

1998 REGIONAL TRANSPORTATION PLAN

1.0 EXECUTIVE SUMMARY

INTRODUCTION (Section 2.0)

Regional transportation planning is a dynamic process requiring periodic refinement, monitoring and updating. The 1998 Regional Transportation Plan includes extensive evaluation of regional transportation issues and the elements required by the Transportation Enhancement Act for the 21st Century (TEA-21). Each component has been studied and modified consistent with regional transportation priorities to achieve an integrated multimodal system.

The adopted Regional Transportation Plan establishes a basis on which funding applications at the state and federal transportation funds by local governments must conform with the RTP, the Kern County State Implementation Plan, and the Federal Transportation Improvement Program.

The Regional Transportation Plan establishes a set of regional transportation goals, objectives, policies and actions intended to guide development of the planned multimodal transportation systems in Kern County over the next twenty years. It was developed through a continuing, comprehensive and cooperative planning process, and provides for effective coordination between local, regional, state and federal agencies. The Congestion Management Program, included as Section 6.2, is designed to ensure that a balanced transportation system is developed, relating population and traffic growth, land use decisions, level-of-service performance standards, and air quality improvement.

With adoption of the RTP, new multimodal facilities will be constructed and transportation services will be implemented on a level consistent with projected funding. Funding projects are based on the assumption that current levels and funding sources will continue throughout the 20-year planning period.

A complete listing of planned improvements by mode is provided in the Financial Element, Section 8.0, Table 8.1. In addition, the projects are displayed on Figure 2-1. The listing and graphic display of projects are consistent with those projects that have been evaluated according to air quality conformity guidelines and requirements and have been found to improve air quality in Kern County, as discussed in Section 7.0. Figure 6-1 provides a graphic display of the CMP System of Highways and Principal Arterials. It is envisioned that this system will address the needs of improved mobility by managing recurring congestion.

GOALS, OBJECTIVES AND POLICIES (Section 3.0)

Goals, objectives and policies are identified as a means of promoting consistency of action among federal, state, regional, and local agencies. Goals, objectives and policies are defined as follows:

Goal - A broadly stated end, or target, toward which effort is directed. It is general in nature and is not time-specific.

Objective - Specific results that contribute to the attainment of a goal within specific times. These results are quantifiable and attainable in light of fiscal, political, and resource constraints. Responsibility for attainment is clearly identified.

Policy - Specific means by which goals and objectives are attained. A policy is a direction statement that guides present and future decisions on specific actions.

The goals, objectives and policies in Section 3.0 have been developed to provide a foundation for regional transportation planning and congestion management.

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REGIONAL AND ENVIRONMENTAL SETTING (Section 4.0)

The Kern region is located in southcentral California, sharing boundaries with eight other counties: San Luis Obispo, Ventura, Santa Barbara, Ventura, Los Angeles, San Bernardino, Inyo, Tulare and Kings. Monterey County lies within two miles of Kern's northwestern corner. Kern County has eleven incorporated cities, 47 school districts, 69 County districts, and 124 special districts. Kern County covers 8,073 square miles, of which 20.4 square miles are waterbodies.

History. Kern County derives its name from Edward M. Kern, a topographer with Captain John C. Fremont's Third Expedition to the West in 1843-44. The first Europeans known to view the area were Spanish soldiers, under the Command of Don Pedro Fages. While in pursuit of army deserters in 1772, the soldiers crested the mountains near what is now called Tejon Pass and gained a view of San Joaquin Valley, naming it "Buena Vista" ("Good View"). Indians had occupied the area for centuries, but little remains to indicate their presence.

Economic Base. Kern County is among the top oil-producing regions in the United States. Two-thirds of the onshore oil produced in California was extracted in the County. Oil production is so great that if the County were a country, it would rank 17th in the world for oil produced. In 1992, the oil industry employed over 12,000 people and provided 10 percent of the County's property tax base.

Land Use Trends. Land use patterns in the majority of Kern County are dispersed. Population centers are often far from each other and travel between them is almost exclusively by automobile. Several exurban areas generate significant commuter traffic into the Bakersfield metropolitan area, namely Tehachapi, Lake Isabella and Frazier Park. In the Rosamond area, residential growth is a direct result of low-cost land, and many of the residents work in Los Angeles County.

Socioeconomic Projections. Population growth in the County has been significant and sustained. From a 1980 population of just over 400,000, Kern County had grown to over 640,000 by the beginning of 1998. Current projections call for a population of 958,300 by 2010. Table 4-1 indicates the past and projected population and housing growth for the County, the metropolitan Bakersfield area and the incorporated cities. The trend of population growth in Kern County over the last 15-20 years has been outward expansion of existing urban centers. This trend is anticipated to continue.

Section 4.4 describes the Environmental Setting of Kern County in varying degrees of specificity. An Environmental Impact Report has been integrated with the Regional Transportation Plan and provides a program-level analysis of typical construction impacts and policy-related issues. A program EIR establishes conditions that reasonably can be expected to occur during the timeframes of the RTP and CMP. It discusses the impacts, mitigation measures, and alternatives to the proposed projects in a conceptual manner, and serves as a basis for focused EIRs on those portions of the multimodal system that require indepth analysis at the time of implementation.

This approach dictates that areas of environmental concern be discussed in varying degrees of specificity. The RTP has been analyzed consistent with the California Environmental Quality Act (CEQA) and determined to have potential impacts in the following areas:

- | | | | |
|---|----------------------------|---|--------------------|
| o | Geology/Hydrology | o | Cultural Resources |
| o | Air Quality | o | Light and Glare |
| o | Biotic Resources | o | Aesthetics |
| o | Noise | o | Public Services |
| o | Land Use | o | Risk of Upset. |
| o | Transportation/Circulation | | |

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Section 4.5 describes Existing Transportation Systems, including highways, aviation, mass transportation, non-motorized transport such as bicycling and walking, and goods movement.

Highways. Kern County's highway and road system provides transportation connectivity over more than an 8,000 square mile region. Because of residents' heavy reliance on the highway network and the geographical expanse of the region, maintenance and expansion of these facilities are critical to the well being of the region's economy. The existing network consists of approximately 6,700 miles of public roads (Figure 4-16). State highways account for 870 miles, while 87 miles comprise the interstate highway system within the region. With the enactment of the federal Intermodal Surface Transportation Efficiency Act and its extending legislation TEA-21, the National Highway System (NHS) and the Surface Transportation Program (STP) redefined the national highway network.

Section 4.5.1.2 addresses issues, accomplishments and needs of the highway system. Key issues identified include (1) aging highway network; and (2) highway safety. Accomplishments include: (1) funding approval and ISTEA requirements in the FTIP; (2) new construction; (3) modeling; (4) corridor studies; (5) work element to monitor the FTIP; (6) short range plans; (7) long range plans; and (8) beyond 20-year horizon. The section also identifies expected roadway deficiencies over the next 20 years.

Aviation. The regional airport system in Kern County is comprised of seven airports operated by the Kern County Department of Airports, four municipally owned airports, three airport districts, three privately owned public use airports, and two major military facilities (Figure 4-58).

Kern County airports include: Meadows Field, Elk Hills/Buttonwillow, Kern Valley in the Lake Isabella area, Lost Hills, Poso adjacent to Routes 65 and 46, Wasco, and Taft. Municipal airports include Bakersfield, California City, Delano and Tehachapi. The airport districts within Kern County include: East Kern at Mojave, Indian Wells Valley at Inyokern, and Minter Field at Shafter. Private airports include Mountain Valley gliderport at Tehachapi and Rosamond Skypark.

China Lake Naval Air Weapons Station and Edwards Air Force Base are located in eastern Kern County in an area known as the R-2508 complex, which is used for the advancement of weapons system technology and tactical training.

Section 4.5.2.2 looks at issues, accomplishments and needs of aviation infrastructure. Issues include: (1) noise; (2) air quality; (3) other environmental factors; (4) airport ground access; and (5) airport comprehensive land use planning. The major accomplishment is the Kern County Airport Land Use Compatibility Plan. Needs include numerous capital improvement projects.

Mass Transportation. Public transit is available in sixteen Kern County communities. In 1996-97, public transit services transported over 5.3 million passengers in Kern County. Transit services include intercity, intracity, demand responsive and fixed route operations. The County of Kern operates Kern Regional Transit that includes service to the unincorporated areas of Buttonwillow, Lamont, Kern River Valley, Frazier Park, Rosamond and Mojave. In addition, the County has agreements with several small cities to share the cost of providing transit service to County areas surrounding incorporated areas. These cities include Delano, Ridgecrest, Shafter, Taft, Tehachapi and Wasco.

Golden Empire Transit District has provided public transit service for the Bakersfield area since 1973. Today, GET operates 14 fixed routes and the Get-A-Lift program to 133 square miles and serves approximately 350,000 residents. Get-A-Lift provides paratransit service in metro Bakersfield for those who are physically unable to use the fixed route service. Elderly and disabled service is also provided by the Consolidated Transportation Service Agency (CTSA). Table 4-28 summarizes public transit services operated within Kern County.

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The Amtrak San Joaquin rail line has its southern terminus in Bakersfield. Bus connections transport passengers to the Los Angeles area from Bakersfield. Currently, the San Joaquin runs four times daily. Common carriers serving Kern County include Greyhound, Orange Belt Stages, Airport Bus of Bakersfield, and Amtrak. These operations have terminals in central Bakersfield.

Section 4.5.3.2 identifies issues, accomplishments and needs of public transit. Issues include: (1) limited transit dollars; (2) coordination with private sector providers; (3) senior/mobility-disabled public transportation; (4) regional transit service improvements; (5) population residing more than 1/4 mile from transit route; (6) highspeed rail; and (7) light rail. Accomplishments include: (1) changes in GET programs and procedures; (2) creation of CTSA; (3) new intercity services provided by Kern Regional Transit; (4) increased Amtrak ridership; (5) GET's Long Range Public Transportation System study; (6) five studies of the potential for high speed rail in California; (7) countywide reporting system; (8) Delano City fixed route system; (9) Kern rural coordination plan; and (10) regional reciprocal transfer system.

Identified needs of the mass transit system include: (1) analysis of funding strategies; (2) intercity service; (3) express service; (4) direct connection with AMTRAK station; (5) coordination of schedules for intercity bus service; (6) countywide CTSA; (7) regional transportation center; and (8) establish railroad right-of-way acquisition policy.

Non-Motorized. Non-motorized defines trips made by bicycle or on foot. Physical fitness, cost, ease of travel, convenience and air quality considerations all influence a decision to bicycle or walk. The future of non-motorized travel within the Kern region is encouraging. Over the past decade, a number of mixed-use developments have been planned and constructed, which have lessened demand for automobile travel while encouraging non-motorized trips. When residents of mixed-use developments work within that development, benefits to the larger community include lessened traffic congestion, enhanced air quality and reduced fuel consumption.

Section 4.5.4.2 addresses issues, accomplishments and needs of non-motorized transportation. These are identified as: (1) public support; and (2) local bikeway plans.

Goods Movement. Movement of goods plays an important role in the overall economy of Kern County. The County is the third most productive agricultural county in the United States (based on farm income), the leading oil producing county in the State and a prominent producer of other minerals. These industries all rely on bulk material movements by truck, rail, pipeline, and to a lesser extent, air.

Kern County is central to the rail and highway transportation network in California and the west coast. Major highways, rail lines, pipelines and air corridors criss-cross the County in all directions. In 1990, trucks traveled over 803 million miles in the County, representing 24.43 percent of all vehicle miles traveled (VMT). Statewide, the average truck VMT was 9.83 percent. Several communities in Kern County have adopted truck routes through the urbanized areas. Special truck routes are posted to guide trucks to central business districts, industrial sites and commercial areas.

Two major railroads, Union Pacific and Burlington Northern Santa Fe operate mainline operations within the County. San Joaquin Valley Railroad operates a number of short-line operations.

Section 4.6.5.2 reviews issues, accomplishments and needs of goods movement. Issues include: (1) high truck volumes and roadway deterioration; (2) truck routing; (3) pipeline safety; (4) hazardous materials movement; and (5) foreign trade zone. Numerous accomplishments are identified, including the modification of low clearance tunnels in Tehachapi Pass. Much of the improvement needed regionally relates to the development of the intermodal connection between modes.

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ACTION ELEMENT (Section 5.0)

The Action Element establishes a plan for addressing identified needs and issues in accordance with the goals, objectives, and policies of the RTP. As outlined by the metropolitan transportation planning process (Section 450.316), fifteen factors are required to be considered, analyzed as appropriate, and reflected in the planning process products. These factors include: (1) preservation of existing transportation facilities; (2) consistency of transportation planning with applicable energy conservation programs; (3) congestion relief; (4) effects of transportation policy decisions on land use and development; (5) programming of expenditures for transportation enhancement activities; (6) effects of all transportation projects to be undertaken within the metropolitan area without regard to the source of funding; (7) access to intermodal transportation facilities, major freight distribution routes; recreation areas, and military installations; (8) connectivity of roadways within and outside metropolitan areas; (9) Transportation needs as measured by the six ISTEA management systems; (10) preservation of future transportation corridors; (11) enhancement of efficient goods movement; (12) use of life-cycle costs in development of bridges, tunnels, or pavement; (13) overall social, economic, energy, and environmental effects of transportation decisions; (14) expansion, enhancement and increased use of transit services; and (15) capital investments for increased transit systems security.

INTELLIGENT TRANSPORTATION SYSTEMS (Section 6.0)

Intelligent Transportation Systems (ITS) is the application of advanced information processing, communications, vehicle sensing and traffic control technologies to the surface transportation system. The objective of ITS is to promote more efficient use of the existing highway and transportation network, increase safety and mobility, and decrease the environmental impacts of congestion. The Federal Highway Administration (FHWA) sponsored the preparation of Early Deployment Plans (EDPs) in different areas of the country to identify ITS application opportunities.

The overall goal of the ITS EDP was to develop a multi-year strategic deployment plan for the Kern region that would result in a well-balanced, integrated, intermodal transportation system. Kern's transportation needs that have the potential of being addressed by ITS technologies have been identified and ITS elements that would be beneficial, cost-effective, and implementable have been evaluated. The strategic plan will facilitate the integration and coordination of ITS applications valley and state-wide in conjunction with other EDPs being conducted throughout California.

CONGESTION MANAGEMENT PROGRAM (Section 6.2)

The Congestion Management Program is designed to ensure that a balanced transportation system is developed that relates population growth, traffic growth, and land use decisions to transportation system performance standards and air quality improvement. The CMP is directly links land use, air quality, transportation, and the use of advanced transportation technologies as an integral and complementary part of the region's plans and programs.

State law requires the CMP to include the following elements: (1) land use analysis program; (2) level of service standards; (3) public transit standards; (4) trip reduction and travel demand strategies; (5) capital improvement program. In addition to these components, Kern COG is required to develop a traffic data base for use in a Countywide model and to monitor the implementation of the CMP.

AIR QUALITY CONFORMITY (Section 7.0)

As the Metropolitan Planning Organization for Kern County, the Kern Council of Governments has made an air quality conformity determination for the 1994 RTP pursuant to the federal Environmental Protection

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Agency's (EPA) Final Rule 93.104. The conformity determination was adopted by Kern Council of Governments on September 18, 1998 and subsequently approved by FHWA/FTA.

Air quality conformity refers to the process whereby transportation plans, programs, and projects are shown to conform to the requirements of the federal Clean Air Act Amendments and the applicable State Implementation Plan (SIP). Specific regulations and requirements are contained in the EPA's Transportation Conformity Rule dated November 15, 1993. Kern Council of Governments' Regional Transportation Plan was found to meet the requirements for Volatile Organic Gases, Nitrous Oxides, Carbon Monoxide, and PM₁₀ when modeled for (1) "build" scenario improvements over "no build"; (2) improvements over the 1990 base year; and (3) adherence to emission budgets in the State Implementation Plan.

FINANCIAL ELEMENT (Section 8.0)

The Financial Element provides a 20-year Capital Improvement Plan (CIP) of project commitments in Kern County. Summarized below are the funding requirements of all ISTEA management system programs. While the RTP CIP for Kern County is financially constrained, a financial summary of projects not part of the conformity process is also presented. These projects are necessary for future year transportation needs to offset anticipated deficiencies in level of service.

The 20-year CIP financial summary projects revenues by quinquennium and by existing funding source. Revenues are further separated by: (1) Capital Improvement Revenue projections, and (2) Operations and Maintenance Revenues.

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SEPTEMBER 1998

Preparation of this report has been
financed in part through grants from the U.S.
Department of Transportation (USDOT). Contents
of this report do not necessarily reflect the
official views or policies of the USDOT.

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Kern Council of Governments Board of Directors

Kern Council of Governments is the regional planning agency as well as the technical and informational resource and rideshare administrator for the area's eleven incorporated cities as well as the County of Kern. Following Board direction, staff coordinates between local, state, and federal agencies to avoid overlap or duplication of programs. This intergovernmental coordination enables staff to work with many public agencies to ensure that planning and implementation of programs proceed in a coordinated manner.

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The adopted Regional Transportation Plan establishes a basis on which funding applications at the state and federal transportation funds by local governments must conform with the RTP, the Kern County State Implementation Plan, and the Federal Transportation Improvement Program.

The Regional Transportation Plan establishes a set of regional transportation goals, objectives, policies and actions intended to guide development of the planned multimodal transportation systems in Kern County over the next twenty years. It was developed through a continuing, comprehensive and cooperative planning process, and provides for effective coordination between local, regional, state and federal agencies. The Congestion Management Program, included as Section 6.2, is designed to ensure that a balanced transportation system is developed, relating population and traffic growth, land use decisions, level-of-service performance standards, and air quality improvement.

With adoption of the RTP, new multimodal facilities will be constructed and transportation services will be implemented on a level consistent with projected funding. Funding projects are based on the assumption that current levels and funding sources will continue throughout the 20-year planning period.

A complete listing of planned improvements by mode is provided in the Financial Element, Section 8.0, Table 8.1. In addition, the projects are displayed on Figure 2-1. The listing and graphic display of projects are consistent with those projects that have been evaluated according to air quality conformity guidelines and requirements and have been found to improve air quality in Kern County, as discussed in Section 7.0. Figure 6-1 provides a graphic display of the CMP System of Highways and Principal Arterials. It is envisioned that this system will address the needs of improved mobility by managing recurring congestion.

GOALS, OBJECTIVES AND POLICIES (Section 3.0)

Goals, objectives and policies are identified as a means of promoting consistency of action among federal, state, regional, and local agencies. Goals, objectives and policies are defined as follows:

Goal - A broadly stated end, or target, toward which effort is directed. It is general in nature and is not time-specific.

Objective - Specific results that contribute to the attainment of a goal within specific times. These results are quantifiable and attainable in light of fiscal, political, and resource constraints. Responsibility for attainment is clearly identified.

Policy - Specific means by which goals and objectives are attained. A policy is a direction statement that guides present and future decisions on specific actions.

The goals, objectives and policies in Section 3.0 have been developed to provide a foundation for regional transportation planning and congestion management.

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REGIONAL AND ENVIRONMENTAL SETTING (Section 4.0)

The Kern region is located in southcentral California, sharing boundaries with eight other counties: San Luis Obispo, Ventura, Santa Barbara, Ventura, Los Angeles, San Bernardino, Inyo, Tulare and Kings. Monterey County lies within two miles of Kern's northwestern corner. Kern County has eleven incorporated cities, 47 school districts, 69 County districts, and 124 special districts. Kern County covers 8,073 square miles, of which 20.4 square miles are waterbodies.

History. Kern County derives its name from Edward M. Kern, a topographer with Captain John C. Fremont's Third Expedition to the West in 1843-44. The first Europeans known to view the area were Spanish soldiers, under the Command of Don Pedro Fages. While in pursuit of army deserters in 1772, the soldiers crested the mountains near what is now called Tejon Pass and gained a view of San Joaquin Valley, naming it "Buena Vista" ("Good View"). Indians had occupied the area for centuries, but little remains to indicate their presence.

Economic Base. Kern County is among the top oil-producing regions in the United States. Two-thirds of the onshore oil produced in California was extracted in the County. Oil production is so great that if the County were a country, it would rank 17th in the world for oil produced. In 1992, the oil industry employed over 12,000 people and provided 10 percent of the County's property tax base.

Land Use Trends. Land use patterns in the majority of Kern County are dispersed. Population centers are often far from each other and travel between them is almost exclusively by automobile. Several exurban areas generate significant commuter traffic into the Bakersfield metropolitan area, namely Tehachapi, Lake Isabella and Frazier Park. In the Rosamond area, residential growth is a direct result of low-cost land, and many of the residents work in Los Angeles County.

Socioeconomic Projections. Population growth in the County has been significant and sustained. From a 1980 population of just over 400,000, Kern County had grown to over 640,000 by the beginning of 1998. Current projections call for a population of 958,300 by 2010. Table 4-1 indicates the past and projected population and housing growth for the County, the metropolitan Bakersfield area and the incorporated cities. The trend of population growth in Kern County over the last 15-20 years has been outward expansion of existing urban centers. This trend is anticipated to continue.

Section 4.4 describes the Environmental Setting of Kern County in varying degrees of specificity. An Environmental Impact Report has been integrated with the Regional Transportation Plan and provides a program-level analysis of typical construction impacts and policy-related issues. A program EIR establishes conditions that reasonably can be expected to occur during the timeframes of the RTP and CMP. It discusses the impacts, mitigation measures, and alternatives to the proposed projects in a conceptual manner, and serves as a basis for focused EIRs on those portions of the multimodal system that require indepth analysis at the time of implementation.

This approach dictates that areas of environmental concern be discussed in varying degrees of specificity. The RTP has been analyzed consistent with the California Environmental Quality Act (CEQA) and determined to have potential impacts in the following areas:

- | | | | |
|---|----------------------------|---|--------------------|
| o | Geology/Hydrology | o | Cultural Resources |
| o | Air Quality | o | Light and Glare |
| o | Biotic Resources | o | Aesthetics |
| o | Noise | o | Public Services |
| o | Land Use | o | Risk of Upset. |
| o | Transportation/Circulation | | |

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Section 4.5 describes Existing Transportation Systems, including highways, aviation, mass transportation, non-motorized transport such as bicycling and walking, and goods movement.

Highways. Kern County's highway and road system provides transportation connectivity over more than an 8,000 square mile region. Because of residents' heavy reliance on the highway network and the geographical expanse of the region, maintenance and expansion of these facilities are critical to the well being of the region's economy. The existing network consists of approximately 6,700 miles of public roads (Figure 4-16). State highways account for 870 miles, while 87 miles comprise the interstate highway system within the region. With the enactment of the federal Intermodal Surface Transportation Efficiency Act and its extending legislation TEA-21, the National Highway System (NHS) and the Surface Transportation Program (STP) redefined the national highway network.

Section 4.5.1.2 addresses issues, accomplishments and needs of the highway system. Key issues identified include (1) aging highway network; and (2) highway safety. Accomplishments include: (1) funding approval and ISTEA requirements in the FTIP; (2) new construction; (3) modeling; (4) corridor studies; (5) work element to monitor the FTIP; (6) short range plans; (7) long range plans; and (8) beyond 20-year horizon. The section also identifies expected roadway deficiencies over the next 20 years.

Aviation. The regional airport system in Kern County is comprised of seven airports operated by the Kern County Department of Airports, four municipally owned airports, three airport districts, three privately owned public use airports, and two major military facilities (Figure 4-58).

Kern County airports include: Meadows Field, Elk Hills/Buttonwillow, Kern Valley in the Lake Isabella area, Lost Hills, Poso adjacent to Routes 65 and 46, Wasco, and Taft. Municipal airports include Bakersfield, California City, Delano and Tehachapi. The airport districts within Kern County include: East Kern at Mojave, Indian Wells Valley at Inyokern, and Minter Field at Shafter. Private airports include Mountain Valley gliderport at Tehachapi and Rosamond Skypark.

China Lake Naval Air Weapons Station and Edwards Air Force Base are located in eastern Kern County in an area known as the R-2508 complex, which is used for the advancement of weapons system technology and tactical training.

Section 4.5.2.2 looks at issues, accomplishments and needs of aviation infrastructure. Issues include: (1) noise; (2) air quality; (3) other environmental factors; (4) airport ground access; and (5) airport comprehensive land use planning. The major accomplishment is the Kern County Airport Land Use Compatibility Plan. Needs include numerous capital improvement projects.

Mass Transportation. Public transit is available in sixteen Kern County communities. In 1996-97, public transit services transported over 5.3 million passengers in Kern County. Transit services include intercity, intracity, demand responsive and fixed route operations. The County of Kern operates Kern Regional Transit that includes service to the unincorporated areas of Buttonwillow, Lamont, Kern River Valley, Frazier Park, Rosamond and Mojave. In addition, the County has agreements with several small cities to share the cost of providing transit service to County areas surrounding incorporated areas. These cities include Delano, Ridgecrest, Shafter, Taft, Tehachapi and Wasco.

Golden Empire Transit District has provided public transit service for the Bakersfield area since 1973. Today, GET operates 14 fixed routes and the Get-A-Lift program to 133 square miles and serves approximately 350,000 residents. Get-A-Lift provides paratransit service in metro Bakersfield for those who are physically unable to use the fixed route service. Elderly and disabled service is also provided by the Consolidated Transportation Service Agency (CTSA). Table 4-28 summarizes public transit services operated within Kern County.

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The Amtrak San Joaquin rail line has its southern terminus in Bakersfield. Bus connections transport passengers to the Los Angeles area from Bakersfield. Currently, the San Joaquin runs four times daily. Common carriers serving Kern County include Greyhound, Orange Belt Stages, Airport Bus of Bakersfield, and Amtrak. These operations have terminals in central Bakersfield.

Section 4.5.3.2 identifies issues, accomplishments and needs of public transit. Issues include: (1) limited transit dollars; (2) coordination with private sector providers; (3) senior/mobility-disabled public transportation; (4) regional transit service improvements; (5) population residing more than 1/4 mile from transit route; (6) highspeed rail; and (7) light rail. Accomplishments include: (1) changes in GET programs and procedures; (2) creation of CTSA; (3) new intercity services provided by Kern Regional Transit; (4) increased Amtrak ridership; (5) GET's Long Range Public Transportation System study; (6) five studies of the potential for high speed rail in California; (7) countywide reporting system; (8) Delano City fixed route system; (9) Kern rural coordination plan; and (10) regional reciprocal transfer system.

Identified needs of the mass transit system include: (1) analysis of funding strategies; (2) intercity service; (3) express service; (4) direct connection with AMTRAK station; (5) coordination of schedules for intercity bus service; (6) countywide CTSA; (7) regional transportation center; and (8) establish railroad right-of-way acquisition policy.

Non-Motorized. Non-motorized defines trips made by bicycle or on foot. Physical fitness, cost, ease of travel, convenience and air quality considerations all influence a decision to bicycle or walk. The future of non-motorized travel within the Kern region is encouraging. Over the past decade, a number of mixed-use developments have been planned and constructed, which have lessened demand for automobile travel while encouraging non-motorized trips. When residents of mixed-use developments work within that development, benefits to the larger community include lessened traffic congestion, enhanced air quality and reduced fuel consumption.

Section 4.5.4.2 addresses issues, accomplishments and needs of non-motorized transportation. These are identified as: (1) public support; and (2) local bikeway plans.

Goods Movement. Movement of goods plays an important role in the overall economy of Kern County. The County is the third most productive agricultural county in the United States (based on farm income), the leading oil producing county in the State and a prominent producer of other minerals. These industries all rely on bulk material movements by truck, rail, pipeline, and to a lesser extent, air.

Kern County is central to the rail and highway transportation network in California and the west coast. Major highways, rail lines, pipelines and air corridors criss-cross the County in all directions. In 1990, trucks traveled over 803 million miles in the County, representing 24.43 percent of all vehicle miles traveled (VMT). Statewide, the average truck VMT was 9.83 percent. Several communities in Kern County have adopted truck routes through the urbanized areas. Special truck routes are posted to guide trucks to central business districts, industrial sites and commercial areas.

Two major railroads, Union Pacific and Burlington Northern Santa Fe operate mainline operations within the County. San Joaquin Valley Railroad operates a number of short-line operations.

Section 4.6.5.2 reviews issues, accomplishments and needs of goods movement. Issues include: (1) high truck volumes and roadway deterioration; (2) truck routing; (3) pipeline safety; (4) hazardous materials movement; and (5) foreign trade zone. Numerous accomplishments are identified, including the modification of low clearance tunnels in Tehachapi Pass. Much of the improvement needed regionally relates to the development of the intermodal connection between modes.

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ACTION ELEMENT (Section 5.0)

The Action Element establishes a plan for addressing identified needs and issues in accordance with the goals, objectives, and policies of the RTP. As outlined by the metropolitan transportation planning process (Section 450.316), fifteen factors are required to be considered, analyzed as appropriate, and reflected in the planning process products. These factors include: (1) preservation of existing transportation facilities; (2) consistency of transportation planning with applicable energy conservation programs; (3) congestion relief; (4) effects of transportation policy decisions on land use and development; (5) programming of expenditures for transportation enhancement activities; (6) effects of all transportation projects to be undertaken within the metropolitan area without regard to the source of funding; (7) access to intermodal transportation facilities, major freight distribution routes; recreation areas, and military installations; (8) connectivity of roadways within and outside metropolitan areas; (9) Transportation needs as measured by the six ISTEA management systems; (10) preservation of future transportation corridors; (11) enhancement of efficient goods movement; (12) use of life-cycle costs in development of bridges, tunnels, or pavement; (13) overall social, economic, energy, and environmental effects of transportation decisions; (14) expansion, enhancement and increased use of transit services; and (15) capital investments for increased transit systems security.

INTELLIGENT TRANSPORTATION SYSTEMS (Section 6.0)

Intelligent Transportation Systems (ITS) is the application of advanced information processing, communications, vehicle sensing and traffic control technologies to the surface transportation system. The objective of ITS is to promote more efficient use of the existing highway and transportation network, increase safety and mobility, and decrease the environmental impacts of congestion. The Federal Highway Administration (FHWA) sponsored the preparation of Early Deployment Plans (EDPs) in different areas of the country to identify ITS application opportunities.

The overall goal of the ITS EDP was to develop a multi-year strategic deployment plan for the Kern region that would result in a well-balanced, integrated, intermodal transportation system. Kern's transportation needs that have the potential of being addressed by ITS technologies have been identified and ITS elements that would be beneficial, cost-effective, and implementable have been evaluated. The strategic plan will facilitate the integration and coordination of ITS applications valley and state-wide in conjunction with other EDPs being conducted throughout California.

CONGESTION MANAGEMENT PROGRAM (Section 6.2)

The Congestion Management Program is designed to ensure that a balanced transportation system is developed that relates population growth, traffic growth, and land use decisions to transportation system performance standards and air quality improvement. The CMP is directly links land use, air quality, transportation, and the use of advanced transportation technologies as an integral and complementary part of the region's plans and programs.

State law requires the CMP to include the following elements: (1) land use analysis program; (2) level of service standards; (3) public transit standards; (4) trip reduction and travel demand strategies; (5) capital improvement program. In addition to these components, Kern COG is required to develop a traffic data base for use in a Countywide model and to monitor the implementation of the CMP.

AIR QUALITY CONFORMITY (Section 7.0)

As the Metropolitan Planning Organization for Kern County, the Kern Council of Governments has made an air quality conformity determination for the 1994 RTP pursuant to the federal Environmental Protection

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Agency's (EPA) Final Rule 93.104. The conformity determination was adopted by Kern Council of Governments on September 18, 1998 and subsequently approved by FHWA/FTA.

Air quality conformity refers to the process whereby transportation plans, programs, and projects are shown to conform to the requirements of the federal Clean Air Act Amendments and the applicable State Implementation Plan (SIP). Specific regulations and requirements are contained in the EPA's Transportation Conformity Rule dated November 15, 1993. Kern Council of Governments' Regional Transportation Plan was found to meet the requirements for Volatile Organic Gases, Nitrous Oxides, Carbon Monoxide, and PM₁₀ when modeled for (1) "build" scenario improvements over "no build"; (2) improvements over the 1990 base year; and (3) adherence to emission budgets in the State Implementation Plan.

FINANCIAL ELEMENT (Section 8.0)

The Financial Element provides a 20-year Capital Improvement Plan (CIP) of project commitments in Kern County. Summarized below are the funding requirements of all ISTEA management system programs. While the RTP CIP for Kern County is financially constrained, a financial summary of projects not part of the conformity process is also presented. These projects are necessary for future year transportation needs to offset anticipated deficiencies in level of service.

The 20-year CIP financial summary projects revenues by quinquennium and by existing funding source. Revenues are further separated by: (1) Capital Improvement Revenue projections, and (2) Operations and Maintenance Revenues.

SECTION 2.0 INTRODUCTION

2.1 REGIONAL PLANNING PROCESS

Regional transportation planning is a dynamic process requiring periodic refinement, monitoring, and revision. The planning program for the next two-year period will continue with extensive evaluation of the Regional Transportation Plan (RTP) and the elements required by the Transportation Equity Act for the 21st Century (TEA-21). Each component will be studied and modified consistent with RTP priorities toward an integrated multimodal system.

Kern Council of Governments (Kern COG) is a federally-designated Metropolitan Planning Organization (MPO) and a State-designated Regional Transportation Planning Agency (RTPA). These designations formally establish Kern COG's role in transportation planning. The Kern COG Board of Directors is composed of elected representatives from the eleven incorporated cities of Kern County and two members of the County Board of Supervisors. A Memorandum of Understanding (MOU) between Kern COG and Caltrans District 06 also provides for a Transportation Planning Policy Committee, which is the existing Board plus Caltrans' representatives. The Transportation Advisory Committee (TAC), composed of technical staff from member agencies, other interested agencies, public members, Caltrans, and the San Joaquin Valley Unified and Kern County Air Districts, provides support to the Board of Directors. Public participation is encouraged at every stage of the planning process, as required under the Federal Clean Air Act Amendments of 1990 and TEA-21, and all meetings are open to the public. Public hearings are held for formal adoption of major planning documents.

The adopted RTP establishes a basis on which funding applications at the state and federal level are evaluated. The intended use of any state or federal transportation funds by local governments must conform with the RTP, the Kern County State Implementation Plan (SIP), and the Federal Transportation Improvement Program (FTIP).

Kern COG has prepared a Regional Transportation Plan that incorporates the Congestion Management Program (CMP). The Program Environmental Impact Report, prepared in 1994, was updated and recertified in 1998 pursuant to the requirements set forth in state and federal RTP Guidelines, State CMP legislation, and the California Environmental Quality Act (CEQA), and has been included in the 1998 RTP.

Kern COG is mandated by California Government Code Section 65080 to prepare and periodically update the RTP. This Code section also specifies that actions by transportation agencies, such as Caltrans, must be consistent with the RTP. Land use decisions should consider and accommodate facilities and programs specified in the RTP whenever possible. The facilities contained in the RTP should be incorporated into city and county General Plans. Most local transportation projects must be consistent with the RTP in order to obtain state, federal, or transportation sales tax funding.

The RTP is a 20-year plan that establishes a set of regional transportation goals, objectives, policies, and actions intended to guide development of the planned multimodal transportation systems in Kern County. It was developed through a continuing, comprehensive, and cooperative planning process, and provides for effective coordination between local, regional, state and federal agencies. The CMP is designed to ensure that a balanced transportation system is developed, relating population and traffic growth, land use decisions, Level of Service (LOS) performance standards, and air quality improvement.

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The CMP is intended to directly link land use, transportation, air quality and the use of advanced transportation technologies as an integral and complementary part of Kern County's plans and programs.

The EIR provides a program-level analysis of typical construction impacts and policy-related issues, as well as more specific analyses of the RTP and CMP's individual elements. A program EIR establishes assumptions on conditions that reasonably can be expected to occur during the timeframes of the RTP and CMP. It discusses the impacts, mitigation measures, and alternatives to the proposed projects in a conceptual manner, and serves as a basis for focused EIRs on those portions of the multimodal system that require more in-depth analysis at the time of implementation. This EIR allows Kern COG to focus on the cumulative effects of the RTP's proposed projects and the requirements of the CMP, and identifies appropriate mitigation measures.

This approach dictates that areas of environmental concern be discussed in varying degrees of specificity. The RTP has been analyzed consistent with the California Environmental Quality Act (CEQA) and determined to have potential impacts in the following areas:

1. **Geology/Hydrology.** Grading for transportation improvement projects may cause significant impacts including topographic changes and the potential for erosion. Appropriate mitigation measures have been incorporated to lessen such impacts. In addition, the amount of impervious surfaces may be increased that would result in increased water runoff. Appropriate mitigation measures have been incorporated to lessen such impacts.
2. **Air Quality.** Both short-term construction and long-term mobile emissions associated with the proposed projects can be significant. Under the Federal Clean Air Act Amendments (FCAAA) of 1990, transportation plans, programs and projects must conform to the State Implementation Plan (SIP). Based on the analysis provided in Section 7.0, Air Quality Conformity, future air quality impacts resulting from the RTP will be less than in applicable Emissions Budgets. In addition, future year air emissions will be less when RTP projects are added versus No-Build conditions. This is attributed partly to the implementation of Transportation Control Measures (TCMs) that reduce trips and vehicle miles traveled (VMTs) and therefore, reduce emissions.
3. **Biotic Resources.** Projects in the proposed RTP may impact existing sensitive biotic resources. Appropriate mitigation measures have been incorporated to lessen the impacts that implementation of proposed projects may cause.
4. **Noise.** Proposed projects may increase vehicle traffic, which may concurrently result in an indirect increase in noise levels on adjacent land uses. Further, short-term noise levels may increase during construction activities. Appropriate mitigation measures have been incorporated to lessen such impacts.
5. **Land Use.** Beneficial changes to the jobs/housing ratio may occur as a result of the RTP. Other beneficial changes and possible negative environmental impacts and mitigation measures are referenced in Section 5.2.2.
6. **Transportation/Circulation.** The RTP includes a program of streets and highways, transit, aviation, rail, and non-motorized transit that may cause significant environmental impacts unless mitigated.
7. **Cultural Resources.** The RTP includes major transportation improvement projects that may impact cultural and historical resources in Kern County. Expected impacts and appropriate mitigation measures have been identified and are referenced in Section 5.2.2.

8. Other. Other possible environmental concerns include the following:

Light and Glare. The RTP includes major transportation improvement projects that may introduce or increase light and glare in existing or future neighborhoods. Appropriate mitigation measures have been identified in Section 5.2.2 to offset any significant impacts as the projects are implemented.

Aesthetics. The RTP may impact existing aesthetic values.. Each physical improvement, when proposed for implementation, should be evaluated to determine the potential impact on aesthetic resources. Possible negative environmental impacts and mitigation measures are discussed in Section 5.2.2.

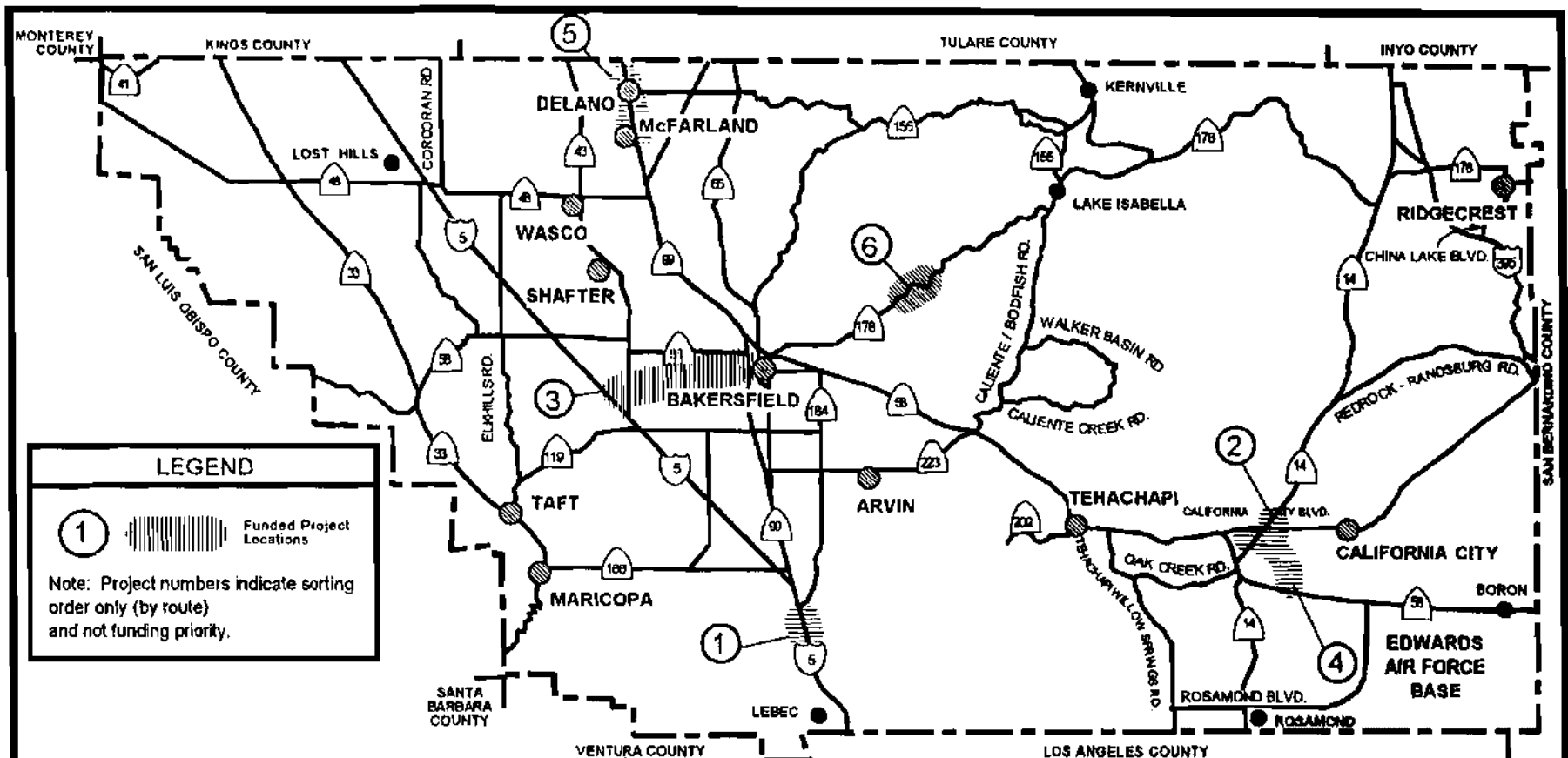
Public Services. Certain proposed projects will result in additional lanes or new facilities. Any expansion may result in increased maintenance requirements.. Beneficial changes and possible negative environmental impacts and mitigation measures are discussed in Section 5.2.2.

Risk of Upset. Improvements within the RTP have the potential to interrupt contaminated soils from previous activities on the project sites. Industrial soil remediation and removal efforts may be required when influential transportation projects are implemented. Other beneficial changes and possible negative environmental impacts and mitigation measures are referenced in Section 5.2.2.

Based on the RTP, new multimodal facilities will be constructed and transportation services will be implemented on a level consistent with projected funding. Funding projections are based on the assumption that current levels and sources of funding will continue throughout the 20-year planning period.

Using projected funding levels, each jurisdiction within Kern County, Caltrans, the Air Districts, and other agencies will implement projects or transportation demand management (TDM) strategies consistent with the goals, objectives, and policies set forth in the RTP. In addition, these agencies, together with Kern COG acting as the Congestion Management Agency (CMA) for Kern County, will implement the objectives of CMP legislation in accordance with requirements specified in this RTP. The RTP is directed toward maintaining the existing multimodal transportation system, improving the safety of the system, and increasing its capacity to improve mobility for Kern County residents.

A complete list of planned improvements by mode is provided in the Financial Element, Section 8.0, Table 8-1. In addition, the projects are displayed on Figure 2-1. The listing and graphic display of projects are consistent with those projects that have been evaluated according to air quality conformity guidelines and requirements and have been found to improve air quality in Kern County (reference Section 7.0, Air Quality Conformity). Figure 6-1 provides a graphic display of the CMP System of Highways and Principal Arterials. It is envisioned that this congestion management system will address the needs of improved mobility by managing recurring congestion in accordance with CMP legislation.



1. ROUTE 5 AT LAVAL RD. INTERCHANGE - UPGRADE BRIDGE AND INTERCHANGE
2. ROUTE 14 AT CALIFORNIA CITY BLVD. - INTERCHANGE
3. ROUTE 58 - CONSTRUCT FREEWAY ON NEW ALIGNMENT FROM STOCKDALE HIGHWAY (NEAR HEATH AVE.) TO MOHAWK ST.
4. ROUTE 58 NEAR MOJAVE - CONSTRUCT 4 LANE FREEWAY
5. ROUTE 99 NEAR MCFARLAND AND DELANO - 4 LANES TO 6 LANES AND REPLACEMENT PLANTING
6. ROUTE 178 NEAR DEMOCRAT ROAD - CONSTRUCT EAST BOUND PASSING LANE

FUNDED PROJECT LOCATIONS

LEGEND

- U.S. Highway
- Interstate
- State Highway



Kern Council
of Governments

FIGURE 2-1

JULY 1998



2.2 INTERGOVERNMENTAL RELATIONSHIPS

Transportation planning in Kern County is considered a coordinated and continuous process, involving all local governments, Caltrans District 06, urban and rural transit agencies, San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD) and Kern County Air Pollution Control District (KCAPCD), other interested/affected agencies, and the public.

In addition to interagency coordination within the County, further coordination with other San Joaquin Valley Regional Transportation Planning Agencies, the Air Districts and Caltrans District 06 has been maintained. A Memorandum of Understanding (MOU) between Kern COG and Caltrans provides for a Transportation Planning Policy Committee, which is made up of the existing Board and Caltrans representatives. Further, Kern COG has entered into a MOU with the other seven San Joaquin Valley RTPAs, SJVUAPCD, and KCAPCD. This MOU defines a coordinated and cooperative process aimed at maximum effectiveness and compatibility of air quality and transportation plans.

Section 7.0, Air Quality Conformity, provides a detailed assessment of the interagency and public consultation process undertaken during development of the RTP, as well as during development of various analytical tools such as the regional traffic model and BURDEN. The assessment of intergovernmental relationships provided in Section 7.0 is consistent with TEA-21 and FCAA requirements.

2.3 TRANSPORTATION EQUITY ACT FOR 21st CENTURY (TEA-21)

On May 22, 1998, Congress passed HR 2400, the Transportation Equity Act for the 21st century (TEA-21). This act superseded the Intermodal Surface Transportation Efficiency Act (enacted in 1991) and authorized highway, highway safety, transit and other surface transportation programs for the next six years.

TEA-21 builds on the initiatives established under ISTEA, combining the continuation and improvement of current programs with new initiatives. This combination of programs is designed to improve safety as traffic congestion continues to increase; protect and enhance communities and natural environment as transportation systems are provided; and advance America's economic growth and competitiveness domestically and internationally through efficient and flexible transportation.

Significant features of TEA-21 include:

- 1) Assurance of a guaranteed level of federal funds for surface transportation through FY 2003. The annual floor for highway funding is keyed to receipts of the Highway Account of the Highway Trust Fund (HTF). Transit funding is guaranteed at a selected fixed amount. All highway user taxes are extended at the same rates when the legislation was enacted.
- 2) Extension of the Disadvantaged Business Enterprises (DBE) program, providing a flexible national 10 percent goal for the participation of disadvantaged business enterprises, including small firms owned and controlled by women and minorities, in highway and transit contracting undertaken with federal funding.
- 3) Strengthening of safety programs across the Department of Transportation (DOT). New incentive programs, with great potential for savings to life and property, are aimed at increasing the use of safety belts and promoting the enactment and enforcement of 0.08 percent blood alcohol concentration standards for drunk driving. These new incentive funds also offer added flexibility to States since the grants can be used for any Title 23 USC activity.

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- 4) Continuation of the proven and effective program structure established for highways and transit under the landmark ISTEA legislation. Flexibility in the use of funds, emphasis on measures to improve the environment, focus on a strong planning process as the foundation of good transportation decisions are continued and enhanced by TEA-21. New programs such as Border Infrastructure, Transportation Infrastructure Finance and Innovation, and Access to Jobs target special areas of national interest and concern.
- 5) Investing in research and its application to maximize the performance of the transportation system. Special emphasis is placed on deployment of Intelligent Transportation Systems to help improve operations and management of transportation systems and vehicle safety.

2.4 FEDERAL AND STATE CLEAN AIR ACT REQUIREMENTS

Descriptions of Federal Clean Air Act Amendments of 1990 (FCAAA) and California Clean Air Act (CCAA) requirements are provided in Section 4.1.2, Environmental Setting - Air Quality, and in Section 7.0, Air Quality Conformity.

2.5 CEQA REQUIREMENTS

The Regional Transportation (RTP) establishes the regional transportation policy for Kern County. The RTP identifies the necessary mechanisms to maintain the region's multimodal transportation system at adequate levels of service that would accommodate projected growth and development. The Program Environmental Impact Report (EIR) has been prepared as an integrated document to analyze environmental impacts associated with development and long-term implementation of the RTP.

This RTP EIR is intended to provide information to public agencies and the general public regarding the potential short- and long-term impacts related to the implementation of the RTP. Under provisions of CEQA, the purpose of the EIR is "to identify the significant effects of a project on the environment, to identify alternatives to the project, and to indicate the manner in which significant effects can be mitigated or avoided."

The analysis of potential environmental impacts is based on a "worst-case" scenario. In order to avoid understating any potential environmental impact, this RTP EIR has been prepared considering only those projects that can be funded and, therefore, implemented between 1994 and 2020. This ensures that the RTP is "financially constrained," consistent with FCAAA and TEA-21 regional transportation planning requirements.

The RTP provides for "program" level environmental evaluation of projects that form the regionally significant transportation system consistent with provisions referenced in CEQA. As a result, any adverse effects that the RTP may generate have been thoroughly analyzed and are referenced in this document along with appropriate mitigation measures and other strategies to overcome adverse environmental impacts. In addition, the RTP takes a holistic approach in the assessment of adverse environmental impacts that new transportation improvement projects could cause.

The RTP identifies new and improved transportation facilities and programs that have not been fully designed and, therefore, have not received detailed environmental study or clearances. This RTP does not seek to analyze details and potential environmental impacts for each specific project referenced in the Financial Element, Section 8.0. Major improvement projects may require further environmental evaluation,

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before design and construction begin, to address specific environmental impacts known only after the various alternative alignments are determined and design concepts for preferred alternatives have been completed.

As stated in the Notice of Preparation (NOP), the EIR has been prepared considering goals, objectives, and policies, projects, and programs reflected in the RTP and their potential environmental effects.

For major transportation projects identified in the RTP, the responsible local agency and/or Caltrans District may be required at a later date to conduct a "project" level environmental evaluation consistent with CEQA and/or National Environmental Policy Act (NEPA) provisions.

This integrated RTP EIR is an information document for use by decision-makers, public agencies, and the general public. It is a policy- and program-level document that sets forth long-range plans for the region's multimodal transportation system. The Congestion Management Program is included to ensure selected major streets and highways and other modes are maintained at adequate levels of service. Agencies will use the RTP and EIR to assess project effects from a "regional" perspective, and impose conditions or propose alternatives designed to lessen potential environmental impacts.

Legal Requirements

The RTP EIR was prepared in accordance with the California Environmental Quality Act of 1970 (Public Resources Code, Section 21000 *et seq.*) and the Guidelines for Implementation of the California Environmental Quality Act published by the Resources Agency of the State of California (California Code of Regulations, Section 15000 *et seq.*).

The EIR-related portions of the RTP have been prepared by professional consultants under contract with Kern COG. The EIR-related sections, and the analysis and conclusions contained in the RTP reflect the independent judgment of Kern COG. Kern COG is designated as the "lead agency" for the project as defined by Section 21067 of CEQA.

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3.0 GOALS, OBJECTIVES, AND POLICIES

Goals, objectives, and policies are identified as a means of promoting consistency of action among federal, State, regional, and local agencies. Organization of goals, objectives, and policies is according to the standard convention, as follows:

GOAL: A broadly stated end, or target, toward which effort is directed. It is general in nature and is not time-specific.

OBJECTIVE: Specific results that contribute to the attainment of a goal within specified times. These results are quantifiable and attainable in light of fiscal, political, and resource constraints. Responsibility for attainment is clearly identified.

POLICY: Specific means by which goals and objectives are attained. A policy is a direction statement that guides present and future decisions on specific actions.

The following goals, objectives, and policies have been developed to provide a foundation for regional transportation planning and congestion management. Kern Council of Governments and its member agencies have responsibility for oversight, implementation and maintenance of identified projects.

3.1 GOALS

1. Provide the County minimum of State highway funding for the region.
2. Provide for safe regional aviation facilities and their environs.
3. Protect airports from encroachment by noise-sensitive land uses and minimize noise impacts on adjacent communities.
4. Provide transportation alternatives and mobility for those dependent on public transportation, with access to *essential* locations.
5. Promote the safe, convenient and efficient use of bicycles as an integral component of the regional transportation network.
6. Promote a safe and convenient pedestrian circulation system as a component of the regional transportation network.
7. Reduce vehicle trips, vehicle miles traveled, and increase efficiency of existing roadways, through low cost, short-range transportation strategies.
8. Provide a balanced and efficient transportation system that maximizes reductions in air pollution.

3.2 OBJECTIVES

1. Plan and construct new roadway facilities that are complementary to a multimodal transportation system and improve the existing facilities.
2. Implement a transportation plan and congestion management program that is fully consistent and coordinated with local land use policies through continued update of the Regional Transportation Plan and congestion management system.

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3. Construct an east/west interstate route through the region.
4. Maintain a fully operational travel demand modeling program.
5. Update the Countywide Airport Land Use Compatibility Plan on a five-year cycle.
6. Provide funding for aviation safety improvements in the biennial updates of the Regional Transportation Plan and Regional Transportation Improvement Program.
7. Evaluate noise contour data and standards during development of Airport Systems Plans, Airport Master Plans, or during development of other studies.
8. Continuously increase public transit through improved service and public awareness.
9. Maintain an ongoing areawide transit performance monitoring program.
10. Provide an intermodal transit facility within Metropolitan Bakersfield.
11. Coordinate with the City of Bakersfield, County of Kern, and Golden Empire Transit District to establish future light rail guideway corridors.
12. Improve coordination of transit system policies and those land use policies that support and influence transit.
13. Carry out statutory requirements of the Transportation Development Act.
14. Continue to include bus-related facilities and amenities design standards in the development review process within the GET service area.
15. Maintain farebox recovery ratios of ten percent for social service and rural transit systems.
16. Plan and provide a continuous and easily accessible bike path system within the region.
17. Develop a regionwide cycling system that will minimize bicycle/automobile conflicts.
18. Require that bicycle facilities be maintained.
19. Provide adequate support facilities for bicycles to encourage use of the bikeway system.
20. Provide an information/education program for motorists and cyclists that identifies the proper role for each in the traffic environment.
21. Create or upgrade the pedestrian circulation system as land uses change, especially when land is developed for urban uses.
22. Develop a nonmotorized system that will minimize potential conflicts between pedestrians, bicycles and motor vehicles.
23. Increase the average vehicle ridership consistent with the California Clean Air Act Amendments of 1990.
24. Assist local agencies with implementation of local trip reduction/travel demand management

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techniques.

25. Develop a program for local governments to mitigate the traffic impacts of land development decisions.
26. Provide non-motorized transport facilities as rapidly as possible wherever they have the potential to reduce motor vehicle use.
27. Sources of revenue shall be actively pursued for nonmotorized transportation facilities, public transportation alternatives, and infrastructure improvements for pedestrian and bicycle access.
28. Other transportation alternatives with the potential to reduce air pollution shall be included in long range planning.

3.3 POLICIES

1. Provide for adequate funding of highways within the Kern region.
2. Work with Caltrans, California Transportation Commission, and other appropriate agencies to assume the region's share of minimum highway funding made available by State law.
3. Recommend appropriate roadway standards to facilitate the use of alternative modes of travel such as bus lanes, bike lanes, and pedestrian access.
4. Provide for continued separation of grade improvements at major transportation conflict points.
5. Through the RTP, set priorities for the programming of State Highway and Combined Road Program projects.
6. Maintain a system of roadside call boxes for selected routes within the region.
7. Identify and protect future road rights-of-way through local agency adoption of Kern COG corridor studies.
8. When reserving right-of-way for future highway alignments, sufficient space should be reserved for capacity enhancements such as the addition of traffic lanes, HOV lanes, light rail lines and bus ways.
9. Assist with coordination between local agency Circulation Plans and Elements.
10. Establish and maintain coordinated regional traffic count, forecasting and modeling programs.
11. All developments and land use plans shall be evaluated in terms of effects on the transportation system.
12. Interregional roads and roads addressed in the CMP shall receive funding priorities.
13. Visual quality should be enhanced by developing scenic routes and through improved

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landscaping on state highways.

14. High priority shall be given to improvement projects that mitigate areas of extreme congestion (Level of Service E or F) or hazardous safety conditions.
15. Plans, ordinances, and development proposals for land adjacent to existing or proposed transportation projects shall evaluate possible effects on the surrounding circulation network.
16. The proposed transportation system shall be consistent with the region's Air Quality Attainment Plans.
17. Upon request by local agencies, assist in the review of projects adjacent to airports to identify aviation safety concerns.
18. Assist both local agencies and airports in the analysis of aviation safety issues related to any airport expansion.
19. Work with airport operators to identify projects that mitigate safety deficiencies or provide safety improvements.
20. Give higher priority in Regional Aviation Capital Improvement Program funding for those projects that mitigate existing safety deficiencies or provide for safety improvements.
21. Work with the Consolidated Transportation Service Agency to provide transportation services for transit dependent senior citizens and physically disabled persons.
22. Develop an annual Short Range Transit Plan that recommends service improvements to existing transit services, as necessary.
23. Identify unmet transit needs in Kern County to improve transit services and to improve the mobility and self sufficiency of disabled persons, to the extent that such needs are reasonable to meet.
24. Identify the size and location of groups likely to be transit dependent or transit-disadvantaged including, but not limited to, the elderly, physically disabled, and persons of low income.
25. Annually analyze the adequacy of existing public transportation services, specialized transportation services, and privately provided services in meeting the identified transit demand.
26. Define alternative methods to improve transit service, and provide cost effective and efficient public transportation services.
27. Continuously monitor transit operations to determine the effectiveness of existing services, and recommend modifications of the system in response to changes in land use and travel patterns.
28. Use mass media, news releases, personal contact, and marketing techniques to promote public transportation and ridesharing.
29. Assist transit operators in marketing efforts and the publication of service changes.

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30. Provide transit representatives to address civic, educational, and other interest groups.
31. Changes in transit services shall be evaluated in terms of cost effectiveness, cost efficiency, and ridership.
32. Assist social service transportation providers and common carriers with the coordination of intra- and inner-city transportation services.
33. Assist GET in developing guidelines for the design and placement of bus-related facilities and amenities in the Metropolitan Bakersfield area.
34. Assist transit operators in securing available funding.
35. Encourage the implementation of bicycle ordinances that clearly specify required action of bicyclists, pedestrians, and motorists.
36. Require the design of new bicycle facilities to be in compliance with Chapter 1000 of the State Bikeway Planning and Design Criteria (Highway Design Manual, Topic 1003, Design Criteria).
37. Provide bikeway maintenance services to clear the facilities of loose material, broken glass, and other material hazardous to pedestrians and bicyclists.
38. Implement a program to install bicycle safe drain gratings.
39. Implement a program to provide proper bicycle route lighting.
40. Encourage secure bicycle storage facilities at industrial, civic, commercial, recreational, educational, and governmental locations.
41. Give priority to projects that link existing sections of the bikeway system, thereby eliminating gaps.
42. Construct bikeway projects in conjunction with street improvement projects.
43. Request that Caltrans design bridges and freeway overpasses/underpasses to serve bicyclists in conjunction with the highways that are designated as portions of the bikeway system.
44. Provide for bicycle storage at terminal facilities such as airports, train stations, and bus terminals to accommodate non-motorized users.
45. Develop a clear, simple and recognizable bicycle system with clearly defined areas and boundaries.
46. Develop bicycling "Rules of the Road" safety pamphlets for distribution through schools, bicycle shops, and civic organizations.
47. Encourage the Department of Motor Vehicles to include bicycle rules and regulations on driver's license tests.
48. Encourage the completion of existing pedestrians systems.

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- 49. Encourage the development of a pedestrian circulation system that minimizes conflicts between bicyclists and motor vehicles.
- 50. Evaluate the Congestion Management Program for consistency with the Regional Transportation Plan.
- 51. The potential for improving air quality shall be considered for all transportation system programs.
- 52. Trip reduction programs, ridesharing, and other transportation alternatives shall be actively encouraged.
- 53. Evaluating the potential for improving the region's air quality shall be an integral part of all transportation system programs.
- 54. All development proposals shall be reviewed and evaluated for potential impacts on the transportation system and regional air quality.
- 55. Give preferential treatment to transportation improvements that facilitate improved public transit routes, a jobs/housing balance, or access to work sites or shopping areas for persons choosing non-motorized or public transport.
- 56. Emphasize and give priority to those transportation system improvements that will enable the region to meet its air quality objectives, as defined by current California Clean Air Act Air Quality Attainment Plans.
- 57. Assure that the transportation system is balanced and integrated with existing and planned land use to ensure maximum air quality improvement.
- 58. Support public information programs that inform the public about the causes and cures of air pollution and traffic congestion.

4.0 REGIONAL SETTING

4.1 ENVIRONMENTAL SETTING

The Kern region is located in south-central California, sharing boundaries with eight other counties: San Luis Obispo, Ventura, Santa Barbara, Los Angeles, San Bernardino, Inyo, Tulare and Kings. Monterey County lies within two miles of Kern's northwestern corner. Kern County has eleven incorporated cities, 47 school districts, 69 County districts, and 124 special districts.

Kern County covers 8,073 square miles, of which 20.4 square miles are waterbodies. The County is larger than the states of Massachusetts, New Jersey, or Hawaii and is larger than the area of Connecticut, Delaware, and Rhode Island combined. It is the third largest county in California and the twenty-fourth largest county in the United States. For illustrative purposes, the topography of Kern County can be divided into three distinct geographic regions: (1) San Joaquin Valley; (2) southern Sierra Nevada Mountains; and (3) western Mojave Desert. Elevations range from a low of 206 feet above sea level near the City of Delano to over 8,800 feet on the southernmost border at Mt. Pinos in the San Emidio Range. Figure 4-1 shows the geographic districts, while Figure 4-2 illustrates the location of Kern County within California and the western United States.

Climate is related to elevation and physical characteristics. The average annual rainfall in the San Joaquin Valley portion of Kern County is less than six inches, with the majority of the precipitation occurring during the mild winter months from November to March. Snowfall is rare, but periods of dense "tule" fog are common. The mountains receive snow, with occasional heavy accumulations. Runoff from the snowpack is an important component of the San Joaquin Valley's water supply during its long, dry summer. Kern County's desert area receives sporadic precipitation, as it lies within the rain shadow of the Sierra Nevada. Brief, but intense, thunderstorms are common during the summer.

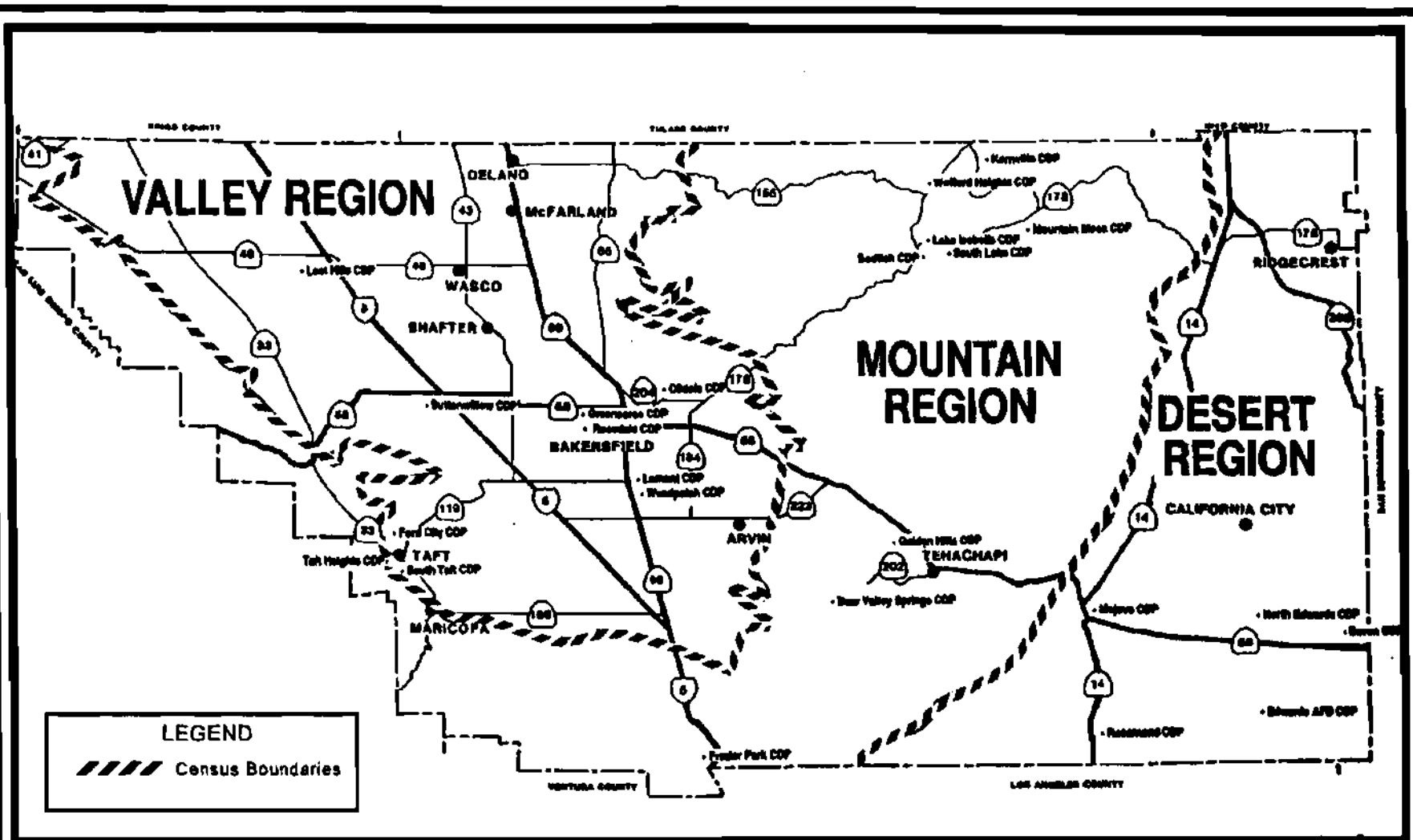
History

Kern County derives its name from Edward M. Kern, a topographer with Captain John C. Fremont's third expedition to the west in 1843-44. The first Europeans known to view the area were Spanish soldiers, under the command of Don Pedro Fages. While in pursuit of army deserters in 1772, the soldiers crested the mountains near what is now called Tejon Pass and gained a view of San Joaquin Valley, naming it "Buena Vista" ("Good View"). Indians had occupied the area for centuries, but little remains to indicate their presence.

Early settlers were lured by gold strikes in the Sierra Nevada in the 1850s. One of the earliest settlements, and the first County seat, Havilah, took its name from the Biblical "Land of Gold." The early gold strikes proved to be relatively low-grade deposits and problems, such as poor roads in the rugged mountains and highway robbery, resulted in most of the mining operations closing prior to 1870.

Much of San Joaquin Valley was marsh at the time the first settlers arrived, requiring drainage and reclamation prior to cultivation. Compounding this problem, the Kern River (which drains a considerable portion of the southern Sierra Nevada) would often flood during the spring. This was not solved satisfactorily until 1953 when construction of a dam was completed at the head of Kern Gorge, forming Lake Isabella.

Bakersfield, the present County seat and largest city, was named after Civil War Colonel Thomas Baker, one of the earliest settlers in the area. Baker provided lodging for travelers and fodder for their stock in his fields; hence, the community became known as Baker's field.



KERN COUNTY INCORPORATED CITIES AND CENSUS DESIGNATED PLACES

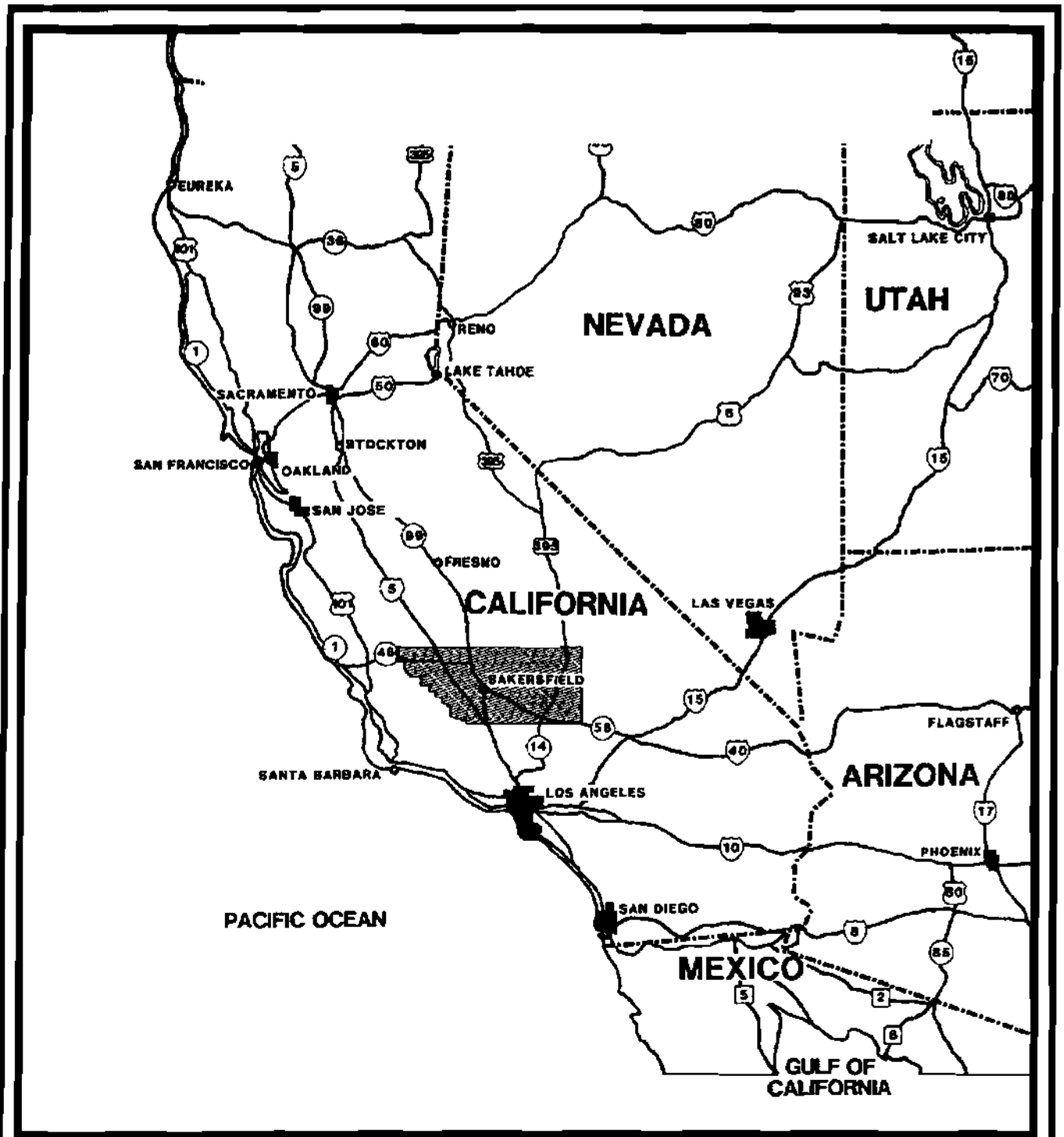


Kern Council
of Governments

FIGURE 4-1

JULY 1998





KERN COUNTY WITHIN THE WESTERN UNITED STATES



**Kern Council
of Governments**

FIGURE 4-2

JULY 1998



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MILES

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Economic Base

Kern County is among the top oil-producing regions in the United States. Two-thirds of the onshore oil produced in California was extracted in the County. Oil production is so great that if the County were a country, it would rank seventeenth in the world for oil produced. In 1992, the oil industry employed over 12,000 people and provided 10 percent of the County's property tax base.

Agriculture is also a mainstay of the economy. Because of the nearly frost-free climate, as well as water importation projects such as the State Water Project's California Aqueduct and the federal Central Valley Project's Kern-Friant Canal, Kern County is among the top agricultural production areas of the nation. Major crops include cotton, grapes, almonds, and carrots.

Aerospace activities have been long associated with Kern County. Edwards Air Force Base, famous for flight testing and Space Shuttle landings, is located east of the Mojave community. The Navy maintains a similar facility, China Lake Naval Air Weapons Station, near Ridgecrest. Mojave Airport is developing as a civilian flight test center. All of these facilities are located in the desert area because of nearly ideal year-round flying conditions and sparse populations in the flight corridors.

Over the last several years, a conscious effort has been made to diversify the County's economic base. Because of the County's central location within the transportation network of the west coast and proximity to the huge southern California market, a number of distribution and warehousing enterprises have been established. Efforts are being made to attract additional manufacturing and "back-office" operations to the area.

4.2 TRENDS AND PROJECTIONS

Land use patterns in the majority of Kern County can be described as dispersed. Population centers are often far from each other and travel between them is largely by automobile. Urbanized areas such as Bakersfield are characterized by decreasing density as one moves away from the center. Residential densities are very low, and few commercial/ industrial areas have high employment densities that would induce a large percentage of transit ridership. Several exurban areas generate significant commuter traffic into the Bakersfield metropolitan area, namely Tehachapi, Lake Isabella and Frazier Park. In the Rosamond area, residential growth is a direct result of low-cost land; many of the residents commute to their employment in Los Angeles County.

Population growth in the County has been significant and sustained. From a 1980 population of just over 400,000, Kern County had grown to over 628,000 at the beginning of 1997. Current projections call for a population of 958,300 by 2010.

While much of the population growth has occurred in the San Joaquin Valley, as well as Tehachapi, over the past several years, growth in the California City/Rosamond area has been significant both on a numerical and percentage basis. The growth rate within Kern County has slowed. The growth rate during 1995 was 1.23 percent and 1.26 percent during 1996. This compares with a growth rate of 4.2 percent in 1991 and 3.23 percent in 1992. In-migration, while still positive, has slowed dramatically since the early 1990s. Population growth over the last three years has been heavily influenced by "natural increase," that is, more births than deaths.

Because of the type of population growth occurring, household formation has been low. This impacts the real estate development industry because of a diminished demand for product. Market conditions have not supported "new towns" such as McAllister Ranch and Keene Ranch since demand for new housing product has been lighter than previously experienced.

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Table 4-1 indicates the past and projected population and housing growth for the County, the metropolitan Bakersfield area and the incorporated cities. The trend of population growth in Kern County over the last 15-20 years has been outward expansion of existing urban centers. This trend is anticipated to continue.

Changes in population, housing and employment alter travel demand and patterns that affect transportation facilities and services. By anticipating the magnitude and distribution of growth and change within the Kern region, present day decisions can be made to capitalize on the positive aspects of the anticipated growth, while minimizing the adverse consequences.

Cost of Travel: The cost of travel will increase for all modes, as the prices of fuel, equipment, labor and service continue to rise. This assumption is based on past trends.

Automobile Use: The private automobile will continue to be the preferred means of travel.

Transit Use: Public transit usage will keep pace with the rise in population and may increase as Transportation Control Measures (TCMs) are implemented. Increases in the handicapped accessible transit provisions that comply with the requirements of the Americans with Disabilities Act (ADA) are anticipated.

Aviation Activity: General and commercial aviation activity is anticipated to remain relatively stable as the regional population and economy continue to expand. Commercial aviation has declined after airline deregulation in the late 1970s. General aviation growth has been limited by overall economic conditions and the limited number of new aircraft entering service.

Air Quality: Increases in hydrocarbons, oxides of nitrogen and carbon monoxide will result as population increases. Efforts to reduce the number of Vehicle Miles Traveled (VMT) will be intensified. VMT reduction efforts will take several forms, including compensatory ridesharing efforts, flextime work scheduling, enforced TCMs and Average Vehicle Ridership (AVR) levels, as well as non-motorized commuting. Jobs to housing balance in local land use decision making will become more important. Introduction of new, cleaner fuels and low-emission vehicles are also anticipated.

Physical and Economic Conditions: No major physical or economic disruptions are assumed (or anticipated) over the planning horizon of this document.

Employment: The employment structure of Kern County is being influenced by attempts to diversify the economy away from a heavy dependence on agriculture and oil production. More activity in the service sector will continue during the late 1990s, with potential for additional employment centers. Agricultural and mining employment will continue to drop in both numerical and percentage terms as those industries become more mechanized and less labor-intensive.

.4.3 SOCIOECONOMIC PROJECTION METHODOLOGY

The socioeconomic information used in the Kern COG Regional Transportation Plan and its air quality conformity program has been developed in the following manner:

Base Year

U.S. Census data for 1990 was processed to determine population and housing on a Transportation Analysis Zone (TAZ) level. A TAZ is a subdivision of a census tract and generally, several TAZs may be within an individual census tract. Population and housing data are available at the block level, so

Kern County Population and Housing
Table 4-1

	1980	1990	1996	1997	1998	2000	2010	2020
Kern County								
Population	403,089	543,477	620,385	629,227	639,789	670,400	958,300	1,220,300
Housing	155,702	198,636	222,227	225,368	228,288	236,652	336,587	423,958
Metro Bakersfield								
Population	228,000	329,106	372,000	377,000	384,000	404,000	558,500	697,132
Housing	89,518	119,992	135,631	137,454	140,123	144,746	203,625	254,169
Arvin								
Population	6,863	9,286	10,610	10,987	11,249	12,386	18,520	24,654
Housing	2,036	2,450	2,769	2,872	2,932	3,243	4,849	6,455
Bakersfield								
Population	105,611	174,820	211,209	214,908	221,689	225,700	315,751	405,802
Housing	42,761	66,175	78,098	79,572	81,932	83,705	117,102	150,499
California City								
Population	2,743	5,955	8,772	8,773	8,795	10,332	21,672	33,012
Housing	1,128	2,384	3,595	3,601	3,601	4,248	8,911	13,572
Delano								
Population	16,491	22,762	31,251	32,406	34,143	37,626	75,188	112,750
Housing	5,135	6,482	7,557	7,875	8,201	9,157	18,297	27,436
Merced								
Population	946	1,193	1,234	1,232	1,240	1,246	1,574	1,902
Housing	360	438	453	453	455	459	580	701
McFarland								
Population	5,151	7,005	7,899	8,026	8,470	8,488	12,434	16,380
Housing	1,465	1,747	2,001	2,038	2,076	2,159	3,162	4,165
Ridgecrest								
Population	15,929	28,295	28,773	28,741	28,077	28,865	35,597	42,329
Housing	6,677	11,249	11,776	11,786	11,802	11,857	14,622	17,387
Shafter								
Population	7,010	8,409	10,925	11,024	11,227	12,352	21,932	31,512
Housing	2,432	2,641	3,278	3,311	3,364	3,716	6,598	9,480
Taft								
Population	5,316	5,902	6,550	6,669	6,894	7,012	10,072	13,132
Housing	2,387	2,370	2,368	2,418	2,405	2,546	2,657	2,720
Tehachapi								
Population	4,126	5,791	6,491	6,502	6,582	6,816	9,699	12,582
Housing	1,602	2,430	2,748	2,756	2,783	2,894	4,118	5,342
Wasco								
Population	9,613	12,412	18,101	18,867	20,143	22,535	49,458	76,381
Housing	3,164	3,597	3,951	4,042	4,114	4,834	10,609	16,384
Unincorporated								
Population	223,290	261,647	278,570	281,092	281,289	297,042	386,403	451,800
Housing	86,555	96,673	103,633	104,644	104,623	107,834	144,081	170,519
Kern County								
Population	403,089	543,477	620,385	629,227	639,798	670,400	958,300	1,220,300
Housing	155,702	198,636	222,227	225,368	228,288	236,652	335,586	423,958

Sources:

Years 1980 and 1990 Population and Housing from U.S. Bureau of the Census.

Years 1996, 1997 and 1998 Population from California State Department of Finance.

Years 2000 thru 2020 from City of Arvin, City of Bakersfield and the Kern Council of Governments

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these two data items are accurate for the base year. In census counts, the block is the smallest area that is tabulated. In urban places it may be a city block bounded by four streets; in rural areas it may be much larger and bounded by topographical features such as a river or ridge line. Block level data includes population and housing data as well as ethnic, racial and age information.

Employment information for the base year is from *Dun & Bradstreet*. This information was current as of April 1, 1990. *Dun & Bradstreet* contains information on employers in the Kern region, including work site address, Standard Industrial Classification (SIC) code to determine type of employment (i.e., manufacturing, retail sales, etc.) and number of employees at a work site. Locations of the work sites were allocated into TAZs and the number of employees were totaled to determine employment within the TAZ. Employment was classified by retail employment (such as a clerk in a fast-food store) or non-retail (all other occupations). This was analyzed because the trips generated by retail and non-retail occupations differ significantly.

Number of vehicles per household and median household income by TAZ for the base year was determined using 1990 Census tract data. Although vehicles per household and median household income is available at the block group level (block groups are combinations of blocks), many TAZ boundaries crossed block group boundaries.

Population and Housing Projections

Population and housing projections were made based on California State Department of Finance (DOF), *Report 93 P-1, Population Projections by Race/Ethnicity for California and its Counties 1990-2040* published in April 1993 and *Interim County Population Projections for 2000, 2010, and 2020*, published in April 1992. A companion report, *Report 93 P-3*, published in May 1993, gives detailed race/ethnicity age tables for the years 2000, 2010, 2020, 2030 and 2040.

Designated land uses were determined by examining local jurisdictions' General Plans. Maximum density was determined by multiplying the area of available land by the allowed density. If the land use designation was residentially related, the maximum allowable number of units were attributed to so designated acreage. In the case of industrial or commercial property, which could be related to employment, the maximum number of employees was attributed to the designated land area. These two computations yielded "build out."

Population projections by TAZ were accomplished by using a combination of past growth rate and by allocating growth into TAZs that had available land for expansion, based on the designated land use from the General Plans. Housing was attributed to individual TAZs based on the existing persons per household as reported in the 1990 Census. Total county population was held to DOF estimates for projection years of 2000, 2010 and 2020. Intermediate years were determined by using a compounding growth formula.

For the purposes of this analysis, it was assumed that employment is a function of housing. Holding the ratio of total housing to employment constant, new employment becomes a multiple of housing. Employment was allocated to TAZs that had appropriately designated land. No effort was made to achieve a jobs-housing balance. As in the case of population and housing, the compound growth factor was applied to yield current year estimates of employment by TAZ. Countywide, the percentage of employment in retail occupations and employment in non-retail occupations was held nearly constant over the projection horizon.

4.4 ENVIRONMENTAL SETTING

4.4.1 GEOLOGY/HYDROLOGY

Regional Geology

Kern County is defined by distinct geologic features, including the nearly level alluvial plains of the San Joaquin Valley, the arid valleys of the Mojave Desert, and the mountains of the southern Sierra Nevada and Transverse Ranges. Elevations in the county range widely from 206 feet above sea level near the City of Delano to almost 8,800 feet at Mt. Pinos. San Joaquin Valley lies mostly below 1,000 feet, and the Mojave Desert area lies primarily between 2,000 and 3,000 feet.

Kern County covers portions of five of the eleven geologic provinces of California (Figure 4-3). These provinces include the southeastern Coast Ranges, the Great Valley of California, the southern Sierra Nevada, the southwestern tip of the Basin Ranges, and the western end of the Mojave Desert. Each province differs from the others in the nature of its geologic history¹.

Coast Ranges - The segment of the Coast Ranges province that lies within Kern County is characterized by north-northwest trending mountain ranges of moderate relief. These ranges are underlain primarily by folded marine sedimentary rocks and are cut by the San Andreas fault. Within the Coast Ranges province, sedimentary rocks trend mostly north-northwest and are moderately to mildly deformed along folds parallel to the mountain ranges.

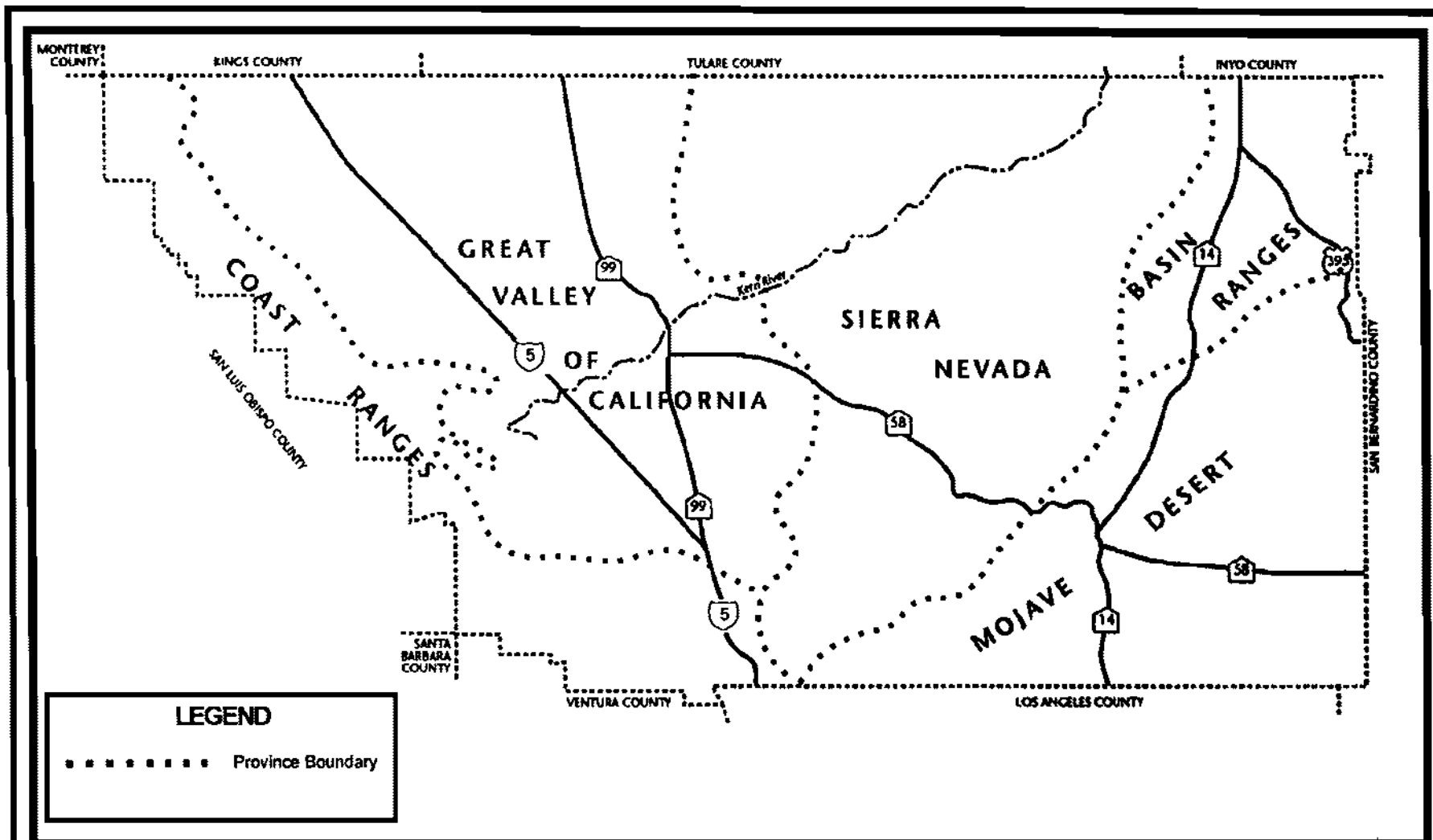
Great Valley - The southern part of the Great Valley province is a nearly flat north trending trough bounded by the Coast Ranges, San Emigdio Mountains, and Sierra Nevada. Sedimentary rocks, largely of marine origin, underlie a relatively thin cover of alluvium.

Sierra Nevada - The southern Sierra Nevada province, comprising the southern Sierra Nevada and Tehachapi Mountains, contains most of the high mountains in Kern County. Granitic rocks underlie most of the southern part of the province and are part of the Sierra Nevada batholith.

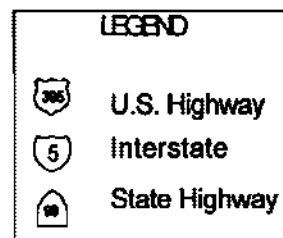
Basin Ranges - Only the small southwestern tip of the Basin Ranges province, which includes several hundred thousand square miles in eastern California, southeastern Oregon, Nevada, and western Utah, lies in Kern County. This portion of the Basin Ranges consists of the El Paso Mountains, which form the southern boundary of the province. The El Paso Mountains contain Mesozoic granitic rocks (between 65 and 240 million years old), as well as the only Paleozoic rocks in the County (240-590 million years) that have yielded well-preserved fossils.

Mojave Desert - The Mojave Desert province, which includes most of the desert in southeastern California lying south of the Basin Ranges province, forms a wedge that is bounded by the San Andreas and Garlock faults. The northwest part of this wedge lies in southeastern Kern County. Isolated buttes and small mountain masses of moderate to low relief are irregularly distributed on the gently undulating desert floor. Most of the area is underlain by granitic rock, with outcroppings of sedimentary and igneous rock.

¹ California Division of Mines and Geology, Mines and Mineral Resources of Kern County, California, County Report 1 (1962).



KERN COUNTY GEOLOGICAL PROVINCES



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FIGURE 4-3

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Seismic and Geologic Hazards

Faults

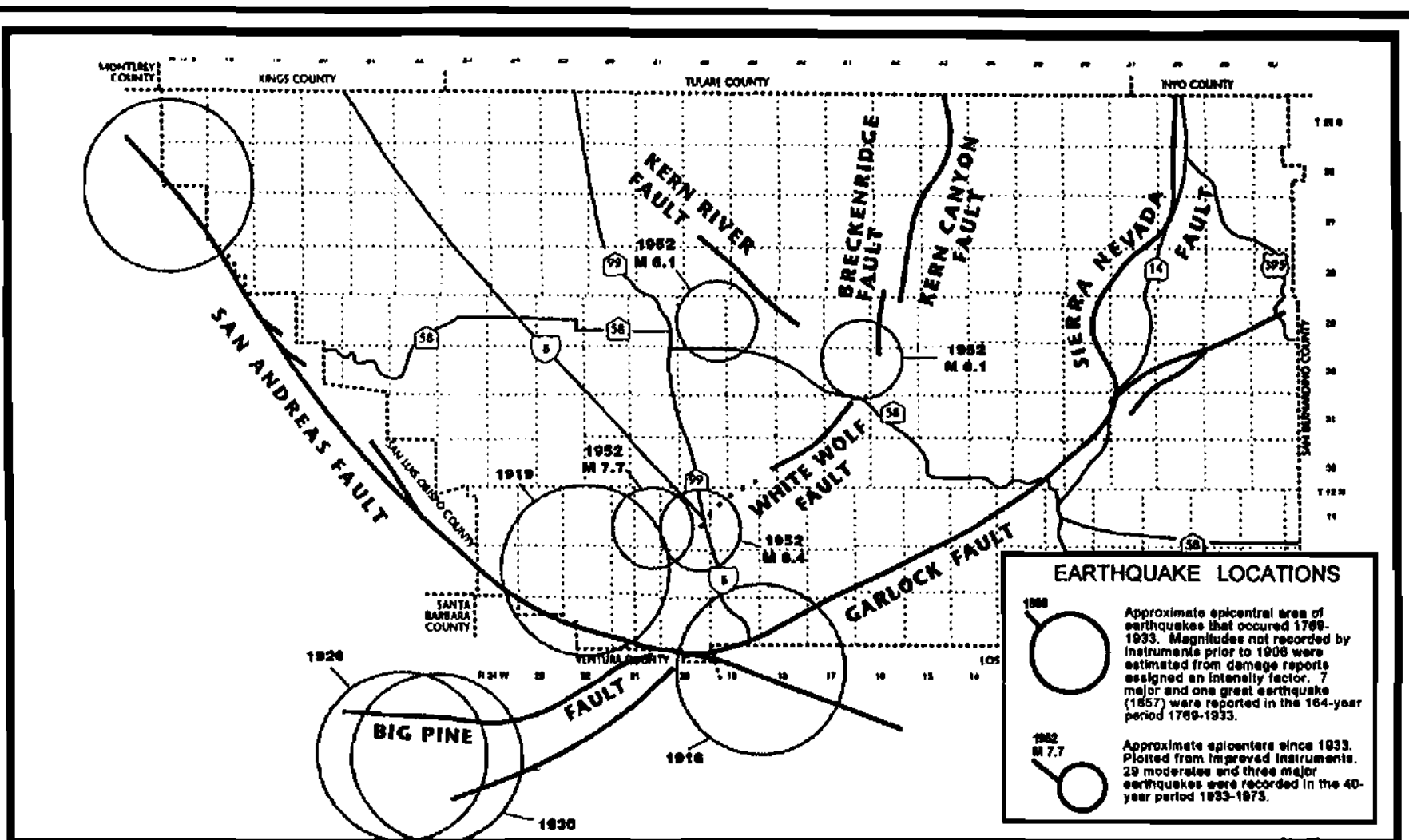
Three significant faults, San Andreas, Garlock, and Sierra Nevada, transect Kern County (Figure 4-4). The San Andreas fault is at least 600 miles long and runs along the western edge of the County; it is considered to be the boundary between the North American Plate and the Pacific Plate. Although the geologic history of displacements (movement) along the San Andreas fault is a difficult study area for scientists, it is clear that the San Andreas system holds the greatest energy potential in terms of the Richter Scale (Table 4-2).

TABLE 4-2
Relevant Faults in the General Project Area

Fault	Estimated Maximum Credible Magnitude (Richter Scale)*	Estimated Maximum Probable Magnitude (Richter Scale)**
White Wolf	7.4	7.4
San Andreas	8.25	8.25
Pleito	7.0	6.5
Wheeler Ridge	7.0	6.5
Garlock	7.75	7.25
Pastoria	7.0	6.5
Big Pine	7.0	6.5
Frazier Mountain	6.5	6.0
San Gabriel	7.0	6.5
Santa Ynez	7.5	7.0
Breckenridge/Kern Canyon	7.5	7.0
Sierra Nevada	8.0	7.5

Source: San Emidio New Town EIR, 1992.

Notes: * Maximum earthquake capable of occurring regardless of time factors.
** Maximum earthquake that is likely to occur during a 100 year interval.



The Garlock fault is 150 miles long and extends northeastward through the central part of the Tehachapi Mountains, extending along the southeast flank of the Tehachapi, Sierra Nevada, and El Paso Mountains. The south end of the Garlock fault is terminated by the San Andreas fault near Frazier Park. The fault is assumed to be active and capable of a very strong event (up to magnitude 8.0), although the last great earthquake on the Garlock fault is not known, nor is the fault's occurrence interval known.

The Sierra Nevada fault system extends more than 300 miles, along the entire eastern front of the Sierra Nevada Range. This fault is exposed near the mouth of Jawbone Canyon where it terminates against the Garlock fault. Northward from this termination point, it follows a poorly exposed, irregular course.

Other faults of regional significance are the Kern Canyon-Breckenridge-White Wolf system, which cuts southwesterly through the central part of the Sierra Nevada. The White Wolf fault has been studied intensively by seismologists and geologists since the Arvin-Tehachapi earthquake occurred along it in 1952. The Kern River fault, a west-dipping fault exposed at the mouth of the Kern River, is one of few faults exposed along the western front of the Sierra Nevada. Table 4-2 illustrates the maximum Richter magnitude of these and other regional faults.

Ground Shaking

Kern County is located in one of the more seismically active areas of California and may, at any time, be subject to moderate or severe ground shaking². Ground shaking hazards exist because of stress that accumulates deep within the earth. This stress, or elastic strain, becomes so great that the rock can no longer be contained as a single rock mass and breaks. Movement along a fracture zone occurs, and an enormous amount of energy is released. This movement may or may not produce a surface fault rupture. At any given location, the amount of the resulting shaking motion caused by the sudden movement to a large extent depends on local ground conditions (including the degree of water saturation), and may be as severe ten miles from the fault as immediately adjacent to it.

Identified faults must be considered in planning and land use activities, and faults identified as active deserve special consideration. No structure, including roadway bridges, should be built astride an active fault. Similarly, utilities that cross such faults must be designed to remain functional even after fault movement. Historic fault movements are illustrated on Figure 4-4.

Ground Failure

Small landslides are common within Kern County's mountain areas as loose material moves naturally down slope. Human activities also tend to destabilize earth materials and thus increase the chance of ground failure. Examples of nonseismic causes of ground instability include stream and lakeshore erosion, heavy rainfall, and poor quality natural materials. Human-induced causes include the cutting of slopes for roadways, overloading slopes with artificial fill, extensive irrigation, poor drainage, excessive groundwater withdrawal, and the removal of stabilizing vegetation. Specific types of ground failure are described below:

Landslides - The severity of landslide problems depends on the local soil and bedrock conditions, including moisture content, slope, and vegetation. Added moisture injected into the

² Seismic Safety and Safety Element of the Kern County General Plan, Kern County Planning Department.

soils by water and sewer systems tends to be detrimental in unstable areas, and can cause the reoccurrence of landslides in a previously stable area.

Land Subsidence - Land subsidence is occurring within the San Joaquin Valley. This type of ground failure can be aggravated by ground shaking, and is most often caused by the withdrawal of large volumes of fluids from underground reservoirs. Subsidence from any cause accelerates maintenance problems on roads, canals, and underground utilities.

Clay Soils - Fine-grained, cohesive clay soils that expand when moisture is added tend to lose their ability to support foundations of structures.

Liquefaction- Liquefaction can occur in certain types of soil that are associated with a shallow water table. Liquefaction occurs when groundshaking produced by earthquakes destabilizes or "liquifies" saturated soils.

Erosion - Erosion is the process whereby materials of the earth's crust are worn down, removed by weathering, and deposited in other places by the flow of water and air. Certain areas within Kern County are susceptible to erosion caused by the flow of water, wind and seismic activity.

Soils

Soil types within Kern County are as diverse as the County's climate, topography, and underlying geology. Fifty different mapping units are identified on the General Soil Map for the County, named for the major soils series that occur within each unit.³ A soil series is a group of soils that have similar characteristics and layers.

These mapping units are organized into eight major groups, based on soil characteristics and qualities, including slope. The soil groups, their associated risk of geologic hazard, and their suitability to agricultural uses are briefly described below.

Group 1 areas are dominated by nearly level coarse to moderately fine textured alluvial soils. This group consists of 13 separate soil associations and is used primarily for sheep grazing, cotton and alfalfa production. Soil corrosiveness ranges widely, depending on the specific soil association.

Group 2 areas are dominated by gently sloping to moderately steep slope areas, and contain coarse to moderately fine textured alluvial soils. This group contains nine separate soil associations and is also used predominantly for grazing, small grain, cotton and alfalfa production, although some soils may support orchards. Shrink-swell and erosion hazards are moderate, as is soil corrosiveness.

Group 3 areas consist of nearly level clayey soils. This group contains four soil associations and supports cotton, alfalfa, sugar beets and other row crops. Shrink-swell potential for this soil group is severe.

³ U. S. Dept. of Agriculture Soil Conservation Service, Report and General Soil Map of Kern County (1967).

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Group 4 areas are dominated by nearly level soils with dense, very slowly to moderately slowly permeable subsoils or hardpan. This group contains four separate soil associations that support grain crops, cotton and vineyard. Shrink-swell potential for this soil group is very high.

Group 5 areas are dominated by sloping soils with dense, slowly to moderately slowly permeable subsoils. This group consists of two soil associations that support range uses and shallow root crops. Shrink-swell potential ranges from low to high between the two soil associations.

Group 6 areas consist primarily of coarse to moderately fine textured, gently sloping to very steep residual soils, and are found mainly above 2,500 feet. This group consists of seven soil associations that are best suited for rangeland, oil and timber production, and wildlife habitat. Shrink-swell potential and erosion hazard is generally severe.

Group 7 areas are dominated by clayey soils on gently sloping to very steep slopes. This group contains seven soil associations that support citrus production, rangeland, and dryland crops. Shrink-swell and erosion potential are moderate to severe.

Group 8 areas are dominated by very shallow soils, rock or very coarse textured soils. This group contains four soil associations that are poorly suited for agricultural uses, and its soil associations are subject to flooding and severe erosion, presenting a threat to construction sites.

As indicated above, Soil Groups 3, 4, 6 and 7 present the greatest constraints to development or construction because of severe shrink-swell potential and the high corrosiveness of associated soils. Group 8 also contains severe limitations because of the potential for flooding and erosion.

Mineral Resources

The abundant mineral resources of Kern County have contributed much to the history and development of California. The yearly value of petroleum fuels alone, about 85 percent of the value of all mineral products, ordinarily exceeds the value of agricultural products from the County.

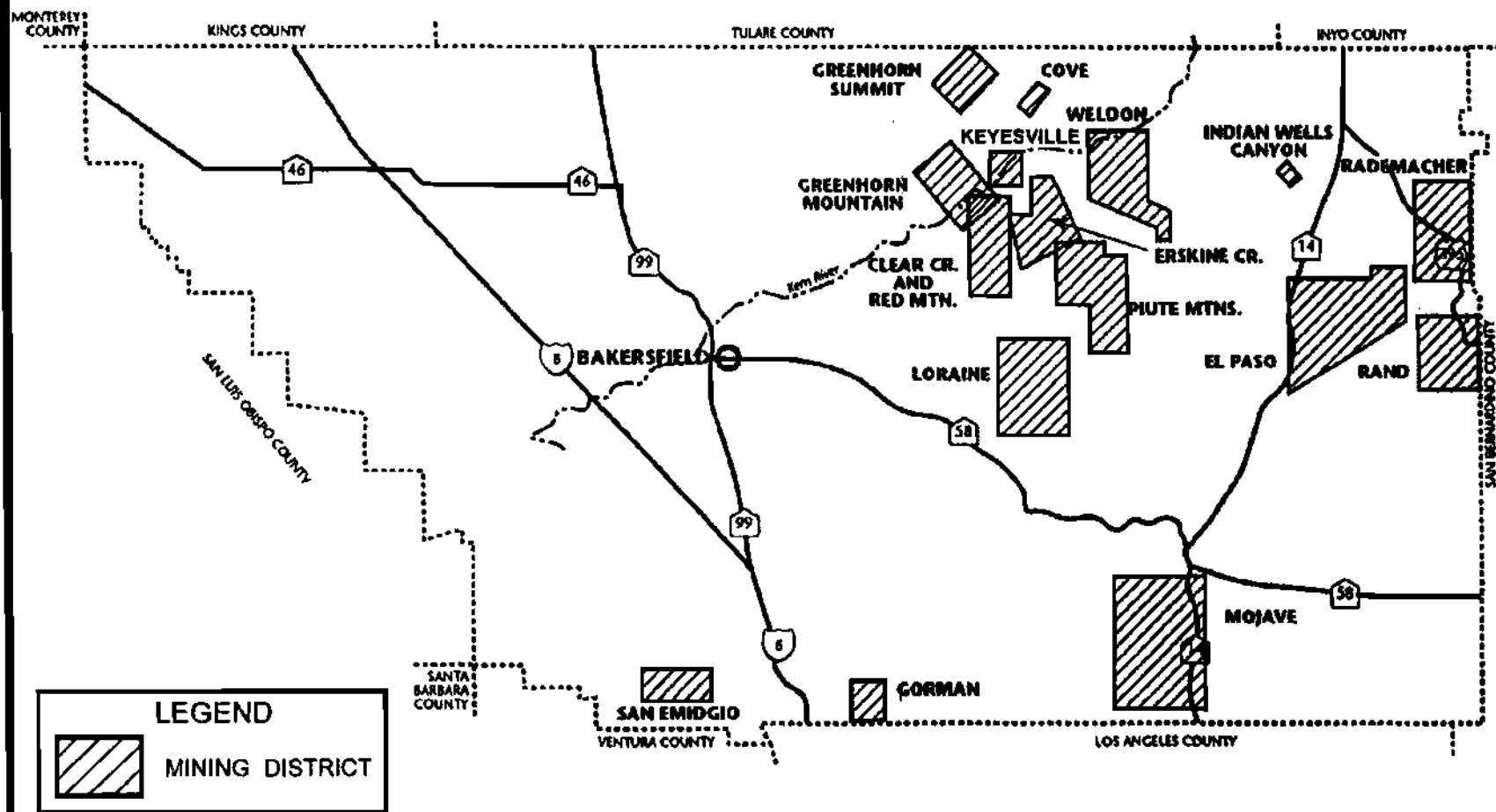
Boron, cement, clay, gold, gypsum, pumice, salt, sand and gravel, silver, and tungsten are the other important mineral products of the County exclusive of petroleum. Among these, gold ranks first in total value of the metallic mineral products, silver ranks second, and tungsten third. Clay, limestone products, boron, and sand and gravel are the most highly valued of non-metallic minerals. In recent years, the County has yielded a significant proportion of California's output of roofing granules.

Nearly all Kern mineral deposits, exclusive of petroleum fields, are grouped in areas that are referred to as Mining Districts. Kern County contains 16 such districts, as illustrated on Figure 4-5.

Agricultural Land Resources

Kern County has been in agricultural production since 1860 when cattle and sheep were first imported. Because of the low precipitation in the area, crop production has depended largely on the availability of irrigation water.⁴ Agriculture is still one of the primary industries of the County, with much of the level and moderately sloping land of the San Joaquin Valley used for the production of alfalfa hay, carrots,

⁴ U. S. Dept. of Agriculture Soil Conservation Service, Soil Survey of Kern County, Northwestern Part



KERN COUNTY MINING DISTRICTS

LEGEND

- U.S. Highway
- Interstate
- State Highway



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Governments

FIGURE 4-5

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citrus, cotton, lettuce, nuts, potatoes, and sugar beets. The foothill and mountain areas are used for livestock grazing.

Williamson Act Lands

Kern County currently contains over 1.6 million acres of prime and nonprime agricultural land under Williamson Act preserve status, within 20 existing Agricultural Preserves⁹. Prime agricultural land is defined as those lands containing the best combination of physical and chemical characteristics for the production of crops. Table 4-3 illustrates the type and amount of agricultural land within Kern County.

TABLE 4-3
Lands in Williamson Act Preserve, Fiscal Year 1993-1994

Urban Prime	Other Prime	Open Space (Non-Prime)	Total
38,074	819,411	761,126	1,618,611

Source: Kern County Planning and Development Services Dept., 1993-1994 Open Space Subvention Application.

HYDROLOGY

Drainage Patterns

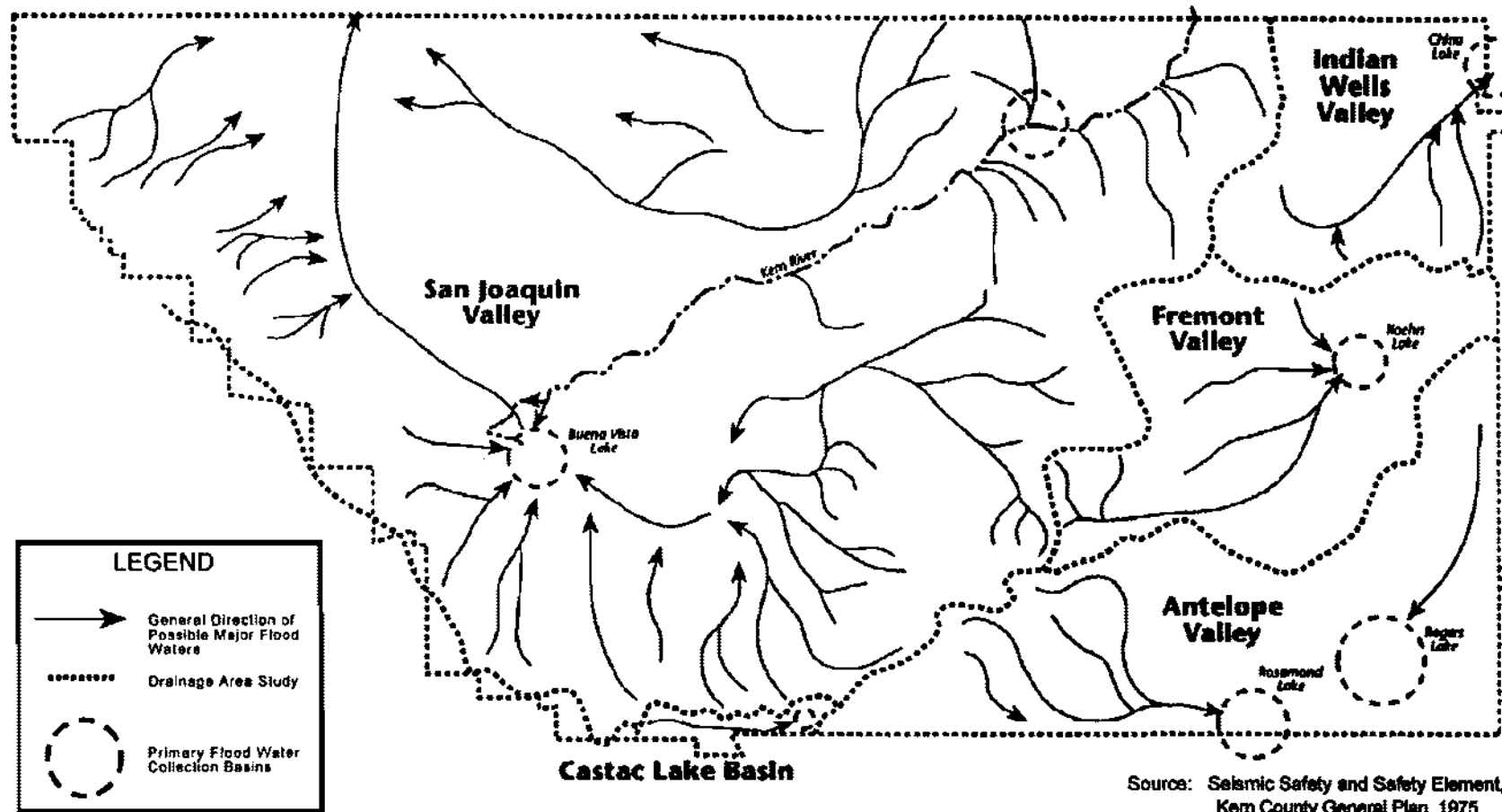
Kern County encompasses portions of two major California drainage systems: the San Joaquin Valley basin and the Mojave Desert basin (Figure 4-6). The western two-thirds of the County drains into San Joaquin Valley, while the remainder of the County drains into the Mojave Desert basin, which consists of three smaller valleys.

San Joaquin Valley has two primary floodwater collection basins: Lake Isabella and Buena Vista Lake. Lake Isabella is located approximately 34 miles northeast of Bakersfield within the Sierra Nevada foothills. Isabella Dam controls the flow of the lower portion of the Kern River resulting in the creation of Lake Isabella. With a storage capacity of 550,000 acre-feet, Lake Isabella is the County's largest reservoir.

San Joaquin Valley's second collection basin is Buena Vista Lake located southwest of Bakersfield. The lake's capacity is 205,000 acre-feet, but is currently used only during periods of exceptionally high run-off.

The Mojave Desert drainage system consists of three separate watershed areas. The most northern of these areas is the Indian Wells Valley located in the northeastern portion of the County. The China Lake collection basin is the primary collection point for this valley. The Fremont Valley is located south of Indian Wells Valley and the Koehn Lake is its primary collection basin. Lastly, the Antelope Valley watershed area is located in the southeastern portion of Kern County. The two primary flood water collection basins within this valley are Rosamond Lake and Rogers Lake.

⁹ County of Kern 1993-1994 Open Space Subvention Application, Kern Co. Planning & Development Services



KERN COUNTY DRAINAGE AREAS



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FIGURE 4-6

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Flooding

Since 1971, the U.S. Department of Housing and Urban Development (HUD) has designated the unincorporated portions of Kern County as a special flood hazard area. In compliance with the Federal Flood Insurance Program, HUD provided Kern County with a series of 83 Flood Hazard Boundary Maps. All but six of these maps apply to unincorporated areas. The maps, which delineate major areas of flooding throughout the County, are on file in the offices of the Kern County Engineering & Survey Services Dept./Floodplain Management Section, and are hereby incorporated by reference.

Water Resources

Kern River is the primary natural surface water source within Kern County. The river flows generally east-west, with its origins in the Sierra Nevada mountain range. Flowing from the Sierra Nevada mountains, the Kern River runs through Lake Isabella and eventually drains into the San Joaquin Valley and Buena Vista Lake. The river's approximate annual run-off is 760,000 acre-feet (an acre-foot is 325,851 gallons). The total Sierra Nevada area drained by the Kern River is 2,420 square miles.

Many communities within the San Joaquin Valley must supplement natural surface water with water diverted from other sources. Two major sources are the State Water Project's California Aqueduct and the Central Valley Project's Friant-Kern Canal. Within Bakersfield, for example, the Kern County Water Agency treats Central Valley Project Cross Valley Canal water in order to supplement its urban ground water supply. Smaller towns in the western portions of San Joaquin Valley receive imported surface water from the San Luis Canal to meet urban needs.

Water "banking" also occurs among San Joaquin Valley communities in order to preserve water for future use. Bakersfield and local water agencies operate a 2,800-acre recharge facility southwest of Bakersfield where surplus water from the Kern River, State Water Project and the Friant-Kern Canal is recharged for withdrawal in drier years. In addition to water diverted from the Kern and other rivers, water is also supplied to the San Joaquin Valley from subsurface sources. The groundwater supply varies, however, depending on the particular area and season.

The eastern portion of Kern County, which encompasses the Mojave Desert drainage system and its three valleys, depends heavily on groundwater as its natural water source. Unlike the western two-thirds of the County, the area east of the Sierra Nevada mountain range does not have a large natural surface water source such as the Kern River.

Two sources of imported water within the Mojave drainage system are the Los Angeles aqueducts constructed in 1913 and 1970. The primary purpose of these aqueducts is to conduct water from the Mono-Owens area to the City of Los Angeles. The combined carrying capacity of both aqueducts is 780 cubic feet per second.

Nearly all the water supplied to the Antelope Valley area comes from well pumping. Because of this dependency on groundwater, serious water overdraft has occurred. The two primary groundwater basins within Antelope Valley are the Antelope Valley basin located in the west and the El Mirage basin to the east. In order to recharge the valley's groundwater basins, the Antelope Valley-East Kern Water Agency began delivering State Water Project water in the 1970's.

Although Antelope Valley generally lacks adequate ground and surface water, water quality is considered to be good in most areas. Within Indian Wells Valley, however, groundwater has been found to be of poor quality and located at deep levels.

4.4.2 AIR QUALITY

This section describes existing air quality within the San Joaquin Valley and Mojave Desert Air Basin portions of Kern County, including: the identification of air pollutant standards, meteorological and topological conditions affecting air quality, and current air quality conditions. Air quality is described in relation to the ambient air quality standards for criteria pollutants, such as ozone, carbon monoxide, and particulate matter less than 10 microns (PM₁₀).

Geographical Location

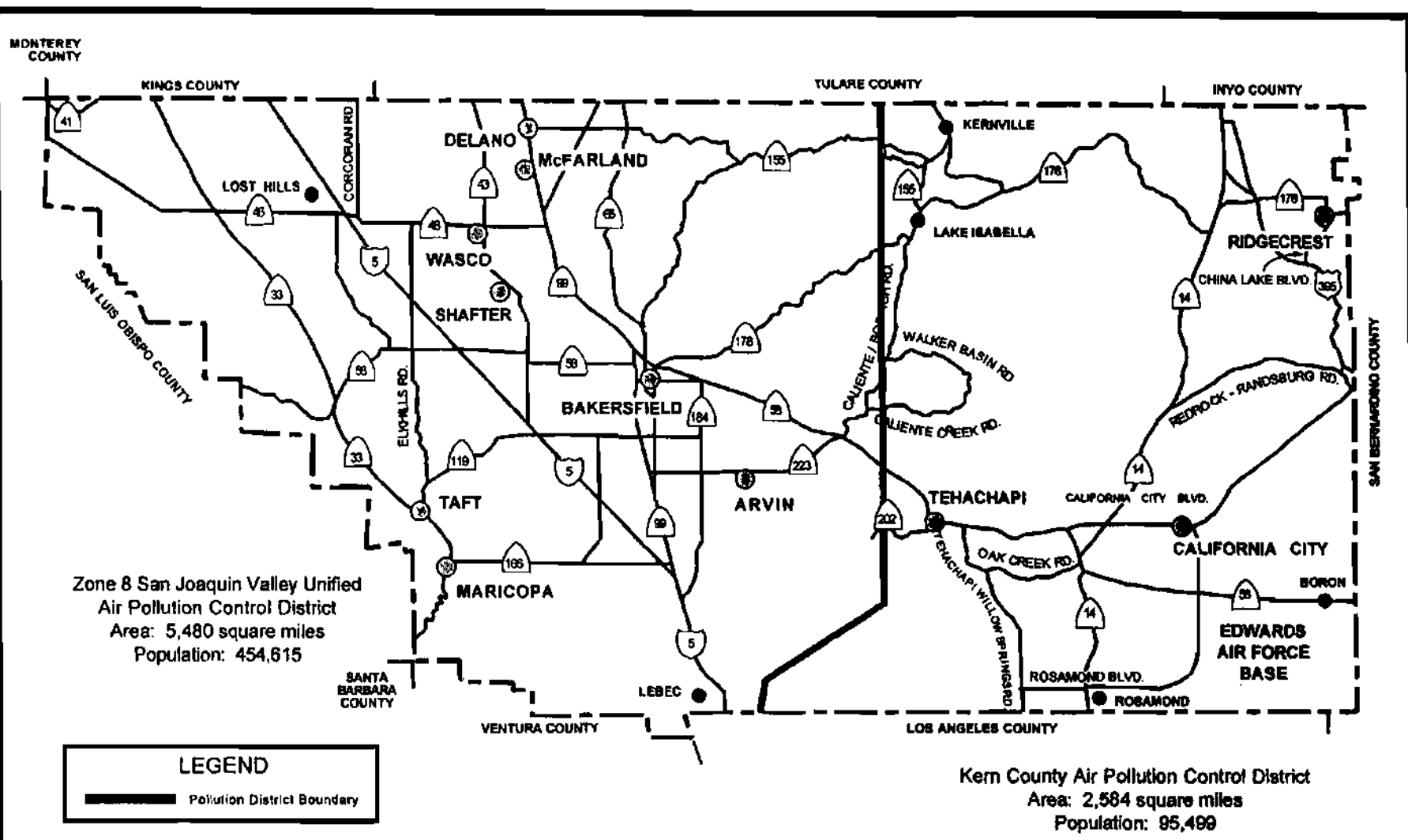
Kern County is located within two air basins [as determined by the California Air Resources Board (CARB)]: the San Joaquin Valley Air Basin (SJVAB) and the Mojave Desert Air Basin (MDAB). Figure 4-7 provides a map of both air basins in Kern County. Air basins are geographic areas sharing a common "air shed." A description of each basin, as designated by CARB, is provided below:

San Joaquin Valley Air Basin (SJVAB): SJVAB is comprised of eight counties: Fresno, Kern (Valley portion), Kings, Madera, Merced, San Joaquin, Stanislaus, and Tulare (Figure 4-8). Encompassing 24,840 square miles, the San Joaquin Valley is the second largest air basin in California. Cumulatively, the counties within the Air Basin represent approximately 16 percent of the State's geographic area. Approximately one-half of Kern County (4,300 square miles) is located within the SJVAB. The air basin is bordered by the Sierra Nevada Mountains on the east (8,000 to 14,492 feet in elevation), the Coastal Range on the west (4,500 feet in elevation), and the Tehachapi Mountains on the south (8,800 feet elevation). The San Joaquin Valley is open to the north extending to the Sacramento Valley Air Basin.

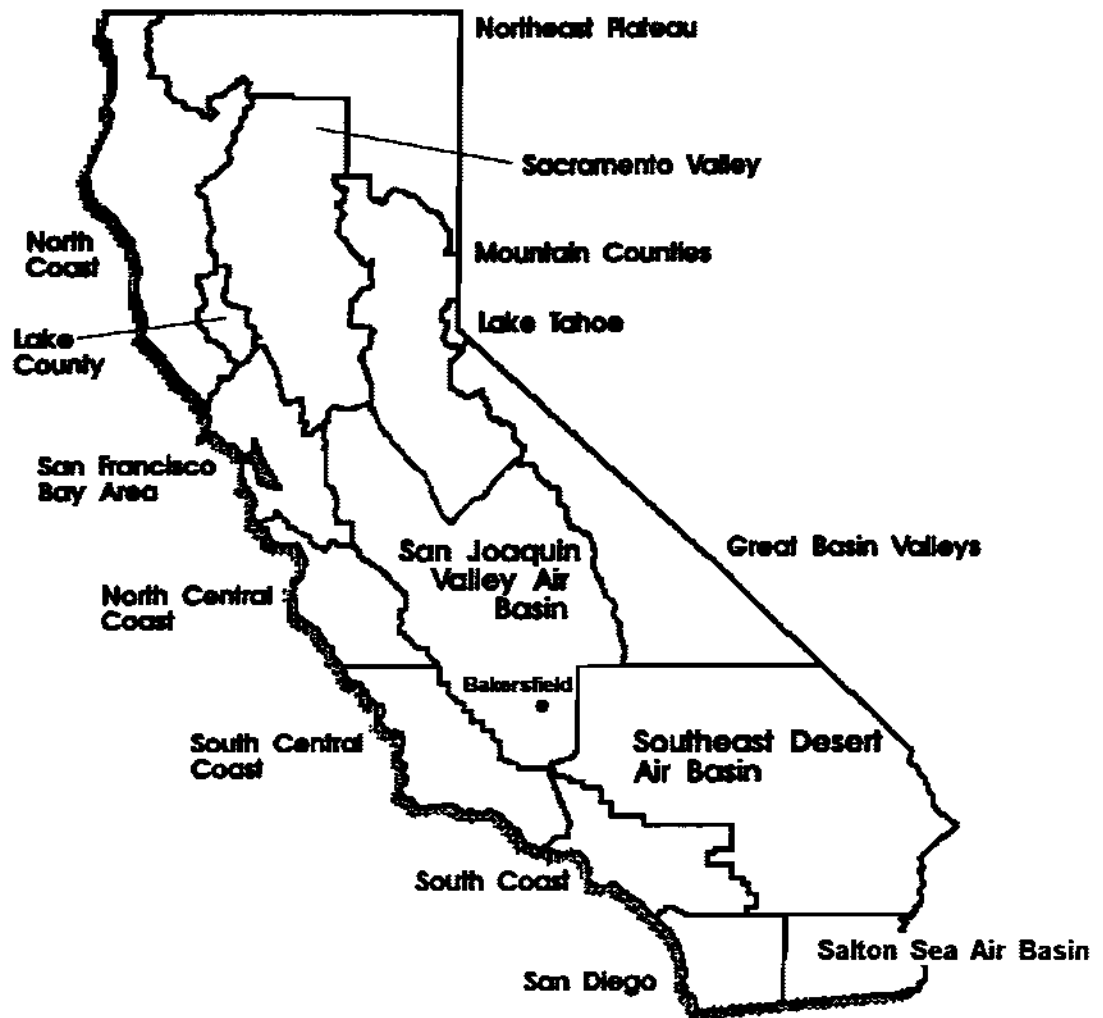
Mojave Desert Air Basin (MDAB): MDAB was created to group similar air quality conditions in the Mojave Desert area. The former SEDAB (Southeast Desert Air Basin) boundaries grouped air quality conditions for both the high and low desert areas, which included the desert portion of Kern, as well as portions of Los Angeles, San Bernardino and Riverside Counties, and all of Imperial County. The new MDAB boundaries group the desert portions of Kern County, Los Angeles and San Bernardino Counties, and the eastern desert portion of Riverside County. This air basin is the largest in California and covers an area of 25,250 square miles, which represents approximately 16 percent of the State's geographical area. Almost one-half (47 percent) of Kern County (3,850 square miles) is located within MDAB and, like the San Joaquin Valley, that portion of Kern County in MDAB is surrounded by mountain ranges.

To the west and northwest is the Sierra Nevada Range (8,000 to 14,492 feet in elevation). To the north lies the Coso Range (8,000+ feet in elevation) and to the northeast and east is the Argus Range (6,000+). To the south lies the El Paso Range (5,000+) and the floor of the valley is high desert at approximately 2,000 feet in elevation.

For the purpose of regulating and monitoring air quality, the two separate areas of Kern County are serviced by two independent Air Pollution Control Districts (APCDs): the SJVAB portion of Kern is serviced together with the other counties in the SJVAB by the San Joaquin Valley Unified APCD (SJVUAPCD) and the MDAB portion of Kern is exclusively serviced by the Kern County APCD (KCAPCD).



AIR BASINS WITHIN KERN COUNTY



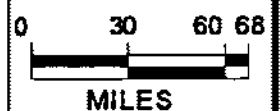
CALIFORNIA AIR BASINS



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FIGURE 4-8

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Topographic Characteristics

Air pollution is directly related to the region's topographic features that restrict air movement within the air basins. Topographical characteristics of the air basins in Kern County are described as follows:

SJVAB: Wind patterns within SJVAB result from marine air that generally flows into the Basin from the San Joaquin River Delta. The Coastal Range hinders wind access into the San Joaquin Valley from the west; the Tehachapis prevent southerly passage of air flow; and the high Sierra Nevada Mountain Range provides a significant barrier to the east. Most of the surrounding mountains are above the normal height of summer inversion layers (1,500-3,000 feet). These topographic features result in weak air flow that becomes restricted vertically by high barometric pressure over the San Joaquin Valley. As a result, SJVAB is highly susceptible to pollutant accumulation over time.

MDAB: Strong surface winds in MDAB occur in late winter and spring as cold fronts move rapidly through the area. These fronts occasionally cause severe dust and sand storms. Strong surface winds with a prevailing speed of 15 knots or greater can be expected 15 days per year and strong gusts of 40 knots or greater can be expected ten days per year. On some of these windy days, visibility will be reduced by blowing sand to less than seven miles.

Climatic Characteristics

In addition to topographic conditions, the local climate can also contribute to air quality problems. Light winds and atmospheric stability provide frequent opportunities for pollutants to accumulate in the atmosphere. Wind speed and direction also play an important role in the dispersion and transport of air pollutants. Wind at the surface and aloft can disperse pollution by mixing vertically and by transporting it to other locations.

Ozone is classified as a "regional" pollutant partly because of the time required for ozone formation. Ozone precursors can be transported easily by winds from a source area before ozone concentrations peak. In addition, temperature and solar radiation are important factors in the chemistry of ozone formation because ozone is formed in a photochemical reaction requiring sunlight. Generally, higher temperatures create greater amounts of ozone, since reaction rates increase with temperature. However, extremely hot temperatures can lift or break the inversion layer.

Localized pollutants, carbon monoxide (CO) for example, may form high concentrations when wind speed is low. Temperature inversions can also be caused by surface radiant cooling. On clear winter nights, the ground loses heat at a rapid rate, causing air in contact with it to cool. Once formed, radiation inversions are similar to subsidence inversions with respect to their effects on pollutant dilution. A description of specific climatic factors in both air basins is provided below:

SJVAB: Climate in the San Joaquin Valley is Mediterranean with moist cool winters and dry warm summers. Precipitation is confined primarily to the winter months. The Kern County portion of SJVAB had an average annual rainfall of 5.72 inches on the valley floor over a 30-year period. During summer months, winds usually originate at the north end of the Valley and flow in a southerly direction to the Tehachapi Pass and into MDAB. These prevailing winds, known as "up-valley winds," originate with coastal breezes that enter San Joaquin Valley through breaks in the coastal ranges, particularly through the Carquinez Straits in the San Francisco Bay area and the Sacramento Valley area.

During winter months, wind occasionally originates from the south end of the San Joaquin Valley and flows in a northerly direction. Also during the winter, the San Joaquin Valley experiences light variable

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winds of less than ten miles per hour. Low wind speeds, combined with low inversion layers, create a climate conducive to high CO concentrations during winter months.

Wind speed and direction also change throughout the day. During the day, northerly winds prevail. However, in the late evening through the early morning, wind flow reverses direction because of the effects of cooler drainage wind from surrounding mountains. Interruption of northerly winds, including the evening and morning transition between the two wind flow patterns, is known as an "eddy". This adds to the complexity of regional wind flow and pollutant transport within SJVAB.

MDAB: The climate is characterized by hot days and cool nights, with extreme arid conditions prevailing throughout the summer months. Average annual precipitation is less than three inches, while the relative humidity throughout the year averages 35 percent. Mean maximum temperatures range from 90 to 100 degrees Fahrenheit in the summer. Ozone precursor transport depends on daily meteorological conditions; therefore, ozone transport from SJVAB and South Coast Air Basin (Los Angeles area) through the Soledad and Cajon Canyons can cause ozone exceedences in the Kern County portion of MDAB.

Mean minimum temperatures are generally in the mid-30's, with extreme minimums around 10 degrees Fahrenheit during the winter. Because temperatures rarely fall below freezing, snowfall is insignificant in the desert portions of the MDAB. During the winter, the Kern County portion of MDAB experiences cold temperatures and calm conditions to increase the likelihood of a climate conducive to high CO concentrations.

The Tehachapi Mountains are not conducive to the formation of ozone other than to act as a barrier that traps ozone and CO emissions because of the elevation and other meteorological conditions.

OTHER AIR QUALITY DETERMINANTS

SJVAB: Anthropogenic, or human-caused, sources of air pollution in Kern County include population growth, urbanization (area sources such as gas-fired appliances and wood-burning stoves/heaters), mobile sources (cars, trucks, airplanes, trains), oil production, and agriculture. The most significant factors that can accelerate air pollution are rapid population growth and its associated increases in traffic, urbanization, and industrial activity. Oil production has been declining since 1985, thereby causing a decrease in emissions. In addition, vehicle engine improvements have and will continue to lower emissions from light-duty automobiles. While these conditions are expected to positively affect air quality in Kern County, projected growth throughout San Joaquin Valley in the near future is expected to outstrip these gains, and may result in increased vehicular emissions over time.

Ozone is the result of a photochemical reaction between Nitrogen Oxides (NO_x) and Reactive Organic Gases (ROG). Mobile sources contribute 64 percent of all NO_x emitted from anthropogenic sources, with oil and gas production contributing another 23 percent of NO_x. In addition, mobile sources contribute 53 percent of all ROG emitted from sources within San Joaquin Valley, with oil and gas extraction contributing another 21 percent and solvent use contributing another 17 percent.

The primary contributors of PM₁₀ emissions in San Joaquin Valley are fugitive (windblown) dust from "open" fields (38 percent) and road dust, both paved and unpaved (38 percent). Farming activities only contribute 14 percent of the PM₁₀.

Carbon monoxide emissions overwhelmingly come from mobile sources in the San Joaquin Valley; on-road vehicles contribute 65 percent, with other mobile vehicles (such as trains, planes, and off-road vehicles) contributing another 17 percent.

MDAB: Intense heat and large amounts of sunlight during the summer months are ideal for the formation of ozone; however, constant winds contribute to substantial dispersion. In contrast, problems with CO are more localized in MDAB because CO is a non-reactive pollutant with one major source: motor vehicles including heavy-duty trucks. Ambient CO distributions closely follow spatial and temporal distributions of vehicular traffic, and are strongly influenced by meteorological factors. CO standards are frequently exceeded in those parts of MDAB subject to a combination of high traffic density and the occurrence of surface-based inversions during winter months. However, currently no areas in the MDAB portion of Kern County exceed CO standards.

In highly populated portions of MDAB (Lancaster/Palmdale, for example), PM_{10} is formed downwind of urban areas when gaseous air pollutants solidify to form particulates after several hours of transport. A larger component of particulate emissions in the less urbanized and populated portions of the Air Basin are caused by strong winds that naturally blow particulates into the air.

Air Quality Standards

The Federal Clean Air Act (FCAA), first adopted in 1963 and periodically amended since then, established National Ambient Air Quality Standards. A set of 1977 amendments determined a deadline for the attainment of these standards. That deadline has since passed. Other FCAA amendments, passed in 1990, share responsibility with individual states in reducing emissions from mobile sources.

In 1988, California passed the California Clean Air Act (CCAA, State 1988 Statutes, Chapter 1568), which set forth a program for achieving more stringent California Ambient Air Quality Standards. California Air Resources Board (CARB) implements State ambient air quality standards, as required in the CCAA, and cooperates with the federal government in implementing pertinent sections of the FCAA amendments. Local and regional APCD's such as SJVUAPCD and KCAPCD regulate stationary and some mobile source air pollutant emissions. Attainment of the more stringent State PM_{10} air quality standards is not currently required.

Both federal and state Ambient Air Quality Standards have been established for the following five critical pollutants: nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulates (PM_{10}), carbon monoxide (CO), and ozone (O_3). Ozone pollution is the most conspicuous air pollutant and is often characterized by visibility-reducing haze, eye irritation, and high oxidant concentrations (i.e., "smog").

The Air Districts operate regional air quality monitoring networks that provide information on average concentrations of pollutants for which state or federal agencies have established ambient air quality standards. Descriptions of the six pollutants of importance in Kern County follow.

Ozone: The most severe air quality problem in the Air Basins is the high level of ozone. Ozone can cause eye irritation and impair respiratory functions. Accumulations of ozone depend heavily on weather patterns and thus, vary substantially from year to year. Ozone is produced in the atmosphere through photochemical reactions involving reactive organic gases (ROG) and nitrous oxides (NO_x). The ozone standard has been exceeded an average of 115 times per year between 1990 and 1992 in the SJVAB portion of Kern County. Data on exceedences in the MDAB portion of Kern County are not available, as monitoring for this pollutant only began recently.

PM_{10} : Particulate matter less than 10 microns in diameter can be inhaled and cause health problems. Common sources of particulates include fugitive dust from "open" fields, dust from paved and unpaved roads, agricultural operations, and other localized sources such as construction and fireplace soot. Very small particulates of certain substances can cause direct lung damage or can contain absorbed

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gases that may be harmful when inhaled. Particulates can also damage materials and reduce visibility. Twenty-four hour PM_{10} standards are exceeded occasionally at SJVAB monitoring stations; the standard was violated on 244 of the 750 readings between 1990 and 1992. The annual geometric mean was also exceeded during that same timeframe. Federal standards have only been exceeded two or three times since 1990 in the MDAB portion of Kern County.

Carbon Monoxide (CO): Because CO is emitted primarily by motor vehicles and is a localized pollutant, ambient CO concentrations normally follow the spatial and temporal distributions of vehicular traffic. CO concentrations are also influenced by meteorological factors such as wind speed and atmospheric mixing. High levels of CO can impair the transport of oxygen through the bloodstream and aggravate cardiovascular disease, which causes fatigue, headaches, and dizziness. CO standards have not been exceeded at SJVAB monitoring stations in the Bakersfield metropolitan area, and the area is considered "attainment" by State standards and attainment/maintenance under federal standards.

Nitrogen Dioxide (NO_2): Major sources of nitrogen dioxide (NO_2), essential to the formation of photochemical smog, are vehicular and industrial fuel combustion. NO_2 is the "orange brown" colored gas evident during periods of heavy air pollution. NO_2 increases respiratory disease and irritation, and may reduce resistance to certain infections. NO_2 standards are being met in both Air Basins, and the Air Districts do not expect the standards to be exceeded in the near future.

Sulfur Dioxide (SO_2): The major source of sulfur dioxide (SO_2) is the combustion of high-sulfur fuels for oil and gas extraction, electricity generation, petroleum refining, and shipping. In humid atmospheres, sulfur oxides can react with vapor to produce sulfuric acid, a component of acid rain. SO_2 can irritate the lungs, damage vegetation and materials, and reduce visibility. SO_2 standards are being met in both Air Basins, and the Air Districts do not expect the standards to be exceeded in the near future.

Lead (Pb): Gasoline-powered automobile engines are a major source of airborne lead, although the use of leaded fuel has been mostly eliminated. Lead can cause anemia and inhibit enzymes involved in blood synthesis. Lead may also affect the central nervous and reproductive systems. Ambient lead levels have dropped dramatically as the percentage of motor vehicles using unleaded gasoline continues to increase. The standards for lead are being met in both Air Basins, and the Districts do not expect the standards to be exceeded in the future.

The U.S. Environmental Protection Agency (EPA) is responsible for enforcement of the provisions of the FCAA. Based on its provisions, EPA designated that portion of Kern County located within SJVAB as nonattainment for PM_{10} . The Indian Wells Valley, located in MDAB, has also been designated as nonattainment for PM_{10} by EPA. Further, both Air Basins have been designated as nonattainment for ozone, which is classified as a "regional" pollutant, and often afflicts areas downwind of the original source of precursor emissions. Finally, the Bakersfield metropolitan area has been designated as "attainment" for carbon monoxide (CO) emissions.

Applicable federal and state standards for each regulated pollution category compared to monitoring data for monitoring sites in Kern County are listed in Table 4-4. For environmental documentation purposes (i.e., identification of significant impacts), the applicable standard for each pollution category is whichever is the more stringent of the federal and state standards.

TABLE 4-4
STATE AND FEDERAL AIR QUALITY STANDARDS
COMPARED TO MONITORED EXCEEDENCES IN 1992
 Parts per Million, Except Where Noted

Pollutant	Averaging Time	Applicable Standard (Monitored Exceedences not to be equaled or exceeded)	SJVUAPCD	KCAPCD
Ozone	Max. Hourly High	0.09 (state) 0.12 (federal)	0.15	0.13*
Carbon Monoxide	Max. Eight-hour High One-hour	9 (state/federal) 20 (state) 35 (federal)		
Nitrogen Dioxide	Annual Mean One-hour	0.24 (state) 0.05 (federal)		
Sulfur Dioxide	Annual average 24 hour Three-hour One-hour	0.03 (federal) 0.14 (federal) 0.04 (state) 0.6 (federal) 0.25 (state)		
Particulates (PM ₁₀)	Geometric Mean Arithmetic Mean 24 hour high	30** (state) 55.6 50* (federal) 50** (state) 150** (federal)	172	60.6 166

SOURCE: California Air Resources Board, 1994

Notes: * Unofficial data
 ** Micrograms per cubic meter

AIR QUALITY MANAGEMENT

Responsibility for managing air quality in California has become increasingly regionalized; this trend is evident in the San Joaquin Valley where until 1991, each county operated a local APCD. There was early recognition of the need to coordinate air pollution control activities in SJVAB. Cooperation between the eight counties began in 1972 through the Basin Control Council.

In 1990, the San Joaquin Valley Air Basin Authority was created to further formalize this regionalization effort. Consolidation was begun in March 1991, and certified by CARB in August 1992 with the formation of SJVUAPCD. Coinciding with the formation of SJVUAPCD, the remainder of Kern County, existing as a part of the Southeast Desert Air Basin (renamed Mojave Desert Air Basin in May 1996), continued the structure of the KCAPCD.

All major metropolitan areas in California now fall under the authority of multi-county unified APCDs or air quality management districts (AQMDs). Air districts' primary responsibility is to regulate air pollution from all sources other than emissions directly from motor vehicles. Regulation of motor vehicles is the responsibility of EPA and CARB. Air districts regulate air quality through their permit authority for most types of stationary emission sources and through their planning and review activities

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for other sources. Further, air districts adopt and enforce rules and regulations to achieve state and federal ambient air quality standards and enforce applicable state and federal law.

The SJVUAPCD prepared and adopted the *San Joaquin Valley Air Quality Attainment Plan* in 1991 per requirements of the CCAA. The KCAPCD also prepared and adopted an Air Quality Attainment Plan in 1991. The CCAA requires each nonattainment district to reduce pertinent air contaminants by at least five percent per year until State air quality standards are met.

AIR POLLUTION SOURCES AND CURRENT AIR QUALITY

In general, three major sources of air pollutant emissions occur in both Air Districts, including: industrial plants, motor vehicles, and agricultural activities. Motor vehicles account for significant portions of regional gaseous and particulate emissions. Construction and agricultural activities can generate significant temporary gaseous and particulate emissions (dust, ash, smoke, etc.). In addition to these primary sources of air pollution, urban areas upwind from Kern County, including areas north and west of the San Joaquin Valley, can cause or generate emissions that are "transported" into Kern County.

Automobiles, trucks, buses and any other vehicles using hydrocarbon fuels release exhaust products into the air. Each vehicle by itself does not release large quantities; however, when considered as a group, the cumulative effect is significant.

Other sources may not seem to fit into any one of the above categories or they may seem to fit into a number of them. These include agricultural uses, dirt roads, animal shelters, animal feed lots, chemical plants and industrial waste disposal that may be a source of dust, odors, or other pollutants. For Kern County, this category includes several agriculturally-related activities, such as plowing, harvesting, dusting with herbicides and pesticides, as well as other related activities.

Principal factors that affect air quality in and around Kern County are: (a) the sink effect, climatic subsidence and temperature inversions and low wind speeds; (b) automobile and truck travel; and (c) increases in mobile and stationary pollutants generated by local urban growth.

Industrial activities constitute one of the main sources of air pollutants in Kern County. Quantities of contaminants and their potential to produce various effects depend on the size and type of industry, pollution controls, local topography, and meteorological conditions. Given those factors, industrial emissions may or may not be the principal source of air contaminants in a particular area. Major sources of industrial emissions in Kern County consist of petroleum production, refining, and marketing operations; mineral extraction and processing operations; and agricultural production and processing operations.

TRANSPORTATION CONTROL MEASURES AND AIR QUALITY MITIGATION PROGRAMS

Until the passage of the CCAA, the primary role of air districts in California was the control of stationary sources of pollution such as industrial processes and equipment. With the passage of the FCAAA and CCAA, air districts were required to implement transportation control measures (TCMs) and were encouraged to adopt indirect source control programs to reduce mobile source emissions. These mandates created the necessity for both Kern Air Districts to work closely with cities and counties and with regional transportation planning agencies to develop new programs.

Descriptions of the various TCMs that have been incorporated into Air District AQAPs, Rate of Progress (ROP) Plans, and the SJVUAPCD TCM Program, or have been identified as necessary to provide for positive air quality conformity findings, are included in Section 7.0, Air Quality Conformity.

4.4.3 BIOTIC RESOURCES

Information regarding existing biotic resources within Kern County is based primarily on data obtained from, and discussions with, the California Department of Fish and Game. Sources reviewed included: *California's Wild Heritage, Threatened and Endangered Animals in the Golden State* (1990) and the *Kern County Master Environmental Assessment and Master Environmental Impact Report* (1981). The Natural Diversity Data Base provided information via a computer search of the known special-status animal and plant taxa for Kern County.

VEGETATION COMMUNITIES

Because of the County's location relative to the San Joaquin Valley and its proximity to two mountain ranges and the Mojave Desert, Kern County is an area of varied topography and diverse ecosystems. The County consists of sections of the Coastal Range foothills and Sierra Nevada range, which form the basin walls of the San Joaquin Valley. East of the Sierra Nevada range is the Mojave Desert, which is a dramatic contrast to the surrounding foothills in both visual and biotic terms. Highly varied terrain and climate result in a great diversity of flora throughout Kern County.

Kern County has five distinct floral regions: the Sierra Nevada, Coast Ranges, San Joaquin Valley, Southern California mountains, and Mojave Desert regions. Each region contains distinct species and attributes unique to that flora.

Within these regions, plants of a particular region can be grouped together into several different associations or communities. These plant associations are often difficult to physically define, because of the subtle transitions that may occur between communities. Conversely, plant associations may change abruptly, affected by only slight differences in exposure, soil, or relative humidity. These distinctive plant associations include:

- ☐ Alkali Sink
- ☐ Lower Sonoran Grassland
- ☐ Upper Sonoran Grassland
- ☐ Upper Sonoran Subshrub
- ☐ Douglas Oak Woodland
- ☐ Chaparral
- ☐ Shin Oak Brush
- ☐ Yellow Pine Forest
- ☐ Red Fir Forest
- ☐ Mountain Meadow
- ☐ Pinyon Woodland
- ☐ Arid Shrub
- ☐ Creosote Bush
- ☐ Shadscale Scrub
- ☐ Freshwater Marsh
- ☐ Vernal Poolbeds
- ☐ Streambank.

AREAS OF BOTANICAL INTEREST

Efforts to preserve Kern County's native vegetation have taken many forms and have been initiated by both public and private groups. The 1972 Open Space and Conservation Element of the Kern County General Plan identified 16 areas having important botanical significance, as well as areas of coniferous forest. In 1975, the California Natural Areas Coordinating Council published the results of an extensive statewide effort to identify natural areas of unique scientific interest. Fifty-three such areas were identified within Kern County, 16 of which were identified as areas of unique botanical interest. These areas are represented on Figure 4-9 and described as follows:

- Area 1:** Lower Sonoran Grassland area, which extends from Comanche Point to Sycamore Canyon, is currently used for livestock grazing. This area historically has exhibited an abundance of wildflowers.
- Area 2:** Upper Sonoran Desert location between Rogers Dry Lake and Buckhorn Dry Lake near the Los Angeles County line, which is currently used as a military base. Desert vegetation is representative of this area.
- Area 3:** This area is the principal habitat for Bakersfield cactus. Located in Caliente Wash and adjoining Sand Ridge, Bakersfield cactus forms one of the notable cactus fields in California. This area has been impacted historically by agricultural and mineral extraction encroachment.
- Area 4:** In private ownership since 1981, this Upper Sonoran Grassland area located between Tejon and Chanac Canyons sustains a series of wildflower species.
- Area 5:** Pinyon Juniper woodland. This location on Cache Peak historically has supported the Piute Jewelflower.
- Area 6:** Douglas Oak Woodland area adjacent to Fort Tejon State Park historically has supported the Fort Tejon Woolly Sunflower.
- Area 7:** Jeffrey pine forest area within the San Emigdio Canyon/Devils Kitchen Creek/Williams Canyon area. Distinctive plant types include the San Emigdio alum root, Big Cone spruce, Jeffrey pine, Bush lupine, and Mariposa lily.
- Area 8:** This area, located on the north slopes of Double Mountain and Cummings Mountain, consists of Jeffrey pine forest with associations of manzanita, White fir, Longleaf willow, and various wildflowers.
- Area 9:** This arid shrub association in Grapevine Canyon has been known to support the endemic plant species Kern Camissonia and Charlotte's phacelia.
- Area 10:** This area includes Piute Cypress, known in 1981 to exist only in six groves. The largest of these groves is located on the north end of Piute Mountain, where the trees grow in a wide area of chaparral and arid Douglas Oak Woodland.

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- Area 11:** The Clear Creek area northeast of Havilah is a Pinyon-Juniper woodland, which has been known to consist of a plant association containing Piute Mountains Navarretia.
- Area 12:** This area sustains riparian habitat between Keene and Tehachapi on Brite Creek.
- Area 13:** The Fay Creek Canyon north of Weldon has been known to support rare and endemic plant and animal species.
- Area 14:** The Shin-Oak Chaparral area is located on Cummings Mountain, and is considered a specialized vegetative association.
- Area 15:** The Poso Creek area, seven miles north of Bakersfield, includes areas of natural marshland and associated habitat.
- Area 16:** The coniferous forest area at Shirley Meadows in the Greenhorn Mountains supports the federal candidate species Shirley Meadows Star-tulip. The area is currently under public ownership.

WILDLIFE

Because of the region's diversified habitats and topography, Kern County's wildlife is equally varied and unique. Although many of the County's native species and habitats have diminished in numbers and area in recent years, the County does sustain a deer range, Tule Elk range, black bear habitat, waterfowl habitat, and special-status species habitat, as shown on Figures 4-10 and 4-11, and described below.

IMPORTANT WILDLIFE AREAS

Deer Ranges - The basic components of deer habitat are food, cover, and water. Key summer and winter ranges provide the deer herds of Kern County with forage areas and protective cover. The nutritional level and overall quality of deer range has been degraded in recent years by urban encroachment and fire suppression techniques that do not allow old growth to be replaced by younger, more nutritious food.

Tule Elk Range - Large herds of tule elk formerly ranged throughout the Central Valley, Delta, and surrounding foothills. The species is now restricted to twelve isolated locations throughout the State. Kern County supports a tule elk herd near Tupman that covers approximately 685 acres and consist of about 65 elk.

Black Bear Habitat - Black bear occur in the higher elevations of the County, in the mountain timber and brush areas. Relatively high concentrations of black bear occur in the Piute Mountains and Breckenridge Mountain area.

Waterfowl Winter Habitat - As part of the Tulare Basin, the Kern National Wildlife Refuge near Wasco provides waterfowl wintering habitat for waterfowl migrating along the Pacific Flyway. This refuge provides year-round habitat for many species, but is used extensively by waterfowl in the fall and winter.

Wetland Habitat/Water Bird Areas - Most of the Tulare Basin wetlands remaining within the County occur on private duck clubs or flooded agricultural lands. Primary Tulare Basin wetlands designated

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in Kern County include: Tulare Lake Bed, Kern Refuge Area, duck clubs, Buena Vista Lake Bed, Kern Lake Bed, and the Greenfield area.

Birds of Prey - Kern County contains nest sites for the Golden Eagle, Prairie Falcon, and Spotted Owl. Nest sites have not been mapped because of the birds' sensitivity to human disturbance.

Desert Tortoise Habitat - Desert tortoise frequent desert oases, riverbanks, washes, dunes, and rocky areas, often where creosote bush is present. The California Desert Tortoise Preserve is in eastern Kern County.

SENSITIVE HABITAT AREAS

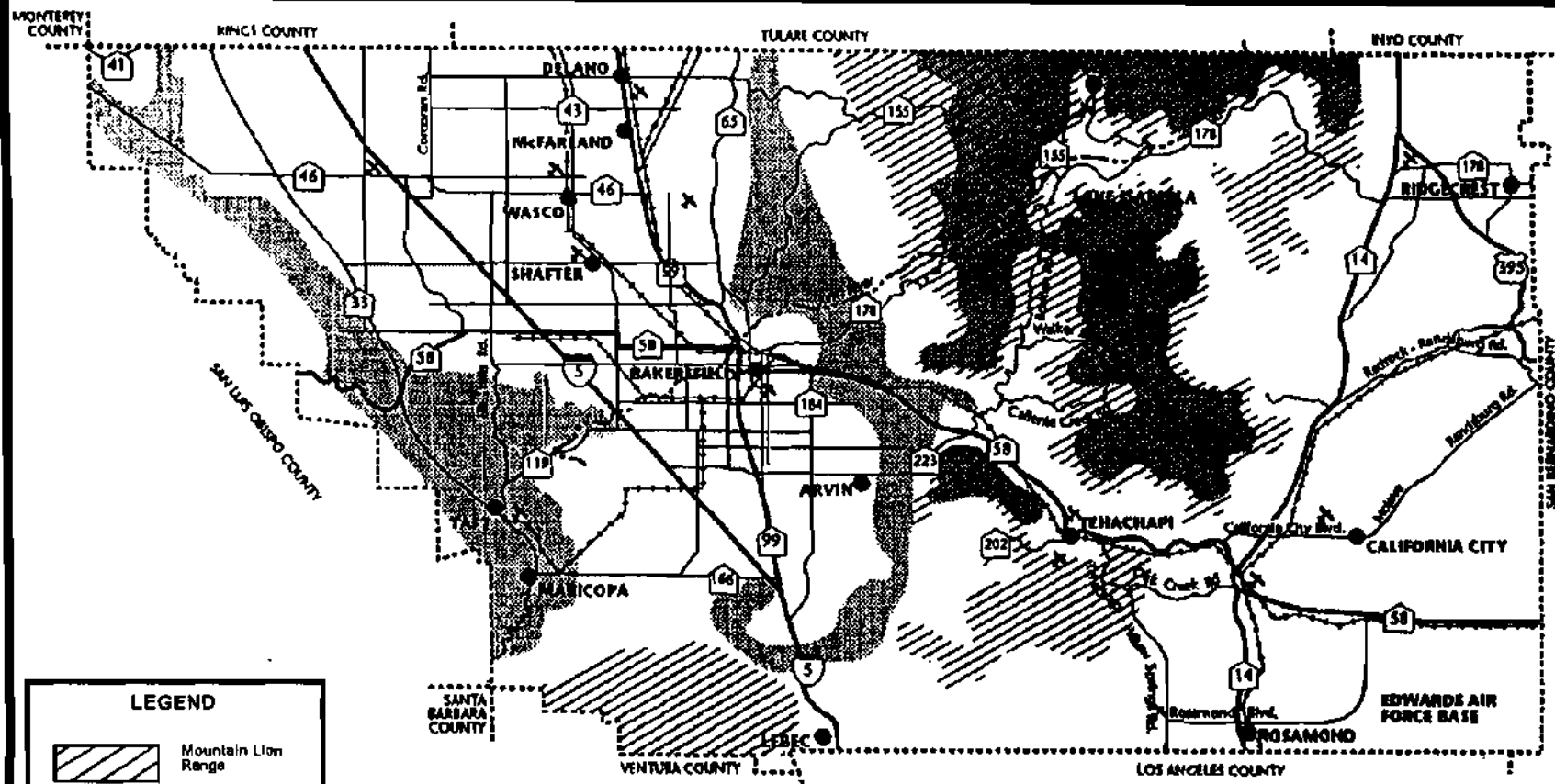
Several sensitive habitats are located within the Kern County. The number and area of freshwater marshes, riparian habitat, grassland and scrub habitat have diminished in previous years partly because of increased development and irregular water flows. Over the past several years, California has experienced a severe drought, with only one winter experiencing normal precipitation. The remaining dry winters have led to a decrease in overall water supply throughout the County and the need to periodically divert water discharge to agricultural, residential, and recreational uses. The combination of water diversion and development pressures has resulted in a dwindling area of sensitive habitat types. Sensitive habitat or "natural community" areas, as identified by CDFG, include:

- ☐ Stabilized Interior Dunes
- ☐ Valley Sink Scrub
- ☐ Valley Saltbush Scrub
- ☐ Valley Needlegrass Grassland
- ☐ Valley Sacaton Grassland
- ☐ Alkali Seep
- ☐ Coastal and Valley Freshwater Marsh
- ☐ Great Valley Cottonwood Riparian Forest
- ☐ Great Valley Mesquite Scrub
- ☐ Valley Oak Woodland
- ☐ Southern Interior Cypress Forest.

SPECIAL-STATUS TAXA

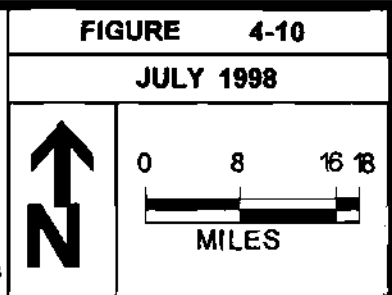
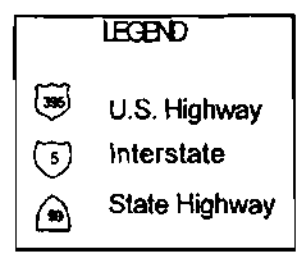
Several plant and animal taxa with special-status listing have been recorded or are known to occur in Kern County, according to a record search conducted by the California Natural Diversity Data Base (CNDDB, 1994). Special-status taxa include:

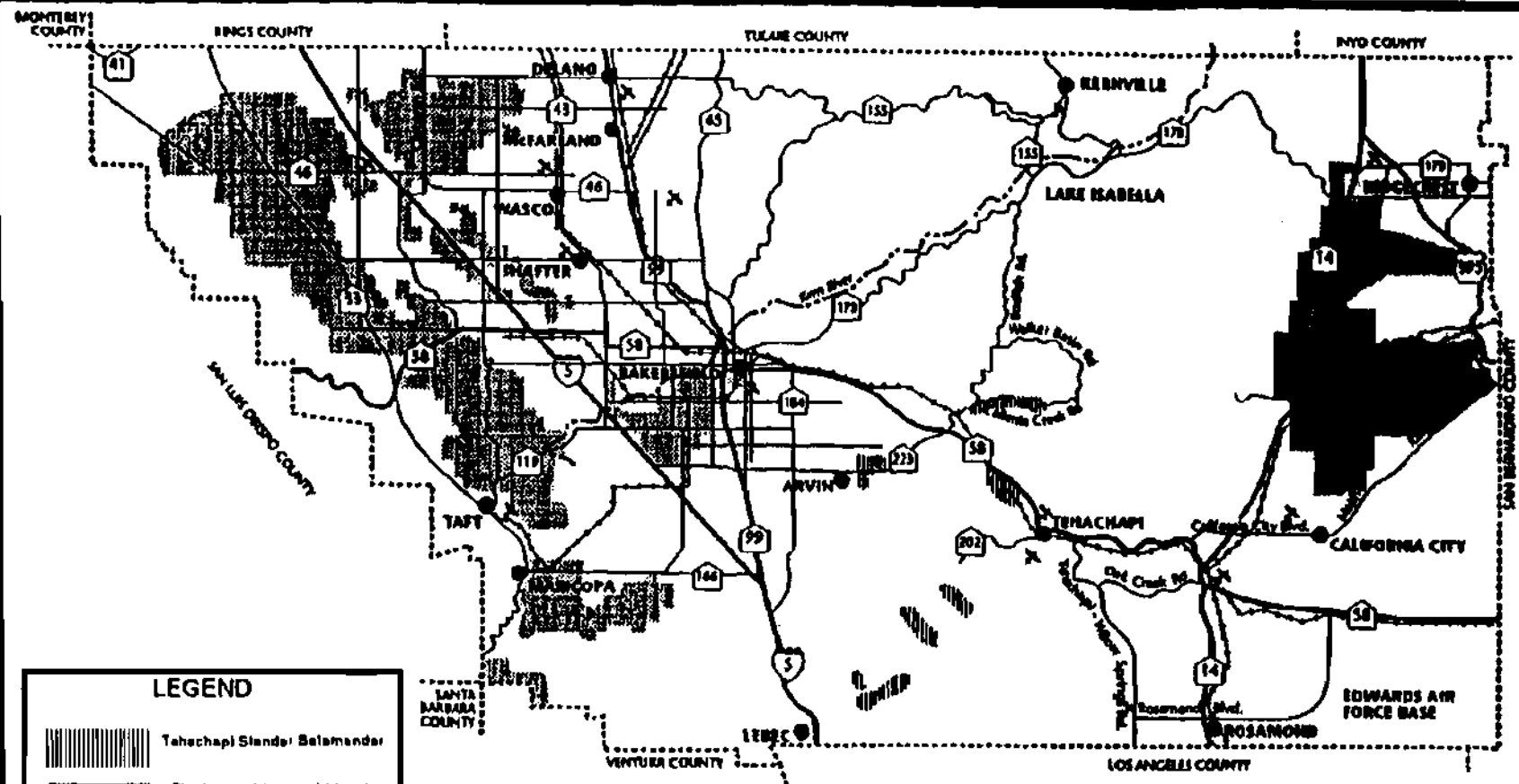
- ☐ Officially designated (rare, threatened, or endangered) and candidate species for listing by the California Department of Fish and Game (CDFG);
- ☐ Officially designated (threatened or endangered) and candidate species for listing by the U.S. Fish and Wildlife Service (USFWS);
- ☐ Other taxa that are considered sensitive or of special concern because of limited distribution or lack of adequate information to permit listing or rejection for state or federal status, such as those identified as animal Species of Special Concern (SSC) by CDFG.



Source: U.S. Bureau of Land Management & Dept. of Fish & Game.

WILDLIFE RANGES - MOUNTAIN LION, BEAR & SAN JOAQUIN KIT FOX





WILDLIFE RANGES - TEHACHAPI SLENDER SALAMANDER, MOJAVE GROUND SQUIRREL, & BLUNT-NOSED LEOPARD LIZARD



Kern Council
of Governments

FIGURE 4-11

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PLANT TAXA OF CONCERN

Based on research conducted by the California Department of Fish and Game and a search of the California Natural Diversity Data Base (April 1994), 46 plant taxa with special status listings are believed to exist within Kern County. These special plant elements are summarized in Table 4-5

TABLE 4-5

Special Plant Taxa Known or Suspected to Occur in Kern County and Current Listing Status April 1994											
Plant Elements	Federal Status					State Status			California Native Plant Society Status		
	E	T	C 1	C 2	P	E	T	R	1 A	1 B	4
Desert Cymopterus <i>Cymopterus Deserticola</i>				x						x	
Owens Peak Lomatium <i>Lomatium Shrevei</i>				x						x	
Slough Thistle <i>Cirsium Crossicoides</i>				x						x	
Halls Daisy <i>Erigeron Aquifolius</i>										x	
Fl. Tenon Woolly Sunflower <i>Eriophyllum Lanatum</i> Var. <i>Hallsii</i>				x						x	
Red Rock Tarplant <i>Hemizonia Arida</i>			x					x		x	
Coulter's Goldfields <i>Lasthenia Glabrata</i> SSP. <i>Coulteri</i>										x	
Comanche Point Layla <i>Layla Leucostephus</i>				x						x	
San Joaquin Adobe Sunburst <i>Pseudobahia Palmeri</i>					x	x				x	
Mason's Nesttrow <i>Stylidium Masonii</i>										x	
San Joaquin Woollythreads <i>Lambertia Congdonii</i>	x									x	
Muir's Railroadvine <i>Raiiardiopsis Muirii</i>										x	
Plute Mine Jewelflower <i>Streptanthus Cordatus</i> Var. <i>Pluteensis</i>				x						x	
California Jewelflower <i>Caulanthus Californicus</i>	x					x				x	
Bakersfield Cactus <i>Opuntia Baskinii</i> Var. <i>Trofesii</i>	x					x				x	
Twisselmann's Nemacodium <i>Nemacodium Twisselmannii</i>				x				x		x	
Bakersfield Smallecale <i>Atriplex Tuaricata</i>				x		x			x		

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Special Plant Taxa Known or Suspected to Occur in Kern County and Current Listing Status: April 1994											
	Federal Status					State Status			California Native Plant Society Status		
Last Hills Crownwheat <i>Atriplex Vallicola</i>				x						x	
Big Bear Valley Wallpod <i>Astragalus Leucocarpus</i>				x						x	
Walker Pass Milk-vetch <i>Astragalus Eriogon</i>				x						x	
Dedecker's Clover <i>Tribulus Macdonaldii</i> var <i>Dedeckeri</i>										x	
Charlotte's Phacelia <i>Phacelia Nashiana</i>										x	
Nine Mile Canyon Phacelia <i>Phacelia Novemmillenaria</i>				x						x	
Flat-Beds Monardella <i>Monardella Unioidea</i> SSP <i>Oblonga</i>				x						x	
Kern Mallow <i>Eremalche Kerneriana</i>	x									x	
Vasek's Clarkia <i>Clarkia Tembloriana</i> SSP <i>Californica</i>				x						x	
Red Rock Poppy <i>Eschscholzia Minutiflora</i> SSP <i>Twisselmannii</i>										x	
Diamond-petaled California Poppy <i>Eschscholzia Rhombipetala</i>				x						x	
Breedlove's Buckwheat <i>Eriogonum Breedlovei</i> Var <i>Breedlovei</i>				x						x	
The Needles Buckwheat <i>Eriogonum Breedlovei</i> Var <i>Scheuchleri</i>											x
Kern Buckwheat <i>Eriogonum Kennedyi</i> Var <i>Pinkola</i>				x						x	
Hoover's Erigeron <i>Erigeron Hooveri</i>		x									x
Plate Mtns Navarretia <i>Navarretia Setikoba</i>			x							x	
Unspotted Larkspur <i>Delphinium insipidum</i>										x	
Recurved Larkspur <i>Delphinium Recurvatum</i>				x						x	
Hesper Bird's-Beak <i>Cordylanthus Molle</i> SSP <i>Hesperus</i>				x						x	
Calico Monkeyflower <i>Mimulus Pictus</i>										x	
Over-leaved Snapdragon <i>Antirrhinum Ovarium</i>				x							x
Mexican Flannelbush <i>Fremontodendron Mexicanum</i>				x				x		x	

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Special Plant Taxa Known or Suspected to Occur in Kern County and Current Listing Status April 1994											
	Federal Status					State Status			California Native Plant Society Status		
Pink Cypress <i>Cupressus Arizonica</i> SSP <i>Navadensis</i>										x	
Spanish Needle Onion <i>Allium (thruvicti)</i>										x	
Palmer's Mariposa Lily <i>Calochortus Palmeri</i> Var <i>Palmeri</i>										x	
Albino Mariposa Lily <i>Calochortus striatus</i>				x						x	
Shirley Meadows Star-tail <i>Calochortus Westonii</i>				x						x	
Striped Adobe Lily <i>Fritillaria striata</i>				x						x	
Kelso Creek Monkeyflower <i>Mimulus Shrevei</i>			x							x	

Key:

Federal Status (USFWS, 1994)

- E = Endangered Listed as "endangered" under Federal Endangered Species Act. Species face possible extinction throughout all, or a significant portion of, its range.
- T = Threatened Although species is not presently at risk of extinction, it is likely to become an endangered species in the foreseeable future in the absence of special protection and management efforts.
- C1 = Category 1 Candidate for listing as endangered or threatened due to the existence of sufficient biological evidence to support a proposal.
- C2 = Category 2 Candidate for listing as endangered or threatened however sufficient biological evidence does not exist to support a proposed rule.
- P = Proposed Species is proposed for listing as endangered or threatened.

California Status (CDFG, 1994)

- E = Endangered Listed as "endangered" under the California Endangered Species Act.
- T = Threatened Listed as "threatened" under the California Endangered Species Act.
- R = Rare Listed as "rare" under the California Endangered Species Act.

California Native Plant Society (CNPS, 1994)

- 1A = Plants presumed extinct in California.
- 1B = Plants, rare, threatened or endangered in California and elsewhere.
- 4 = Plants of limited distribution - a watch list.

Source: California Department of Fish and Game, Natural Heritage Division, Natural Diversity Data Base, April 1994.

ANIMAL TAXA OF CONCERN

Table 4-6 summarizes numerous animal taxa with special-status listings by either the U.S. Fish and Wildlife Service or the California Department of Fish and Game that are believed to exist within Kern County. All listed species are considered "special animals," which is a broad term for animals with special legal status because of declining numbers, habitat, and other factors. Among those listed are nine amphibians/reptiles, 17 birds, nine mammals, and two insects.

TABLE 4-6

Special Animal Taxa Known or Suspected to Occur in Kern County and Current Listing Status April 1994							
	Federal Status				State Status		
Amphibians/Reptiles	E	T	C1	C2	E	T	SSC
Blunt-nosed Leopard Lizard <i>Gambelia</i> <i>Stilus</i>	x				x		
Southern Rubber Boa <i>Charina</i> <i>Bottae</i> <i>Umbratica</i>				x		x	
Kern Canyon Slender Salamander <i>Batrachoseps</i> <i>Simatus</i>				x		x	
Southwestern Pond Turtle <i>Clemmys</i> <i>Marmorata</i> <i>Pallida</i>			x				x
Desert Tortoise <i>Xerobates</i> <i>Agassizii</i>		x				x	
California Tiger Salamander <i>Ambystoma</i> <i>Californiense</i>				x			x
Tehachapi Slender Salamander <i>Batrachoseps</i> <i>Stebbinsi</i>				x		x	
Yellow Blotched Salamander <i>Ensatina</i> <i>Eschscholtzii</i> <i>Croceator</i>				x			x
Mohave Tui Chub <i>Gila</i> <i>Bicolor</i> <i>Mohavensis</i>	x				x		
Kern Brook Lamprey <i>Lampetra</i> <i>Hubbsi</i>				x			x
Birds							
Yellow Breasted Chat <i>Icteria</i> <i>Virens</i>							x
California Condor <i>Gymnogyps</i> <i>Californianus</i>	x				x		
Buena Vista Lake Shrew <i>Sorex</i> <i>Ornatus</i> <i>Relictus</i>			x				x
Willow Flycatcher <i>Empidonax</i> <i>Traillii</i>					x		
Yellow Warbler <i>Dendroica</i> <i>Petechia</i> <i>Brewsteri</i>							x
Coopers Hawk <i>Accipiter</i> <i>Cooperi</i>							x
Swainsons Hawk <i>Buteo</i> <i>Swainsoni</i>						x	x

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Special Animal Taxa Known or Suspected to Occur in Kern County and Current Listing Status April 1994							
	Federal Status				State Status		
Prairie Falcon <i>Falco Mexicanus</i>							x
Burrowing Owl <i>Athene Cunicularis</i>							x
Tricolored Blackbird <i>Agelaius Tricolor</i>				x			x
Western Yellow Billed Cuckoo <i>Coccyzus Americanus Niveus</i>					x		
Western Snowy Plover <i>Charadrius Alexandrinus</i>		x					x
Le Conte's Thrasher <i>Toxostoma Lecontei</i>							x
Gray Vireo <i>Vireo Vicinior</i>							x
Pacific Fisher <i>Martes Pennanti Pacifica</i>				x			x
Kern Shoulderband <i>Helminthoglypta Callistoderma</i>				x			
Mammals							
San Joaquin Kit Fox <i>Vulpes Macrotis Mutica</i>	x					x	
Mohave Ground Squirrel <i>Spermophilus Mohavensis</i>				x		x	
Tehachapi Pocket Mouse <i>Perognathus Alticolus Inexpectatus</i>				x			x
Giant Kangaroo Rat <i>Dipodomys Ingens</i>	x				x		
Tipton Kangaroo Rat <i>Dipodomys Nitratoides Nitratoides</i>	x				x		
Tulare Grasshopper Mouse <i>Onychomys Torridus Tularensis</i>							x
California Wolverine <i>Gulo Gulo Luteus</i>				x		x	
San Joaquin Antelope Squirrel <i>Ammospermophilus Nelsoni</i>			x			x	
Pale Big Eared Bat <i>Plecotus Townsendii Pallescens</i>							x

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Special Animal Taxa Known or Suspected to Occur in Kern County and Current Listing Status April 1994							
	Federal Status				State Status		
Insects							
Molestan Blister Beetle <i>Lytta Molesta</i>				X			
Kern Primrose Sphinx Moth <i>Euprosopinus Euterpe</i>		X					

Key:

Federal Status (USFWS, 1994)

E = Endangered

T = Threatened

C1 = Category 1

C2 = Category 2

Listed as "endangered" under Federal Endangered Species Act. Species faces possible extinction throughout all, or a significant portion of, its range.

Although species is not presently at risk of extinction, it is likely to become an endangered species in the foreseeable future in the absence of special protection and management efforts.

Candidate for listing as endangered or threatened due to the existence of sufficient biological evidence to support a proposal.

Candidate for listing as endangered or threatened however sufficient biological evidence does not exist to support a proposed rule.

State Status (CDFG, 1994)

E = Endangered

T = Threatened

SSC = Species of Special Concern

Listed as "endangered" under the California Endangered Species Act.

Listed as "threatened" under the California Endangered Species Act.

Source: California Department of Fish and Game, Natural Heritage Division, Natural Diversity Data Base, April 1994.

4.4.4 NOISE

This analysis addresses potential noise impacts resulting from implementation of the RTP. Since the RTP is countywide, the analysis of noise impacts is general. Traffic noise on streets and highways has been quantitatively analyzed based on projected traffic volumes and other operational assumptions. Train and airport noise also have been addressed in a general manner.

Acoustical Terminology

The following section provides a description of the acoustical terminology applied to determine noise impacts. Unless otherwise stated, all sound levels reported are in A-weighted decibels (dB). A-weighting de-emphasizes the very low and very high frequencies of sound in a manner similar to the human ear. Most community noise standards use A-weighting, as it provides a high degree of correlation with human annoyance and health effects.

Ambient Noise Level:

The composite of noise from all sources near and far. In this context, the ambient noise level constitutes the normal or existing level of environmental noise at a given location.

CNEL⁶:

Community Noise Equivalent Level. The average equivalent sound level during a 24-hour day, obtained after addition of approximately five decibels to sound levels in the evening from 7 p.m. to 10 p.m. and ten decibels to sound levels in the night before 7 a.m. and after 10 p.m.

⁶ Note: CNEL and DNL represent daily levels of noise exposure averaged on an annual basis, while L₁₀ represents the average noise exposure for a shorter time period, typically one hour.

Decibel, dB:	A unit for describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure, which is 20 micropascals (20 micronewtons per square meter).
DNL/L_{dn}:	Day/Night Average Sound Level. The average equivalent sound level during a 24-hour day, obtained after addition of ten decibels to sound levels in the night after 10 p.m. and before 7 a.m.
L_{eq}:	Equivalent Sound Level. The sound level containing the same total energy as a time varying signal over a given sample period. L_{eq} is typically computed over 1, 8 and 24-hour sample periods.
L_{max}:	The maximum noise level recorded during a noise event.
L_n:	The sound level exceeded "n" percent of the time during a sample interval (L_{90} , L_{50} , L_{10} , etc.). L_{10} equals the level exceeded 10 percent of the time.
Noise Exposure Contours:	Lines drawn about a noise source indicating constant levels of noise exposure. CNEL and DNL contours are frequently used to describe community exposure to noise.
SEL or SENEL:	Sound Exposure Level or Single Event Noise Exposure Level. The level of noise accumulated during a single noise event, such as an aircraft overflight, with reference to a duration of one second. More specifically, it is the time-integrated A-weighted squared sound pressure for a stated time interval or event, based on a reference pressure of 20 micropascals and a reference duration of one second.
Sound Level:	Sound pressure level in decibels as measured on a sound level meter using an A-weighting filter network. The A-weighting filter de-emphasizes very low and very high frequency components of the sound in a manner similar to the response of the human ear and gives good correlation with subjective reactions to noise.

The most significant noise sources in Kern County are automobiles and trucks, mainly because roadways are so extensive. Noise produced near airports and rail lines may be locally significant, but in terms of the number of square miles affected, their impacts compared to traffic noise are relatively minor.

Traffic Noise

Existing traffic noise levels were evaluated using the Federal Highway Administration (FHWA) Highway Traffic Noise Prediction Model. Traffic volumes and assumed truck percentages, speeds and 24-hour traffic distribution were entered into the model to roughly estimate noise levels at locations adjacent

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to roadways. No provision was made for depressed roadways, soundwalls or other factors that would affect noise levels. Potential impacts are classified as follows⁷:

Low	- L_{dn} 60 dB or below
Moderate	- L_{dn} 61 dB to 70 dB
High	- L_{dn} 71 dB or greater.

Table 4-7 lists the proportions of high, moderate and low impact segments for the existing scenario and the three future scenarios.

**TABLE 4-7
PROPORTIONS OF HIGH, MODERATE AND
LOW NOISE ROADWAY SEGMENTS FOR
EXISTING CONDITIONS**

Impact Potential	Existing (%)
High	49 (16)
Moderate	164 (55)
Low	85 (29)

Source: Brown-Burtin Associates

Rail Noise

The two mainline rail operations in Kern County are Union Pacific (UP) and Burlington Northern Santa Fe (BNSF). Approximately 20 freight train operations per day occur on the UP and BNSF lines that extend from their respective yards in Bakersfield to points north of the County. The UP line that extends from the Bakersfield yard into Mojave carries about 36 UP and BNSF trains per day⁸. The UP and BNSF lines in eastern Kern County have about 10-15 operations per day. Four daily roundtrip passenger operations occur on the AT&SF line from Bakersfield to Oakland.

High noise impacts can be expected within approximately 100 feet of the mainline tracks, moderate impacts from 100-700 feet, and low impacts at distances greater than about 700 feet. The above-noted impacts may be lesser or greater depending on site-specific factors such as soundwalls, grade crossings and topographic shielding. Insignificant noise impacts can be expected adjacent to the several branch lines in Kern County that have one to three operations per day.

⁷ The CNEL and DNL represent daily levels of noise exposure averaged on an annual basis, while L_{dn} represents the average noise exposure for a shorter time period, typically one hour.

⁸ Brown-Burtin Associates, Inc. Technical Background Information prepared for the Metro Bakersfield Year 2010 General Plan Draft EIR. 1986.

Airport Noise

Section 4.5.2, Existing Systems - Aviation, provides a detailed description of Kern County's airport facilities. Airport noise contours have been established for all airport facilities and are consistent with the Federal Aviation Administration (FAA) Integrated Noise Model. In addition, noise contours for existing and future conditions at each of the airports are contained in plans or studies, including: Airport Master Plans, Airport Land Use Commission studies, Comprehensive Airport Land Use Plans, Airspace Plans, and Airport Layout Plans. Each of these plans or studies include implementation goals, objectives, and policies and/or recommendations to lessen noise impacts.

4.4.5 LAND USE

Kern County consists of 8,073 square miles, or over five million acres, within south-central California. The County is comprised of planning regions ranging from rich agricultural on the San Joaquin Valley floor, to high desert in the Mojave region, to the mountains of the Sierra Nevada and Transverse Ranges. Each of these planning regions comprise approximately one third of the County's land area. Kern County is bounded by Kings, Tulare and Inyo Counties on the north, San Bernardino on the east, Los Angeles and Ventura on the south, and Santa Barbara and San Luis Obispo on the west.

Agriculture

Agriculture is the predominantly active land use within Kern County, as the San Joaquin Valley is one of the most agriculturally productive regions in the world. Gross value of the large variety of agricultural goods produced places the County among the top three agricultural counties in the United States. Because of the semi-arid climate, more than 95 percent of Kern County crops are grown on irrigated land. Over 3.7 million acres are agriculturally zoned, which represents 74 percent of Kern County's total acreage.

San Joaquin Valley's long growing season and rich alluvial soils support more than 250 different varieties of vegetables and other crops, with cotton by far the dominant crop in terms of production value. Cotton is followed by grapes, almonds, and cattle in terms of production revenue.

Residential

Approximately 19.2 percent of the County (958,000 acres) is residentially zoned. Residential zoning categories include urban, suburban and rural. Moving out from urban centers, acreage of parcels tends to become greater to allow for livestock and agricultural uses. Urban residential zones have small lots and relatively high densities. Approximately 22,000 acres (2.3 percent of the total residential area) is zoned for urban residential uses. Suburban residential zoning has larger lot sizes, which generally permit large domestic animals. Approximately 56,000 acres (5.8 percent of total residential) are within this classification.

The largest residential category is rural residential. This zoning permits one dwelling unit on parcels ranging from 2.5 acres to over 20 acres. The rural residential designation is applied to approximately 880,000 acres, which constitutes 91.9 percent of the residential zoning in Kern County and 17.6 percent of total County acreage. One reason for the preponderance of this zoning is that much of the federal land in national forests is zoned for large parcel sizes to discourage development.

Commercial

Less than one percent of the County's area (4,500 acres) is zoned for commercial land uses. Such classifications are found primarily near large residential concentrations in order to allow for the provision of goods and services. Because the Kern County Zoning Ordinance permits residential uses in commercial zones with a conditional use permit, it is possible that a portion of this commercially zoned property may not be used as such.

Industrial/Other Classifications

The remaining 337,500 acres (approximately 6.8 percent of the total County land area) are zoned for industrial and other special uses. While most of the industrial zoning is found near urbanized areas, a notable exception is the borax mine near Boron. Similar instances occur where Portland cement, oil or other natural resources are produced. Special zoning classifications include open space, flood control, and natural resource districts.

Incorporated Cities

The City of Bakersfield is Kern County's most populous area with a population of approximately 202,000 people, or approximately 32 percent of the County's total population. The central district of Bakersfield serves as the administrative center for both City and County government.⁹

Metropolitan Bakersfield, like most communities in Kern County, has developed in the flatter areas of San Joaquin Valley. With physical constraints to the north, south, and west, development has occurred generally adjacent to the transportation corridors of Interstate 5, Route 99, and Route 58. The City of Bakersfield is adjacent to neighboring communities such as Lamont, Weedpatch, and Arvin to the south and east, and Oildale, Shafter and Buttonwillow to the north and west. The Kern River flows from Lake Isabella in the southern Sierra through the central district of the City.

Kern County includes ten other incorporated cities or towns in addition to Bakersfield. The Cities of Delano, McFarland, Wasco and Shafter lie northwest of Bakersfield, along Routes 99 and 43 in San Joaquin Valley. The Cities of Taft and Maricopa are located southwest of Bakersfield along Routes 33 and 166, adjacent to the Temblor Range and near the San Andreas fault. Arvin, Tehachapi, and California City, all southeast of Bakersfield, are valley, mountain, and desert communities, respectively, and are representative of Kern County's diverse communities. Ridgecrest, at the eastern edge of the County, is a high desert community adjacent to China Lake Naval Air Weapons Station.

Unincorporated Areas

Approximately 275,000 people, or 47 percent, of Kern County's population reside within unincorporated portions of Kern County. Unincorporated population centers include Mojave, Rosamond, Oildale, Lamont, Golden Hills, Buttonwillow, Greenfield, and Inyokern.

The County also contains large federally owned areas, including the majority of Edwards Air Force Base and a portion of the China Lake Naval Air Weapons Station. In addition, the mountainous regions of the County contain Sequoia National Forest (northeast), a portion of Los Padres National Forest (south), and Red Rock Canyon State Park (east).

⁹ California Public Sector Publications, *California Public Sector*, 1992.

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Unincorporated areas are governed by the Kern County General Plan and other county-wide planning efforts, and all applicable General Plan goals, policies, and objectives.

Regulatory Framework

General Plans

Land uses within each city and the County are governed by General Plans that designate appropriate land uses throughout the jurisdiction and define specific goals, policies and objectives. In general, most plans recognize existing land uses and determine acceptable uses for future development of land currently used for agriculture or open space.

General plans consist of a number of elements, including land use, circulation, housing, conservation, open space, noise and safety. Other elements also may be included at the discretion of the jurisdiction that relate to the physical development of the county or city. The General Plan must be comprehensive and internally consistent. Each element has equal status and must be consistent with other elements. Of particular importance is the consistency between the circulation and land use elements. The general location and extent of existing and proposed major thoroughfares, transportation routes, terminals, and other public utilities and facilities must be consistent with the general distribution and intensity of land for housing, business, industry, open space, education, public areas, waste disposal facilities, and agriculture.

Airport Land Use Commission

California state legislation authorizes the creation of an Airport Land Use Commission (ALUC) in each county having a public use airport. The basic purpose of ALUCs is to help ensure that proposed land use development in the vicinity of these airports will be compatible with airport activities. As a principal means of achieving this objective, each ALUC is required to prepare a compatibility plan for the airports within its jurisdiction.

Establishment of ALUCs was once mandated by State law. However, in July 1993, the law changed to make their creation optional. Kern County and its incorporated cities formed an ALUC in 1971 to address compatibility issues involving the County's public use airports. When the law changed in 1993, the County decided to disestablish the Kern ALUC. The County concluded that the purposes for which airport land use commissions are created could be accomplished through other local actions, including general plan policy and zoning implementation. Kern County has adopted an Airport Land Use Compatibility Plan.

Future Land Use

The future pattern of land uses will remain relatively constant at a countywide level. While urbanized areas will continue to increase in size, the number of acres used for development to accommodate this increased population is comparatively small. Bakersfield will remain the predominant urban center in Kern County, with the other cities representing a second tier of urban land use. Most of the development within these cities will be suburban growth on the outskirts of the urbanized areas. This pattern of relatively low-density urban growth will be a continuation of existing land use patterns.

In addition to slow, low-density growth patterns typical of rural regions, Kern County is also beginning to experience the effects of a number of large-scale planning efforts at both the policy and project-specific level, as described below.

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Metropolitan Bakersfield 2010 General Plan

The Metropolitan Bakersfield 2010 General Plan encompasses an area of 408 square miles in Kern County, including the City of Bakersfield. The Plan is a policy document designed to give long-range guidance to decision makers. The plan is the product of a joint planning process between the City of Bakersfield, Kern County, Kern Council of Governments, and Golden Empire Transit. In 1986, these agencies entered into an agreement to develop this areawide General Plan.

The Metropolitan Bakersfield 2010 Plan Land Use Element provides development policies and land use designations for which pertinent policies and standards have been established. The intent of this element is to focus new development into distinctive centers that are separated by low land use densities, and to site development in a manner that takes advantage of a location's environmental setting. These principles are referenced as the "centers" and "resource" concepts.

Mojave Project

The Mojave Project consists of ten projects proposed for development west of the unincorporated community of Mojave. The cumulative project area encompasses 695 acres and would include 4,153 residential dwelling units and 250,000 square feet of commercial/retail use. Implementation would require a number of changes to the Kern County General Plan and Zoning Ordinance, and would be constructed over a period of ten years as individual developments.

Western Rosedale Specific Plan

The Western Rosedale Specific Plan area is contained within the Metropolitan Bakersfield 2010 Plan. This Specific Plan modified the Land Use and Circulation Elements of the Metropolitan Bakersfield 2010 Plan, and superseded a number of adopted Specific Plans within the Western Rosedale Specific Plan boundary.

Other Planning Efforts

Other planning efforts, initiated by both local agencies and private development, will continue to influence change within Kern County. Such efforts include the Ridgecrest General Plan Update, the San Emidio New Town, McAllister Ranch Specific Plan, and the Keene Ranch Specific Plan.

4.4.6 TRANSPORTATION/CIRCULATION

Implementation of the 1998 RTP will result in improvements to existing regional transportation and circulation systems and will meet required regional transportation needs. Proposed street and highway programs are aimed at reducing existing traffic and other transportation/circulation conflicts and resulting accident hazards. Implementation of planned improvements to the street and highway network, improvement of County airports, provision of mass transportation services and facilities, identification of additional bikeways and pedestrian improvements, and improved transportation systems that accommodate goods movement, will have beneficial effects on a regionwide basis.

To determine the type and number of multimodal transportation projects necessary to accommodate Kern County's expected growth, level of service (LOS) was assessed along the Regionally Significant System of street and highway facilities. The Congestion Management Program System of Highways and Principal Arterials were also revised. In addition, analysis was made of the ability of other transportation modes to accommodate future transportation needs, including enhanced mass

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transportation and non-motorized transportation facilities and services. Descriptions of each of these systems are provided in Section 4.5, Existing Systems and Section 6.2, CMP Element.

STREETS AND HIGHWAYS

Kern County's regional roadway system is served by one Interstate, one Federal Route and 16 State Routes (Figure 4-12). Interstate 5 and Federal Route 395 are major routes that run in a north-south direction. State Routes 14, 33, 43, 58, 65, 99, 119 and 184 provide north-south access, while Routes 41, 46, 155, 166, 178, 202, 204 and 223 run in an east-west direction. In addition, many city and county roads are used for commute, agricultural, recreational and scenic purposes. With urbanization taking place in the County, commuter and business trips are increasing. Kern County has over 6,700 miles of County and city roads, 870 miles of State Routes, and an additional 87 miles on the interstate highway system.

According to the 1985 Highway Capacity Manual (HCM), level of service is categorized by two parameters of traffic, uninterrupted and interrupted flow. Uninterrupted flow facilities do not have fixed elements such as traffic signals that cause interruptions in traffic flow. Interrupted flow facilities have fixed elements that cause an interruption in the flow of traffic such as stop signs, signalized intersections, and arterial roads¹⁰. The difference between uninterrupted flow and interrupted LOS is defined in Table 4-8 and in the following summaries:

Uninterrupted Traffic Flow Facilities LOS

LOS A represents free flow. Individual vehicles are virtually unaffected by the presence of others in the traffic stream.

LOS B is in the range of stable flow, but the presence of other vehicles in the traffic stream begins to be noticeable. Freedom to select desired speeds is relatively unaffected, but there is a slight decline in the freedom to maneuver.

LOS C is in the range of stable flow, but marks the beginning of the range of flow in which the operation of individual vehicles becomes significantly affected by interactions with other vehicles in the traffic stream.

LOS D is a crowded segment of roadway with a large number of vehicles restricting mobility and a stable flow. Speed and freedom to maneuver are severely restricted, and the driver experiences a generally poor level of comfort and convenience.

LOS E represents operating conditions at or near the level capacity. All speeds are reduced to a low, but relatively uniform value. Small increases in flow will cause breakdowns in traffic movement.

LOS F is used to define forced or breakdown flow (stop-and-go gridlock). This condition exists when the amount of traffic approaches a point where the amount of traffic exceeds the amount that can travel to a destination. Operations within the queues are characterized by stop and go waves, and they are extremely unstable.

¹⁰ Transportation Research Board, 1985.

Interrupted Traffic Flow Facilities LOS

LOS A describes operations with average intersection stopped delay of five seconds or less (how long a driver must wait at a signal before the vehicle can begin moving again).

LOS B describes operations with average intersection stopped delay in the range of 5.1 to 15.0 seconds per vehicle, and with reasonably unimpeded operations between intersections.

LOS C describes operations with higher average stopped delays at intersections (in the range of 15.1 to 25.0 seconds per vehicle). Stable operations between locations may be more restricted because of the ability to maneuver and change lanes at midblock locations can be more restrictive than LOS B. Further, longer queues and/or adverse signal coordination may contribute to lower average speeds.

LOS D describes operations where the influence of delay is more noticeable (25.1 to 40.0 seconds per vehicle). Intersection stopped delay is longer and the range of travel speeds are about 40 percent below free flow speed. This is caused by inappropriate signal timing, high volumes, or a combination of these.

LOS E is characterized by significant approach stopped delay (40.1 to 60.0 seconds per vehicle), and average travel speeds of one-third the free flow speed or lower. These conditions are generally considered to represent the capacity of the intersection or arterial.

LOS F characterizes arterial flow at extremely low speeds, with high intersection stopped delay (greater than 60 seconds per vehicle). Poor progression, long cycle lengths, and high traffic demand volumes may be a major contributing factor to this condition. Traffic may be characterized by frequent stop-and-go conditions.

According to the RTP Policy Element (Section 3.0), the minimum LOS along the Regionally Significant System and the CMP System is LOS "E." As a result, this policy also establishes the minimum LOS for purposes of evaluating environmental impacts. To determine existing LOS for each segment along the Regionally Significant System and the CMP System, segment LOS was estimated using the Modified HCM-Based LOS Tables (Florida Tables). The tables consider capacity of individual segments based on numerous roadway variables (freeway design speed, signalized intersections per mile, number of lanes, saturation flow, etc.) These variables were identified and applied in the Tables to reflect existing traffic LOS conditions in Kern County. The variables are consistent with HCM variables referenced above in Table 4-8.

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TABLE 4-8
Level of Service Criteria

LOS	DENSITY (PC/M/LN) 1	UNINTERRUPTED FLOW			INTERRUPTED FLOW				
		70 mph FREEWAY DESIGN SPEED			URBAN AND SUBURBAN ARTERIAL 2 AND 4 LANES SIGNALIZED				
		SPEED (MPH)	V/C	MSF 2 (PC/H/L) 3	SPEED (MPH)	V/C	DELAY	ARTERIAL ADT 4	
								2 LANE	4 LANE
A	≤12	≥80	0.00 - .38	700	≥35	0.00 - .50	≤6.0 Sec.	5,000	12,000
B	≤20	≥67	.38 - .54	1,100	≥28	.51 - .70	5.1 - 15 Sec.	8,000	21,000
C	≤30	≥64	.56 - .77	1,550	≥22	.71 - .88	15.1 - 25 Sec.	10,000	24,000
D	≤42	≥36	.76 - .93	1,850	≥17	.91 - .99	25.1 - 40 Sec.	12,000	27,000
E	≤67	≥30	.93 - 1.00	2,000	≥13	.91 - 1.00	40.1 - 60 Sec.	13,000	30,000
F	>67	<30	>1.00		<13	>1.00	> 60 Sec.		

Source: 1985 Highway Capacity Manual

1. PC/M/LN: passenger cars per mile per lane
2. PC/H/L: passenger cars per hour per lane
3. MSF: maximum service flow rate per lane under ideal conditions. $[c_j (\text{capacity under ideal conditions}) \cdot v/c = \text{MSF}]$
4. ADT: average daily traffic. These figures are affected by an intersection's degree of access control, the type of roadway, grades, design, geometrics, percent truck traffic, etc.

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A complete description of the Modified Tables and the variables applied to calculate segment LOS are included in Appendix C. Results of the LOS segment analysis along the RTP Regionally Significant System are reflected on Figures 4-13 and 4-14, and are further described in Appendix C. Segment LOS analysis along the CMP System is reflected on Figures 4-13 and 4-14,. Results of the LOS analysis indicate that the following segments along the Regionally Significant System and the CMP System are currently operating at LOS "F":

Route 204 (Airport Dr. to F St.)
Route 58 (Gibson to Rt. 99)
Route 178 (Oak St. to Beech St.)

Referencing Section 6.0, Congestion Management Program, a deficiency plan must be prepared when the LOS along the CMP System falls below LOS "E". The deficiency plan must identify the cause of the deficiency, the necessary improvement projects that would mitigate the deficiency, the costs of mitigation, and the project implementation schedule. Specific deficiency plan requirements are referenced in Section 6.0.

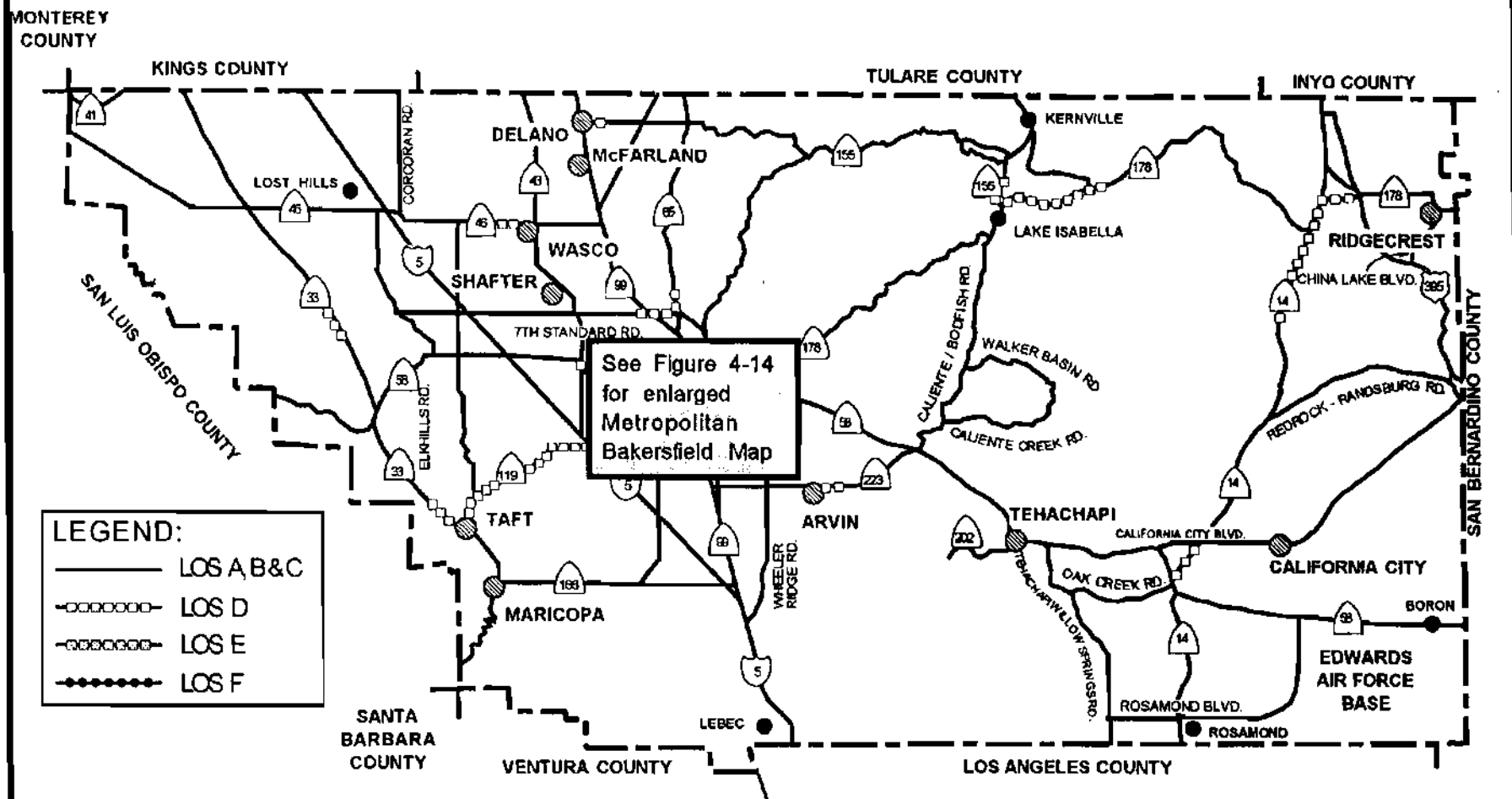
Given results of the LOS analysis described above, a deficiency of LOS "F" has occurred along Route 99 between Route 58 West and Route 58 East within the City of Bakersfield. The deficiency is caused by traffic generated through growth and development in southwest and west Bakersfield that has impacted this segment over time. According to the Financial Element (Section 8), the deficient segment is scheduled for improvement between 1994 and 1999. The improvement consists of widening Route 99 from 6 to 8 lanes between .5 mile south of Ming Avenue to the Route 204/99 separation. The State Transportation Improvement Program (STIP) also references the improvement project and has programmed funds for project construction beginning in fiscal year 1994/95. The project is estimated to cost approximately \$16 million. Resulting LOS along these segments of Route 99 following mitigation will be "D" and "C", thereby decreasing congestion and improving traffic flow by handling greater volumes along these segments of freeway.

To satisfy deficiency plan requirements associated with the Route 99 LOS deficiency, it is recommended that this RTP first be accepted by Kern COG as a Deficiency Plan. Consultation with the City of Bakersfield and Caltrans District 06 was provided during review of the Draft RTP.

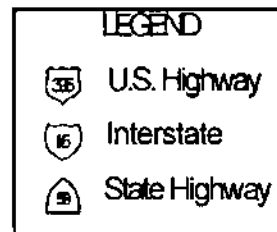
AVIATION

The regional airport system in Kern County includes a diverse range of aviation facilities. It is comprised of seven airports operated by the Kern County Department of Airports, four municipally owned airports, three airport districts, three privately owned public-use airports, and two major military facilities (Edwards Air Force Base and China Lake Naval Air Weapons Station).

Scheduled air carrier and commuter airline service is provided at Meadows Field and serves the Bakersfield Metropolitan area and the surrounding service area. Scheduled commuter services are provided at InyoKern Airport, which serves the City of Ridgecrest and the China Lake Naval Air Weapons Station in the northeastern County area. General aviation needs are served by public-use airports, both publicly and privately owned, throughout the County. These airports serve a full range of business, agriculture, recreation, and personal aviation activities.



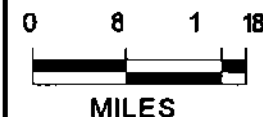
1998 REGIONALLY SIGNIFICANT SYSTEM EXISTING CONDITIONS

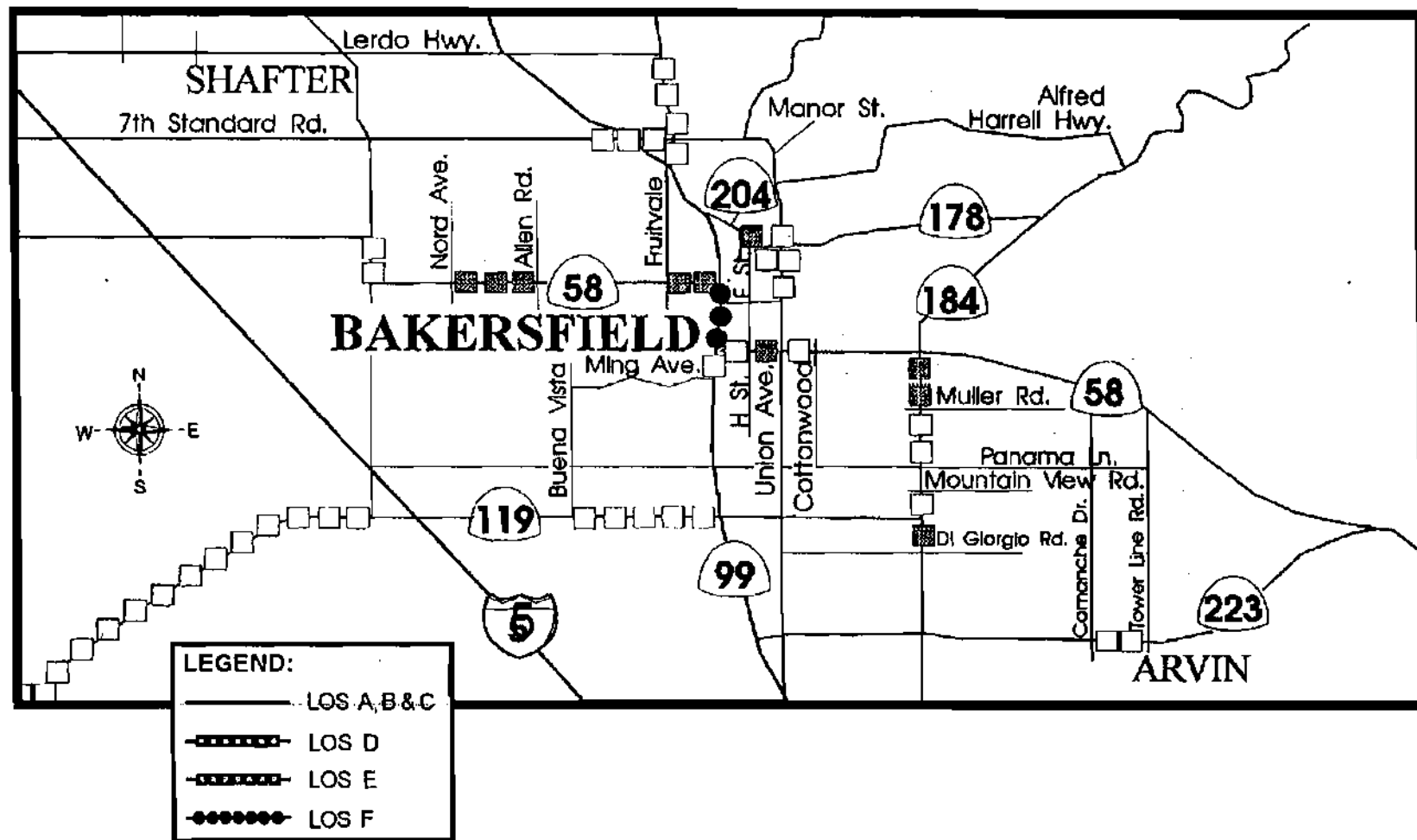


Kern Council
of Governments

FIGURE 4-13

JULY 1998





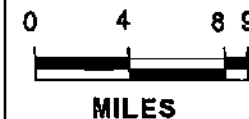
1998 REGIONALLY SIGNIFICANT SYSTEM - BAKERSFIELD AREA



Kern Council
of Governments

FIGURE 4-14

JULY 1998



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The Kern County Department of Airports is embarking on a plan to replace the existing (circa 1950) air terminal. The new site will contain approximately 40,000 square feet and will be readily expandable to meet current and anticipated future needs. The design will include facilities for regional jet operations, while maintaining flexibility and comfort for commuting passengers. The site will consist of approximately nine acres of aircraft ramp, three acres of terminal area and grounds, and five acres of auto parking and other support facilities. Approximately 23 acres will remain for growth and expansion.

Cost of the facility is anticipated to be \$15.4 million. This total will include \$5 million from the Federal Aviation Administration, \$2.4 million from Meadows Field (primarily through the use of Passenger Facility Charges) and \$8 million of other local funds.

Three sites are being considered, one being the site of the existing airport terminal, with the other two being along the eastern airport boundary south and north of Seventh Standard Road.

Timeline for the project includes an architectural rendering completed not later than December 1999. Final drawings are to be completed no later than December 2000. The project will be bid early in 2001, with airline ramp construction commencing later that same year. Terminal building construction will begin in 2002 with completion anticipated by the end of 2003.

MASS TRANSPORTATION

Within Kern County, existing mass transportation services include public transit, rail, and other transit services that are provided by private common carriers. Public transit is available in sixteen communities. In 1992-1993, over five million passengers were carried by public transit in Kern County. Transit services include inter-city, intra-city, demand responsive, and fixed route operations. Kern County operates the Kern Regional Transit that includes service to the unincorporated areas of Buttonwillow, Lamont, Kern River Valley, Frazier Park, Rosamond, and Mojave. In addition, the County has agreements with several small cities to share the cost of providing transit service to County areas that surround incorporated places. These include Arvin, Delano, Ridgecrest, Shafter, Taft, Tehachapi, and Wasco. Need for improved services is evaluated on an annual basis by Kern County through its Short-Range Transit Plan (SRTP).

Golden Empire Transit (GET) has provided public transit service for the Metropolitan Bakersfield area since 1973. Today, GET operates 14 fixed routes and Get-A-Lift within 133 square miles, and serves approximately 350,000 residents. The Get-A-Lift program provides a complementary paratransit service within Metropolitan Bakersfield for those who are physically unable to use the fixed route service. Elderly and disabled services also are provided by the Consolidated Transportation Service Agency (CTSA). Basing its analysis on population density, income, auto ownership, and age, GET has determined that within Metro Bakersfield, the east and southeast areas exhibit the highest potential for enhanced service. Other areas with high transit potential are portions of Oildale and central Bakersfield. The lowest potential areas include most of the southwest, northwest, Greenacres, and Greenfield. The need for enhanced services in the GET service area is determined through GET's SRTP.

Common carriers that serve Kern County include Greyhound, Orange Belt Stages, Airport Bus of Bakersfield, and AMTRAK. These operations have terminals in central Bakersfield. Evaluations of current service are developed independently by each of the common carriers. An evaluation of existing services provided by the AMTRAK bus system is made by Caltrans as part of its evaluation of the San Joaquin passenger rail service.

RAIL

Amtrak currently provides passenger rail service through Kern County. It operates four trips along the San Joaquin line between Bakersfield and Oakland. Service between Bakersfield and points east and south are provided by Amtrak bus services. Passenger rail service needs are assessed by Caltrans, including an evaluation of the farebox recovery ratio and monitoring current ridership to estimate the need for expanded services when necessary.

NON-MOTORIZED

Non-motorized transportation is defined as trips made by bicycle, on foot, or by other non-motorized modes. Walking and bicycling are becoming more popular forms of travel for short trips, especially trips in the immediate vicinity of an individual's residence. Physical fitness, cost, ease of travel, convenience, and air quality considerations influence the decision to use non-motorized forms of transportation.

Over the past decade, a number of mixed use developments have been planned and constructed to enable and encourage non-motorized travel. These mixed-use developments have lessened the demand for automobile travel while encouraging non-motorized trips. When mixed use development residents work within the development, benefits to the larger community include lessened traffic congestion, enhanced air quality, and reduced fuel consumption.

Although bicycle ridership drops dramatically when a person obtains a driver's license, a significant number of adults use bicycles for day-to-day transportation needs. Many of the population centers within Kern County are ideally suited for bicycle usage because of the nearly level or rolling terrain and warm weather that predominates nearby. However, bicyclists are concerned with their physical safety, since heavy automobile traffic and poor road surfaces pose hazards for both experienced and inexperienced riders.

Walking has attributes that cannot be duplicated by other modes of travel. For very short trips, walking is the most efficient means of transportation. Nearly all communities have made provisions for pedestrian circulation. Sidewalks are a common infrastructure improvement that are almost entirely devoted to pedestrian movement. Kern County is ideally suited for pedestrian travel for the same reasons as bicycle travel; however, pedestrians face many of the same hazards as bicyclists.

GOODS MOVEMENT

Goods movement is provided by a combination of modes, including trucking, rail, aviation, and pipeline. A number of trucking carriers currently operate in Kern County. Both inter- and intra-county truck travel is accommodated by streets and highways in Kern County; however, inter-county truck travel represents a significant percentage of the total. Most of the inter-county truck traffic travels along I-5, Route 58, and Route 99. Because these facilities accommodate such a major portion of all truck movement, LOS along these facilities has been affected. Results of the current LOS analysis for all streets and highways along the Regionally Significant System and the CMP System are provided in Section 4.5.1.

Two major railroads, the Union Pacific (UP) and the Burlington Northern Santa Fe (BNSF) operate mainline operations through the County. In addition, the San Joaquin Valley Railroad operates a

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number of short-line operations. Evaluation of freight rail needs is developed by private rail companies; hence, an assessment of whether deficiencies exist cannot be made by Kern COG.

4.4.7 ENERGY

Current vehicle-related energy consumption in Kern County is indicated in Table 4-9. Automobiles account for approximately one-half of the total vehicles presently in use. One quarter of the total is light-duty gasoline trucks, while one-eighth is medium-duty diesel trucks. The final eighth of the total vehicle count is either medium-duty gasoline trucks, heavy-duty gasoline trucks or motorcycles. No buses were included in these calculations, since information on bus mileage was not available from the regional model. Energy consumption by existing commuter rail and aviation services was also excluded from these totals, since changes in commuter rail vehicle miles traveled (VMT) is not available and aviation services are not anticipated to be directly affected by the RTP.

Kern COG's regional model indicates that total VMT in Kern County for these vehicle types is 17,772,748 miles for 1994. This results in a total 1994 energy consumption of 1,429,332 gallons of gasoline and diesel fuel. The average mileage per gallon of fuel (MPG) is 12.434.

TABLE 4-9 1994 EXISTING ENERGY CONSUMPTION				
Vehicle Type	Percent of Total Vehicles	Vehicle Miles Traveled (VMT)	Miles Per Gallon (MPG)	Energy Consumption (gal)
Auto	50.57	8,987,679	22.492	399,594
Light-duty Truck	25.24	4,485,842	19.555	229,396
Medium-duty Truck	6.14	1,091,247	6.235	175,020
Heavy duty Truck	4.44	789,110	4.700	167,896
Medium-duty Diesel Truck	12.94	2,299,793	5.054	455,044
Motorcycle	0.67	119,077	50.000	2,382
TOTAL	100.00	17,772,748	12.434	1,429,332

Source: Percent of Vehicles and Total VMT- Kern COG; MPG for vehicle types - Caltrans.

Table 4-10 indicates the projected energy consumption within Kern County in 2001 without implementation of the proposed project. Total VMT is expected to rise by 3,896,613 trips to 21,669,361 trips in that year. This would be an increase of 21.92 percent over 1994 VMT levels, which represents an annual percentage increase of 3.13 percent.

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Because of a modest reduction in the proportion of automobiles in the total vehicle count and a consequent increase in other types of vehicles with lower MPG figures, the average MPG in the county in 2001 would drop slightly to 12.400 miles per gallon. Total energy consumption in Kern County would increase by 318,194 gallons to 1,747,526 gallons in 2001. This would be an increase of 22.26 percent over 1994 energy usage, which equates to an annual percentage increase of 3.18 percent.

TABLE 4-10 2001 ENERGY CONSUMPTION WITHOUT PROJECT				
Vehicle Type	Percent of Total Vehicles	Vehicle Miles Traveled	Miles Per Gallon	Energy Consumption (gal)
Auto	48.10	10,422,963	23.342	446,533
Light-duty Truck	26.49	5,740,214	20.337	282,255
Medium-Duty Truck	6.31	1,367,337	6.232	219,406
Heavy Duty Truck	4.70	1,018,460	4.748	214,503
Medium Duty Diesel Truck	13.71	2,970,869	5.106	581,839
Motorcycle	0.69	149,518	50.000	2,990
TOTAL	100.00	21,669,381	12.400	1,747,526

Source: Percent of Vehicles and Total VMT- Kern COG; MPG for vehicle types - Caltrans.

Table 4-11 notes the projected energy consumption within the County in 2014 without implementation of the proposed improvement projects. Total VMT is expected to increase by 14,125,251 trips to 31,897,999 trips between 1994 and 2014. This would be an increase of 79.48 percent over 1994 VMT levels, which represents an annual percentage increase of 3.97 percent. Between 2001 and 2014 total VMT would rise by 10,228,638 trips (47.20 percent). This equates to an annual percentage increase of 3.63 percent between 2001 and 2014.

The modest reduction in the proportion of automobiles in the total vehicle count indicated earlier would continue during this time period. Because of the resultant increase in other types of vehicles with lower energy efficiency, the average miles per gallon in the County in 2014 would decrease moderately to 12.032 mpg. Total energy consumption in Kern County would increase to 2,651,116 gallons in 2014. This would be an increase of 1,221,784 gallons (85.48 percent) over existing 1994 levels and 903,590 gallons (51.71 percent) over the levels anticipated in 2001. This represents an annual percentage increase of 4.27 percent between 1994 and 2014 and 3.98 percent between 2001 and 2014.

TABLE 4-11
2014 ENERGY CONSUMPTION WITHOUT PROJECT¹¹

Vehicle Type	Percent of Total Vehicles	Vehicle Miles Traveled	Miles Per Gallon	Energy Consumption (gal)
Auto	45.06	14,373,238	23.377	614,845
Light-duty Truck	27.57	8,794,278	20.507	428,843
Medium Duty Truck	6.43	2,051,041	6.232	329,114
Heavy Duty Truck	5.16	1,645,937	4.797	343,118
Medium Duty Diesel Truck	15.05	4,800,649	5.159	930,539
Motorcycle	0.73	232,856	50.000	4,857
TOTAL	100.00	31,897,999	12.032	2,651,116

Source: Percent of Vehicles and Total VMT- Kern COG; MPG for vehicle types - Caltrans.

4.4.8 CULTURAL RESOURCES

This section identifies significant archaeological and historic sites within Kern County and evaluates potential conflicts between these resources and the projects proposed by the RTP/CMP. Data collected for this evaluation is derived from the Kern County General Plan EIR, various project EIRs, and from the State Historic Preservation Office (SHPO).

Archaeological Resources

Kern County encompasses distinct geographic regions that have been evaluated for archaeological resources at varying levels of detail through individual research efforts. On a regional scale, however, the level of information is quite general. These geographic regions and known archaeological resources are discussed below and delineated on Figure 4-15:

Temblor Ranges: The Temblor Range is thought to have had low resource potential for ancient populations (Interior Chumash and Cuyama Chumash tribes) because of a lack of water and game. Early occupation of this area, therefore, is considered to be sporadic and unsettled, which is reflected in recorded archaeological records. Significant known sites

¹¹ Total VMT (vehicle miles traveled) has been calculated for 2014. The 2014 statistics for the percentage of total vehicles in each vehicle type and the miles per gallon achieved by type are not currently available. The 2010 figures, therefore, have been used in these instances. This is a conservative assumption, as fuel economy is expected to continue rising for all vehicle types during this time period.

within this territory, include pictographs and rock art sites, although larger sites of this type are found in San Luis Obispo County.

Coast Range: Unlike the Temblor Range, which has received little archaeological attention, resources associated with the Coast Range Castac Chumash have been more thoroughly investigated. The territory of the Castac Chumash includes the southwestern portion of Kern County, consisting of the upper foothills of the Coast Range near the Ventura County line between Maricopa and Gorman. Significant studies associated with the Castac Chumash included the excavation of a Chumash village on the shore of Castac Lake.

Tehachapi Mountains: Known archaeological resources in the Tehachapi Mountains region are few because of the small number of surveys conducted. Surveys to date have been made primarily in conjunction with environmental impact studies for specific development proposals.

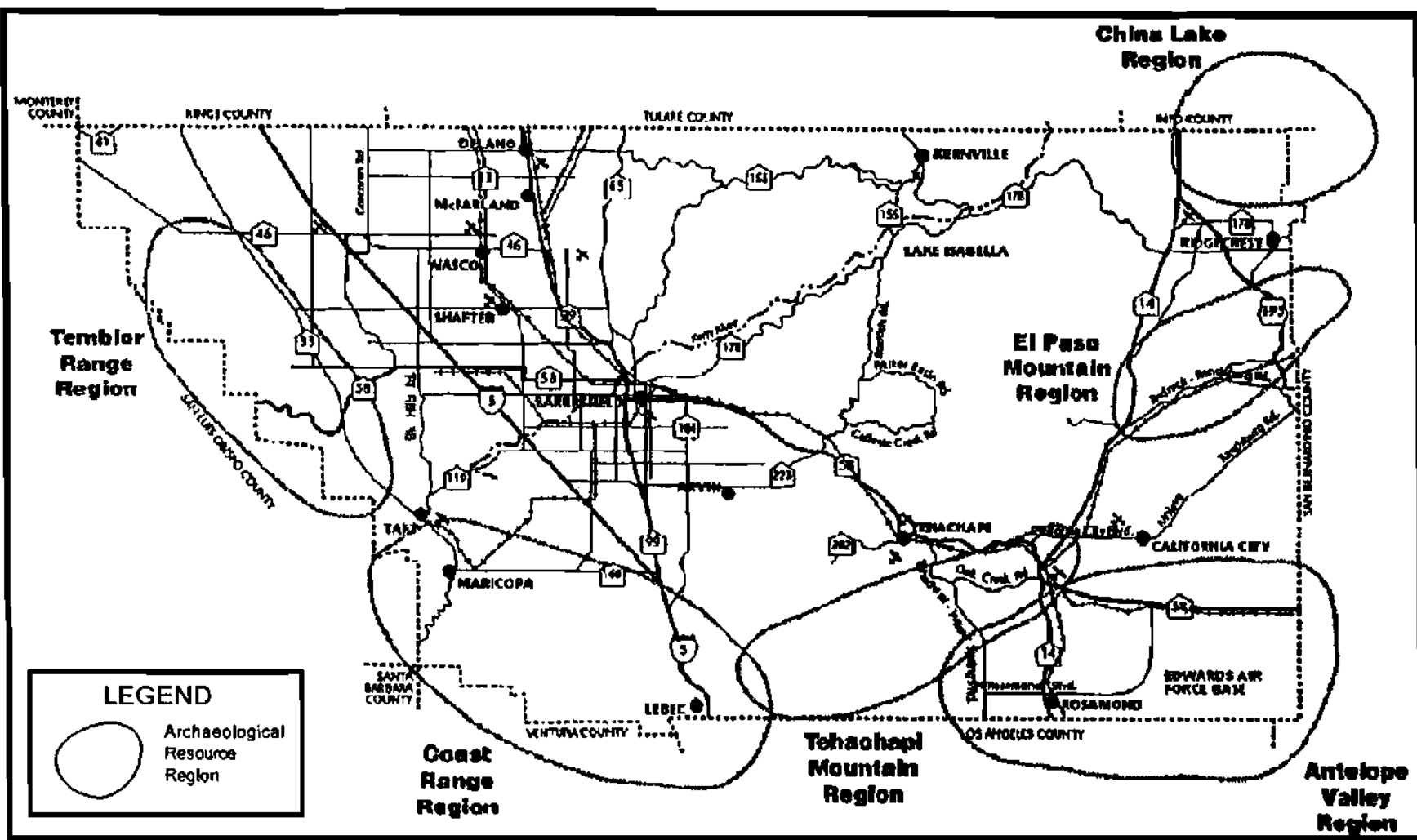
El Paso Mountains: Located in eastern Kern County near the San Bernardino County line, the EL Paso Mountains are considered to have significant research potential because of prior finds in the 1930s of petroglyphs, pottery, stone tools, obsidian chips, and water jars. To date, however, very few investigations have taken place within this region.

Antelope Valley and Edwards Air Force Base: This area of southeastern Kern County, in which the Rosamond Hills are located, has been studied more thoroughly than the other defined regions. Sites in the Rosamond Hills have provided evidence of semi-permanent Native American locations (W.S. Glennan, 1971), which included the presence of petroglyphs, bedrock mortar, tools, knives, and weapon points dating back to between 2000 and 4000 B.C. Archaeological studies at Edwards Air Force Base (Sutton, 1976-79) have resulted in the recordation of a number of sites and the documentation on the region's prehistory.

China Lake Basin: China Lake, now a dry lake bed in the northeast corner of Kern County and the site of the China Lake Naval Air Weapons Station, once contained a substantial amount of water and lush vegetation. As of 1981, 15 areas containing artifacts had been recorded near the shores of the lake bed. These artifacts range from 2,000 to 12,000 years old.

Native American Issues

Places considered sacred to the Native American community have been recorded within the desert areas of Kern County (Laidlow 1979), although a comprehensive resource study has not been conducted for the majority of the County. The Native American Heritage Commission (NAHC) does offer guidelines to archaeologists for obtaining information concerning cultural resources of Native American origin. A primary concern of the Native American community is the disturbance of hidden or unmarked sites, such as grave sites, that may not show any surface evidence and may be known only to members of the tribe.



<h2 style="margin: 0;">AREAS OF KNOWN ARCHEOLOGICAL RESOURCES</h2>	<p style="text-align: center; margin: 0;">LEGEND</p> <div style="display: flex; align-items: center; margin-bottom: 5px;"> U.S. Highway </div> <div style="display: flex; align-items: center; margin-bottom: 5px;"> Interstate </div> <div style="display: flex; align-items: center;"> State Highway </div>	<p style="margin: 5px 0;">Kern Council of Governments</p>	<p style="text-align: right; margin: 0;">FIGURE 4-15</p> <p style="text-align: right; margin: 0;">JULY 1998</p> <div style="display: flex; align-items: center; justify-content: center; margin-top: 10px;"> <div style="text-align: center; margin-right: 20px;"> <p>N</p> </div> <div style="text-align: center;"> <p>MILES</p> </div> </div>
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Native American burial grounds are of particular concern and the most emotional of archaeological resource issues. Such sites are often on private land, and project development is often approved before the local Native American community is consulted. NAHC has issued recommendations for the documentation of Native American heritage resources in order to assist agencies and individuals in complying with current environmental law. NAHC urges direct consultation with the local Native American community in the course of research conducted for the purpose of site-specific environmental documentation.

Historic Resources

Kern County once consisted of portions of Los Angeles and Tulare Counties. In 1866, County boundaries were redefined to form Kern County, with the town of Havilah designated as the County Seat. The California Gold Rush declined in the late 1860s, and many of the prospectors relocated to San Joaquin Valley to pursue agricultural work, particularly in the growing town of Bakersfield. Kern River was harnessed to provide a series of canals to irrigate crops and orchards on land that was previously swamp or considered non-productive desert. Most early farms consisted of family-worked operations of approximately 20 acres, that provided subsistence; larger farms produced alfalfa, cotton, wheat, and citrus fruit for profit.

Kern County's population continued to grow in response to economic opportunities in the area. This growth was accelerated by the extension of the railroad to Bakersfield in 1873. In 1875, the County Seat was moved from Havilah to Bakersfield, reflecting the growing importance of the town. In 1899, oil was discovered adjacent to the Kern River near Bakersfield. With this discovery and the progress being made by the farming industry, communities within Kern County were growing rapidly by the turn of the century. Agriculture and oil, two essential resources for an industrializing America, have been responsible for the relatively stable economy of Kern County for over a century.

Historic Preservation

Historic sites are identified and protected by various state and federal agencies. Sites of potential statewide significance are reviewed by the California Historical Resources Commission, which is funded through SHPO. A complete listing of all existing and potential historic objects, sites, buildings, and districts is available from that office and is on file with Kern County. The current listing was compiled in May 1994.

4.4.9 OTHER ENVIRONMENTAL ISSUES

Appendix G of the California Environmental Quality Act (CEQA) guidelines state that "a project will have a significant effect on the environment if it will have a "substantial, demonstrable negative effect." The following environmental impact categories are not expected to be significantly impacted by the RTP. Because of the regional nature of the Plan, it is difficult to fully assess the specific environmental effects that could be potentially caused by projects in the Plan.

LIGHT AND GLARE

Light and glare that could be caused by improvement projects identified in the RTP, can be determined by examining anticipated project effects from a number of vantage points, including:

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construction-related visual disruption, observer position, and changes to the present visual character of the area effected.

The RTP identifies several major transportation-related improvement projects that will require extended construction schedules and that will provide transportation improvements along new alignments where previous transportation uses did not exist. These improvements could impact existing light and glare conditions in Kern County.

Currently, Kern County is composed of one significant urban area (the Bakersfield Metropolitan Area), many smaller cities and communities, and vast rural areas that are either located in the desert region of the County, are mountainous, or are located in the San Joaquin Valley and primarily used for agricultural purposes. Each of these areas has its own aesthetic character and values. For instance, in the metropolitan areas, significant light and glare during evening hours is experienced. In smaller cities and communities and in rural areas of the County, where urban development is less dense, light and glare impacts are not as frequent.

RISKS OF UPSET

"Risks of upset" refers to a condition that because of its quantity, concentration, or physical chemical, or infectious characteristics may: (1) cause, or significantly contribute to an increase in mortality or an increase in serious irreversible, or incapacitating irreversible illness; or (2) pose a substantial potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed. Toxic substances include chemical, biological, flammable, explosive, and radioactive substances.

According to the State Hazardous Waste and Substances Site List, a number of hazardous waste sites are located in Kern County. Further, a limited number of toxic spills have occurred along the existing regional transportation system, including major highways and rail lines. These spills have resulted from traffic accidents and derailments. The Kern County Office of Emergency Services, the California Highway Patrol, and other affected agencies are responsible for responding to these emergencies and implementing appropriate steps to lessen further impacts and hazards to human health and the environment.

The potential to locate regional transportation improvements along or near hazardous waste sites exists. In addition, it is probable that future toxic spills resulting from traffic accidents or derailments will occur because of increased traffic and congestion levels along the region's transportation system.

PUBLIC SERVICES

Currently, public services (water and sewer, police, fire, and ambulance, street and highway maintenance, and other public services) are provided by various federal, State and local agencies, and private companies in Kern County.

Fire services in urban areas of the County are provided by local agency fire departments. The Kern County Fire Department, various fire districts and/or the U.S. Forest Service and the State Department of Forestry provide fire suppression services in rural areas of the County and/or in federal and State park, preserve and recreation areas.

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Police protection in urban areas is provided by local jurisdictions unless the services are contracted to other law enforcement agencies. The County Sheriff's Department provides primary law enforcement protection in rural areas of the County. The California Highway Patrol provides law enforcement services throughout the County along the State highway system and along other streets and roads when under contract with local agencies.

Other emergency services, such as ambulance and paramedics services, are provided primarily by local agencies, public service districts and/or various private companies. Services most affected by this Plan, such as street and highway maintenance, are provided by local Public Works Departments. In the case of federal and State highways, Caltrans is responsible for maintenance activities.

Public services such as libraries, parks, etc. are not expected to be significantly impacted by the goals, objectives, and policies, improvement projects, and/or programs identified in the RTP. To the contrary, these services are expected to benefit from the Plan.

AESTHETICS

The aesthetic quality of the Kern County regional transportation system is comparable to other transportation systems in the San Joaquin Valley. The County is relatively flat within the valley and desert regions. The valley areas are met in the south, east, and west by foothill and mountain ranges. The aesthetic quality of the County has been affected by various forms of transportation for some time. As a result, the existing and planned multimodal transportation system is not considered to have a significant impact on the aesthetic quality in Kern County. However, current aesthetic values can be maintained as the planned regional transportation system is implemented.

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SECTION 4.5 EXISTING SYSTEMS**4.5.1 HIGHWAYS****4.5.1.1 DESCRIPTION**

Kern County's highway and road system provides transportation connectivity within an 8,073-square-mile region. Because of residents' heavy reliance on the highway network and the geographical expanse of the region, maintenance and expansion of these facilities are critical to the well being of the region's economy. The existing network consists of approximately 6,700 miles of public roads (Figure 4-16). State highways account for 870 miles, while 87 miles comprise the interstate highway system within the region. With the enactment of the federal Intermodal Surface Transportation Efficiency Act (ISTEA), the National Highway System (NHS) and the Surface Transportation Program (STP) will redefine the national highway network. Routes I-5, 14, 46, 58 (from I-5 to San Bernardino County line), 65, 99, 395 and a portion of 178 (in eastern Kern County) make up the Kern County NHS routes. All other state highways and local roadways are part of the STP funding system.

Interstate 5 (NHS)

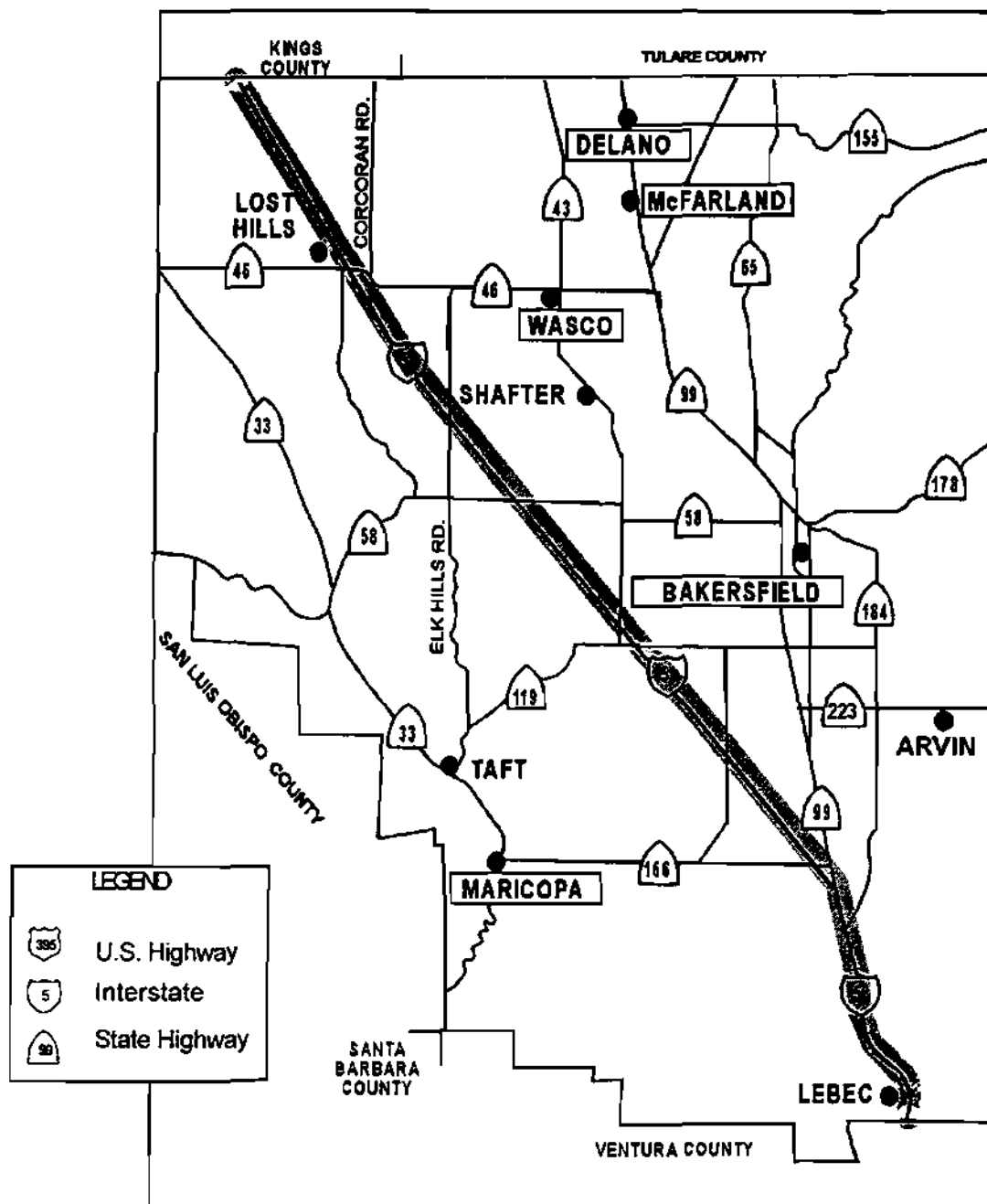
Interstate 5 extends 87 miles north/south through the rural and fairly undeveloped west side of the San Joaquin Valley and is the only interstate facility in Kern County (Figure 4-17). Traffic on I-5 consists primarily of interstate movement; this includes the bulk of surface moved goods between northern and southern California. Diesel trucks account for 20-25 percent of the annual average daily traffic (AADT) and the route is designated as part of the national network for larger trucks under the federal Surface Transportation Assistance Act (STAA). Only a small number of intraregional auto trips occur on this facility because of the rural nature of the surrounding area.

Route 14 (NHS)

Route 14 is located in the eastern desert region of Kern County, and is approximately 65 miles in length within the County (Figure 4-18). This highway serves as a major tourist, truck, and interstate traffic route. Traffic volumes from the Mojave area south to the County line have become more commuter oriented because of continued population growth in Antelope Valley. Route 14 also provides the main access to two military installations and is, therefore, vital to national security. Trucks account for approximately 9 to 30 percent of the AADT, and the route is designated as part of the national network for larger trucks under STAA. During peak recreational seasons, an estimated 17 to 20 percent of the highway volume may also consist of recreational vehicles. Both trucks and recreational vehicles cause considerably more wear to the pavement than a standard passenger vehicle and, therefore, require higher maintenance expenditures than would otherwise be expected.

Route 33 (STP)

Route 33 extends along the foothills of western Kern County for approximately 74 miles. It serves the cities of Taft and Maricopa, provides connectivity to Route 46 at Blackwell's Corner and access to the the Frazier Park area within southwestern Kern County (Figure 4-19). Traffic volume consists mainly of agriculture and oil related vehicles, although some commuter traffic occurs between cities. Trucks account for as much as 32 percent of the AADT in some segments. The route is designated as a State Highway Terminal Access Route (SHTAR), serving as an alternate to Interstate 5.



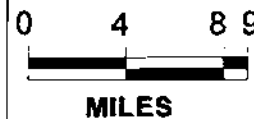
INTERSTATE 5 REGIONAL HIGHWAY LIMITS

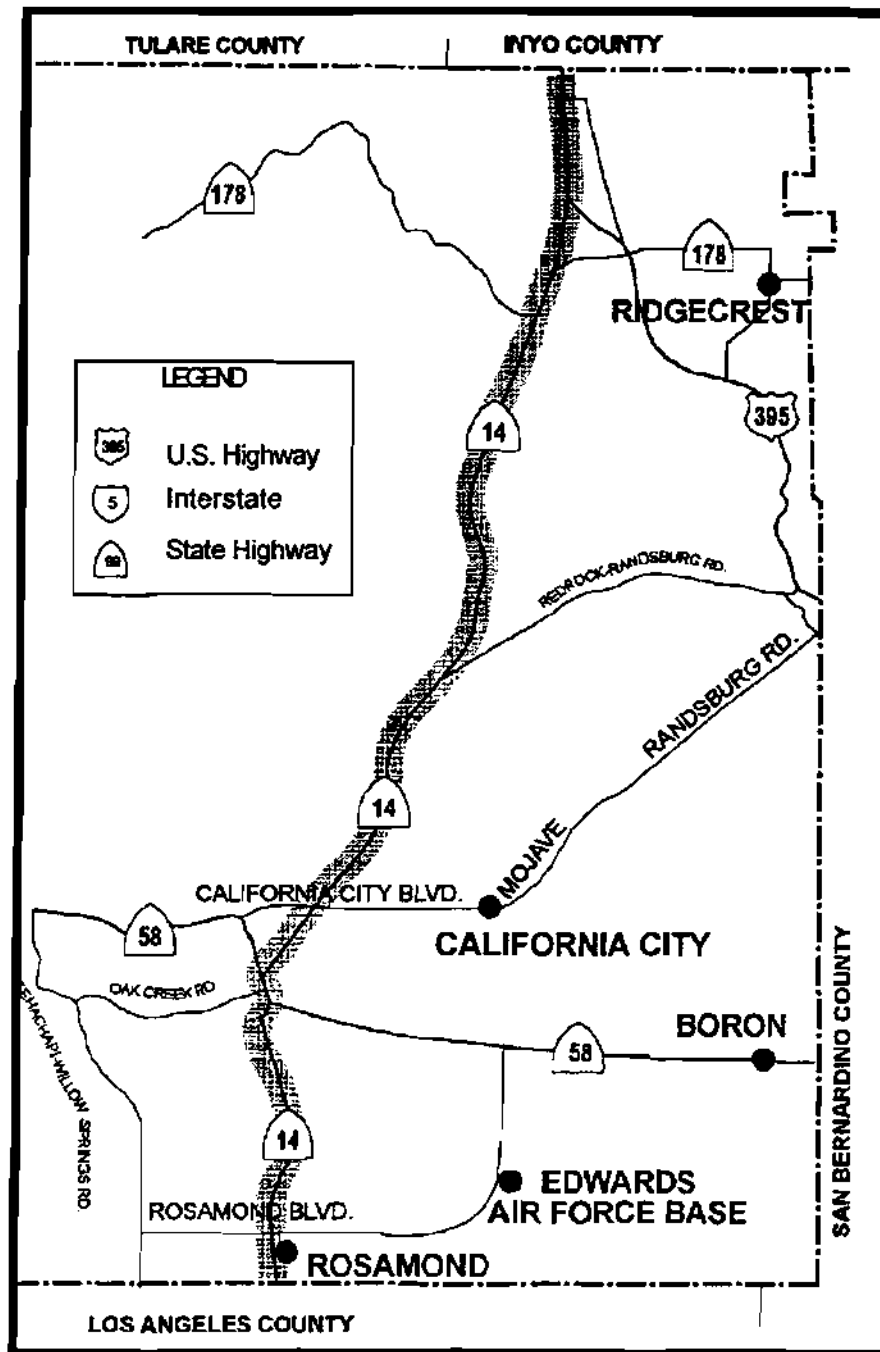


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FIGURE 4-17

JULY 1998





HIGHWAY LIMITS

ROUTE 14 REGIONAL HIGHWAY LIMITS

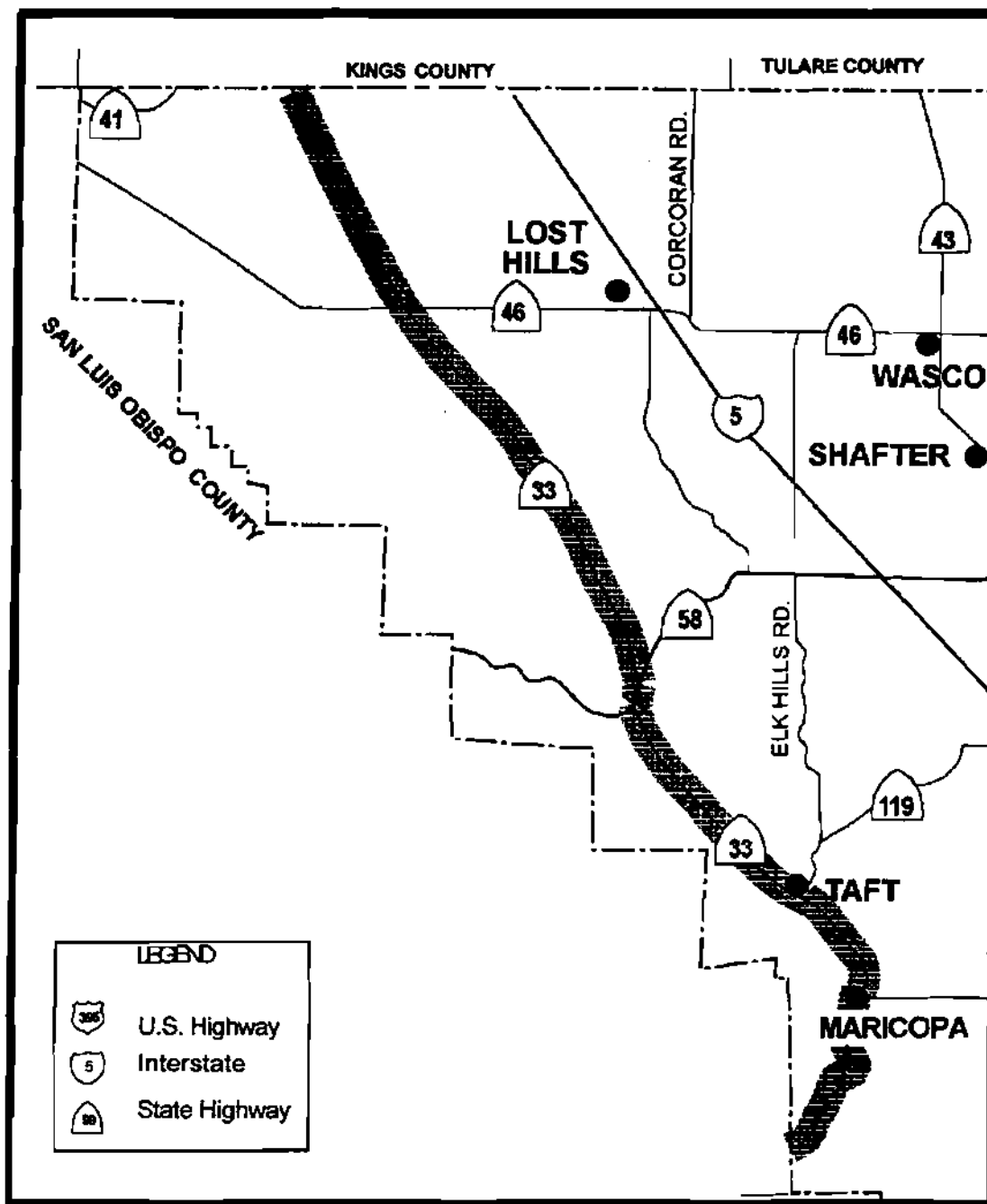


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FIGURE 4-18

JULY 1998





STATE ROUTE 33 REGIONAL HIGHWAY LIMITS



**Kern Council
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FIGURE 4-19

JULY 1998



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Route 41 (STP)

Route 41 cuts through the extreme northwest corner of Kern County for approximately five miles (Figure 4-20). Traffic volume along the route is typically recreational in nature with higher volumes on weekends, holidays and during summer months. The highway also serves as an important shipping route for agricultural products. The route is designated as a SHTAR. This route does not impact traffic in the region since it has no access to the regional transportation system. However, the route does count against the County's minimum for state funding.

Route 43 (STP)

Located west of Route 99, Route 43 begins at Route 119 (Taft Highway) and continues in a northerly direction for approximately 74 miles. The highway serves the cities of Wasco and Shafter while providing connectivity to westerly portions of the metropolitan Bakersfield area (Figure 4-21). Traffic along Route 43 is typically agriculture-related, but also provides for commuter traffic between Wasco, Shafter and the greater Bakersfield community. Trucks account for approximately 24 percent of the traffic volume and the route is designated as a SHTAR.

Route 46 (NHS)

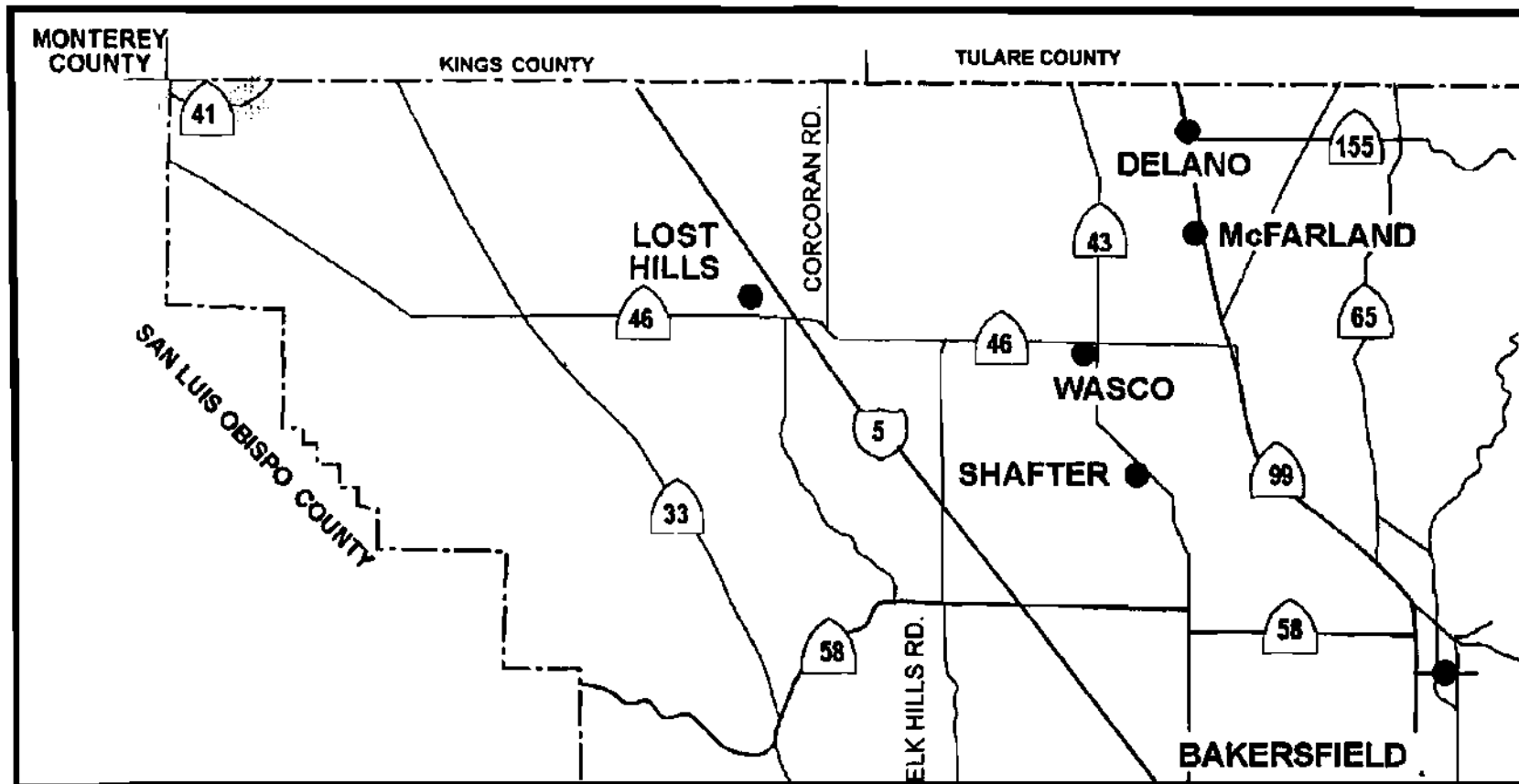
Route 46 runs westerly approximately 58 miles from Route 99 to the San Luis Obispo County line toward Routes 1 and 101 (Figure 4-22). The route serves the City of Wasco and other small communities in western Kern County. Travel along Route 46 is mainly interregional as it provides a major link between the San Joaquin Valley and the central coast. The highway is also a major route for agricultural products leaving the San Joaquin Valley, producing truck volumes between 20 and 37 percent. Seasonally, this route has a high recreational traffic volume. The route is designated as a SHTAR.

Route 58 (NHS from I-5 east to San Bernardino County line; STP from San Luis Obispo County line to I-5)

Route 58 extends for approximately 144 miles from San Luis Obispo County line in the west portion of Kern to the eastern county line (San Bernardino) in the Mojave Desert. The highway provides a crucial link for interregional and interstate traffic as well as connectivity between I-5 and Route 99 within the San Joaquin Valley. Route 58 also connects Route 99 to Interstates 15 and 40 allowing easterly movement beyond Kern County and the State (Figure 4-23). Route 58 is a major shipping corridor for agricultural goods and other products in and out of central and northern California. The route also serves the Bakersfield metropolitan area and the City of Tehachapi, as well as other smaller communities, and is used as a commuter link between Bakersfield and Tehachapi. Trucks account for 25-33 percent of all the traffic. The route is designated as a SHTAR, and is part of the national network for trucks, under STAA, between Route 99 and the San Bernardino County line.

Route 65 (NHS)




Route 65 extends approximately 25 miles in a northerly direction from Route 99 in northern Bakersfield continuing across the County line just east of Delano (Figure 4-24). The area surrounding the route is predominantly rural. The route mainly serves as a commuter route for the small cities and towns east of Route 99. In addition, the route serves agricultural and oil related businesses in the area. The average daily traffic



 HIGHWAY LIMITS

ROUTE 41 REGIONAL HIGHWAY LIMITS

LEGEND

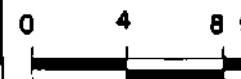
-  U.S. Highway
-  Interstate
-  State Highway



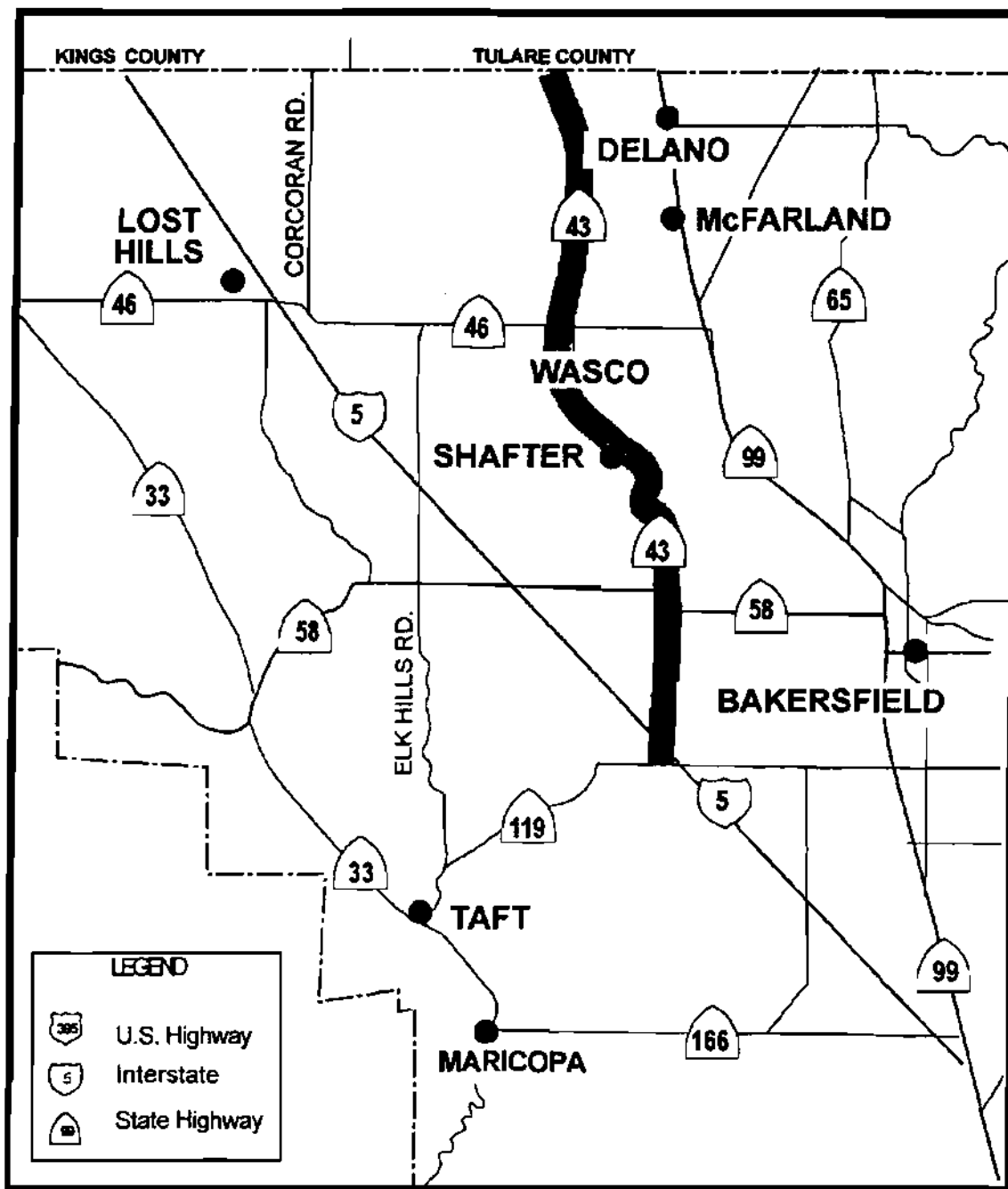
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FIGURE 4-20

JULY 1998



MILES



HIGHWAY LIMITS

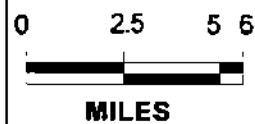
ROUTE 43 REGIONAL HIGHWAY LIMITS

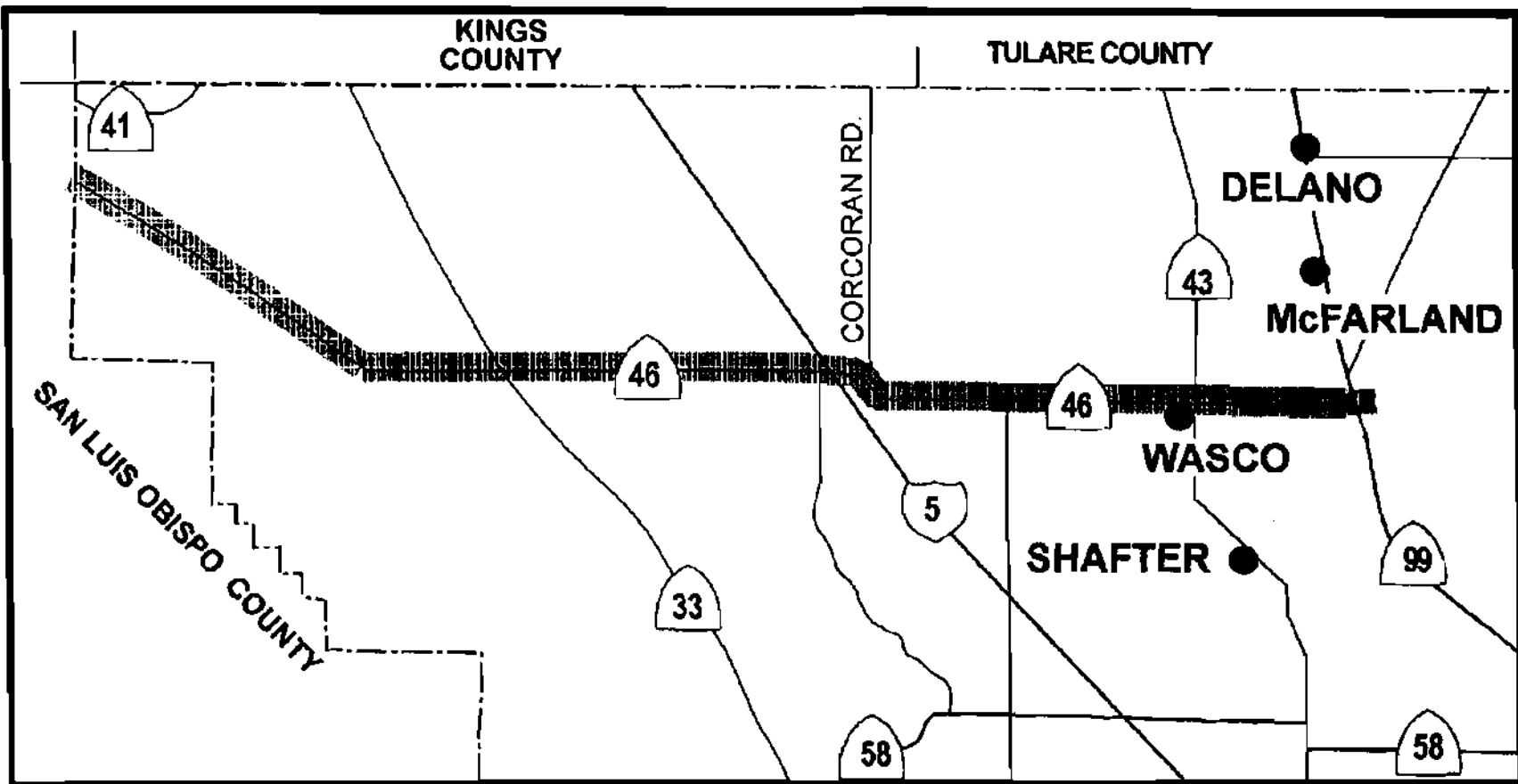


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FIGURE 4-21

JULY 1998








 **HIGHWAY LIMITS**

ROUTE 46 REGIONAL HIGHWAY LIMITS

LEGEND

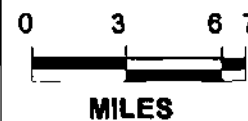
-  U.S. Highway
-  Interstate
-  State Highway

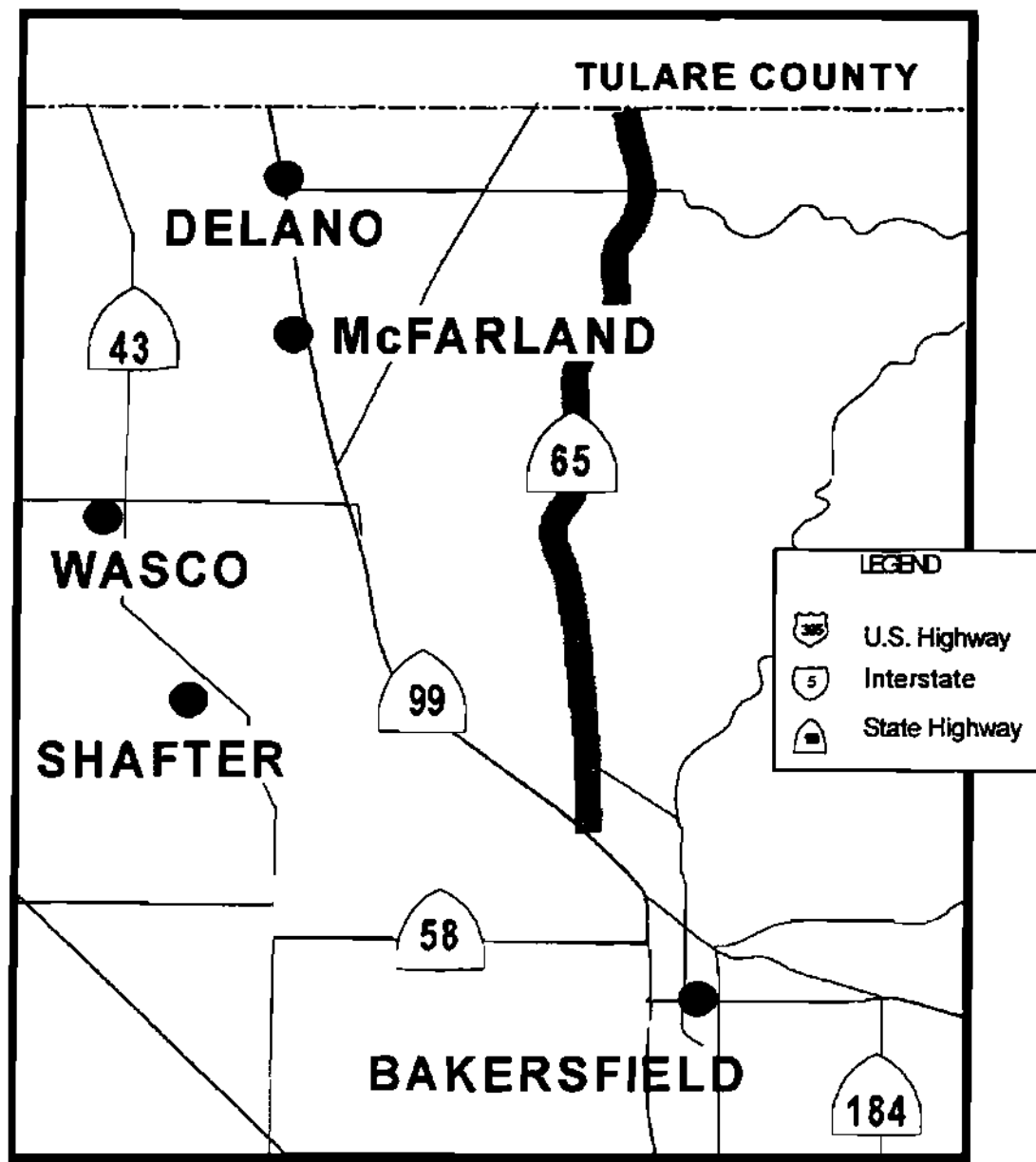


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FIGURE 4-22

JULY 1998





 **HIGHWAY LIMITS**

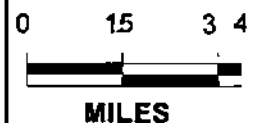
ROUTE 65 REGIONAL HIGHWAY LIMITS



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FIGURE 4-24

JULY 1998



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includes 20 to 25 percent truck traffic and is designated as a SHTAR. Route 65 also provides access to the national forests and recreational areas of the Sierra Nevadas.

Route 99 (NHS)

Route 99 is a major north/south State highway running the length of the San Joaquin Valley. The route crosses through Kern County for approximately 58 miles and serves the cities of Delano, McFarland, and metropolitan Bakersfield, as well as other smaller communities (Figure 4-25). Traffic is typically statewide or interstate, with commuter traffic occurring through metro Bakersfield and between the smaller cities. Traffic counts are generally very high along the route, particularly through metropolitan Bakersfield where average daily counts are as high as 100,000 vehicles per day. Trucks account for as much as 30-37 percent of the average daily traffic, and the route is designated as part of the national network for larger trucks. Although Route 99 is not an interstate freeway, it carries higher volumes than Interstate 5 because of urbanized areas abutting the route.

Route 119 (STP)

Route 119 extends approximately 31 miles from Route 33 in Taft to Route 99 in southern Bakersfield. The route provides connectivity between Taft and Bakersfield as well as other smaller communities. Travel along the route is largely intra-regional, influenced by the heavy agricultural and oil related businesses in the area. The route also serves as a commuter link between Taft and Bakersfield and as a connection between Routes 33 and 99 (Figure 4-26). The Bakersfield 2010 General Plan proposes a freeway along this general corridor and Kern COG has identified the corridor for alignment studies; however, this facility improvement is proposed beyond the 20-year timeframe of this document. Trucks account for up to 20 percent of the average daily traffic and the route is designated as a SHTAR for larger trucks.

Route 155 (STP)

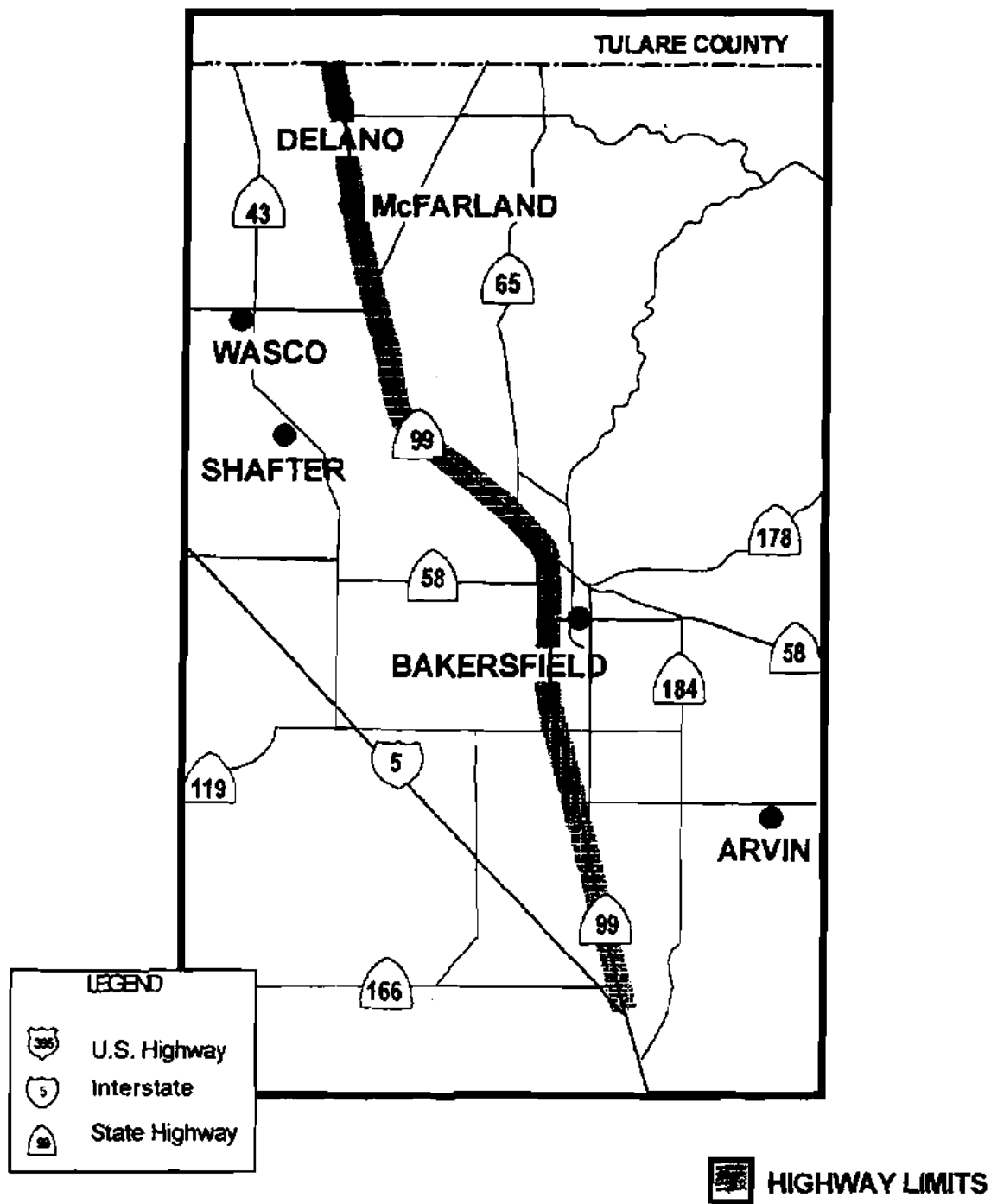
Route 155 begins at Route 99 in Delano and extends to Route 178 near Lake Isabella in northeastern Kern County. Route 155 serves Delano and the mountain communities of Woody, Glennville, Alta Sierra, Wofford Heights and Lake Isabella (Figure 4-27). Route 155 is an important access route to the small communities and ranches in northeast Kern County and offers an alternative to Route 178 when the Kern River Canyon is closed by inclement weather and occasional rockslides. It also provides access to popular recreational areas surrounding Lake Isabella.

Route 166 (STP)

Route 166 extends through the County for approximately 25 miles between Route 33 in Maricopa and Route 99 near Mettler. This corridor serves the agricultural and oil related industries of the area. The route connects traffic from Route 33 to Interstate 5 and Route 99, and serves as alternative access to the central coast region, especially during the winter months (Figure 4-28). Trucks account for as much as 25 percent of the traffic along the route and it is designated as a SHTAR for larger trucks.

Route 178 (STP except for short portion in eastern Kern County from Hwy 14 to China Lake NAWS, which is NHS)

State Route 178 extends through the County for approximately 57 miles and serves the Ridgecrest area, the Bakersfield metropolitan area, Kern River Valley, and other smaller communities (Figure 4-29).



ROUTE 99 REGIONAL HIGHWAY LIMITS



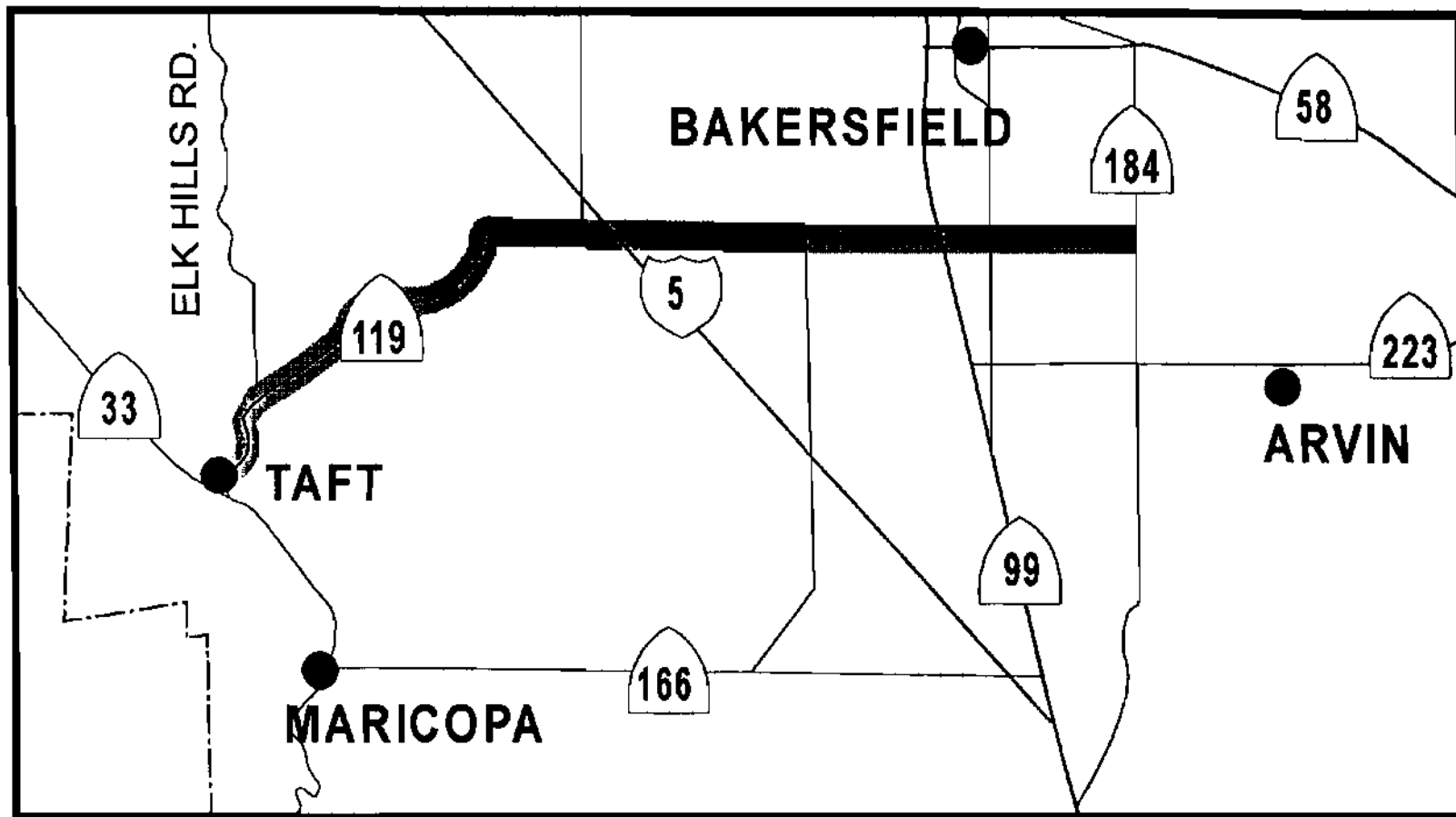
**Kern Council
of Governments**

FIGURE 4-25

JULY 1998






**0 2.5 5 6
MILES**



 HIGHWAY LIMITS

ROUTE 119 REGIONAL HIGHWAY LIMITS

LEGEND

-  U.S. Highway
-  Interstate
-  State Highway

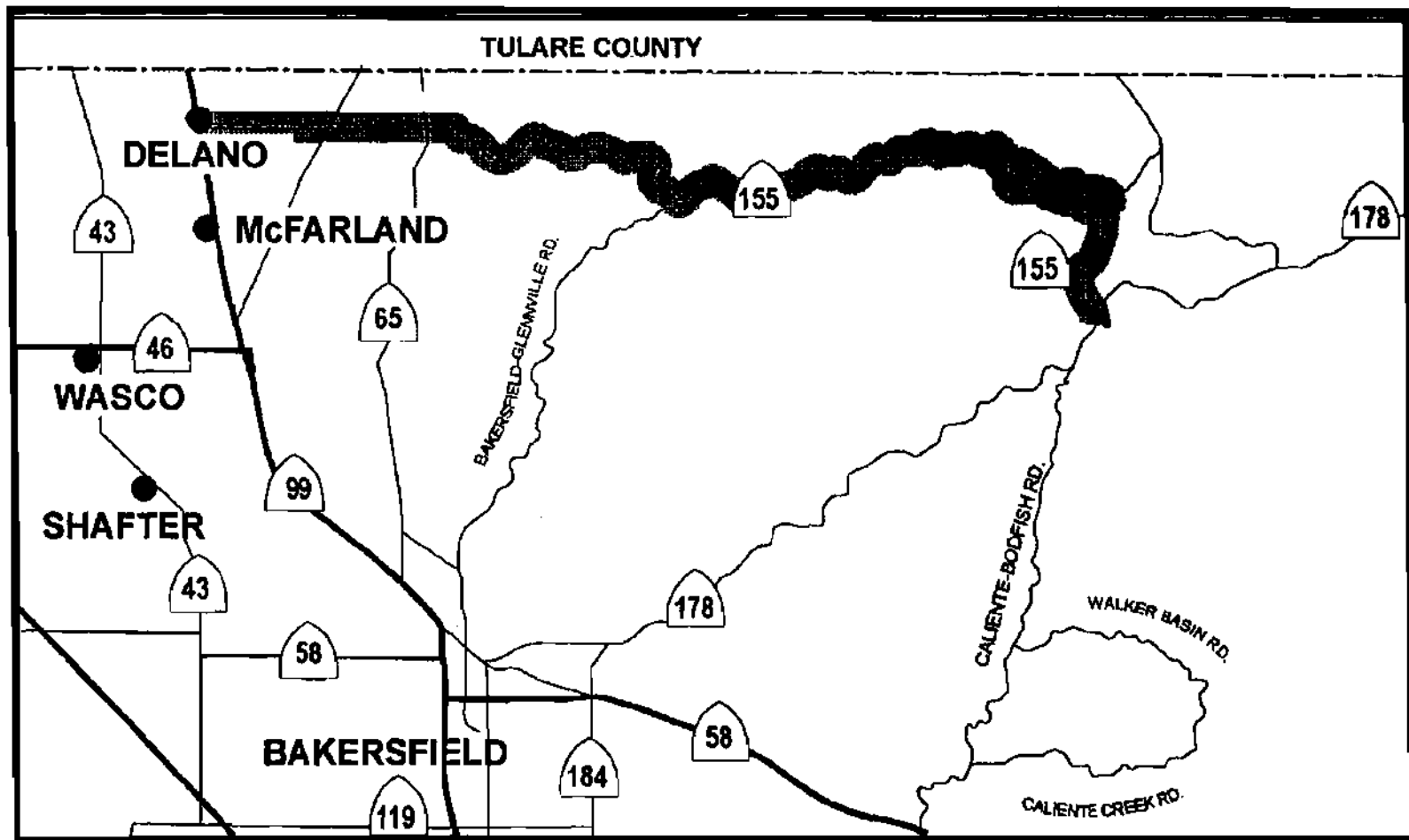


Kern Council
of Governments

FIGURE 4-26

JULY 1998





HIGHWAY LIMITS

ROUTE 155 REGIONAL HIGHWAY LIMITS

LEGEND

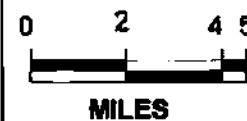
- U.S. Highway
- Interstate
- State Highway

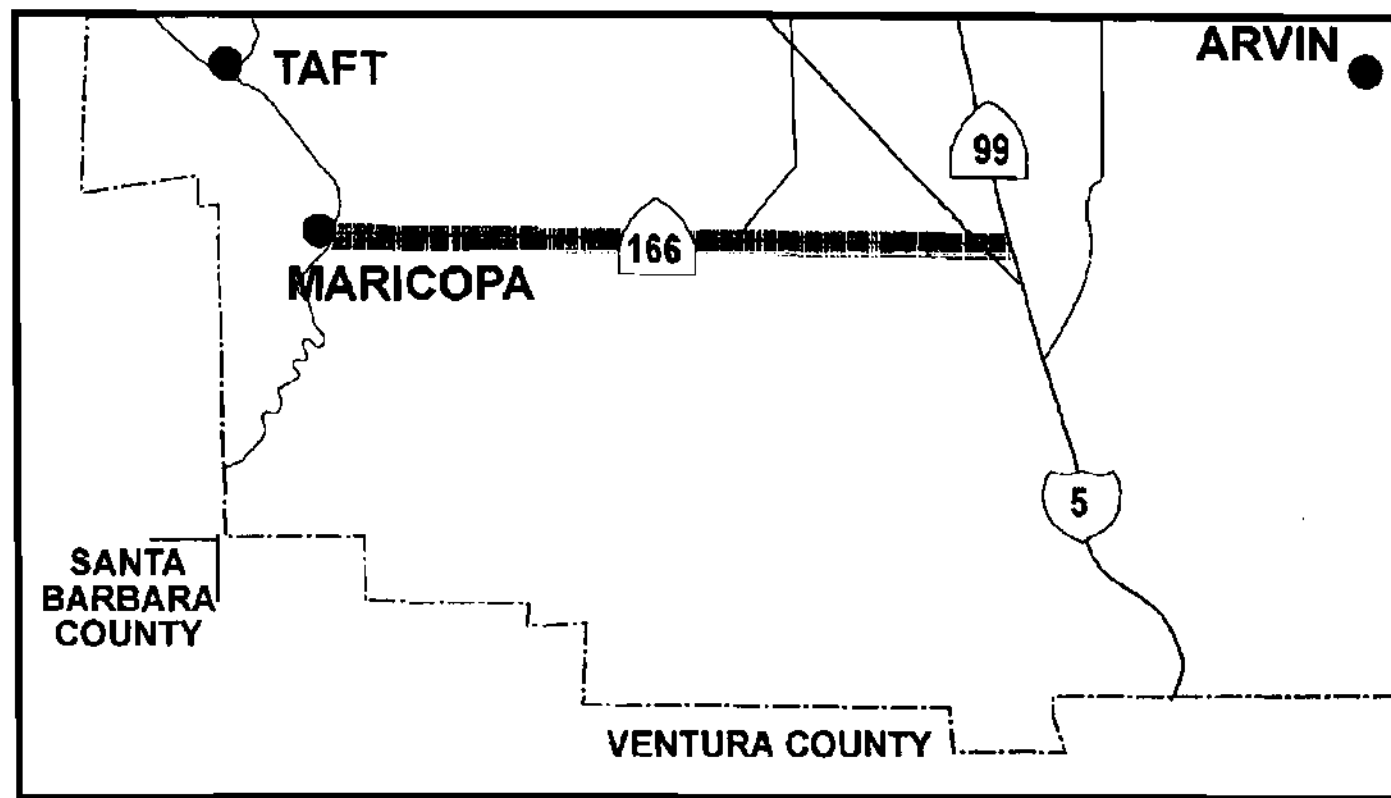


**Kern Council
of Governments**

FIGURE 4-27

JULY 1998





DEFICIENCIES IN LEVEL OF SERVICE ARE
NOT ANTICIPATED - MAINTENANCE ONLY

NO CAPACITY INCREASING CAPITAL IMPROVEMENT
PROJECTS PROPOSED FOR THIS ROUTE

ROUTE 166 PROPOSED CAPITAL IMPROVEMENTS & REGIONAL HIGHWAY DEFICIENCIES

LEGEND



U.S. Highway



Interstate



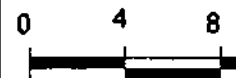
State Highway



Kern Council
of Governments

FIGURE 4-28

JULY 1998



MILES

1998 REGIONAL TRANSPORTATION PLAN

Travel along this route consists mainly of tourism, especially during weekends, holidays, and the summer. Within metropolitan Bakersfield, the traffic is commuter oriented with the route serving as the major link between the northeast area and downtown. Approximately 500 weekday commuters use Kern River Canyon between Lake Isabella and metropolitan Bakersfield. The route also provides access to the China Lake Naval Air Weapons Station. Trucks account for around 22 percent of the average daily traffic. The portion of Route 178 between Route 99 and the mouth of the Kern River Canyon is designated as a SHTAR for larger trucks.

Route 184 (STP)

Route 184 extends approximately 12 miles between Route 223 and Route 178 providing access between Lamont and the Bakersfield metropolitan area (Figure 4-30). Traffic along this route is primarily agriculture related with growing commuter traffic between Bakersfield and the Lamont/Arvin areas. The Metro Bakersfield 2010 General Plan proposes a transportation corridor through this easterly section. A study for the east beltway has not occurred to date and construction of such a corridor is beyond the 20-year scope of this document. Truck traffic accounts for up to 20 percent of the average daily traffic along the route and the route is designated as a SHTAR for larger trucks.

Route 202 (STP)

Route 202 is a road of local significance, serving as the principal access between substantial residential populations in Bear Valley Springs, Stallion Springs, and Golden Hills, and the City of Tehachapi. Route 202 also links the California Correctional Institution (CCI) with Route 58 and is currently in process of being realigned as reflected on Figure 4-31. This route serves daily commuter traffic to Edwards AFB, Lancaster/Palmdale, Bakersfield, as well as that generated by employees of CCI.

Route 204 (STP)

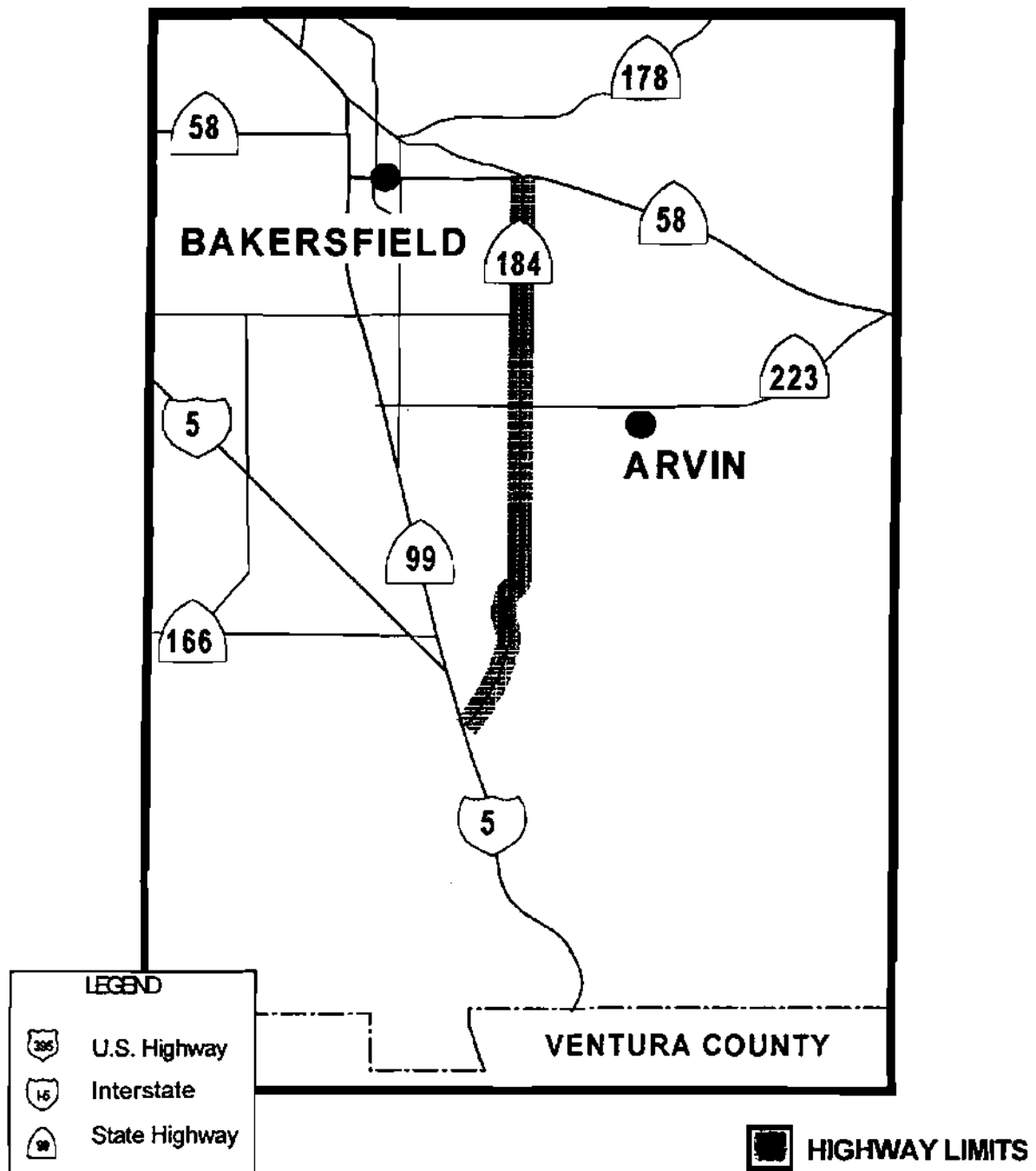
Route 204, also referred to as Golden State Avenue, consists of a seven-mile urban highway situated entirely in the Bakersfield metropolitan area, between Route 58 and Route 99. This corridor connects Routes 99 and 58 with downtown, and traffic along the route is primarily commuter oriented (Figure 4-32). Traffic volumes are generally high, and truck traffic constitutes approximately nine percent of the average daily traffic. The route is designated as part of the national network for large trucks.

Route 223 (STP)

Route 223 is a 30-mile highway that begins at I-5, south of Bakersfield, and ends at Route 58 east of Arvin (Figure 4-33). Route 223 typically serves intra-regional commuter and agricultural traffic. The ratio of trucks in the average daily traffic is significant, as high as 30 percent of the average daily traffic near the interchange of Route 99.

Route 395 (NHS)

This route is part of the Highway 14/395 corridor. It is the major transportation corridor connecting the eastern Sierra region and west-central Nevada with southern California (Figure 4-34). Much of the traffic is recreation-oriented, as skiers, hikers and sightseers travel to the Mammoth Lakes Recreation Area and the Tioga Pass into Yosemite.

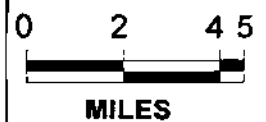


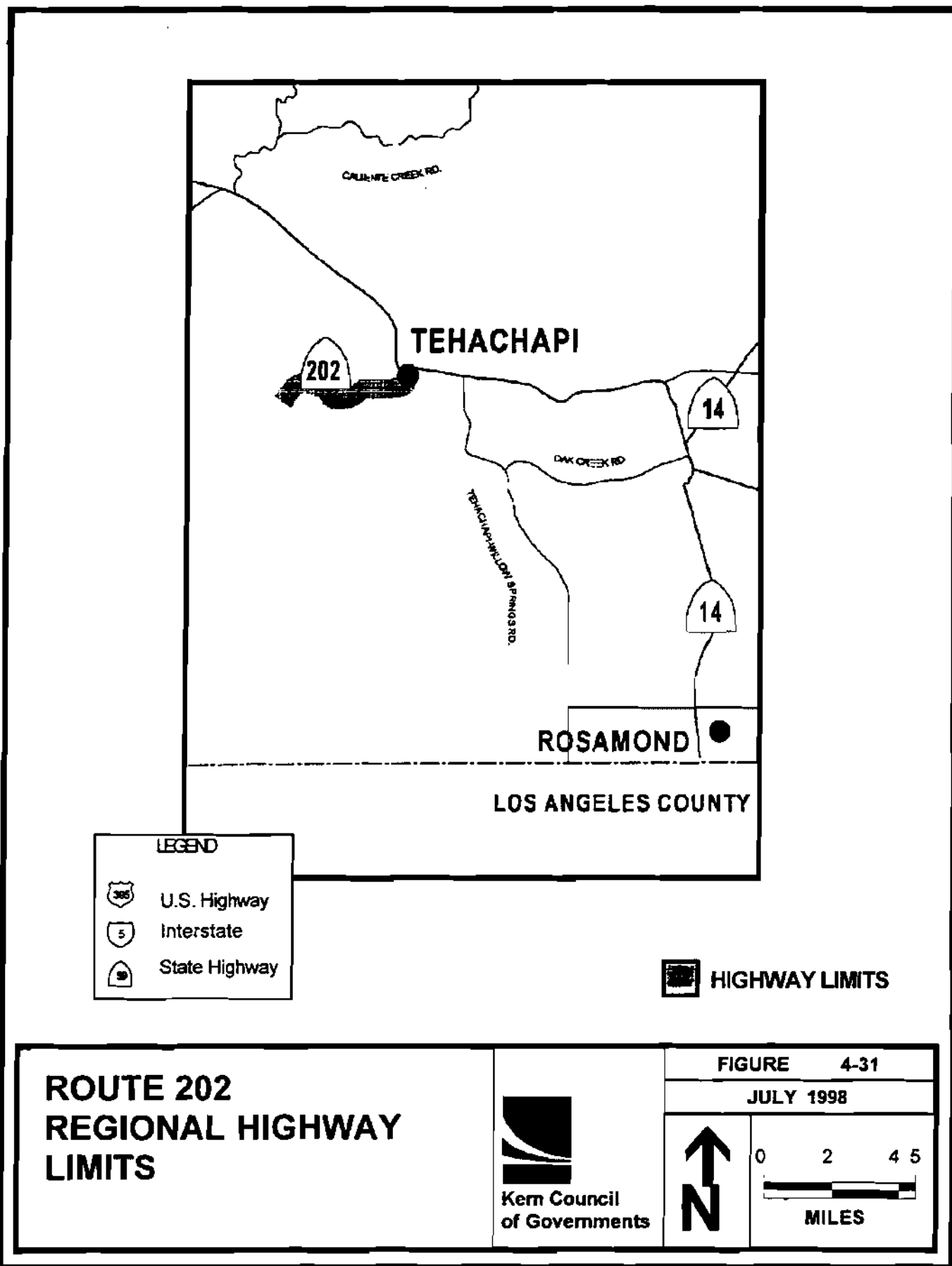
ROUTE 184 REGIONAL HIGHWAY LIMITS

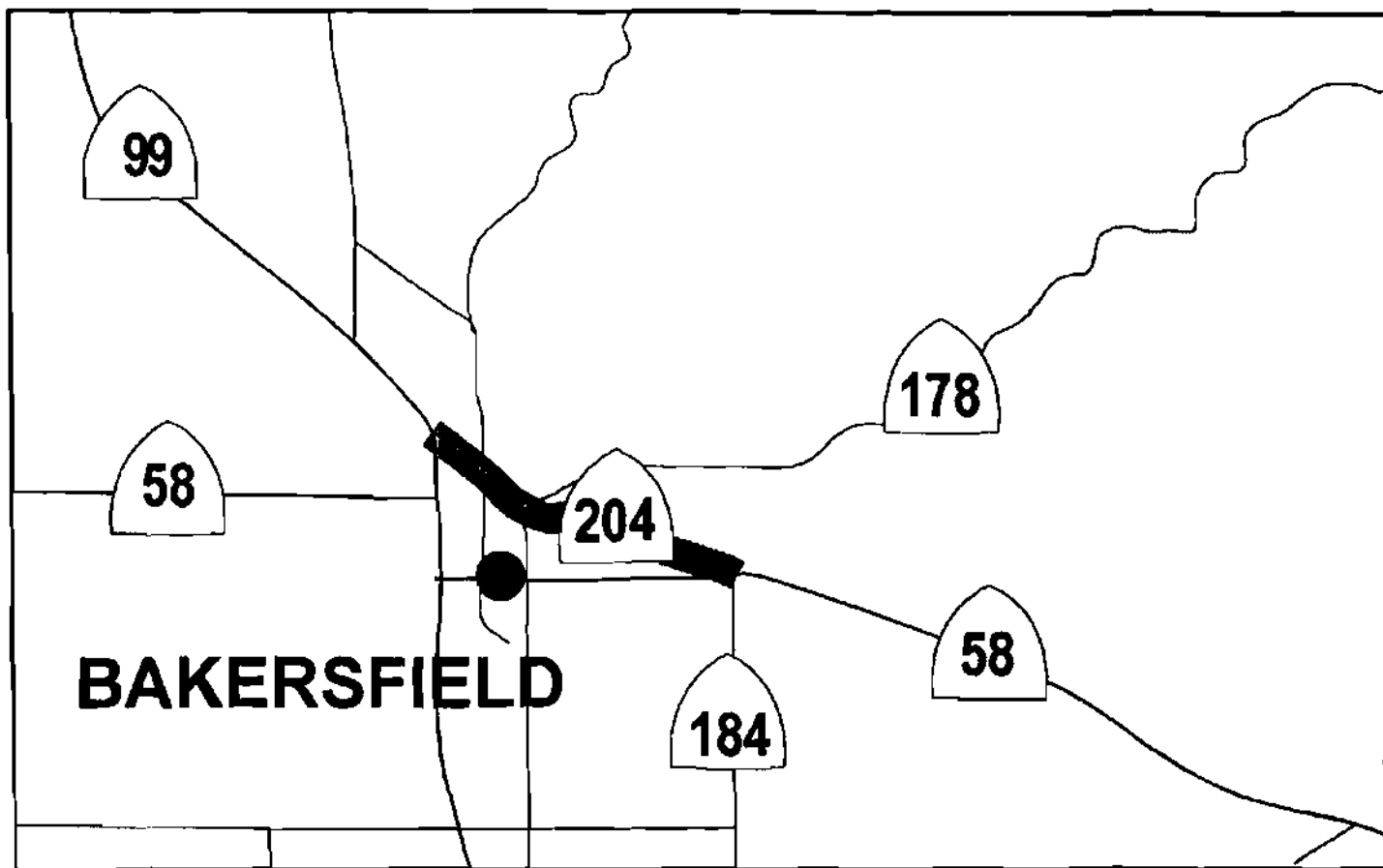


FIGURE 4-30

JULY 1998










 **HIGHWAY LIMITS**

ROUTE 204 REGIONAL HIGHWAY LIMITS

LEGEND

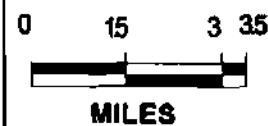
-  U.S. Highway
-  Interstate
-  State Highway

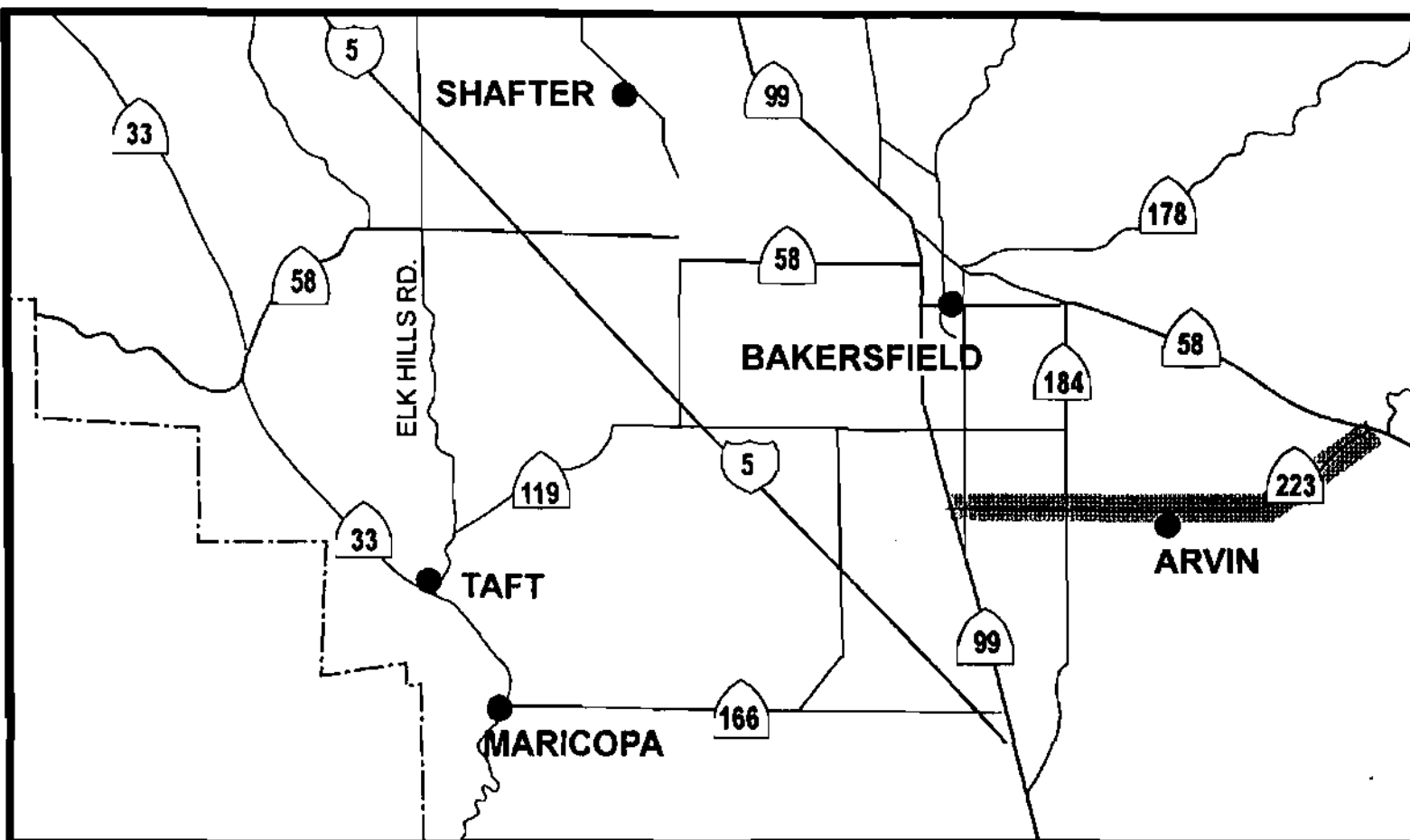


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FIGURE 4-32

JULY 1998








 **HIGHWAY LIMITS**

ROUTE 223 REGIONAL HIGHWAY LIMITS

LEGEND

-  U.S. Highway
-  Interstate
-  State Highway

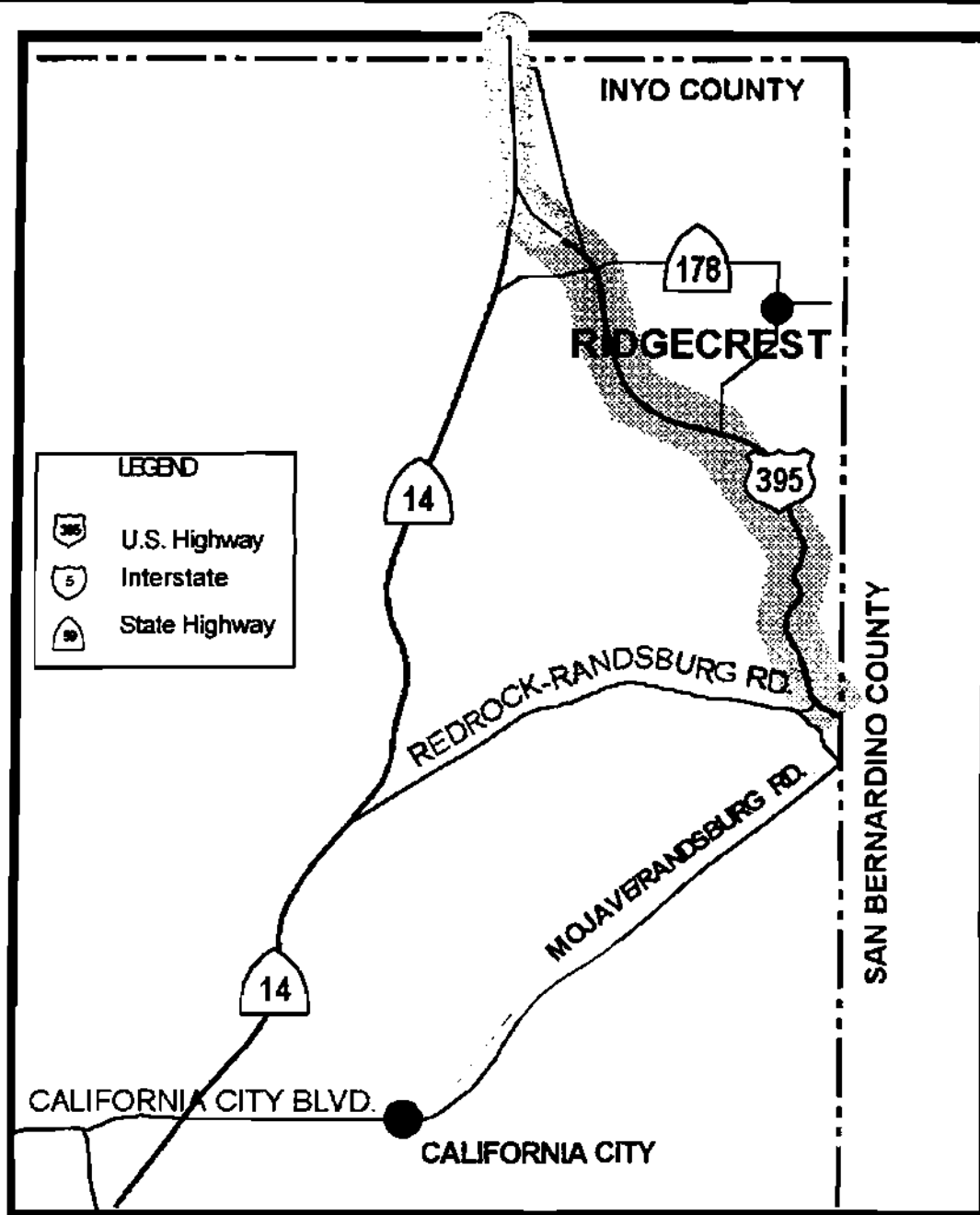


**Kern Council
of Governments**

FIGURE 4-33

JULY 1998





 **HIGHWAY LIMITS**

ROUTE 395 REGIONAL HIGHWAY LIMITS



**Kern Council
of Governments**

FIGURE 4-34

JULY 1998



0 4 8 9



MILES

1998 REGIONAL TRANSPORTATION PLAN

4.5.1.2 ISSUES, ACCOMPLISHMENTS AND NEEDS

HIGHWAY ISSUES

Aging Highway Network

As highways continue to move a greater amount of goods, deterioration of highway infrastructure threatens the nation's productivity. Economic competition is dependent on the ability to move goods. Businesses and the general public are equally impacted when transportation facilities are unable to provide efficient and timely delivery of goods and materials.

Caltrans estimates that over 50 percent of Kern County highways have existing service deficiencies. Facilities that become deficient over the next ten years will require continued maintenance and repair to maximize safety and usability. Construction of new routes and support of public transit also extend the life of the highway system by changing traffic volume distribution. Figure 4-35 reflects anticipated deficiencies on Kern County routes through 2010.

The Capital Improvement Program in Section 8.0 reflects Caltrans' commitment to maintenance and upkeep of existing highways through the State Highway and Operations Protection Plan (SHOPP), the Minors Program, and various safety programs. Because of seismic activity in California, seismic retrofit projects continue to be a priority for Caltrans. Many of the larger and more expensive state bridges have commanded close attention during state budget discussions on the expense to replace or repair these bridges.

Highway Safety

The safety of California highways has become a larger issue since the San Francisco Loma Prieta earthquake in October 1989 and the January 1994 Northridge earthquake. Construction methods and the aging of elevated highway sections, as well as future construction techniques, must be re-evaluated. Not only are these important factors for the safety of facility users, but also for the economy because it is structured around the ability to move relatively freely. Transportation and land use policies are not designed to handle failures or closures at strategic points in the highway system. The ability to move freely can be greatly affected, or even completely stopped, by major failures of elevated highway sections, and with few other choices of transportation available, the outcome could be disastrous to the region, the State and the country as a whole.

Another safety concern is the accident rate on many of Kern County's state highways. According to Caltrans' Route Concept Reports, nine state highways in Kern County are identified as having some type of accident concern. Any route with an accident rate greater than 1.6 times the statewide average is considered to be an accident concern. In 1988, 157 fatal accidents occurred in Kern County, which was 3.23 percent of the statewide total. This would indicate an injury/fatality rate of 1.29 per million vehicle miles traveled (VMT), a decrease from the 1987 total of 1.40 per million VMT.

In 1989, the Bay Area was subjected to a severe earthquake and numerous highway structures were damaged or destroyed. As a result, Caltrans embarked on a major retrofit program statewide. In 1994, when Los Angeles was rattled by a major earthquake, many bridges still were not reinforced. As a result, the Governor mandated that retrofit projects be advanced to the front of the STIP list of projects. According to a quarterly report dated December 9, 1997 from Caltrans to the California Transportation Commission, Phase 1 seismic retrofit projects (1,039 bridges) are 98 percent complete statewide, and 96 percent of Phase 2 (1,155 bridges) are currently under construction or completed.

1998 REGIONAL TRANSPORTATION PLAN

HIGHWAY ACCOMPLISHMENTS

Funding Approval & ISTE A Requirements in the RTP

Since 1990, some of the major highway improvements have included lane additions, interchange improvements, and safety improvements. The widening project on Route 99 from Ming Avenue to the Route 204 interchange has been completed as are the interchange projects at Rosedale Highway and Airport Drive. Work continues to widen various segments of Route 14 in eastern Kern County, with some segments expanded to expressway standards. An \$8 million four-mile expressway segment along Route 14 near Cantil was completed in 1997.

New Construction

Most cities have made appropriate improvements to their local circulation systems as development has occurred. In Bakersfield, improvements have been made at various locations to enhance existing facilities and to reduce congestion as well as increase capacity. A bridge was completed at Calloway Drive linking Rosedale Highway to Stockdale Highway. Panama Lane Bridge over Route 99 was widened in 1997, and grade separation projects have been completed in Bakersfield at Coffee Road just south of Rosedale Highway and in Mojave at Oak Street near Sierra Highway.

Modeling

Another major accomplishment has been the Kern COG air quality modeling program, which is now validated using 1995 data. This enables Kern COG to forecast travel demand, analyze various transportation scenarios, study transit route effectiveness, project traffic volumes and emissions inventory. Air quality conformity is a requirement to qualify for federal transportation funding.

Work Element to Monitor the FTIP

Regional programming of projects in the FTIP is an ongoing process. Amendments are provided to accommodate State projects on request while locally agreed on programming for RSTP and CMAQ funds are periodically established and a consensus reached before those projects are placed in the FTIP for approval. All funding allocations have been programmed to use all available funding allocated to this region.

Short Range Plans (1-5 years)

The Capital Improvement Program (CIP) in the Financial Element (Section 8.0) reflects a multi-modal project grouping. Project lists are divided into five-year segments (quinquenniums) grouped by transportation mode. These groups comprise state highways, local streets and roads, transit, passenger rail, high speed rail, and non-motorized. Many highway projects in the first quinquennium are also listed in the Federal Transportation Improvement Program.

Long Range Plans (6-20 years)

Kern River Freeway (Route 58): This corridor would complete a vital link between Bakersfield and Interstate 5 and would greatly benefit interstate, intrastate, and local travel. Existing roads within the area will not accommodate the demand generated by these travel markets. It is forecasted that demand will exceed capacity on virtually all highway links east of Highway 43 by 2010. Figure 4-36 depicts the recommended alignment of the Kern River Freeway. The 1998 STIP reflects additional funding for right-of-way purchase and construction. Route 58 from Route 99 to I-5 continues to be the Kern region's number one priority.

1998 REGIONAL TRANSPORTATION PLAN

Crosstown Freeway: This freeway would link the existing Route 178 at "M" street to Route 99, joining the proposed Route 58 alignment west of Route 99. Currently, Route 178 converts from a freeway to an arterial at "M" street in downtown Bakersfield. The proposed Route 178 "southern alignment" would connect the existing freeway segment just east of "M" Street, proceed south just east of Union Avenue to California Avenue, then proceed west along the north side of California 4-36 Avenue to Route 99. In general, the major travel interactions within the Bakersfield area are between the southwest and northeast. This freeway would close a gap in the freeway system and benefit the intra-area travel patterns.

Beyond 20 Year Horizon

The West Beltway. The concept of the West Beltway originated as part of the Metropolitan Bakersfield 2010 General Plan. This facility will not be needed until the 2020 to 2030 period. The preferred alignment for the West Beltway follows Rudd Road north of the Kern River and transitions to Jenkins Road south of the River. This alignment offers the most transportation benefit possible, while minimizing adverse impacts on the environment and existing land use plans. Although the actual facility will not be needed for another 30 years, the process of acquiring right-of-way should continue now. Figure 5-3 in Section 5.0 depicts the recommended beltway.

The South Beltway also originated as part of the Metropolitan Bakersfield 2010 Plan. Its primary purpose will be to alleviate anticipated congestion on adjacent arterials and provide connectivity in the circulation loop as proposed by the Metropolitan Bakersfield 2010 Plan Circulation Element. Although construction would not commence prior to 2020, acquiring rights-of-way will begin sooner. The City of Bakersfield and County of Kern are presently defining a preferred alignment that will determine a specific plan line for this corridor. Figure 5-4 in Section 5.0 depicts this beltway.

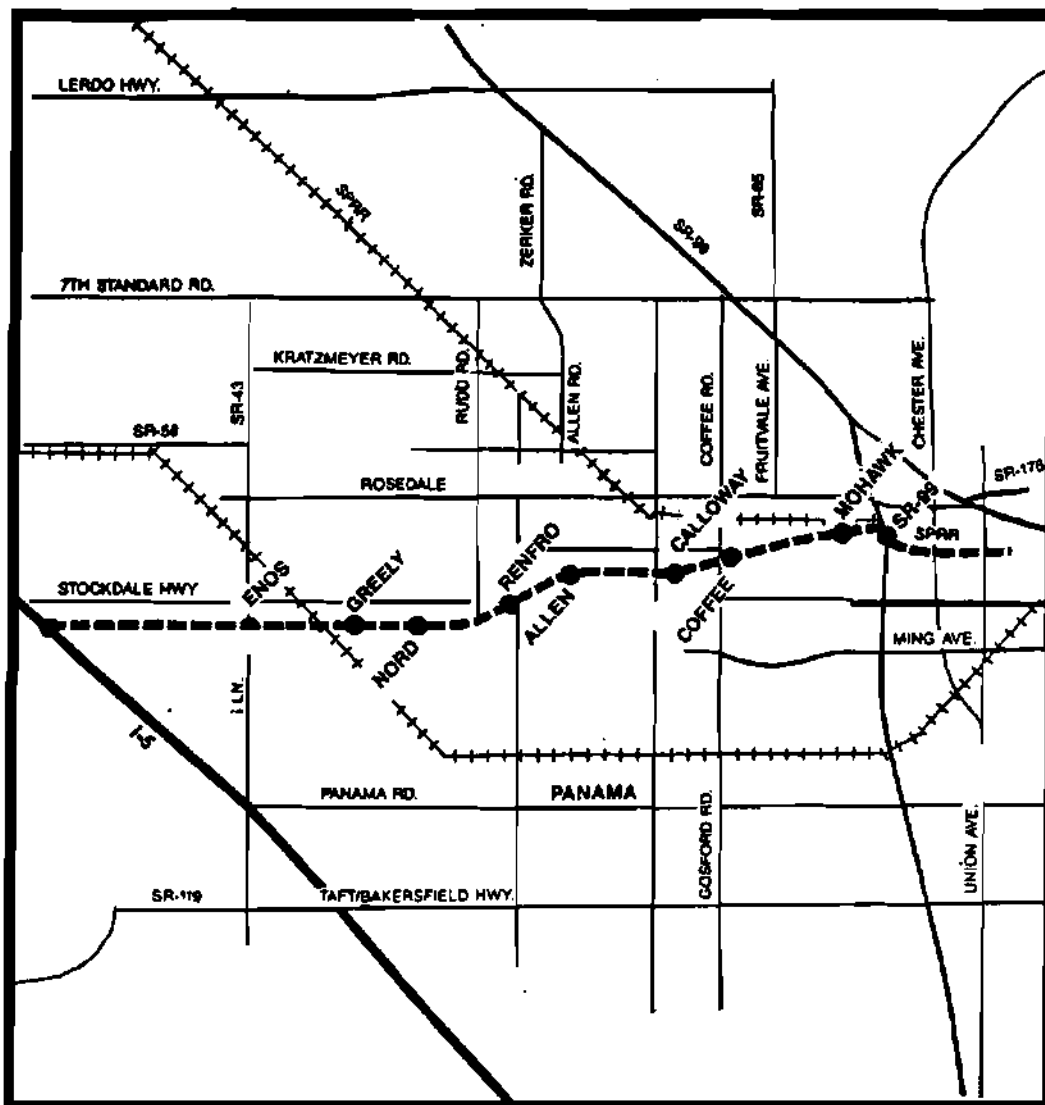
Traffic projections from the COG model indicate that the West Beltway will be needed between 2015 and 2020, while the South Beltway will not be needed until approximately 2025. This model will be reviewed at every update of the RTP, and priorities may shift as metropolitan Bakersfield develops.

Bakersfield Centennial Transportation (Routes 58/178): This corridor (see Figures 4-36 and 4-37) would complete a link between Bakersfield and Interstate 5 and would benefit interstate intrastate and local traffic. West of Route 99, the Centennial Corridor incorporates the facility known as the Kern River Freeway (Route 58). East of Route 99, it incorporates the Crosstown Freeway (Route 178) and an as yet to be determined connection with Route 58 east of Route 99.

This facility is necessary to relieve congestion within central and western Bakersfield, as well as to complete two freeway systems (Routes 58 and 178) that were not initially constructed to allow connections to Route 99 and I-5. The Centennial Corridor, at completion, will provide access to the rapidly developing westside, as well as the downtown area that is undergoing revitalization.

Other Proposed Plans

Route 178 Kern Canyon Realignment: This project is a 15-mile realignment of State Route 178 in the Kern River Canyon (Figure 4-38). This project is important primarily for safety reasons. A combination of sharp curves, steep drop-offs, harsh weather, and falling rock make this stretch of highway one of the most dangerous in the state. A 1984 study stated that the accident rate and fatality plus injury rate were nearly two times the statewide average.



LEGEND

- CORRIDOR ALIGNMENT
- INTERCHANGES

BAKERSFIELD CENTENNIAL TRANSPORTATION CORRIDOR: WEST OF ROUTE 99

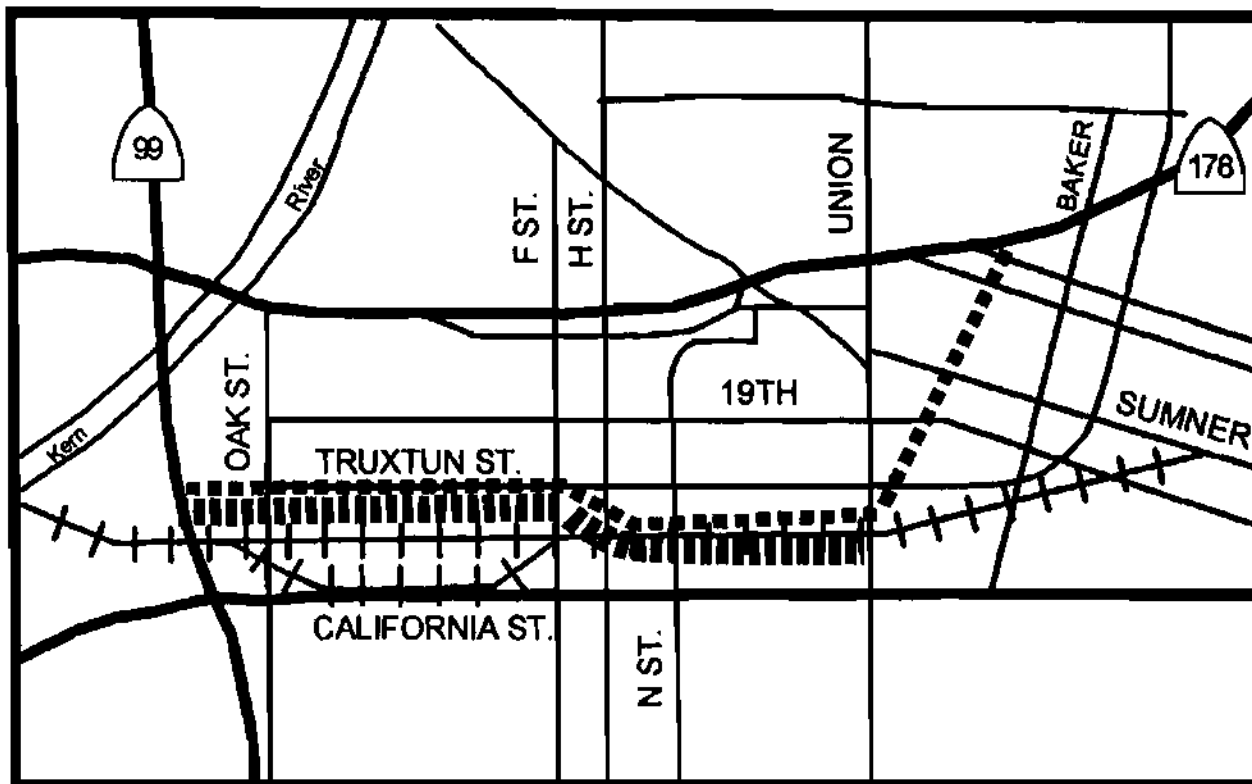


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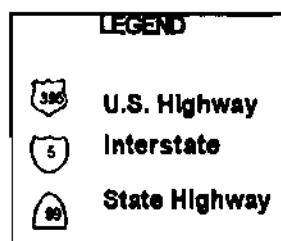
FIGURE 4-36

JULY 1998





**BAKERSFIELD CENTENNIAL
TRANSPORTATION CORRIDOR:
EAST OF ROUTE 99**

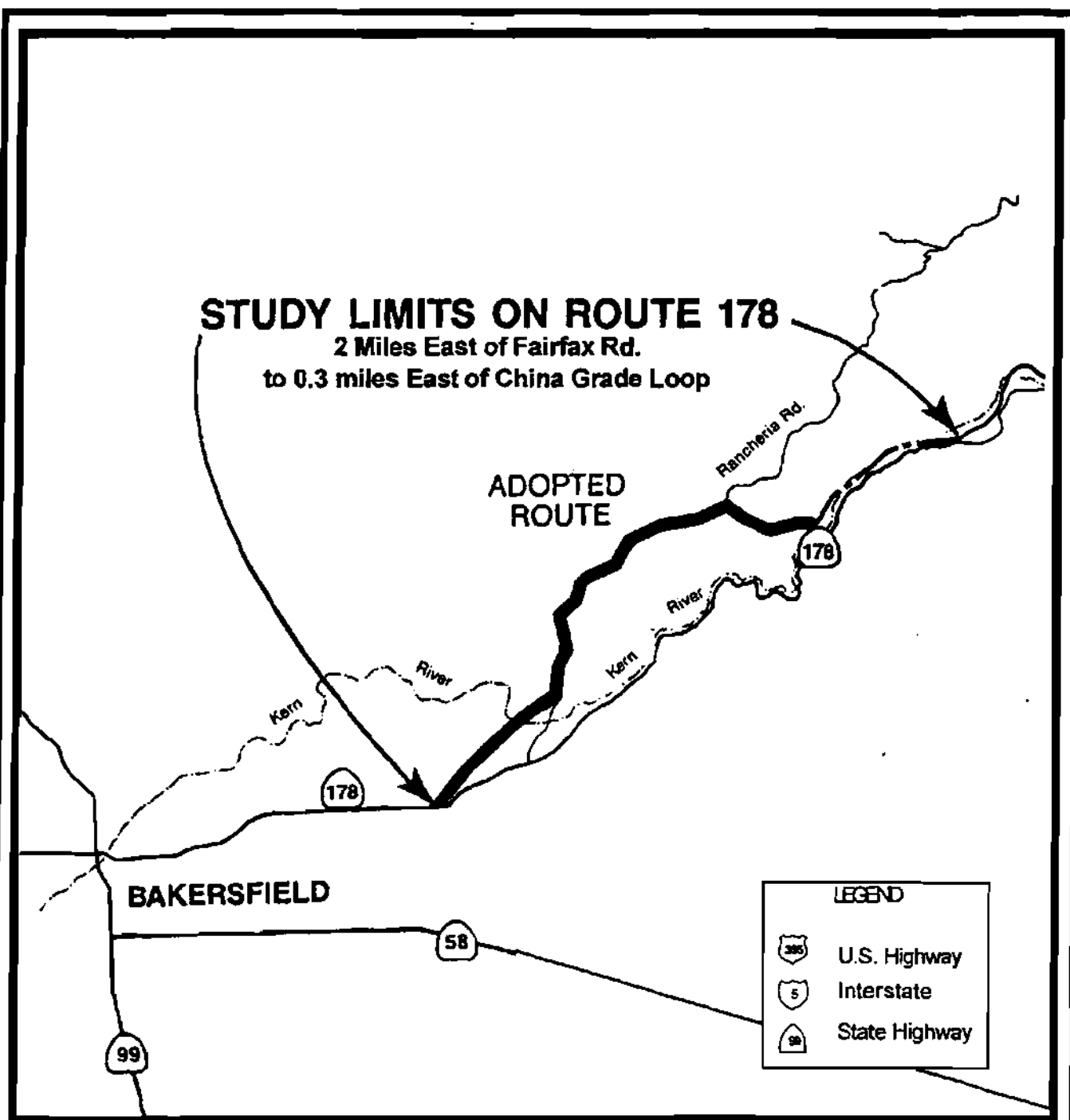


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FIGURE 4-37

JULY 1998





**CORRIDOR STUDY: ROUTE 178
 THROUGH KERN RIVER
 CANYON & PROPOSED KERN
 CANYON FREEWAY
 ALIGNMENT**



**Kern Council
 of Governments**

FIGURE 4-38

JULY 1998



1998 REGIONAL TRANSPORTATION PLAN

HIGHWAY NEEDS

Route 14

Deficiencies are currently experienced on Route 14 and will continue until the route has been widened to four lanes for its entire length within Kern County. The FTIP continues to include several capacity-increasing projects for Route 14 (Figure 4-39).

Route 33

Deficiencies have been noted on Route 33 through Taft, and much of the route in the Taft area will be deficient by 2000 (Figure 4-40). Improvements needed for mitigation include lane additions. The 1998 SHOPP has two rehabilitation projects including overlay work and drainage reconstruction totaling \$8.1 million.

Route 41

The five-mile portion of Route 41 in the County will become deficient by the year 2000. Needed mitigation for the deficiency is a widening and passing lane improvement project (Figure 4-41). The 1998 SHOPP has one rehabilitation/overlay project totaling \$8.2 million.

Route 43

Deficiencies are occurring along Route 43 and will continue to increase through 2010. Improvements needed for mitigation include lane additions and operational improvements (Figure 4-42). No projects for Route 43 are included in the FTIP.

Route 46

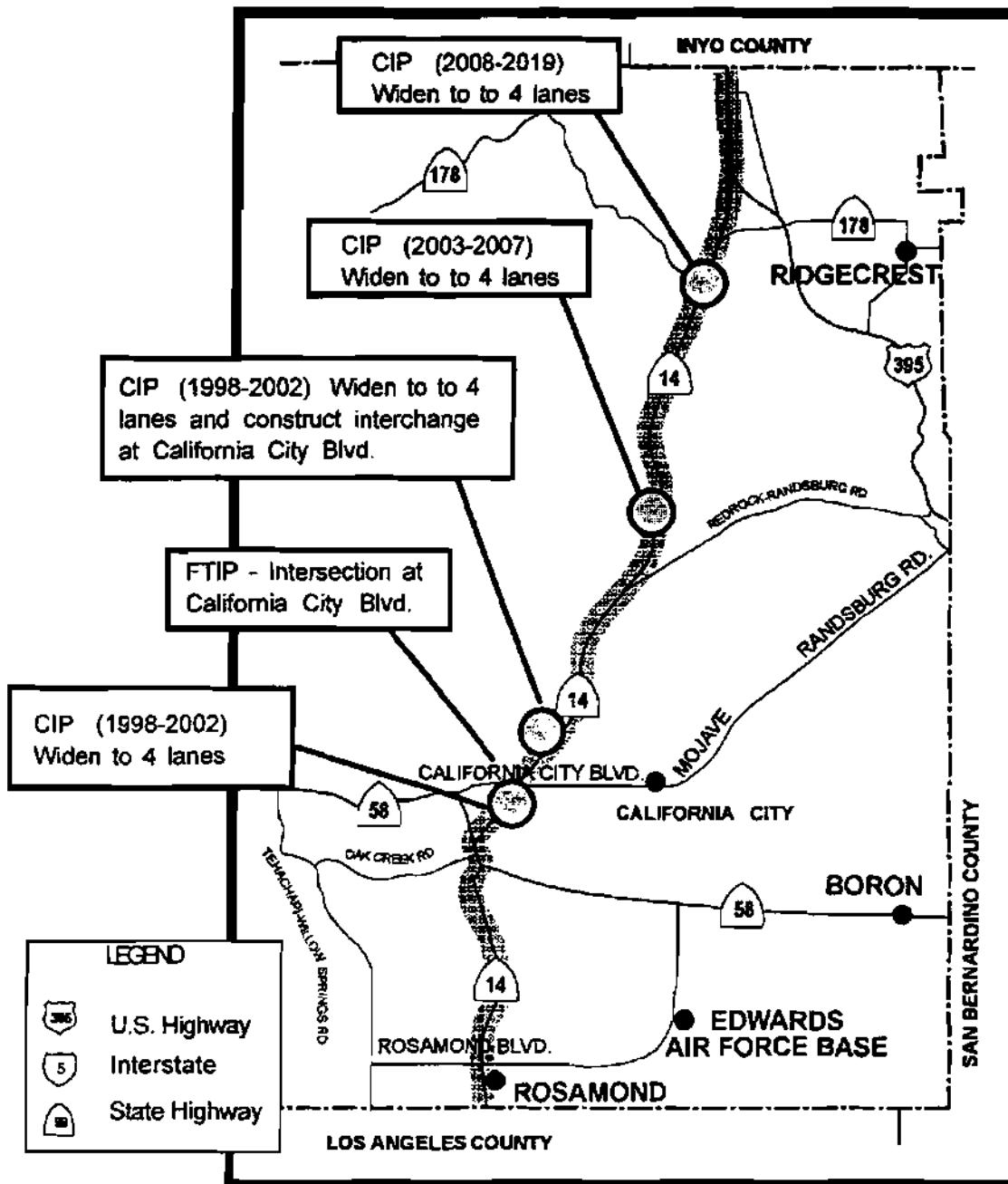
Deficiencies will occur on Route 46 by 2000, with the entire route becoming deficient by 2010. Improvements needed for mitigation include additional lanes (Figure 4-43). The 1998 SHOPP has one rehabilitation project including overlay work and shoulder widening totaling \$8.9 million.

Route 58

Deficiencies exist at several locations along Route 58 and, over the next ten years, much of the route will become deficient (Figure 4-44). Improvements needed for mitigation include the construction of a new freeway, lane additions, and interchange improvements. Two projects are identified for Route 58: (1) the Kern River Freeway in the metropolitan Bakersfield area from Route 99 to I-5 (Figure 4-45) and (2) the Mojave Freeway in eastern Kern County (Figure 4-46). The 1998 SHOPP has four proposed projects at various locations on Route 58 totalling \$7.3 million, including landscape replacement, asphalt overlay, and roadway rehabilitation.

Route 65

Deficiencies exist on Route 65 just north of Route 99 and by 2010, the route throughout Kern County will be deficient (Figure 4-47). Improvements needed to mitigate the deficiencies are lane additions along the entire route. The 1998 SHOPP has four rehabilitation projects, including overlay and bridge reconstruction totalling \$10.2 million.



PROPOSED PROJECTS

ANTICIPATED DEFICIENCIES IN LEVEL OF SERVICE

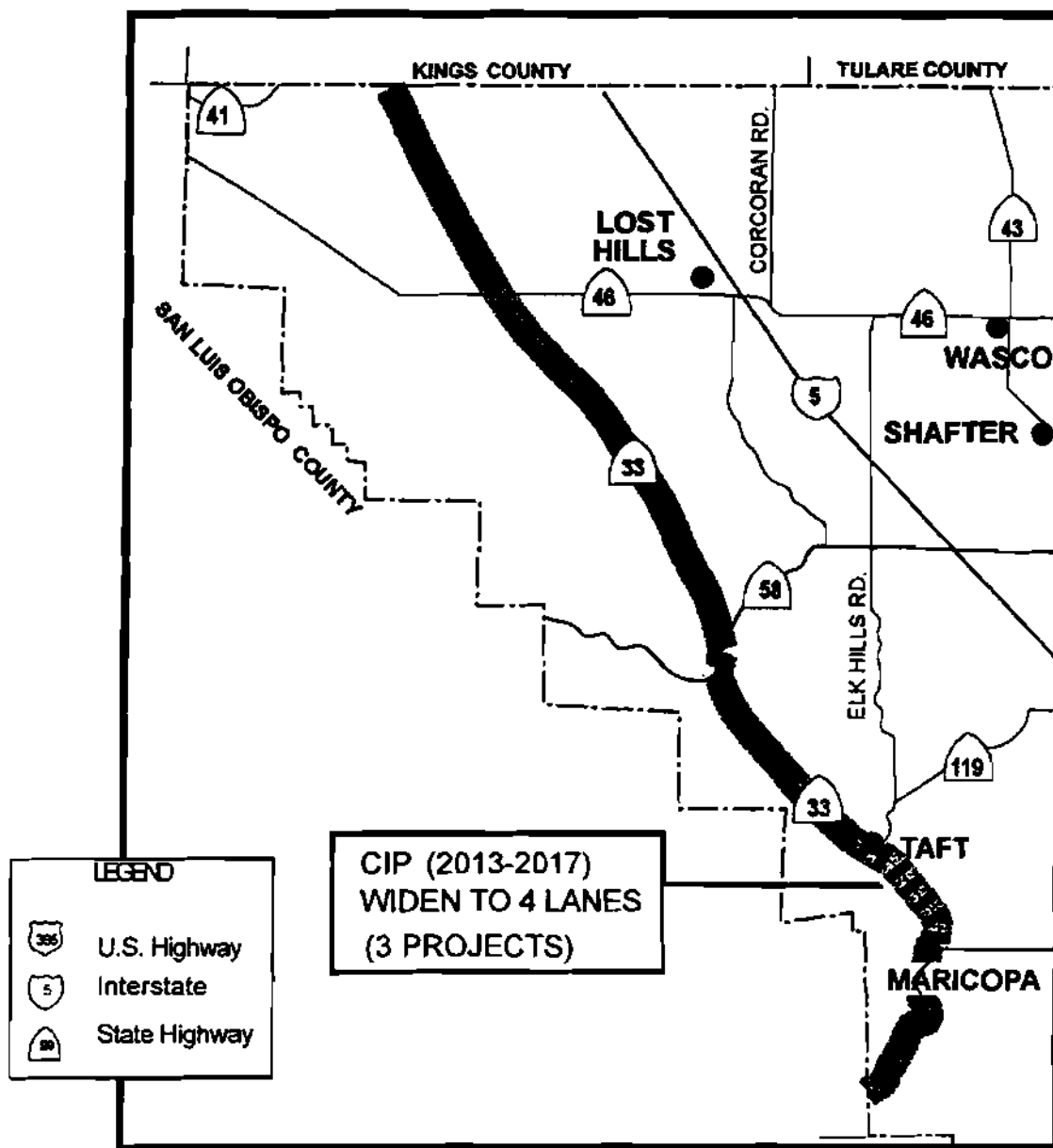
ROUTE 14 REGIONAL HIGHWAY DEFICIENCIES & PROPOSED CAPITAL IMPROVEMENTS



FIGURE 4-39

JULY 1998





- ||** PROPOSED CAPITAL IMPROVEMENT PROJECTS
- ANTICIPATED DEFICIENCIES IN LEVEL OF SERVICE

ROUTE 33 REGIONAL HIGHWAY DEFICIENCIES & PROPOSED CAPITAL IMPROVEMENTS

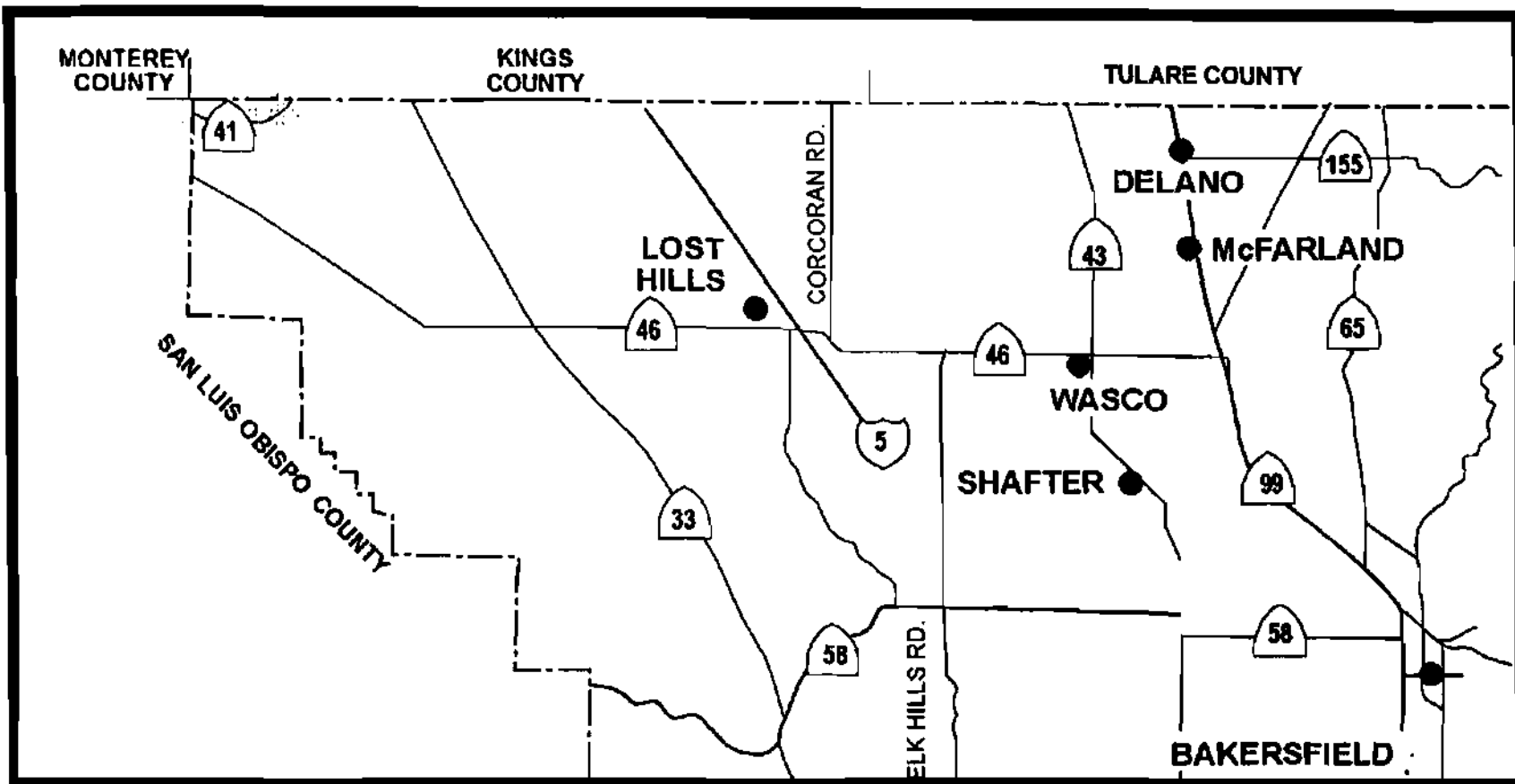


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FIGURE 4-40

JULY 1998





ANTICIPATED DEFICIENCIES
IN LEVEL OF SERVICE



NO CAPACITY INCREASING CAPITAL IMPROVEMENTS
PROPOSED FOR THIS ROUTE

ROUTE 41 REGIONAL HIGHWAY DEFICIENCIES & PROPOSED CAPITAL IMPROVEMENTS

LEGEND



U.S. Highway



Interstate



State Highway



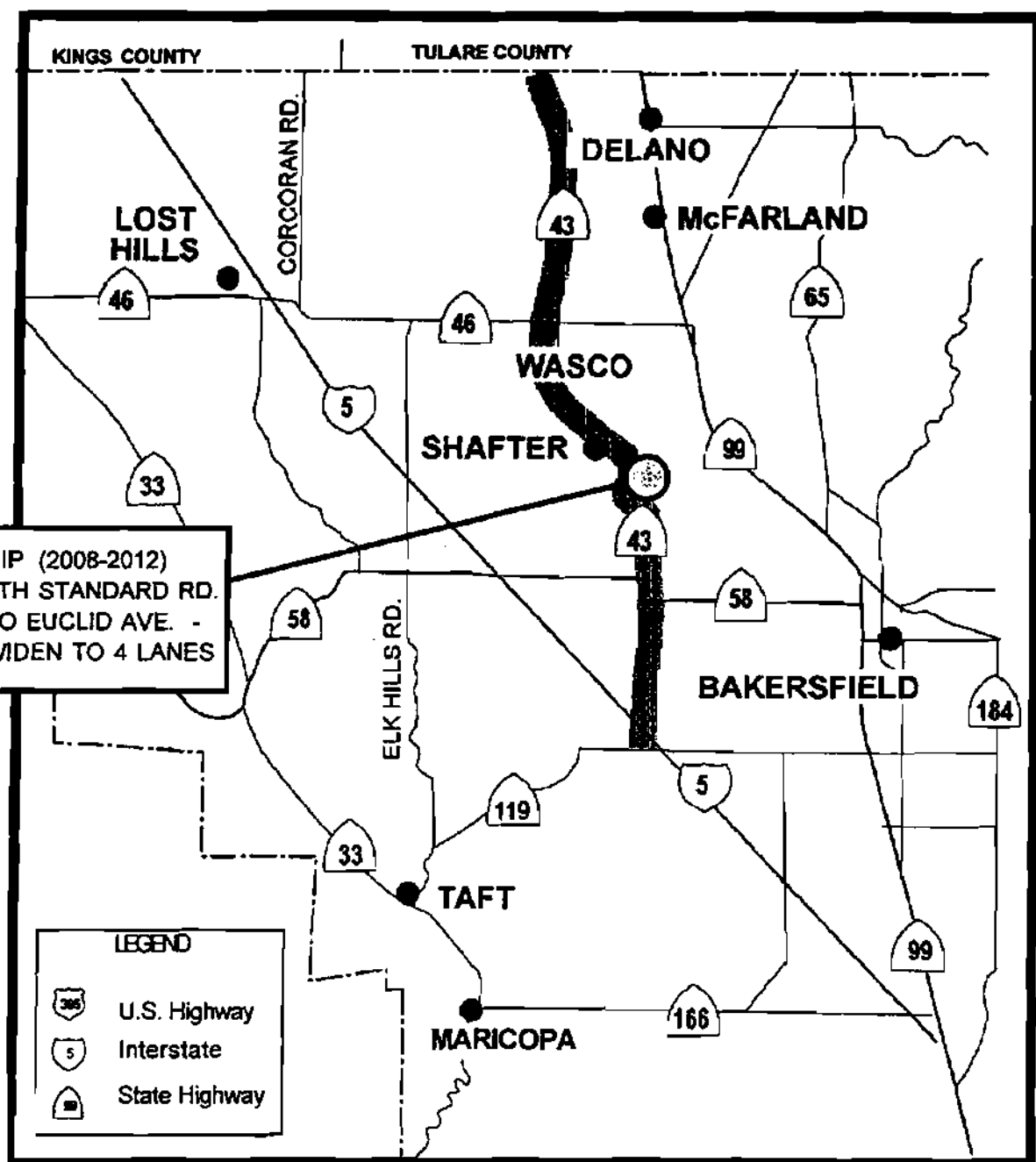
**Kern Council
of Governments**

FIGURE 4-41

JULY 1998



MILES



○ **PROPOSED CAPITAL IMPROVEMENT PROJECTS (2009 - 2014)**

■ **ANTICIPATED DEFICIENCIES IN LEVEL OF SERVICE**

ROUTE 43 REGIONAL HIGHWAY DEFICIENCIES & PROPOSED CAPITAL IMPROVEMENTS

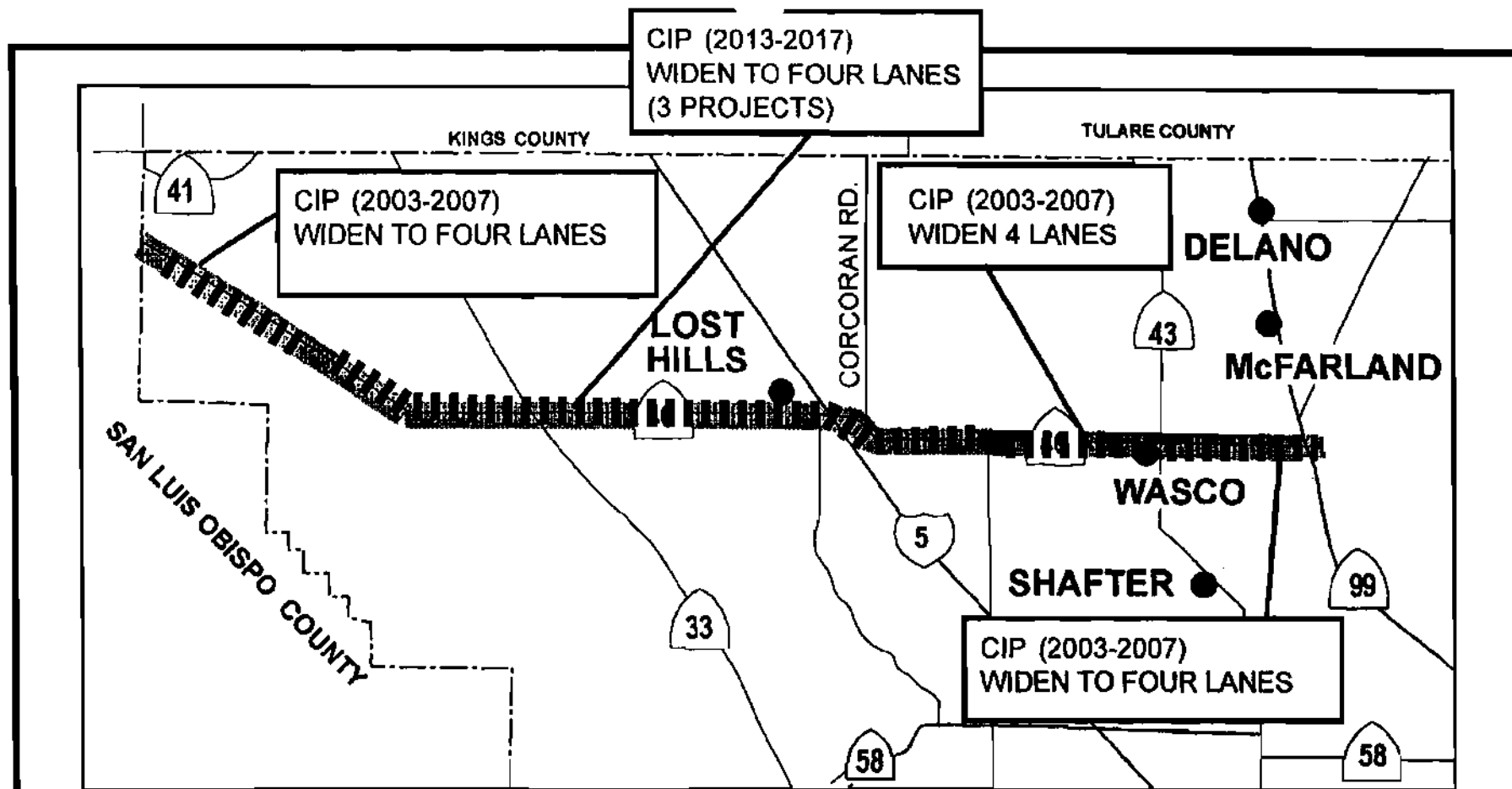


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of Governments**

FIGURE 4-42

JULY 1998





ROUTE 46 REGIONAL HIGHWAY DEFICIENCIES & PROPOSED CAPITAL IMPROVEMENTS

LEGEND

U.S. Highway

Interstate

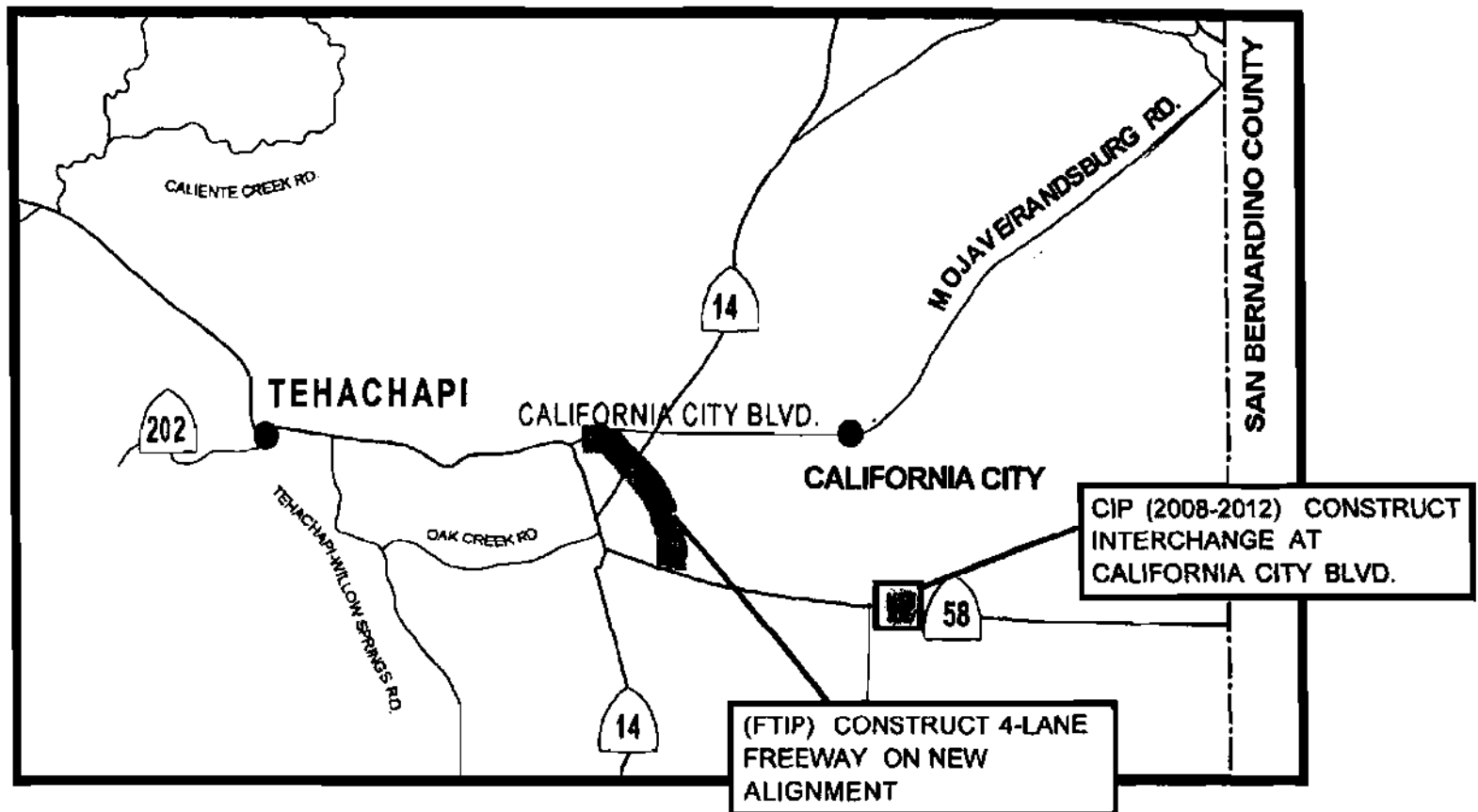
State Highway



FIGURE 4-43

JULY 1998





PROPOSED CAPITAL IMPROVEMENT PROJECTS

ROUTE 58 (EAST) PROPOSED CAPITAL IMPROVEMENTS

LEGEND

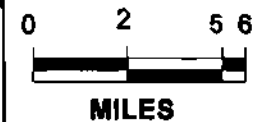
- U.S. Highway
- Interstate
- State Highway

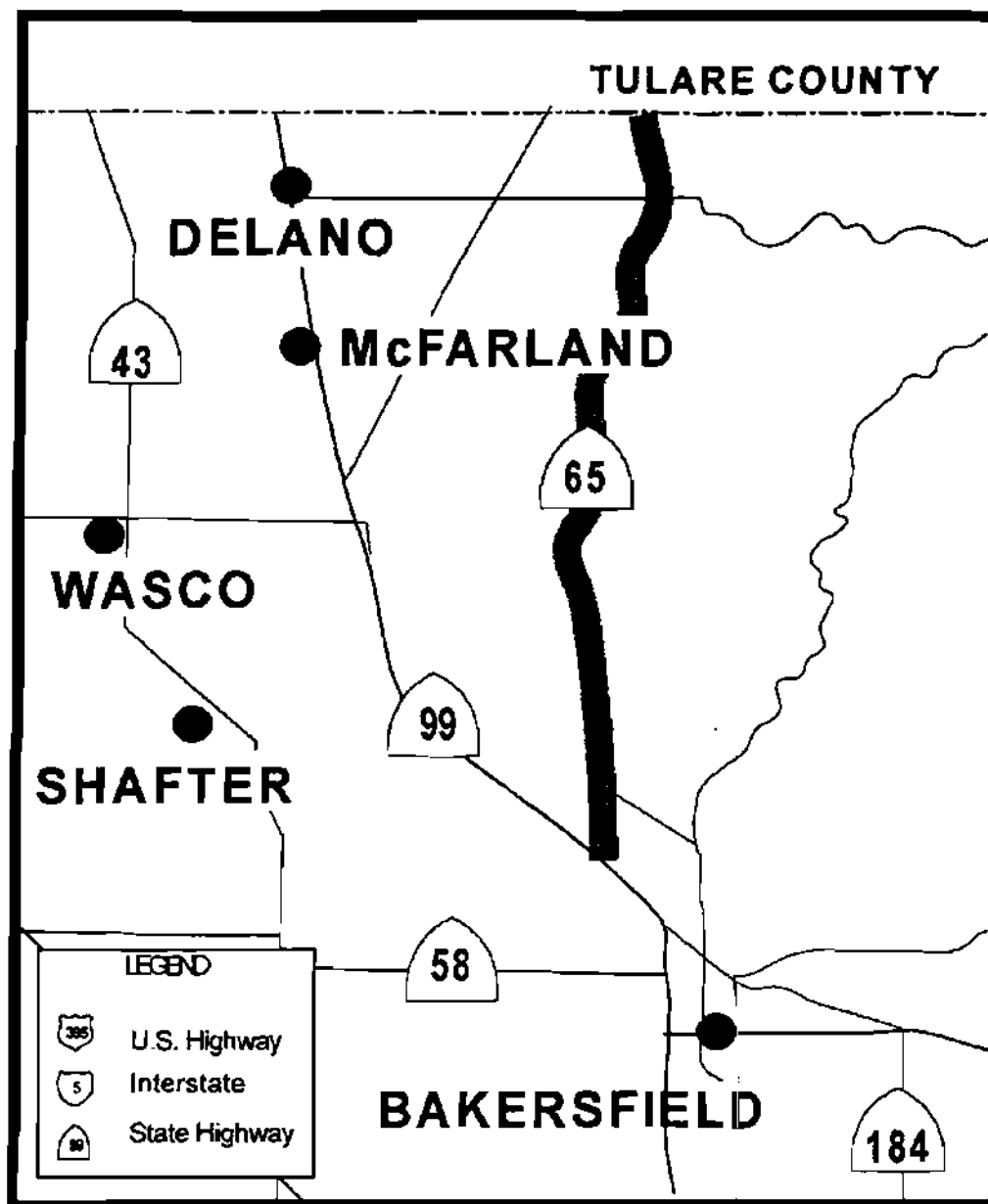


**Kern Council
of Governments**

FIGURE 4-46

JULY 1998





**NO CAPACITY INCREASING CAPITAL IMPROVEMENT
PROJECTS PROPOSED FOR THIS ROUTE**



ANTICIPATED DEFICIENCIES IN LEVEL OF SERVICE

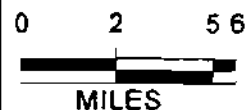
**ROUTE 65
REGIONAL HIGHWAY
DEFICIENCIES & PROPOSED
CAPITAL IMPROVEMENTS**



**Kern Council
of Governments**

FIGURE 4-47

JULY 1998



1998 REGIONAL TRANSPORTATION PLAN

Route 99

Deficiencies are identified along Route 99 through Bakersfield, and much of the Route throughout the County will be deficient by 2010. Improvements to mitigate these deficiencies include additional and ancillary lanes. The West Beltway Study (formerly 99 Bypass) was initiated to reduce existing and projected congestion on Route 99 and introduced several alternatives as well as a preferred solution. The 1998 SHOPP has five safety and maintenance projects including overlay, offramp and median reconstruction, landscaping and surveillance stations totaling \$12.1 million. (Figure 4-48)

Route 119

Deficiencies exist along the entire route, with the exception of a two-mile portion through Taft that will become deficient within the next 20 years (Figure 4-49). Improvements needed to mitigate these deficiencies include lane additions and upgrading several areas to expressway standards. No projects are programmed for Route 119 in the FTIP.

Route 155

Route 155 is an important access route to the small communities and ranches in northeast Kern County. Route 155 offers an alternative to Route 178 when the Kern River Canyon is closed by inclement weather or rockslides, and provides access to Lake Isabella's recreation area. Deficiencies on Route 155 are expected to occur by 2000 brought on by level of service deterioration and safety concerns (Figure 4-50). No projects are programmed for Route 155 in the FTIP.

Route 166

Deficiencies are not predicted along Route 166 over the next 20 years and, therefore, no mitigation is needed. No projects are included in the FTIP for the route (Figure 4-51).

Route 178

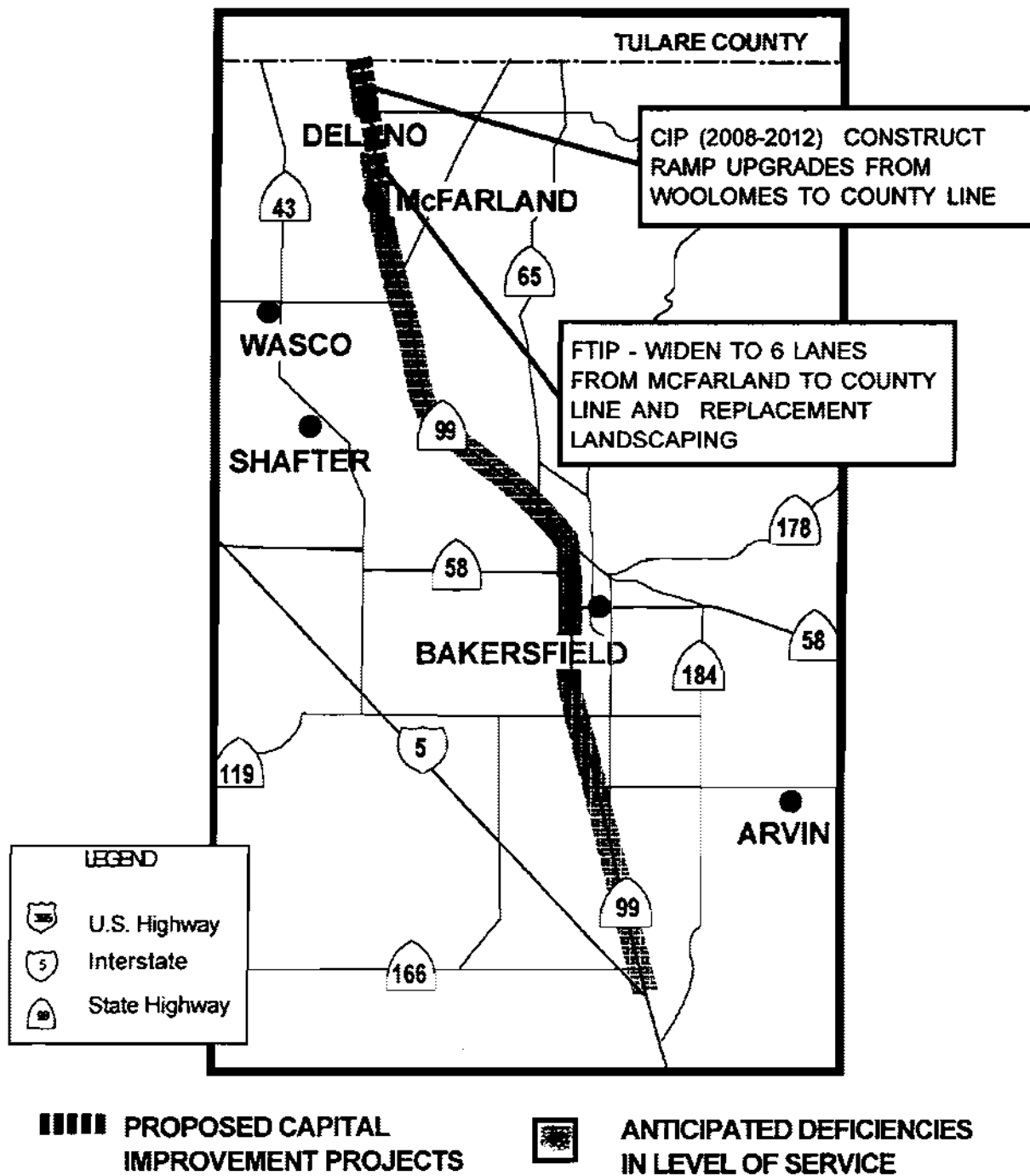
Deficiencies exist at several locations along Route 178, and within 20 years a majority of the route will be deficient (Figure 4-52). Improvements to mitigate the deficiencies include lane additions and two new freeway alignments, one through central Bakersfield and the other along the Kern River Canyon. The 1998 SHOPP has three proposed projects listed comprising ramp reconstruction, road realignment, and guardrails, totaling \$7.8 million. Figure 4-53 depicts Route 178 outside the metropolitan Bakersfield area. No projects are programmed for this segment of the highway.

Route 184

Deficiencies will occur along Route 184 over the next ten years, with approximately half the route deficient by 2010 (Figure 4-54). Improvements to mitigate these deficiencies include several lane addition projects. The 1998 SHOPP has a proposed project to add a double left lane near Edison Highway in the Lamont area totaling \$2 million.

Route 202

Deficiencies are occurring and will continue as traffic on this route continues to increase (Figure 4-55). Limited passing opportunities are available along this section of the highway because of restrictions imposed by the vertical alignment. The 1998 SHOPP has a proposed project for bridge replacement and road realignment totaling \$7.2 million.



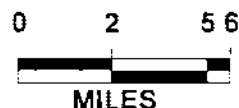
ROUTE 99 REGIONAL HIGHWAY DEFICIENCIES & PROPOSED CAPITAL IMPROVEMENTS

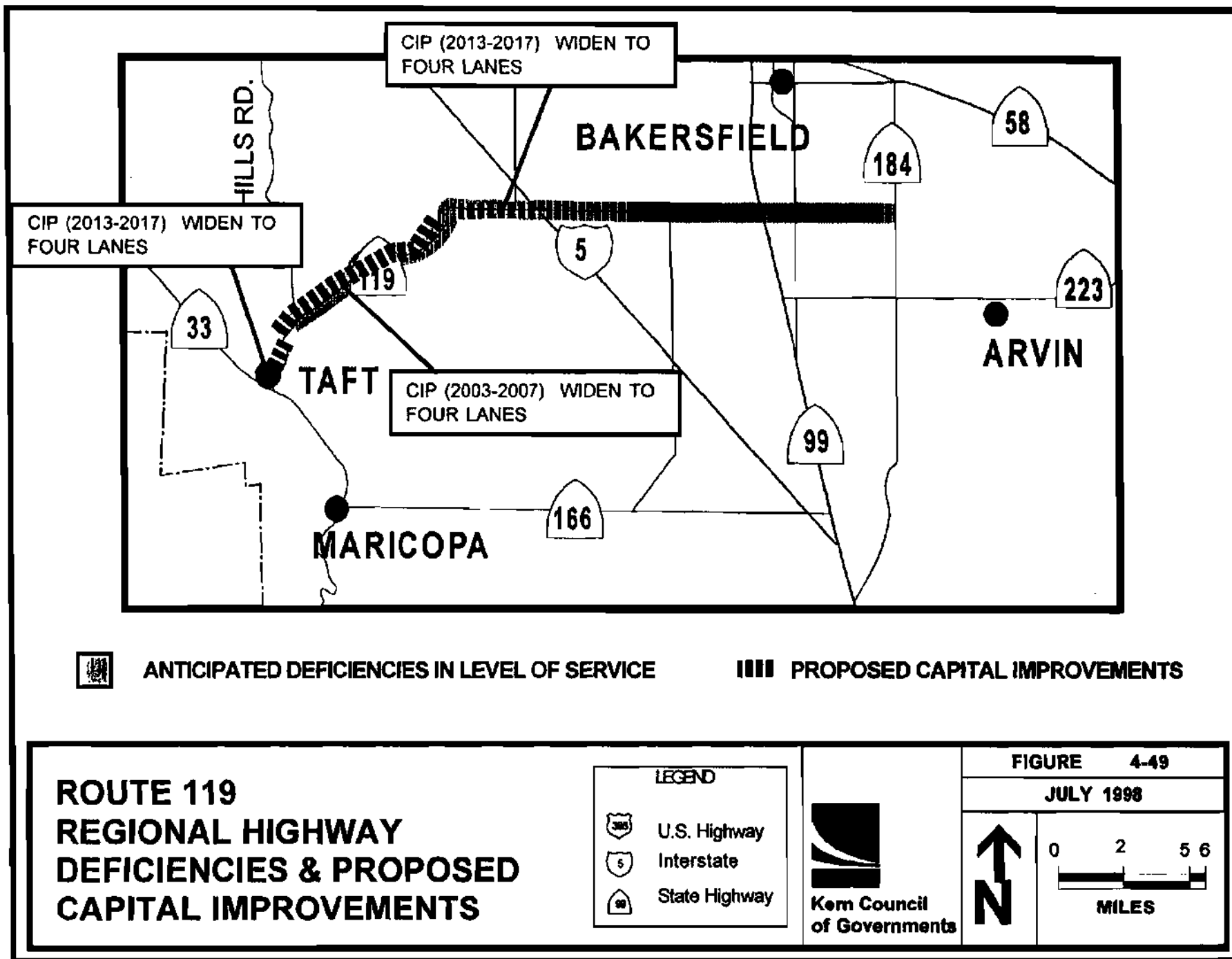


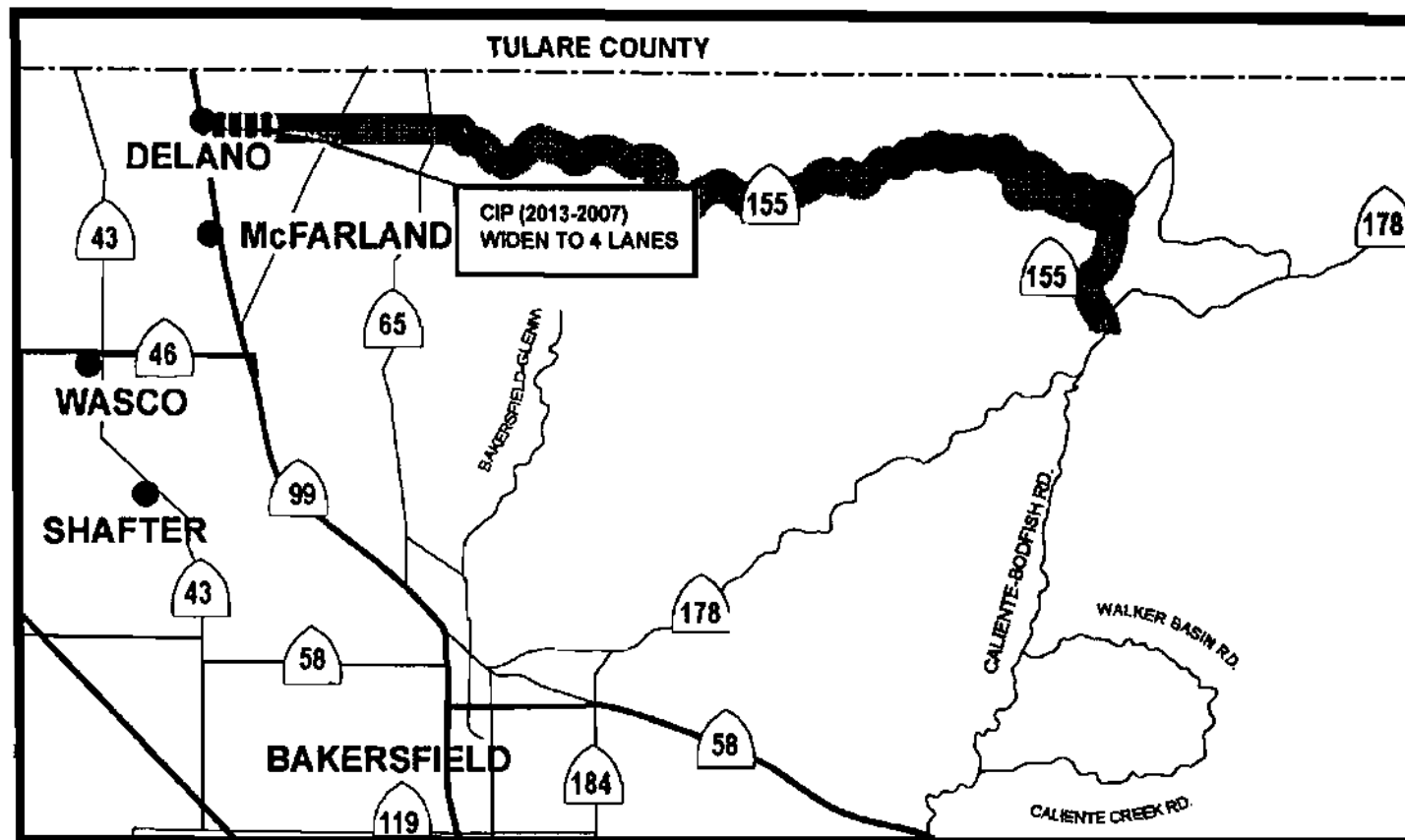
**Kern Council
of Governments**

FIGURE 4-48

JULY 1998







ANTICIPATED DEFICIENCIES IN LEVEL OF SERVICE



PROPOSED CAPITAL IMPROVEMENT

ROUTE 155 REGIONAL HIGHWAY DEFICIENCIES & PROPOSED CAPITAL IMPROVEMENTS

LEGEND



U.S. Highway



Interstate



State Highway

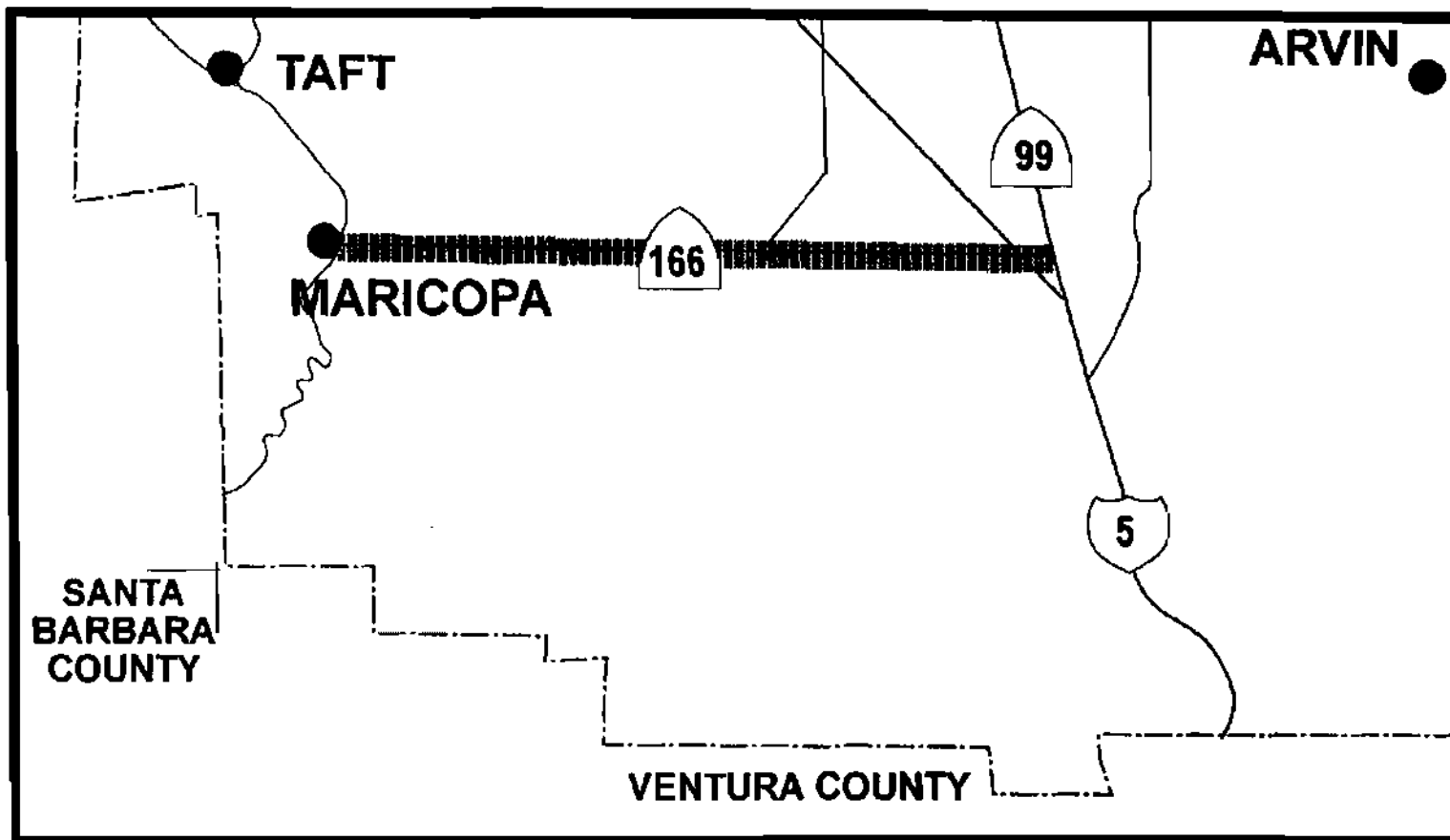


Kern Council
of Governments

FIGURE 4-50

JULY 1998








**MAINTENANCE ONLY - NO CAPACITY PROJECTS ANTICIPATED PRIOR TO 2014
NO DEFICIENCIES ANTICIPATED PRIOR TO 2014**

ROUTE 166 REGIONAL HIGHWAY DEFICIENCIES & PROPOSED CAPITAL IMPROVEMENTS

LEGEND

-  U.S. Highway
-  Interstate
-  State Highway

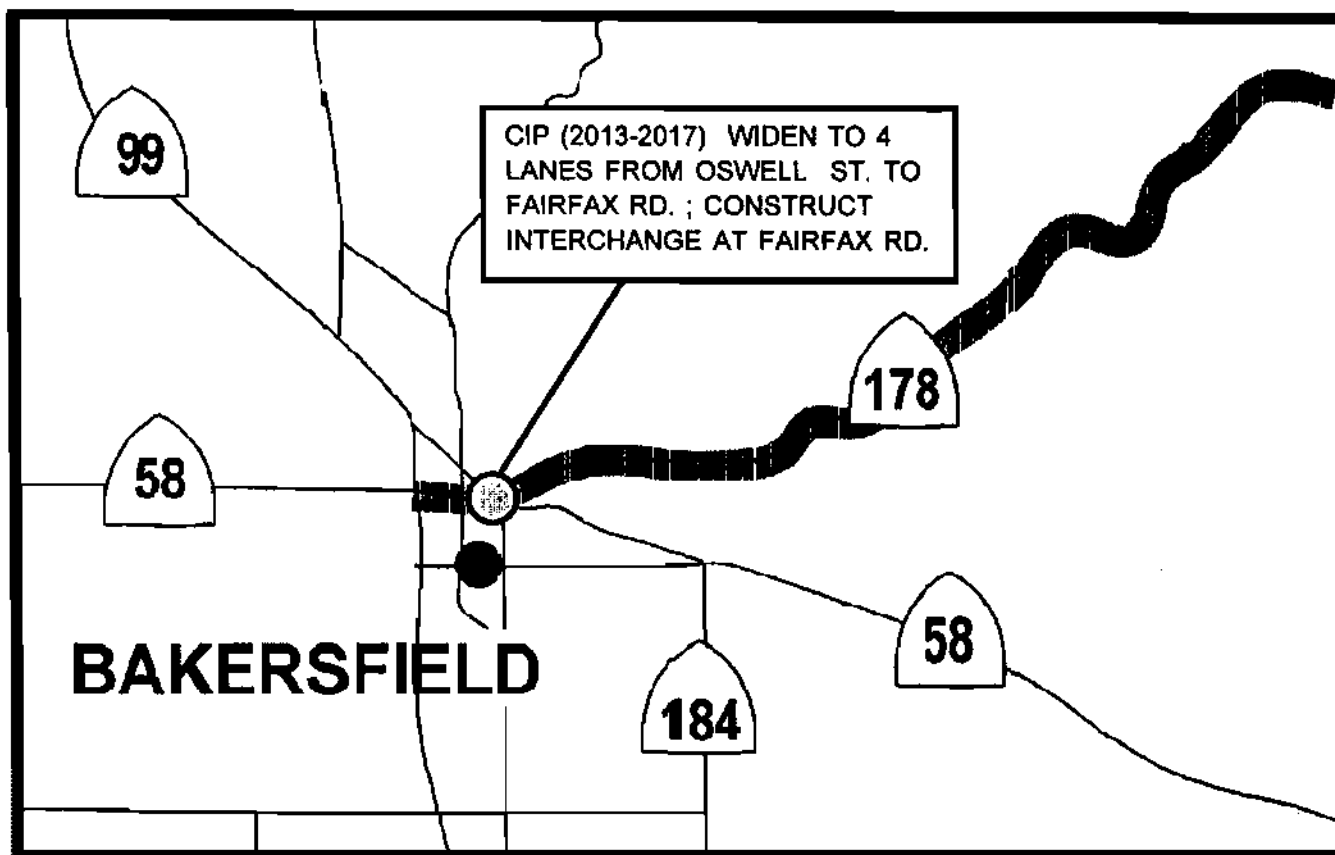


**Kern Council
of Governments**

FIGURE 4-51

JULY 1998





ANTICIPATED DEFICIENCIES IN LEVEL OF SERVICE



PROPOSED CAPITAL IMPROVEMENT PROJECTS

**ROUTE 178
(METRO BAKERSFIELD) REGIONAL
HIGHWAY DEFICIENCIES & PROPOSED
CAPITAL IMPROVEMENTS**

LEGEND



U.S. Highway



Interstate



State Highway

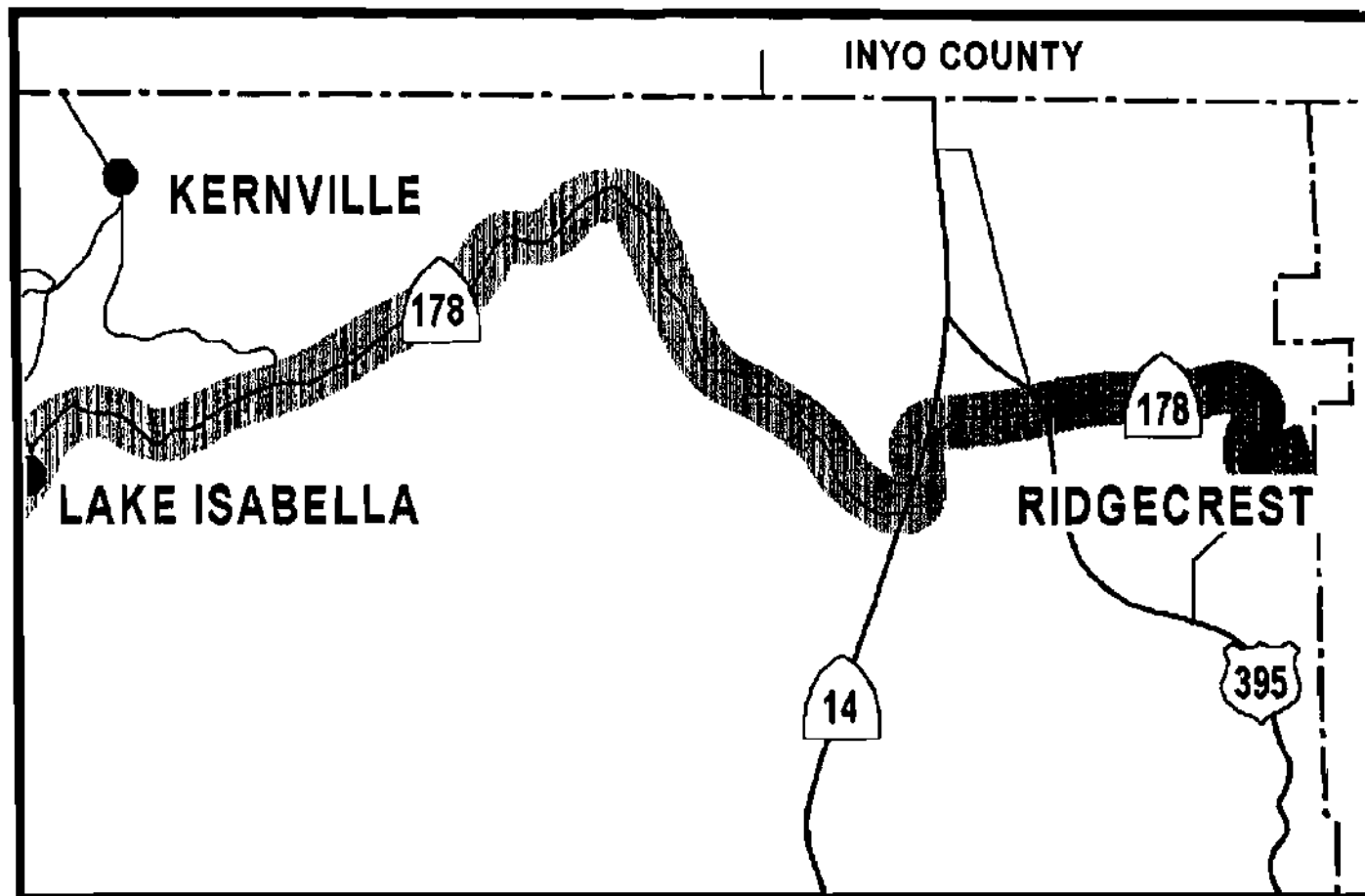


**Kern Council
of Governments**

FIGURE 4-52

JULY 1998





NO PROJECTS ARE PROPOSED IN THE CIP
FOR THIS SECTION OF ROUTE 178



ANTICIPATED DEFICIENCIES IN LEVEL OF SERVICE

STATE ROUTE 178 (EAST) REGIONAL HIGHWAY DEFICIENCIES & PROPOSED CAPITAL IMPROVEMENTS

LEGEND



U.S. Highway
Interstate
State Highway

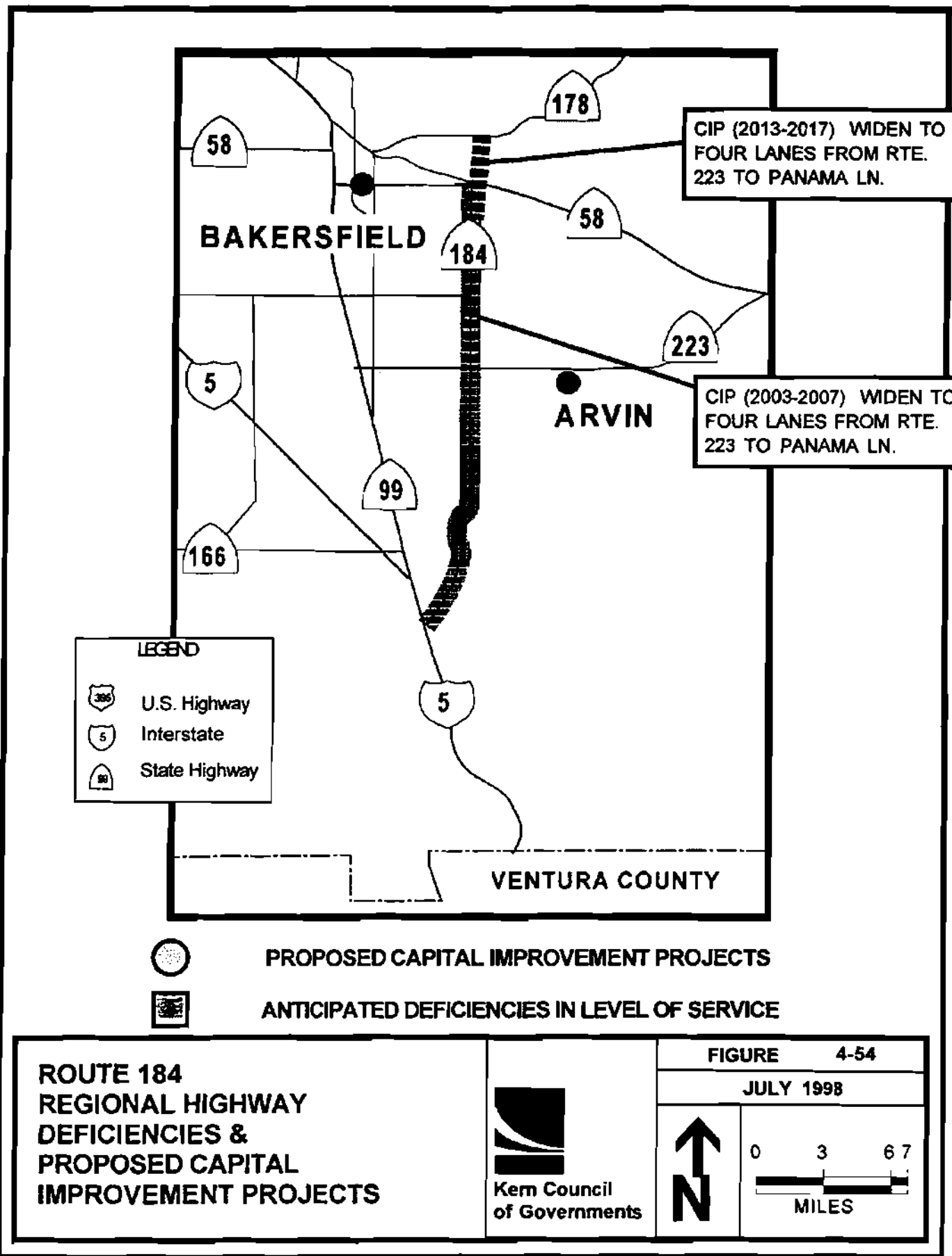


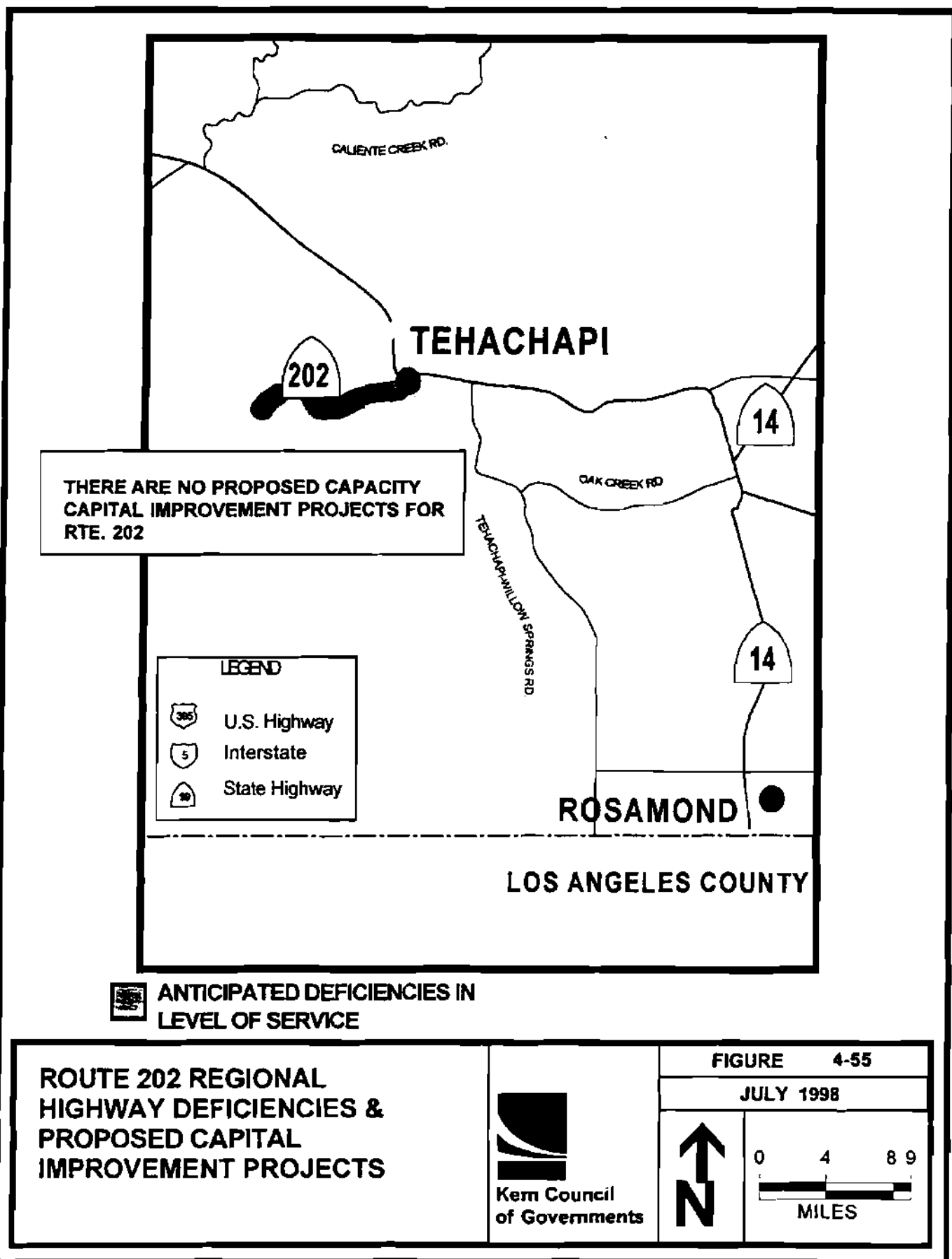
**Kern Council
of Governments**

FIGURE 4-53

JULY 1998







1998 REGIONAL TRANSPORTATION PLAN

Route 204

Currently, the section of Route 204 between Route 58 and "F" Street has been designated as a "maintain and improve" facility. This designation is used for urban facilities when normal operating levels cannot be assigned. The remainder of the route between "F" Street and Route 99 has limited available right-of-way and will not be deficient over the next twenty years because of lower overall standards set for the route. The designation of "maintain and improve" means that the route will be upgraded incrementally as small-scale improvements are needed. The Metro Bakersfield 2010 General Plan proposes upgrading the facility to provide improved connectivity with Routes 99, 58, and the new alignment of 178 (Figure 4-56). The interchange at Airport Drive near Route 99 has been completed. No other projects are currently programmed in the FTIP.

Route 223

Route 223 is not expected to experience deficiencies within the next 20 years and should only require routine maintenance. The 1998 SHOPP has two proposed projects for overlay totaling \$3.9 million.

Route 395

One project has been programmed in the current FTIP for Route 395. This project will convert a portion of the route to a four-lane expressway (Figure 4-57). Level of service deficiencies are projected in future years for a segment of Route 395 between Route 178 east of Route 14 and the intersection of Route 395 at Route 14. However, no capacity projects are currently proposed.

Local Streets and Roads

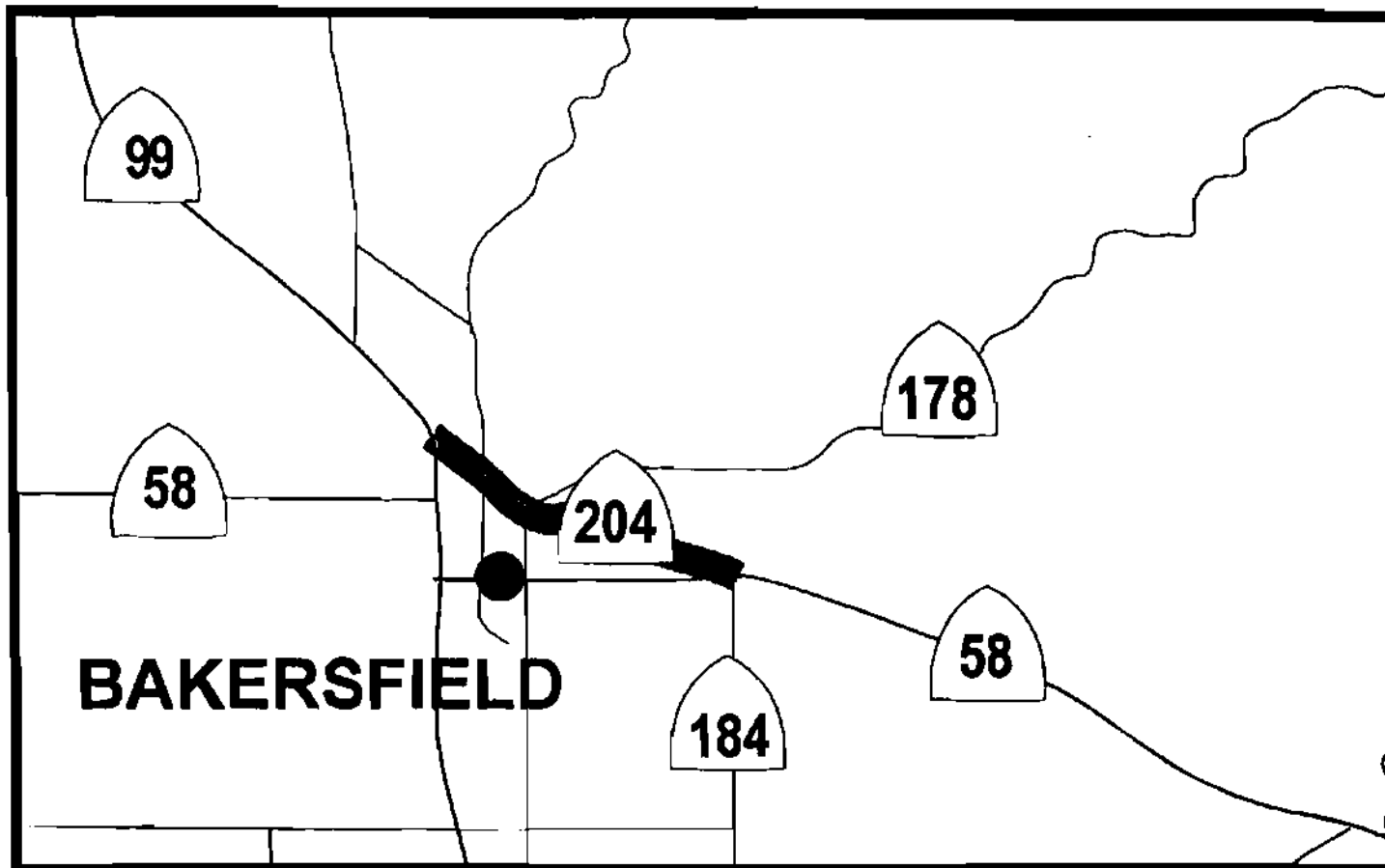
Currently, local street and road projects are under the authority of the various cities and the County. Projects are funded by the Surface Transportation Program and Local Transportation Funds (LTF). The majority of local street and road projects in the FTIP call for maintenance of existing facilities. It should be noted that not all of the street and road projects to be undertaken by local jurisdictions appear in the TIP; only those using federal funding or those that have regional significance are included.

State Highways

Two of the biggest, costliest, and most important improvements on interregional routes in the southern part of the State are in Kern County: Route 58 in the western part of Bakersfield and the Route 58 bypass at Mojave. Together, these projects will cost as much as \$400 million during the next several STIP cycles.

The Route 58 Kern River Freeway project from Route 99 to I-5 continues to be the number one priority for the Kern region. Construction costs are anticipated to consume most of the County's share of state and federal transportation dollars for the next two to three TIP cycles. Given the upcoming interregional road needs in Kern County, State highway projects of significance to the Kern region may be short of funding and in need of a local funding measure to address this shortfall.

State highway projects are ultimately incorporated into the State Transportation Improvement Program (STIP) after projects receive local approval. The California Transportation Commission (CTC) receives the Regional Transportation Improvement Program (RTIP) from Kern County after it is adopted by Kern COG. Highway projects listed in the RTIP are first submitted to Kern COG from local government agencies within Kern County. The projects are ranked based on adopted criteria and placed into the RTIP as funding becomes available. Projects programmed in the STIP strive toward providing an acceptable level of service throughout the region while meeting the transportation needs of a growing community.



ANTICIPATED AREA OF DEFICIENCIES



MAINTENANCE ONLY - NO PROJECTS
ANTICIPATED PRIOR TO 2017

ROUTE 204 REGIONAL HIGHWAY DEFICIENCIES & PROPOSED CAPITAL IMPROVEMENTS

LEGEND



U.S. Highway



Interstate



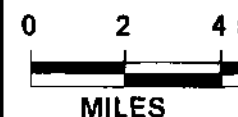
State Highway

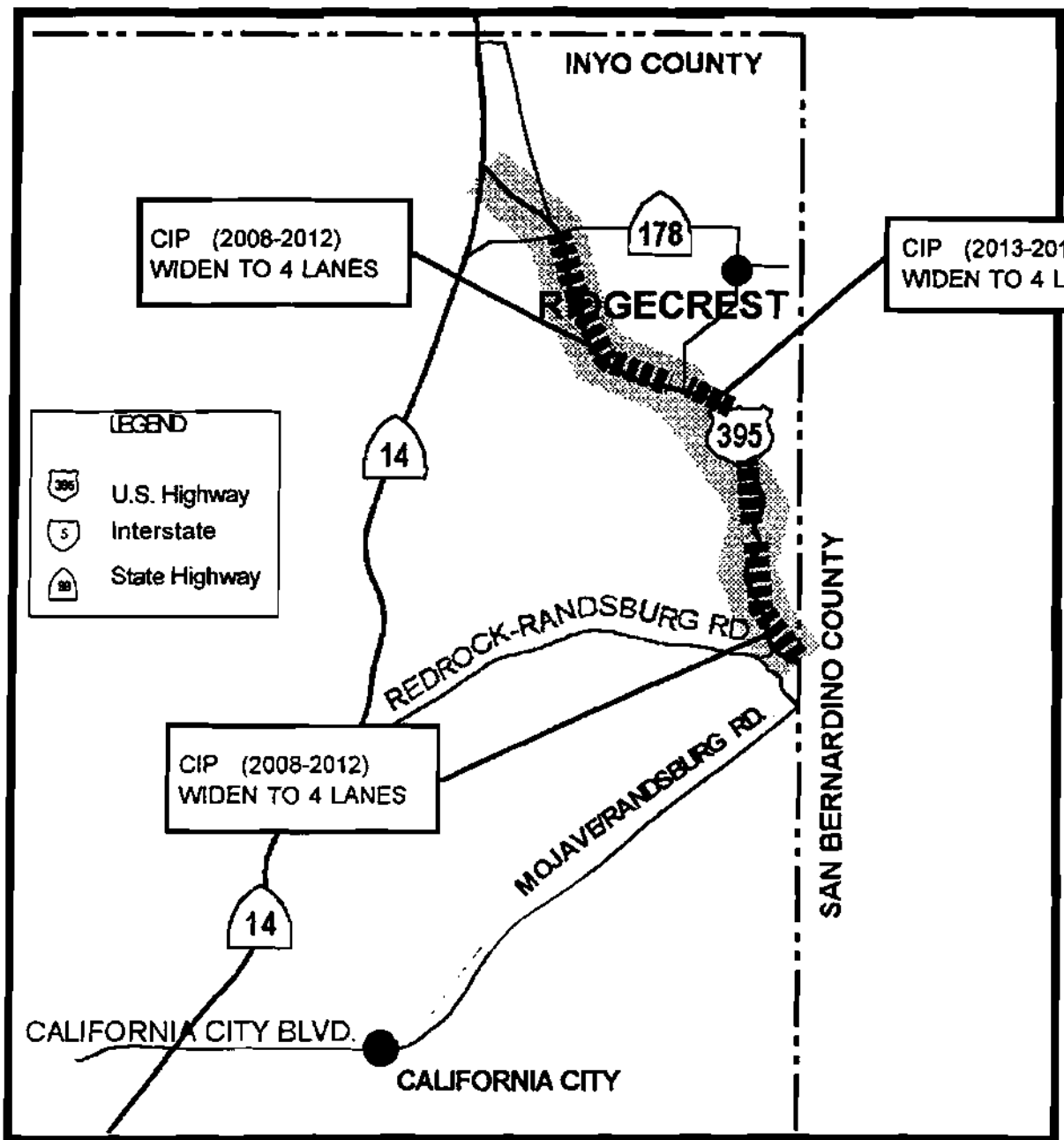


Kern Council
of Governments

FIGURE 4-56

JULY 1998





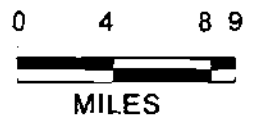
ROUTE 395 REGIONAL HIGHWAY DEFICIENCIES & PROPOSED CAPITAL IMPROVEMENT PROJECTS



**Kern Council
of Governments**

FIGURE 4-57

JULY 1998



4.5.2 AVIATION

4.5.2.1 DESCRIPTION

The regional airport system in Kern County includes a diverse range of aviation facilities. It is comprised of seven airports operated by the Kern County Department of Airports, four municipally owned airports, three airport districts, three privately owned public-use airports, and two major military facilities (Figure 4-58).

Scheduled air carrier and commuter airline service is provided at Meadows Field, which serves the metropolitan Bakersfield and surrounding air service area. Scheduled commuter services are provided at Inyokern Airport, which serves the City of Ridgecrest and the China Lake Naval Air Weapons Station in the northeastern area of the County.

General aviation needs are served by public use airports, both publicly and privately owned, throughout the County. These serve the full range of business, agriculture, recreation, and personal aviation activities.

Airport Land Use Compatibility Planning

Kern Council of Governments (Kern COG) was designated as the agency responsible for carrying out functions of the Airport Land Use Commission (ALUC) for Kern County in October 1971. This action was based on the July 27, 1971, Board of Supervisors' approval of such designation and the August 26, 1971, concurrence by the mayors of all Kern County cities. These two approvals were required by the Public Utilities Code as conditions for designation of Kern COG as the ALUC. Kern COG assumed the duties of the ALUC in November 1971.

Airport Land Use Study Areas for each of the airports in Kern County were established in June 1973. These were prepared in cooperation with the Kern County Department of Planning and reflected changes requested by the Kern County Planning Commission. In December 1974, Kern COG adopted an Airports Plan as an element of the Areawide Transportation Plan. This was followed by Airport Land Use and Height Recommendations in March 1976.

In 1993, Senate Bill 443 was passed making the creation of an ALUC optional rather than mandatory. While this Act did not change any other provisions of the State Aeronautics Act, it did make optional the primary means by which local jurisdictions demonstrated compliance with the Act. On February 28, 1994, the Kern County Board of Supervisors passed a resolution to disestablish the ALUC. The County concluded that the purposes for which an ALUC is created could be accomplished through other local actions, including general plan policy and zoning implementation. As a result, each local agency with land use jurisdiction in the County must now individually determine that airport land use compatibility objectives are being met.

Kern County Airports

Seven airports are owned and operated by the County of Kern. These range in size from small airstrips with no based aircraft to Meadows Field, the county's largest commercial service airport.

1998 REGIONAL TRANSPORTATION PLAN

Meadows Field

Meadows Field is classified as a commercial service primary airport under the National Plan of Integrated Airport Systems (NPIAS). This facility serves both commercial and general aviation needs for Bakersfield and the southern San Joaquin Valley region. The airport is located on 1,107 acres four miles northwest of central Bakersfield.

The airfield consists of two parallel runways and associated taxiways. The main runway (12L/30R) was extended over Seventh Standard Road to a length of 10,857 feet in 1987. This is a Category I Instrument Landing System (ILS) runway with Medium Intensity Approach Lighting System with Runway Indicator Lights (MIALSRIL), Precision Approach Path Indicator (PAPI), and Medium Intensity Runway Lighting System (MIRLS). Airport Surveillance Radar (ASR) is located northeast of runway 12L/30R.

The airport terminal is a 16,400-square-foot complex of two-story buildings. First floor activities include boarding gate access, passenger ticketing, baggage, and waiting areas, gift shop, and FAA offices. County airport administration offices and equipment are located on the second floor. A third story on one building contains FAA office space, a training room, and a control tower that was replaced in 1975. A new air traffic control tower located 1,600 feet northeast of the threshold of runway 30R provides air and ground communications and is staffed 17 hours per day.

General aviation is served on approximately 35 acres both northwest and southeast of the terminal area. A full range of fixed-base operator services are available.

FORECAST GENERAL AVIATION OPERATIONS MEADOWS FIELD

YEAR	BASED AIRCRAFT	PASSENGER ENPLANEMENTS	TOTAL ANNUAL OPERATIONS
1995	256	239,175	144,411
2000	322	337,920	165,328
2005	340	469,860	191,738

Source: California Aviation System Plan Forecasts, 1988

Elk Hills/Buttonwillow Airport

This facility serves seasonal agricultural aircraft, recreational and personal aviation needs of western Kern County. It is located near the intersection of Interstate 5 and Route 58, a rapidly developing highway-oriented commercial area.

The airport has a 3,260 foot unlighted runway, paved aircraft tiedown space for twelve aircraft, and ten automobile parking spaces. Existing land use in the vicinity of the airport is agriculture.

1998 REGIONAL TRANSPORTATION PLAN

FORECAST GENERAL AVIATION OPERATIONS ELK HILLS/BUTTONWILLOW

YEAR	BASED AIRCRAFT	TOTAL ANNUAL OPERATIONS
1995	0	650
2000	0	650
2005	0	650

Source: California Aviation System Plan Forecasts, 1988

Kern Valley Airport

This facility serves commercial, recreational, and occasional fire suppression activities in the Lake Isabella/Kern River Valley area. The airport is located south and east of the community of Kernville. Other nearby communities include Wofford Heights, Lake Isabella, Bodfish, Mountain Mesa, Onyx, and Weldon. Outdoor recreation is the prime attraction in this region, and aviation activity continues to increase because of the airport's proximity to Lake Isabella and the surrounding mountains.

The airport has a 3,500 foot runway and 30 aircraft tiedowns, 15 hangar spaces, and parking for 20 automobiles. Other facilities include gasoline sales, a fixed-base operator and a restaurant. The U.S. Forest Service leases 3-1/2 acres outside the airport boundary adjacent to the terminal area.

Existing land use includes a small residential area northeast of the airport, farm and rangeland to the east and south, and Lake Isabella on the west. A fly-in campground is available on the west side of the airport.

FORECAST GENERAL AVIATION OPERATIONS KERN VALLEY

YEAR	BASED AIRCRAFT	TOTAL ANNUAL OPERATIONS
1995	37	13,192
2000	39	13,782
2005	40	14,252

Source: California Aviation System Plan Forecasts, 1988

1998 REGIONAL TRANSPORTATION PLAN

Lost Hills Airport

This facility serves local and regional agricultural, business, and personal aviation needs in northwestern Kern County, and is located adjacent to the community of Lost Hills near the intersection of I-5 and Route 46. This intersection is rapidly developing as a highway-oriented commercial area. Route 46 is the primary access to the central coast area from the southern San Joaquin Valley. The airport is an important base for agricultural aircraft operating over the area's extensive crop land.

The airport currently has a 3,020 foot runway, 12 aircraft tiedowns, and four hangar spaces. Existing land use around the airport is predominantly agriculture, with a small residential area northwest of the runway. The community of Lost Hills is west of the airport.

FORECAST GENERAL AVIATION OPERATIONS LOST HILLS

YEAR	BASED AIRCRAFT	TOTAL ANNUAL OPERATIONS
1995	8	3,676
2000	9	3,835
2005	9	3,960

Source: California Aviation System Plan Forecasts, 1988

Poso Airport

This facility is located approximately 20 miles north of Bakersfield. Airport access is via Route 99, then east on Route 46. It is used primarily by agricultural and training aircraft. The airport is used extensively for recreational purposes in conjunction with drag racing events at an adjacent paved strip.

The airport has a 3,000 foot runway and 20 aircraft tiedowns. No other services or facilities are available. Adjacent land use is agriculture, with a small highway-oriented commercial development to the northwest of the airport.

FORECAST GENERAL AVIATION OPERATIONS POSO

YEAR	BASED AIRCRAFT	TOTAL ANNUAL OPERATIONS
1995	0	1,000
2000	0	1,000
2005	0	1,000

Source: California Aviation System Plan Forecasts, 1988

1996 REGIONAL TRANSPORTATION PLAN

Wasco Airport

This facility serves agricultural, business, and personal needs for the area around the City of Wasco. The airport is located one mile north of Wasco and 22 miles northwest of the City of Bakersfield. Services include fuel sales. The airport is an important base for agricultural aircraft operations.

The airport has a 3,380 foot runway, 36 aircraft tiedowns, six shelters, 11 T-hangars, and four hangar spaces. The main runway has medium intensity runway lighting (MIRL) and the airport has a beacon. Existing land use in the vicinity of the airport is agriculture.

FORECAST GENERAL AVIATION OPERATIONS WASCO

YEAR	BASED AIRCRAFT	TOTAL ANNUAL OPERATIONS
1995	21	11,618
2000	22	12,131
2005	23	12,548

Source: California Aviation System Plan Forecasts, 1988

Taft Airport

This facility serves business and personal aviation needs for the City of Taft and southwestern Kern County. This is an area of intensive oil production and processing. While significant demand has been voiced for an airport in this region, the existing facility has been considered unsatisfactory for some years. The runway heading is poorly oriented to wind direction; the runway gradient of 2.2 percent exceeds FAA standards; and insufficient land is available for improvements. In addition, the land is held by the County under a lease subject to a 90-day cancellation notice. Kern County is currently evaluating available options for improving the airport.

Existing facilities include two runways, 7/25 and 3/21, with 3 and 7 used for take-offs downhill and 21 and 25 used for landings uphill. Eighteen aircraft tiedowns, 22 T-hangars, and five hangar spaces are available. Runway 7/21 has medium intensity runway lighting (MIRL) and the airport has a beacon. Gasoline sales and fixed base operator services, including aircraft maintenance and pilot and aircraft certifications, are available. Adjacent land uses consist primarily of oilfield-type activities to the north, east, and south with the urban area of the City of Taft to the west.

1998 REGIONAL TRANSPORTATION PLAN

FORECAST GENERAL AVIATION OPERATIONS TAFT

YEAR	BASED AIRCRAFT	TOTAL ANNUAL OPERATIONS
1995	36	11,609
2000	38	12,177
2005	39	12,720

Source: California Aviation System Plan Forecasts, 1988

Municipal Airports

In addition to the airports operated by Kern County, four airports are owned and operated by municipalities located in the three geographic subregions of the County: San Joaquin Valley, Southern Sierra/Tehachapi Mountains, and Mojave Desert. In the Valley, municipal airports are operated by the Cities of Bakersfield and Delano. The City of Tehachapi operates a municipal airport in that mountain area, and California City Municipal Airport is located north of the desert community of Mojave.

Bakersfield Municipal Airport

This facility serves business, personal, and recreational aviation needs in the Bakersfield metropolitan area. The airport has recently completed an ambitious development program, including land acquisition, and construction of a 4,000 foot runway 16/34, associated taxiways, and support facilities.

Bakersfield Municipal Airport is located in southeast Bakersfield, approximately 1.5 miles south of Route 58 and about two miles east of Route 99. When purchased by the City of Bakersfield in 1985, the airport consisted of 100 acres; the City is in the process of acquiring an additional 83 acres.

Existing land use in the vicinity of the airport consists of industrial to the west and north, low-density and rural residential to the northeast and east, and rural or agricultural to the east and south. Planned land use for the areas adjacent to the airport, as depicted in the Casa Loma Specific Plan, continues the current pattern, with some extensions of industrial activity in existing undeveloped areas.

FORECAST GENERAL AVIATION OPERATIONS BAKERSFIELD MUNICIPAL

YEAR	BASED AIRCRAFT	TOTAL ANNUAL OPERATIONS
1995	124	84,749
2000	129	88,844
2005	134	92,983

Source: California Aviation System Plan Forecasts, 1988

1998 REGIONAL TRANSPORTATION PLAN

California City Municipal Airport

This airport is used for various general aviation activities, especially recreational aviation. The airport is located northwest of California City approximately eight miles east of Route 14 and two miles north of California City Boulevard.

The airport consists of a single 6,035 foot Runway 6-24 with medium intensity runway lighting (MIRL) and a 5,010 foot parallel taxiway. Two dirt glider landing strips and a parachute drop zone are located 3/4 mile south of the airport. Existing land use in the immediate area is predominantly undeveloped desert, with developed portions of the City east of the airport.

FORECAST GENERAL AVIATION OPERATIONS CALIFORNIA CITY MUNICIPAL

YEAR	BASED AIRCRAFT	TOTAL ANNUAL OPERATIONS
1995	30	38,595
2000	32	40,230
2005	33	41,647

Source: California Aviation System Plan Forecasts, 1988

Delano Municipal Airport

This airport serves business, personal and recreational aviation activity in the north-central part of the County. Extensive crop dusting and helicopter operations, as well as ultralight activities, are accommodated at this airport. The airport is located just east of Route 99 approximately two miles southeast of central Delano.

Existing facilities consist of a main Runway 14L-32R that is 5,650 feet long. A secondary Runway 14R-32L is 3,500 feet long and is a converted taxiway used by agricultural crop dusting aircraft. Runway 14L-32R has medium intensity runway lights (MIRL) and visual approach slope indicators (VASI) on both ends. A displaced threshold on Runway 14R with 4,010 feet is available for aircraft landings.

Existing land use consists of mixed urban uses to the northwest; a golf course and park area to the northeast; industrial uses to the east and south; and Route 99 to the west.

1998 REGIONAL TRANSPORTATION PLAN

FORECAST GENERAL AVIATION OPERATIONS DELANO MUNICIPAL

YEAR	BASED AIRCRAFT	TOTAL ANNUAL OPERATIONS
1995	67	30,118
2000	70	31,762
2005	75	34,328

Source: California Aviation System Plan Forecasts, 1988

Tehachapi Municipal Airport

This is a general aviation airport providing business, personal and recreational aviation services. The airport is located between Route 58 and Tehachapi Boulevard. The airport is also adjacent to the Southern Pacific Railroad, but a railroad spur into the airport property is not available.

Existing airport facilities include a 4,035 foot Runway 11-29 equipped with low intensity runway lighting (LIRL) and VAPIs (visual approach path indicators), as well as displaced thresholds, on both ends of the runway.

Existing land uses consist of industrial to the west, east and south, urban residential uses to the south, and Route 58 freeway on the north. North of the freeway, extensive development is proposed for primarily commercial and office uses.

FORECAST GENERAL AVIATION OPERATIONS TEHACHAPI MUNICIPAL

YEAR	BASED AIRCRAFT	TOTAL ANNUAL OPERATIONS
1995	68	26,753
2000	71	27,858
2005	73	28,765

Source: California Aviation System Plan Forecasts, 1988

Airport Districts

Three airport districts operate airports in Kern County. Each is organized as a special district, with a board of directors and an airport manager. One district, Minter Field, is located within the boundary of the incorporated City of Shafter. The other two districts, East Kern and Indian Wells Valley, are in the eastern portion of Kern County.

1998 REGIONAL TRANSPORTATION PLAN

East Kern Airport District/Mojave Airport

The Mojave Airport currently offers fixed-base operator facilities for airport users from Edwards Air Force Base, Rosamond, Mojave, Tehachapi, California City, and Boron. The airport serves as a civilian flight test center for business, military, civil, and home-built aircraft development testing. It also serves as a base for modification of major military and civilian aircraft. The airport is located northeast of the community of Mojave and is within one mile of Routes 14 and 58. A rail spur from the Southern Pacific Railroad leads into the airport.

Existing airport facilities include a 9,600 foot primary Runway 12-30 and two crosswind Runways 7-25 and 4-22. Runway 12-30 is equipped with high intensity runway lights (HIRL) and 7,040-foot Runway 7-25 is equipped with medium intensity runway lights (MIRL). Runway 4-22 is 4,900 feet long and has no lighting.

Existing land use in the vicinity consists of mixed urban uses to the east and south in the community of Mojave, industrial and highway commercial uses to the northwest, and undeveloped desert to the north and east. The airport itself includes a substantial area devoted to aviation related industrial uses.

FORECAST GENERAL AVIATION OPERATIONS MOJAVE

YEAR	BASED AIRCRAFT	TOTAL ANNUAL OPERATIONS
1995	146	18,957
2000	160	20,300
2005	174	21,808

Source: California Aviation System Plan Forecasts, 1988

Indian Wells Valley Airport District/Inyokern Airport

This air carrier airport serves the China Lake Naval Air Weapons Station, the community of Inyokern, and the City of Ridgecrest with scheduled airline service to the Los Angeles basin and other areas. It also serves local general aviation needs for personal, business and recreational flying. Several fixed-base operators provide services at the airport. The airport is located northwest of the community of Inyokern north of Route 178 and west of Route 14.

Existing facilities consist of three runways, the longest of which is 7,344 foot Runway 15-33. This runway and Runways 2-20, length 6,275 feet, and 10-28, length 4,153 feet, are equipped with medium intensity runway lights (MIRL) and visual approach slope indicators (VASI) for Runways 20 and 33. Displaced thresholds are located on both ends of Runway 15-33 and Runway 20.

1998 REGIONAL TRANSPORTATION PLAN

FORECAST GENERAL AVIATION OPERATIONS INYOKERN

YEAR	BASED AIRCRAFT	PASSENGER ENPLANEMENTS	TOTAL ANNUAL OPERATIONS
1995	92	22,330	18,066
2000	96	26,966	20,019
2005	99	31,652	21,890

Source: California Aviation System Plan Forecasts, 1988

Minter Field

Minter Field is a general utility airport serving general aviation activities. This airport is located within the Shafter city limits at the junction of Route 99 and Lerdo Highway. Minter Field has two main runways. Runway 12/30 is 4,520 feet in length and is equipped with a precision approach path indicator (PAPI), and landing lights. Runway 16/34 is 2,980 feet. A third runway, 7-25, is 2,800 feet long and is used primarily by agricultural aircraft. The airport does not have a control tower.

Minter Field is surrounded primarily by agricultural uses with a housing development and commercial area and campground to the south, and industrial uses to the south and east.

FORECAST GENERAL AVIATION OPERATIONS MINTER FIELD

YEAR	BASED AIRCRAFT	TOTAL ANNUAL OPERATIONS
1995	77	20,595
2000	81	21,525
2005	84	22,580

Source: California Aviation System Plan Forecasts, 1988

Private Airports

Three privately owned and operated public use airports are located in Kern County. One of these, Rio Bravo, has requested a designation on the City of Bakersfield General Plan for non-aviation uses and has been so planned and rezoned by the City. While it continues to be used in the interim as an airport, it is no longer considered for system planning purposes.

1998 REGIONAL TRANSPORTATION PLAN

Mountain Valley Airport

Mountain Valley Airport is located approximately two miles southeast of the City of Tehachapi. The airport is used extensively for sailplane operations. The airfield consists of two parallel gravel/soil runways that are in good condition. Runway 9L-27R is 5,190 feet long and Runway 9R-27L is 5,420 feet long. Runway 9L-27R has a 200-foot displaced threshold for Runway 9R and a 380-foot displaced threshold for Runway 27R.

Development on the north side of the airport consists of commercial and industrial uses that are part of the airport operation. A variety of services, ranging from food service to sailplane rentals, are provided by the airport owners.

Land around the airport is sparsely developed at present. A large land development east of the airport was recently approved by Kern County. Development is also occurring on the south side of the City of Tehachapi that in time may encroach on airport activities.

FORECAST GENERAL AVIATION OPERATIONS MOUNTAIN VALLEY

YEAR	BASED AIRCRAFT	TOTAL ANNUAL OPERATIONS
1995	6	57,389
2000	7	59,326
2005	7	61,731

Source: California Aviation System Plan Forecasts, 1988

Rosamond Skypark

Rosamond Skypark is located in the desert community of Rosamond, approximately 14 miles south of Mojave. Originally, the airport was about two miles west of the developed area of the town. In the early 1980s, property on the south side of the runway was developed as an aviation-oriented residential community. Each lot was oversized, and each had taxiway access to the airport runway.

Over time, development at the airport served as a catalyst for residential development on adjacent lands. Growth in the Rosamond area accelerated significantly in the late 1980s when the area became popular as a low-cost alternative to the Palmdale/Lancaster area in Los Angeles County. The airport now is in a situation of urban-level residential encroachment on three sides.

1998 REGIONAL TRANSPORTATION PLAN

FORECAST GENERAL AVIATION OPERATIONS ROSAMOND SKYPARK

YEAR	BASED AIRCRAFT	TOTAL ANNUAL OPERATIONS
1995	35	32,789
2000	38	34,595
2005	51	36,154

Source: California Aviation System Plan Forecasts, 1988

Military Aviation Facilities

China Lake Naval Air Weapons Station (NAWS) and Edwards Air Force Base (EAFB) are located in an area known as the R-2508 complex, which is used for the advancement of weapons systems technology and tactical training. The R-2508 complex (Figure 4-59) consists of several restricted airspace areas; it is approximately 110 miles wide and 140 miles long, and covers approximately 20,000 square miles.

The nature of operations conducted within this airspace creates a flight hazard to non-military aircraft. The R-2508 area was established in 1955 to prevent accidents and protect military activities.

In addition to NAWS and EAFB, other military installations use this air space, including Fort Irwin Military Reservation near Barstow and Air Force Plant 42 at Palmdale.

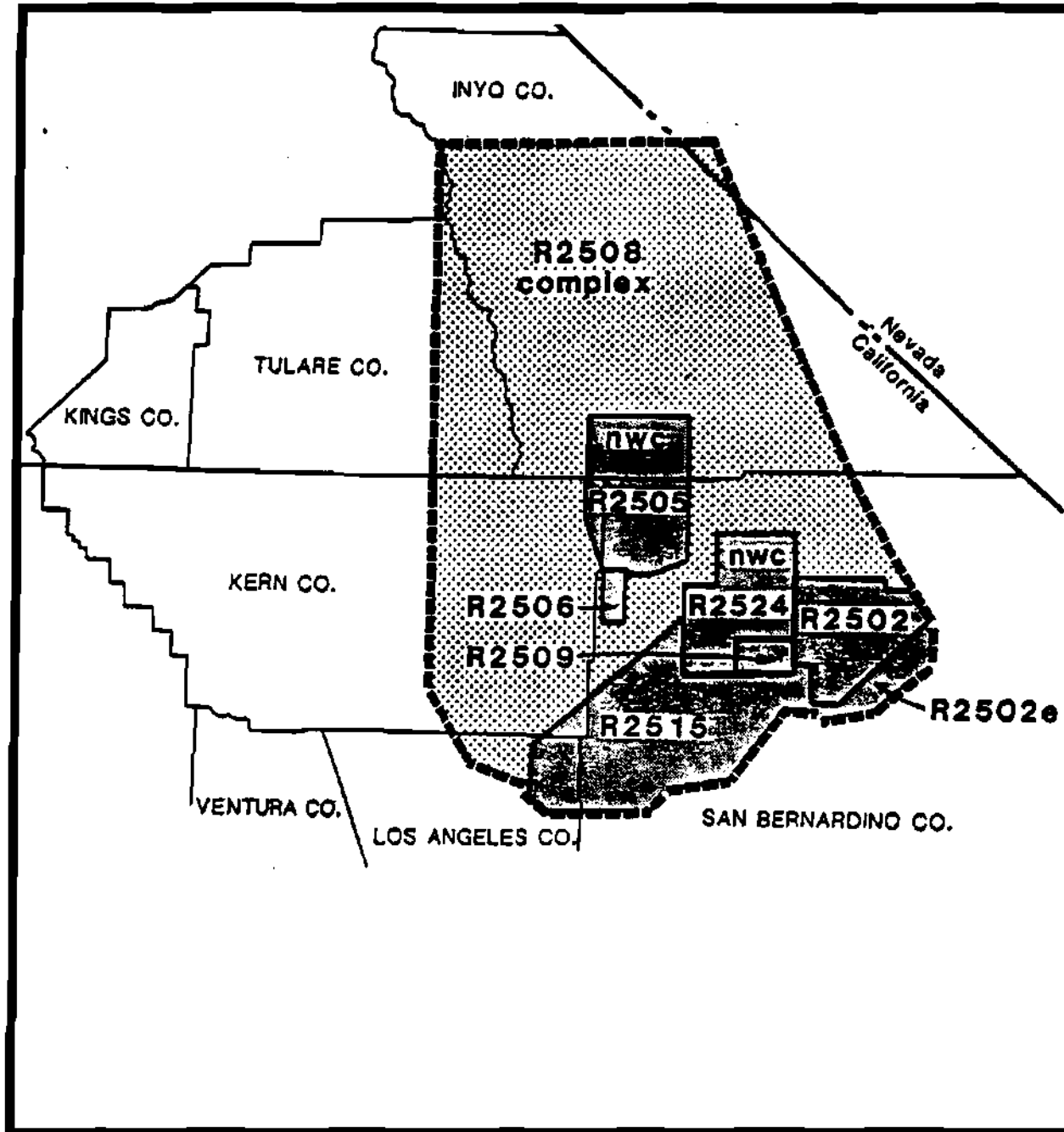
4.5.2.2 ISSUES, ACCOMPLISHMENTS, AND NEEDS

AVIATION ISSUES

Noise

Noise issues are generally a function of urban encroachment in the vicinity of an airport. In Kern County, virtually all airports were originally developed in areas that were some distance from other development. Frequently, the very success of the airport served as the catalyst for development in the surrounding area. Since the purpose of an airport is to facilitate the take-off and landing of aircraft, and since aircraft make noise, conflicts over noise are an early indicator that an airport is facing the broader issue of urban encroachment.

Noise contour maps have been prepared through various programs for all of the airports in Kern County, using the FAA Integrated Noise Model. For the more active airports, the noise analysis has been part of preparing an Airport Master Plan. Noise contours were also prepared for airports as part of various ALUC studies. A Comprehensive Land Use Plan has been prepared that includes Land Use Plans, Noise Contours, Airspace Plans and Layout Plans for all airports within Kern County.



**MILITARY RESTRICTED
AIR SPACE
(R-2508)**



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FIGURE 4-59

JULY 1998



NOT TO SCALE

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Air Quality

In November 1983, the Environmental Protection Agency (EPA) published its final rule for determining conformity of general federal actions to state or federal air quality implementation plans (40 CFR Parts 6, 51, and 93). These rules require that federally-funded plans, programs, and projects be found to conform to the FCAAA. While many of the implications of this rule have yet to be fully understood, it is likely some future impact on airport facilities will occur.

Other Environmental Factors

In the San Joaquin Valley portion of the County, environmental concerns related to agricultural aircraft operations have significant impact on several airports. Generally, the problem is groundwater contamination resulting from loading or washdown activities. Problems resulting from past practices, for the most part, have been resolved, often through the discontinuance of the operation and placement of an impermeable cap on the contamination area. Another groundwater contamination source is underground fuel storage tanks. A number of the airports in the County were formerly military airfields. While airport operators have generally identified and removed old leaking tanks, previously unknown tanks are occasionally found that must be corrected. Surface contamination from stormwater runoff is also an issue at several airports. In most cases, this has been addressed adequately by airport operators. At this point, no regional activity is anticipated.

Endangered wildlife species are found throughout the County. In the San Joaquin Valley, the San Joaquin Kit Fox and the Blunt-Nosed Leopard Lizard are commonly encountered. In the eastern portion of the County, the Mojave Ground Squirrel is an issue. Other endangered species of birds and vegetation may be present at various locations in the County. These must be addressed in the environmental review for airport projects, and any adverse impacts identified and mitigated.

Airport Ground Access

Ground access is of particular concern to commercial airports. Both Meadows Field and Inyokern currently have reasonably good access by surface roads. For Inyokern, this should be adequate for some time into the future. Meadows Field, however, could be impacted by future transportation system issues in the Bakersfield metropolitan area.

At present, Meadows Field has good access to Route 99 as well as local streets and the Golden Empire Transit system. Future transportation modes, however, include the potential for light rail serving the metropolitan area and high-speed rail connecting Bakersfield to San Francisco and Los Angeles. Future growth at the airport could also increase the need for better access not only to Route 99, but also Routes 58 and 178, as well as Interstate 5. It is essential that future planning ensure a truly intermodal transportation system in the Bakersfield metropolitan area that is integrated with Meadows Field.

Ground access to general aviation airports is satisfactory at present. Minter Field currently has good access to Route 99, but with anticipated industrial development, surface access to the airport on Lerdo Highway may need some improvement. Good potential has been identified for increased rail access to the industrial properties at the airport. The potential for air, rail, and highway access presents a number of intermodal opportunities at Minter Field. Delano Municipal Airport also is located in proximity to freeway and rail transportation, and has adjacent industrial development. Mojave Airport also has good freeway access.

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Airport Comprehensive Land Use Planning

Until early 1994, development in the vicinity of airports was reviewed by the Kern Airport Land Use Commission (ALUC). In 1973, Airport Planning Areas were formally established around each airport and projects which required local agency planning or zoning action were referred to the ALUC for airport land use compatibility review.

The State Aeronautics Act was revised in 1993 to make the creation of an ALUC optional, rather than mandatory, for local jurisdictions. In response to this legislation, the Kern County Board of Supervisors chose in early 1994 to eliminate the Kern ALUC. As a result of this action, issues of airport land use compatibility review are now the responsibility of the local jurisdiction, be it county or city or both.

Prior to the elimination of the ALUC, Caltrans Division of Aeronautics had funded a major revision to the ALUC Airport Land Use Compatibility Plan. While the ALUC no longer exists, the Airport Land Use Compatibility Plan remains as a useful resource for local jurisdictions to use in their own planning processes. If state law is changed to again make an ALUC mandatory, the Airport Land Use Compatibility Plan would be available as a resource for the new ALUC.

AVIATION ACCOMPLISHMENTS

The 1990 Regional Transportation Plan (RTP) Improvement Program identified 13 projects, based on the 1990 Aeronautics Program of the California Transportation Commission (CTC). For the most part, these projects have been completed. From a regional planning perspective, the most significant of these was the Kern County Airport Land Use Compatibility Plan. Originally intended for adoption and implementation by the ALUC, the Plan was modified upon the elimination of the ALUC in early 1994 to make it more usable by local agencies in their compliance with the State Aeronautics Act.

The 1990 RTP Improvement Program was a somewhat limited listing, since it did not include projects that were contemplated for funding by FAA or other sources. Additional projects, funded by the CTC, FAA, and other sources, have been identified, funded, and completed in the interim period. Because of the unclear linkage with funding sources, especially the FAA, these projects were not reflected in the 1990 RTP and are thus not clearly identifiable as accomplishments.

AVIATION NEEDS

In keeping with the objective of a financially constrained RTP, aviation needs have been identified by projects and identified funding sources. For funding, the 1994 RTP identifies anticipated aviation capital improvement revenue through 2014, the 20-year planning horizon (Reference Section 8.9.1-2). These revenues are listed according to source, i.e., federal, state, or local.

Aviation capital improvement projects have also been identified for the 20-year period, based on information provided by airport operators and the Division of Aeronautics. These are categorized both as constrained (Reference Section 8.9.4) and unconstrained (Reference Section 8.9.3). Funding for the constrained project category is reconciled with the projected capital improvement revenues for the planning period. Projects for which funding is not identified would be dependent on funding from sources that are not currently identified or available.

Unlike other transportation modes, airports have developed a variety of funding sources. These can range from tie-down or hangar fees at a general aviation airport to landing fees and passenger facilities charges (PFC). While this makes long-range programming, such as in the RTP, somewhat problematic, it affords necessary

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flexibility for airports to deal with changing priorities. In many situations, such as smaller general aviation airports, funds generated may be of marginal significance. In the case of PFC, however, resultant funds may be a major source of revenue.

Aviation operations and maintenance revenues have also been identified through the 2014 planning horizon. These revenues are listed according to state and local sources (Reference Section 8.9.2), and are in addition to the revenues identified for capital improvements.

4.5.3 MASS TRANSPORTATION

4.5.3.1 DESCRIPTION

Public transit is available in sixteen Kern County communities. In 1994-1995, public transit services transported over 4.5 million passengers in Kern County. Transit services include intercity, intracity, demand responsive and fixed route operations. The County of Kern operates Kern Regional Transit that includes service to the unincorporated areas of Buttonwillow, Lamont, Kern River Valley, Frazier Park, Rosamond and Mojave. In addition, the County has agreements with several small cities to share the cost of providing transit service to County areas surrounding the incorporated areas. These cities include Delano, Ridgecrest, Shafter, Taft, Tehachapi and Wasco. The County also provides intercity service between Lamont/Bakersfield; Lake Isabella/Bakersfield; Frazier Park/Bakersfield; and California City/Mojave/Rosamond/Lancaster/Palmdale.

Golden Empire Transit (GET) District has provided public transit service for the Bakersfield area since 1973. Today, GET operates 14 fixed routes and the Get-A-Lift program to 133 square miles and serves approximately 350,000 residents. Get-A-Lift provides complementary paratransit service within metropolitan Bakersfield for those who are physically unable to use the fixed route service. Elderly and disabled service is also provided by the Consolidated Transportation Service Agency (CTSA). Table 4-28 summarizes public transit services operated within Kern County.

GET has determined that within metropolitan Bakersfield, the east and southeast areas exhibit the highest service potential. This analysis is based on population density, income, auto ownership, and age. Other areas with high transit potential are portions of Oildale and central Bakersfield. The lowest potential areas include most of the southwest, northwest, Greenacres, and Greenfield.

The Amtrak San Joaquin rail line has its southern terminus in Bakersfield. Bus connections transport passengers to Los Angeles from Bakersfield. Currently, the San Joaquin runs four times daily. Common carriers serving Kern County include Greyhound, Orange Belt Stages, Airport Bus of Bakersfield and Amtrak. These operations have terminals in central Bakersfield.

TRANSIT SERVICES

Ten incorporated cities and several unincorporated communities are within the rural portions of the County. Rural public transit coverage is extensive and is provided by nine of the cities and Kern County. All operations are accessible to elderly and disabled riders, and all provide either door-to-door or curb-to-curb service. Most rural services in Kern County provide special service to senior citizens for activities at senior centers.

Below is a description of services provided by each rural public transit provider, including hours of operation, type of service provided, and number of fleet service vehicles. Also included are current ridership figures. Table 4-28 summarizes public transit services operated within the Kern County.

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**TABLE 4-28
PUBLIC OPERATORS OF MASS TRANSPORTATION WITHIN KERN COUNTY**

Operator	Area Served	Service Type	Days of Service	Fare Structure	
				Regular	Discount
Arvin	Arvin, Lamont	Dial-a-ride	Mon-Fri	\$0.75	\$0.50 (senior, disabled, children under 9)
California City	California City, Mojave	Dial-a-ride	Mon-Fri	\$1.25	\$1.00 (seniors, disabled, ages 5-14)
CTSA	Metro Bakersfield	Dial-a-ride	Mon-Fri	\$1.00	\$0.40
Delano Express Transit (DET)	Delano	Fixed Rt. Dial-a-ride	Mon.-Sat	\$1.00	\$0.50
McFarland	McFarland	Dial-a-ride	Mon-Fri	\$1.00	\$0.50 (seniors, disabled, students)
Ridgecrest	Ridgecrest and adjacent areas	Dial-a-ride	Mon-Sat	\$1.25	\$0.75 (seniors, disabled)
Shafter	Shafter & adjacent unincorporated area	Dial-a-ride	Mon-Fri	\$1.00	\$0.75 (seniors, disabled, youth)
Taft	Greater Taft (Taft, Taft Heights, So. Taft, Ford City)	Fixed Rt. Dial-a-ride	Mon-Fri	\$1.00 \$1.50 (dial-a-ride)	\$0.50 (seniors, disabled, students)
Tehachapi	Tehachapi & adjacent unincorporated area	Dial-a-ride	Mon-Fri	\$1.00 (city-County trips) \$0.75 (within city or county)	\$0.75 (seniors, disabled, children) \$0.50 (seniors, disabled, children)
Wasco	Wasco (Bakersfield service stops in Shafter also)	Dial-a-ride	Mon-Fri (Tue and Thur for Bkfd. service)	\$1.00	\$0.60 (seniors, disabled, youth 5-12) \$0.75 from Wasco to Shafter \$1.50 for Bkfd.
Kern Regional Transit	Bkfd-Frazier Park	Intercity	Mon-Sat	Varies with origin and destination	
	Bkfd-Lake Isabella	Intercity	Mon-Sat	Varies with origin and destination	
	Bakersfield-Taft	Intercity	Mon-Fri	\$2.00	\$2.00
	Bkfd-Tehachapi	Intercity	Mon-Fri	Varies with origin and destination	
	Buttonwillow-Bkfd	Intercity	Tue, Thu	\$1.75	\$1.25 (Seniors, disabled)
	Bkfd-Lamont	Intercity	Mon-Sat	\$1.75	\$1.75
	Cal City-Palmdale	Intercity	Mon-Sat	Varies with origin and destination	
	Kern River Valley	Dial-a-ride	Mon-Sat	Varies with origin and destination	

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Operator	Area Served	Service Type	Days of Service	Fare Structure	
				Regular	Discount
	Frazier Park	Dial-a-ride	Mon-Sat	\$0.75	\$0.50 (Srs, disabled & youth 5-15)
	Lamont	Fixed route	Mon-Sat	\$0.75	\$0.50 (Srs, disabled & youth 5-15)
	Mojave	Dial-a-ride	Mon-Sat	\$0.75	\$0.50 (Srs, disabled & youth 5-15)
	Rosamond	Dial-a-ride	Mon-Sat	\$0.75	\$0.50 (Srs, disabled & youth 5-15)
GET	Metro Bakersfield	Fixed Route	Mon-Sat	\$0.75	\$0.35 (seniors & disabled)
GET-A-LIFT	Metro Bakersfield	Dial-a-ride	Daily	\$1.00	

Transit ridership in Kern County has been on the increase over the past three years as shown in Table 4-29. GET experienced the highest patronage ever in 1996/97. Largely because of expansion of services, transit ridership on Kern Regional Transit increased by almost 50% between 1994/95 and 1996/97. With further expansions set for implementation in 1997/98, transit ridership is projected to continue to increase.

Table 4-29
Passengers Transported by Kern County Transit Operators
FY 1994/95–FY 1996/97

Operator	1994/95	1995/96	1996/97
Arvin	43,021	49,885	56,999
California City	19,981	22,874	28,841
CTSA	45,663	43,877	42,390
Delano	118,780	215,692	n/a
GET & GET-A-Lift	4,539,740	4,648,928	4,747,146
Kern Regional Transit	267,255	369,278	377,322
McFarland	10,054	14,891	n/a
Ridgecrest	25,615	31,573	29,430
Shafter	18,522	23,072	27,499
Taft	84,304	86,786	n/a
Tehachapi	27,061	24,844	26,718
Wasco	28,171	27,833	26,263

Source: Annual Report of Financial Transactions—Transit, 1993-94, published by the State Controller, Transit Operators

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4.5.3.2 ISSUES, ACCOMPLISHMENTS, AND NEEDS

TRANSIT ISSUES

Limited Transit Dollars

Financial resources for public transportation are limited, while demand for those resources has increased. Traditional mass transportation revenue sources do not support the increasing need for public mass transportation to help mitigate population increases, clean air mandates, and trip reduction programs. Should a countywide transportation tax be implemented, part of this revenue should provide capital and operating revenues for all public transit providers.

Coordination With Private Sector Providers

Existing interface between the public and private providers of mass transportation must be identified. This is conducted as one of the tasks in the short range transit plans that Kern COG prepares annually for different transit operators in the County. In the 1996-97 fiscal year, Kern COG proposes to update the transit development plans (TDPs) for the cities of California City, Delano, and Ridgecrest.

Senior/Mobility-Disabled Public Transportation

The senior and mobility-disabled populations in Kern County have limited access to public transportation. Differing fare structures, trip priorities, and limited service hours inhibits a coordination of efforts among operators of senior and disabled transportation. A countywide Consolidated Transportation Service Agency (CTSA) could be developed to incorporate all public operators of disabled and senior transportation. Expanding the CTSA would provide a means for coordination of services and efforts.

Kern Regional Transit Service Improvements

Several service improvements for Kern Regional Transit are being proposed for implementation within FY 1994-95, contingent on other Caltrans priorities. They include:

- 1) Westside Express I provides express commuter service Monday through Friday between Bakersfield and the Taft area. The schedule is designed primarily for commuting workers and students, with additional midday trips for shopping and medical purposes. Connections will be made with Taft Area Transit and GET when possible.
- 2) Tehachapi Express provides service Monday through Friday between Tehachapi and Bakersfield, primarily for worker and student commuters. Connections will be made with Tehachapi Transit and GET.
- 3) Valley Express will offer commuter service between Delano, McFarland, Wasco, Shafter and Bakersfield. Service will be provided each weekday, with several early morning and early evening trips to meet both work and school schedules, as well as several midday trips for various purposes. Service will be coordinated with local transit services and GET.
- 4) East Kern Express currently operates five days a week with three round trips daily between California City, Mojave, Rosamond, Lancaster and Palmdale. Additional service is proposed between Tehachapi and Mojave, providing a linkup with the Tehachapi Express' trips to and from Bakersfield. Future improvements may include service to connect with the Metrolink commuter rail line in Lancaster, which will in turn provide service to downtown Los Angeles.

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Population Residing More Than 1/4 Mile From Transit Route

GET District policy is for 90 percent of residents within metropolitan Bakersfield to be within one-quarter mile of an existing transit route. Within the District, several populated areas are more than one-quarter mile from a transit route. Currently, GET serves about 80 percent, or 10 percent less than the District goal. Most of this population is on the periphery of metropolitan Bakersfield, with some areas that form "holes" in the one-quarter mile buffer around routes. Some of the unserved areas may not have high transit potential. Of these areas, those with high transit potential include Fairfax, Eucalyptus/Monica, Southern Pacific Railroad, Riverview, McDonald/Belle Terrace and White Lane/Akers.

Continued development around the urban fringes presents many difficulties in meeting route coverage standards. Much of the new development is low density, middle and upper income housing that tends to generate little transit ridership. Furthermore, development is not always contiguous to existing development, causing transit services to cover unproductive miles in outlying areas that generate low ridership. However, urban fringe development may generate levels of transit ridership to justify express bus service. Other metropolitan areas within California have developed express routes to help reduce home to work automobile trips. GET should evaluate creation of express routes within metropolitan Bakersfield for the same purpose.

High Speed Rail

AB 971 formed a study group to develop a long range plan for a high speed rail corridor connecting the Bay Area with Sacramento-Fresno-Los Angeles. This project is a phased improvement program that would commence with improvement of existing rail and would ultimately construct high speed magnetic levitation ("maglev") rail lines, allowing maximum speeds of 300 mph (Figure 4-50). Seven objectives have been adopted by the study group for the evaluation of improvement projects:

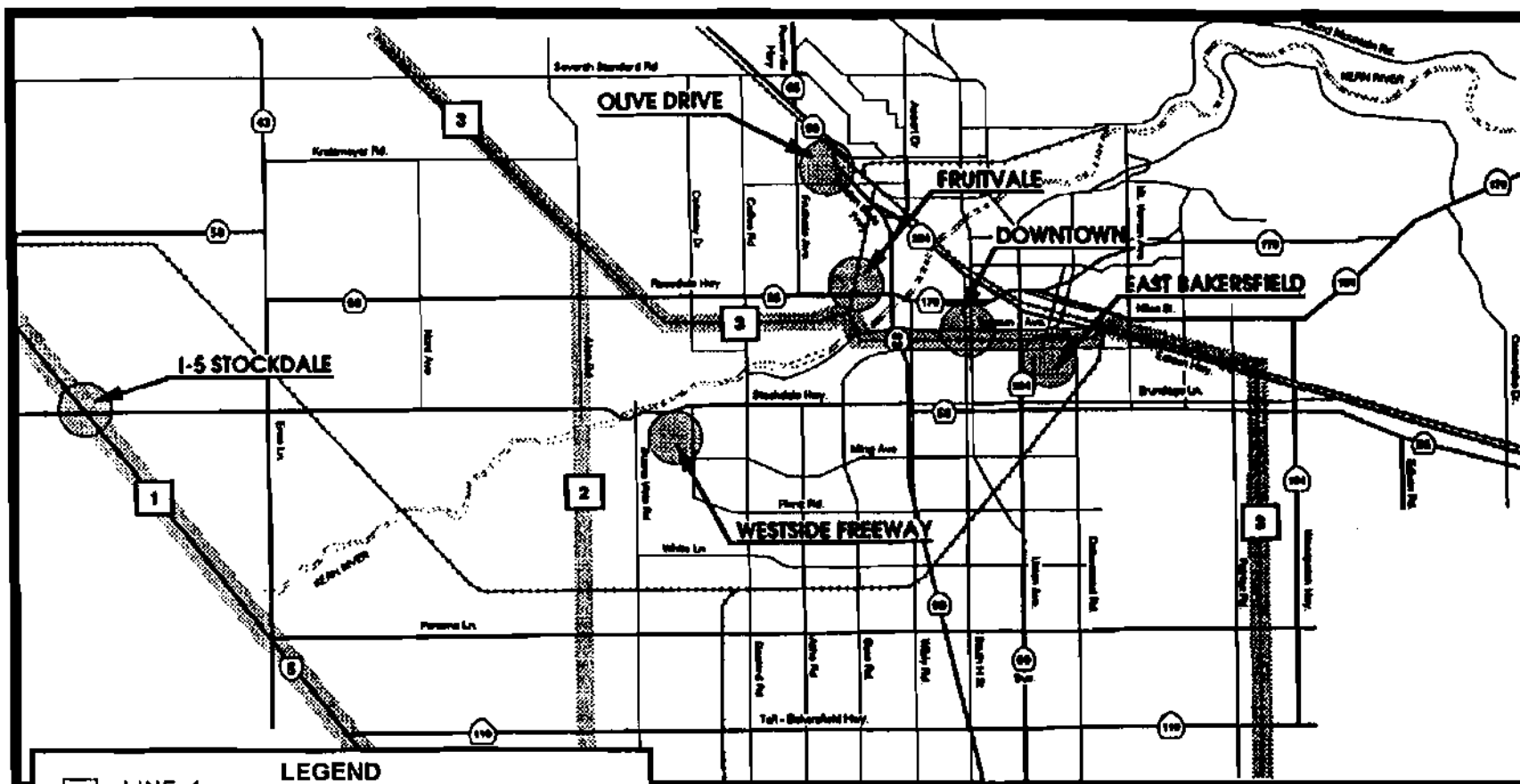
1. Reduce travel time and enhance speed for trips within the corridor.
2. Provide additional passenger rail service and passenger-carrying capacity within the corridor.
3. Extend direct rail service to Los Angeles and to Sacramento and the Bay Area.
4. Increase patronage potential and accessibility of rail service within the corridor.
5. Improve the quality of passenger rail service in the corridor.
6. Maintain capacity for freight operations.
7. Provide improvements that maximize benefits within the corridor relative to costs.

TRANSIT ACCOMPLISHMENTS

This section outlines accomplishments and activities that have taken place during recent years. These accomplishments and activities provide a documentation of progress being made toward fulfilling the goals, objectives, and policies of Kern COG.

Golden Empire Transit District (GET)

GET changed its fixed route operation from a radial system, with downtown as a primary focus, to a crosstown system designed to provide a higher level of service to the fast growing northeast and southwest areas.



- | LEGEND | |
|--------|--------------------------|
| 1 | LINE 1 |
| 2 | LINE 2 |
| 3 | LINE 3 |
| ○ | High Speed Rail Terminal |
| — | High Speed Rail Route |

HIGH SPEED RAIL ROUTE ALTERNATIVES

LEGEND

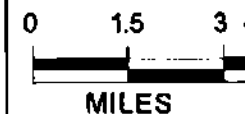
- | | |
|--|---------------|
| | U.S. Highway |
| | Interstate |
| | State Highway |



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FIGURE 4-60

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In FY 1992-1993, GET's fixed route operation achieved its highest ridership level ever with over 4,690,421 million riders. During FY 1992-1993, ridership on the Get-A-Lift system experienced its highest ridership of 38,973 passengers. A program to designate bus stops on curbs was implemented in 1988. The systemwide number of unmarked bus stops is now only 45 stops, making the total percentage of marked stops at 97 percent. Sixty-six percent of the stops are wheelchair accessible.

A formal procedure has been established to allow the transit district opportunity to review and comment on all proposed tract maps for Bakersfield and the County. GET reviews proposed developments for transit amenities such as bus turnouts, bus stop shelters, and adequate bus access.

In January 1994, GET opened the Southwest Transfer Facility adjacent to the Valley Plaza. The facility accommodates seven buses arriving simultaneously, serving ten different routes. Other public transportation systems that provide intercity service also use the location as a transfer point. Over 8,000 passengers travel through the center daily. The facility was designed to comply with the Americans with Disabilities Act (ADA) requirements.

Since May 1993, people confined to a wheelchair can access 97 percent of GET's fixed route buses. This was accomplished by retrofitting 14 buses. The non-accessible buses are only used in limited service, such as peak or backup service.

Consolidated Transportation Service Agency (CTSA)

In 1997, Kern COG rescinded Bakersfield Senior Center's designation as the CTSA. The North Bakersfield Recreation and Park District (NOR) was designated the interim CTSA, effective until June 30, 1999. A permanent designation will be made prior to April 1999.

Kern Regional Transit

Kern Regional Transit has increased mobility within Kern County by establishing new intercity services. In September 1992, service between California City and Palmdale was established. The service is referred to as the "East Kern Route," and provides intercity service between California City, Rosamond, Mojave, Lancaster, and Palmdale.

In March 1993, Kern Regional Transit established a Dial-A-Ride service three days per week in the unincorporated community of Frazier Park; service between Bakersfield and Frazier Park is available two days per week. In July 1993, Kern Regional Transit established a Dial-A-Ride in the Rosamond community and added a vehicle to the Lamont service area providing intercity service between Lamont and Bakersfield.

In September 1993, Kern Regional Transit established an "800" transit hotline. Kern County residents can call during regular business hours to receive information regarding areawide transit operations. In July 1994, an additional "800" line was established for making reservations on the County's system.

In 1995, Kern Regional Transit established the Bakersfield-Taft intercity service. Effective March 1996, another new service is being provided: the Tehachapi Express, which is a fixed route intercity service between Bakersfield and Tehachapi.

Amtrak - San Joaquin Service

The state-supported Amtrak San Joaquin service presently extends 312 rail miles between Oakland and Bakersfield (Figure 4-61). Four round-trip trains operate daily, and three of these train sets are stored overnight

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in Bakersfield. Bakersfield represents both the end of the line for the current rail service and the stepping-off point for further travel to the Los Angeles area.

In 1996, the Bakersfield station handled 245,543 passengers (boardings and alightings combined) and was the busiest Amtrak station on the San Joaquin route; it was ranked as fifth busiest among all Amtrak stations in California. Table 4-30 provides passenger data for the San Joaquin route as reported by Caltrans.

Because the San Joaquin service is such an integral component of inter-regional public transportation system, Caltrans has proposed that service on the San Joaquin route be increased from four to six round-trip trains, and that maximum speeds be increased to 110 mph where conditions permit (*California Rail Passenger Program Report, 1993/94 - 2002/03*). This commitment to the San Joaquin route is well founded by the growth forecast for the Central Valley over the next two decades.

Table 4- 30

San Joaquin Annual Performance

State Fiscal Year	Total Riders	Avr. Riders/Train	Fare Box ratio (%)
1973/74 (a)	38,770	166	n/a
1974/75	66,990	92	n/a
1975/76	66,530	91	n/a
1976/77	87,642	120	n/a
1977/78	80,611	110	n/a
1978/79	87,645	122	n/a
1979/80 (b)	123,275	120	29.5%
1980/81	159,498	110	32.0%
1981/82	189,479	130	40.1%
1982/83	186,121	129	41.8%
1983/84	248,275	170	58.4%
1984/85	269,837	185	60.3%
1985/86	280,798	197	63.0%
1986/87	304,668	208	66.3%
1987/88	340,573	233	77.4%
1988/89	370,190	254	86.9%
1989/90 (c)	418,768	226	77.5%
1990/91	463,906	212	68.8%
1991/92	483,593	222	66.4%

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1992/93 (d)	516,112	193	56.8%
1993/94	558,569	191	52.1%
1994/95	524,680	180	48.8%
1995/96 (e)	526,088	180	49.2%
1996/97	585,358	218	(through May 1997)

Source: Caltrans Division of Rails

- (a) Amtrak San Joaquin inaugurated with one daily trip on March 6, 1974
- (b) State support started on October 1, 1979. Second round trip added February 3, 1980
- (c) Third San Joaquin round trip added December 17, 1989.
- (d) Fourth San Joaquin round trip added October 25, 1992.
- (e) Cost accounting changed from avoidable basis to long-term avoidable basis with FY 1995/96, then to fully allocated basis with FY 1996/97.

Amtrak Station Relocation

In 1988, Kern COG completed the *Bakersfield Intermodal Transit Facility Plan* that identified a site north of the rail tracks between Q and T Streets for an intermodal facility to consolidate the existing operations of Amtrak, intercity bus, and local transit services at a single location. The California Transportation Commission (CTC) programmed \$4 million through the Transit Capital Improvement (TCI) program; however, environmental clearance for the preferred site and project development could not be secured before \$2 million of this funding reverted to the state. With the third *San Joaquin* round trip set to begin in October 1989, Caltrans, Amtrak and ATSF proposed construction of an expanded, but interim, Amtrak station immediately adjacent to the existing facility on land owned by the railroad.

In October 1993, Kern COG completed the *Metropolitan Bakersfield High Speed Ground Transportation System Terminal Study*, that identified a site in the vicinity of the Convention Center, between "Q" and "T" Streets as the preferred station location for high speed rail service. Completion of the *Long-Range Public Transportation System Study* (for the Golden Empire Transit District) and the *Los Angeles-Bakersfield High Speed Ground Transportation Preliminary Engineering Feasibility Study* led to the reconsideration of the construction of an interim Amtrak station that would not be able to serve the future expansions of Amtrak service, and the possible high speed rail and light rail transit.

Based on these new considerations, Caltrans, the City of Bakersfield and ATSF agreed in March 1994 that Kern COG should coordinate a new effort to determine the schedule and cost impacts of relocating the station to the originally preferred site—between Q and T Streets. After completing the preliminary technical studies and cost estimations, Caltrans, Amtrak, Kern COG and the City of Bakersfield initiated a Project Study Report (PSR) to further define the project and arrive at a final consensus.

The PSR entailed a thorough site analysis, preliminary station design and environmental clearance. The preferred site is approximately 0.9 miles east of the existing Amtrak station, and is adjacent to the convention center/sports arena/hotel complex in downtown Bakersfield. The PSR also involved developing detailed cost estimates for the entire project, and a construction schedule.

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The proposed station relocation and expansion project is estimated to cost \$12.7 million. Major components of this cost are as follows:

Railway	\$3,500,000
Station	\$4,798,000
Roadway	\$550,000
Structure	\$1,746,000
Right-of-way	\$2,063,000
Total	\$12,657,000

Funding in the amount of \$4,981,752 is currently programmed for this project by the State of California. Supplemental funding for the remaining amount would be sought from the State's Interregional Improvement Program (IIP) account.

The project would be developed in stages. The following scheduling milestones are anticipated for the project.

Environmental Clearance	February 1998
ROW Acquisition	April 1998
Structural Work Completion	October 1998
Railway Items Completion	December 1999
Station Buildings & Sitework Completion	December 2000

Metropolitan Bakersfield Major Transportation Investment Strategy (MTIS)

The MTIS will assess the future transportation needs of the metropolitan Bakersfield area, develop alternative transportation strategies, identify possible funding sources, and select a locally preferred investment strategy. The MTIS is a cooperative effort involving GET, Kern COG, City of Bakersfield, County of Kern, Caltrans, and San Joaquin Valley Unified Air Pollution Control District. The MTIS is a strategic transportation planning process that will select the best package of long-range improvement for the metropolitan Bakersfield area. The goal of the MTIS is to propose a transportation investment strategy that has the right mix of highway and transit improvement in order to effectively address the issues of traffic congestion, mobility, and air quality.

It is important to note that rail lines are conceptual alignments and could shift within a one-mile corridor during further analysis. When combined with the recommended bus and demand responsive improvements, the system described above provides public transportation services that meet the future travel demands in Kern County.

MTIS is fully discussed in Section 5.5.

High Speed Rail Authority

The newly created California Intercity High Speed Rail Authority has the responsibility of implementing the high speed rail (HSR) network in California in accordance with the findings of the California Intercity High Speed Rail Commission.

The Commission completed its investigation of the feasibility of HSR for California, and submitted the final report to the Governor and the Legislature at the end of 1996. The Commission determined that HSR is technically, environmentally and economically feasible once constructed, and would be operationally self-sufficient.

With the submission of a final report, the Commission was dissolved and was replaced by the Authority created by Senate Bill 1420 in 1996, and signed by Governor Pete Wilson in September 1996. The Authority is required to direct the development and implementation of intercity HSR service that is fully coordinated with other public

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transportation services. The Authority consists of nine members: five appointed by the Governor, two by the Senate Committee on Rules, and two by the Speaker of the Assembly.

The recommended HSR network is 676 miles long, and would serve over 90 percent of the state's population. The HSR system would be completely grade-separated, double-tracked and electrified, with maximum speeds exceeding 200 mph.

The first major challenge to the Authority is to secure financing in order to implement the system. Detailed financial projections show that farebox and other revenue will not be sufficient to finance the construction costs of a HSR system. A voter approved public funding source (such as a statewide sales tax or gas tax increase) will be needed to provide a stable source for construction. However, the Authority will sunset if it fails to gain approval of a HSR funding measure by November 2000.

Countywide Reporting System

Kern COG began monthly monitoring of all Kern County transit operations in December 1989. Each month, data is collected from all transit operators. The requested information includes vehicle miles traveled, vehicle hours, ridership, and farebox revenue. This information is compiled and sent to all transit operators. This allows transit operators and Kern COG to establish trends of transit performance measures and compare transit performance among all Kern County transit operators.

City of Delano Fixed Route System

Since June 1995, the City of Delano provides a fixed route transit system called the Delano Express Transit (DET). As required by the Americans with Disabilities Act (ADA), Delano also offers a complementary dial-a-ride service for passengers who are disabled. The switch to a fixed-route system has resulted in increased ridership in Delano.

Kern Rural Coordination Plan

In July 1993, JKaplan and Associates completed a coordination/consolidation plan for rural operators within Kern County. The study recommended the following:

1. Kern COG - formally establish a committee of transit operators who meet on a regular basis to discuss common issues, work toward further coordination and possible consolidation of different facets of their operations.
2. Kern COG - take on the role of an information "clearinghouse" on driver training needs.
3. Kern COG/GET - develop a countywide toll free "800" number.
4. Kern County's Transit Operators - adopt a consistent definition of a "senior" passenger.
5. Kern County's Transit Operators - develop a regional transfer system.
6. Kern County's Transit Operators - develop joint bid package for vehicle purchases.
7. Kern COG - maintain current list of planned transit capital purchases.
8. Delano/McFarland - explore the benefits that could result if a consolidated transit service was operated for these adjacent communities.

Regional Transfer System

The Kern Rural Coordination Plan recommended "reciprocal acceptance of transfers" among publicly owned transportation providers. In response to this, the Regional Transfer System was established by Kern COG in

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November 1993 to assist transit riders in transferring between connected systems. As more communities in Kern County participate, this system will help reach a seamless transit system within Kern County.

TRANSIT NEEDS

Funding Strategies

Kern County is the only major urbanized California county without a dedicated sales tax to support both highway and transit improvements. The expansion of public transportation services in the County is predicated on an aggressive financial plan. Kern County should consider a dedicated revenue source for public transportation services. A dedicated revenue source, preferably a sales tax, would fund the ongoing system operating costs and provide financing for capital improvements. Revenue from a sales tax of 1.5 cents is the projected need to finance the RTP highway and transit plans. It is important to emphasize that financing for both long term operating and capital costs will be needed to successfully expand transit in Kern County.

Significant state public transportation funds should be sought, including: (1) \$500,000 annual Transit Capital Income funding; (2) continued use of State Transit Assistance funding for bus program; (3) commitment of Local Transportation Fund for bus program.

Kern County should undertake an aggressive federal funding strategy that targets the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) as a major funding source. Federal funding should include: (1) Section 3 bus discretionary funding totaling 50 percent of bus capital costs; (2) Funding future rail studies and preliminary engineering using a combination of congestion mitigation and air quality improvement (CMAQ) funding and Section 9 routine capital formula funding. In addition, State TCI funding earmarked at \$2 million should be used for these studies; (3) Federal Transit Administration (FTA) earmarked in FY 1997 for full funding of a light rail program. Authorized new start funding for FY 97 increases to over \$1 billion creating opportunities for new projects that are not currently available. More importantly, the FY 97 new start funding level should represent the starting point for a new authorization of ISTEA with significant additional funds for new starts. GET's full funding contract should be funded from these increased funds; (4) GET should explore federal programs that provide funding for land banking and/or railroad right-of-way preservation; (5) The REMOVE program established by AB 2766 and sponsored by SJVUAPCD provides grant monies for projects that specifically reduce emissions.

Regional Transfer System

A regional transfer system was introduced in May 1995. It was later suspended in June 1996 because of the financial hardship that the transfers created for a few transit systems. The transfer system that was in place for a year led to a significant loss of passenger fare revenues. Plans are currently underway to develop a financially feasible transfer system.

Intercity Service

The Tehachapi/Bakersfield corridor is being served by an express service, the "Tehachapi Express." The "Westside Express" serves the Bakersfield/Taft corridor. Kern Regional Transit also operates intercity services between Bakersfield and Lake Isabella, Bakersfield and Lamont, and California City and Palmdale. Kern Regional Transit has plans to introduce a Delano/McFarland/Shafter/Wasco/Bakersfield service in February 1999.

Express Service

GET introduced an express service between Bakersfield College and Valley Plaza in January 1998.

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Continued development around the urban fringes presents many difficulties in meeting route coverage standards. Much of the new development is low-density, middle- and upper-income housing, which tends to generate little transit ridership. Furthermore, the development is not always contiguous to existing development causing the transit service to cover unproductive miles that generate low ridership in outlying areas. However, the nature of urban fringes may generate levels of transit ridership to justify express bus service.

An analysis comparing transit trip times to automobile trip times clearly indicates that GET's fixed route transit system is deficient in providing comparable trip times to automobile trip times. Within the metropolitan area, automobile travel and parking are relatively unrestricted, which makes automobile travel quick and convenient. Although GET continues to attract a larger ridership, it will capture only a very small percentage of the total trips within the metropolitan area, and will not attract motorists out of their automobiles for most trips.

Direct Connection with Amtrak Station

Currently, GET provides direct service to the Airport Bus of Bakersfield, Greyhound, and Meadows Field; however, GET does not provide direct service to the Bakersfield Amtrak station. To improve mobility within metropolitan Bakersfield, GET should provide service to the Bakersfield Amtrak station at a minimum of more than 20 minutes prior to the departure of all Bakersfield Amtrak services that are provided during GET's normal service hours. Also, GET should provide service to the Bakersfield Amtrak station no more than twenty minutes after the arrival of all Bakersfield Amtrak services that are provided during GET's normal service hours.

Coordination of Schedules for Intercity Bus Service

When Kern COG prepares TDPs, a component of the scope of work should identify possible schedule coordination with other modes of publicly- and privately-owned mass transit. Mass transit providers identified during the course of a TDP shall work to accomplish the schedule coordination. When new services are established, the service provider should coordinate with all other publicly- and privately- owned mass transit systems.

Countywide CTSA

Currently, the CTSA provides service only within metropolitan Bakersfield. A countywide CTSA would provide a more complete service to the elderly and disabled population. One agency should oversee the transportation services for the senior and handicapped population in Kern County. Consolidation of Get-A-Lift, Bakersfield Senior Center (BSC), and North Bakersfield Recreation and Parks District (NOR) and contracts established with Kern Regional Transit to provide specialized service to the rural portions of the County should also be considered.

In February 1994, JKaplan and Associates completed the *Metropolitan Bakersfield Social Services Coordinated Transit Services Study*, in which several recommendations were made regarding social service transportation. Kern COG, CTSA, and GET will work toward the following recommendations:

1. CTSA (BSC & NOR) - Develop a consistent program including fare policy, trip priority, hours of service, areas served, and joint dispatching.
2. CTSA - Increase the fare to the \$0.50 - \$0.75 range.
3. GET & CTSA - Evaluate benefits of joint maintenance.
4. CTSA - Bring all provisions of service under the same operator.
5. CTSA & GET - Evaluate the advantages of having a single agency responsible for all general public social service transportation in the metropolitan area.

Regional Transportation Center

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Passengers whose travel involves two or more travel modes are inconvenienced by the need to change stations as well as vehicles. An intermodal transit facility serving Amtrak and all intercity and regional bus carriers, as well as the proposed high speed rail system, would enable passengers to arrive by one carrier and board another without leaving the site. Secondly, it would give passengers the flexibility to use one mode or carrier for half of the round-trips and another mode or carrier on the return line. Thirdly, by providing a secure, sheltered waiting area with seats, retail concessions, and other conveniences, such as bicycle storage facilities, the proposed transportation center would improve transportation system efficiency and passenger convenience.

The City of Bakersfield, Kern County, Caltrans, Kern COG, and publicly- and privately-owned providers of mass transportation need to develop a regional (multimodal) transportation center.

Railroad Right-of-Way Acquisition Policy

It should be the policy of Kern County and affected local jurisdictions to preserve, wherever possible, the use of railroad rights-of-way for future public use. Metropolitan Bakersfield has over 160 miles of railroad right-of-way, of which a significant portion currently serves the Bakersfield metropolitan area, or parallels future growth centers in Kern County. These rights-of-way, as illustrated on Figure 4-63, are valuable transportation corridors that should be preserved for future transportation use. Preserving transportation options to connect these areas with metropolitan Bakersfield is an essential component of a future regional economic development policy.

4.5.4 NON-MOTORIZED

4.5.4.1 DESCRIPTION

"Non-motorized" is used to define trips made by bicycle or on foot. Walking and bicycling are becoming more popular forms of travel for short trips, especially those in the immediate vicinity of an individual's residence. Physical fitness, cost, ease of travel, convenience and air quality considerations all influence a decision to bicycle or walk.

The future of non-motorized travel within the Kern region is encouraging. Over the past decade, a number of mixed-use developments have been planned and constructed. These mixed-use developments have lessened demand for automobile travel while encouraging non-motorized trips. When residents of mixed-use developments work within that development, benefits to the larger community include lessened traffic congestion, enhanced air quality and reduced fuel consumption.

Bicycling

Bicycling has gained popularity with the general public. Although bicycle ridership drops dramatically when a person obtains a driver's license, a significant number of adults use bicycles for day-to-day transportation needs. Table 4-31 shows the number and percentage of people within Kern County using bicycles for commuting to work, based on information from the 1990 Census. Several factors adversely affect bicycle usage, especially inclement weather. Steady rain will reduce ridership to practically zero. However, if the weather is clear, bicycle ridership rates remain relatively constant regardless of extreme heat or cold.

Geographical location is also a factor in using a bicycle for transportation purposes. Attractions that are more than three or four miles from the trip origin experience a decline in bicycle usage. Topographical features also influence bicycle usage. For example, an attraction located at the top of a long, steep hill will experience a lower level of bicycle usage than a similar attraction located on more level terrain. Many of the population centers within the Kern COG region are ideally suited for bicycle usage because of the nearly level or rolling terrain in the area and the clear, warm weather that predominates nearly year-round.

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Physical safety is a concern for bicyclists. Heavy automobile traffic, poor road surfaces and hazardous street fixtures (such as storm sewer gratings into which bicycle wheels can fall) pose hazards for both experienced and inexperienced riders. Low visibility in traffic is a danger, as well as careless motorists, unrestrained pets, and unobservant pedestrians. The use of cycling helmets has become widespread for safety reasons, and is required for children under the age of eighteen.

Pedestrian Circulation

Walking, the most basic form of human transportation, has attributes that cannot be duplicated by other modes of travel. For very short trips, walking is the most efficient means of transportation. Nearly all communities have made provisions for pedestrian circulation. Sidewalks are a common infrastructure improvement that are almost entirely devoted to pedestrian movement.

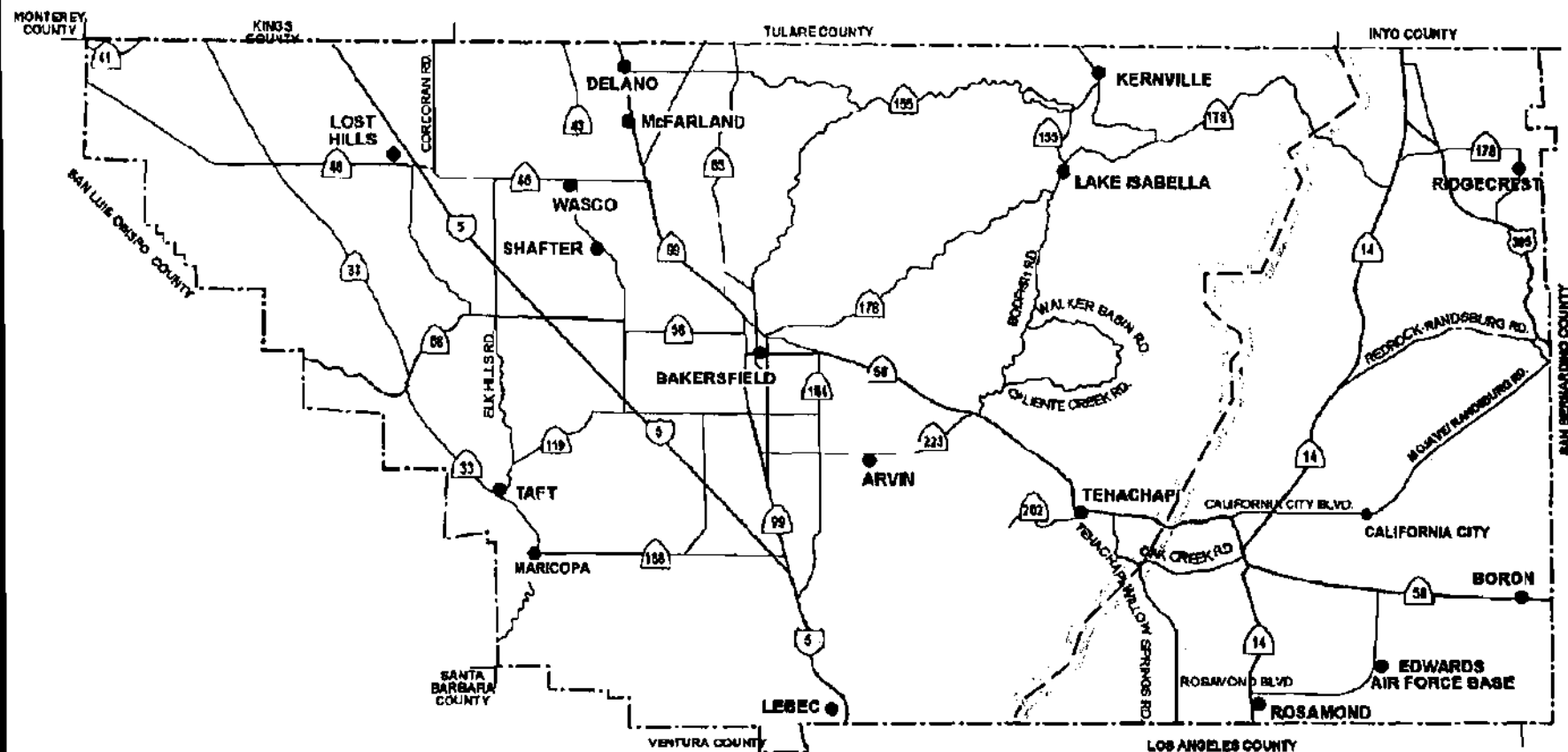
Table 4-31 shows the number and percentage of persons in Kern County who reported walking to work according to the 1990 Census. The percentage and number of people who walked to work is significantly higher than those who bicycled.

The Kern region is ideally suited for pedestrian travel for the same reasons as bicycle travel; fair, clear weather, the relatively flat terrain, smaller scale development and the trend to develop neighborhood retail shopping outlets.

Many areas of interest within the County may only be reached by walking, especially in the mountainous areas. Although this is a recreational activity, a network of trails has been established both on National Forest Service and Bureau of Land Management property. The Pacific Crest Trail, which passes through Kern County, was established in 1968 by the National Scenic Trails Act (Figure 4-54). The equestrian and hiking trail stretches nearly 2,600 miles from the Mexican to the Canadian borders. The portion of the Pacific Crest Trail that passes through Kern County was completed in 1990 and dedicated in April 1991.

Many hazards that face bicyclists also face pedestrians. Concerns of traffic, poor surface, street crossings, unrestrained pets, weather considerations and distance all affect the propensity for a pedestrian trip.




Several of the incorporated communities within the Kern CDG region have developed pedestrian or bicycle master plans. Those cities include Bakersfield, California City, Delano, Maricopa, Ridgecrest, Tehachapi and Taft. The County of Kern has adopted a countywide bicycle plan. Funding constraints have prevented much of the planned systems from being constructed.



--- TRAIL ROUTE

PACIFIC CREST TRAIL

LEGEND

-  U.S. Highway
-  Interstate
-  State Highway



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FIGURE 4-64

JULY 1998



1998 REGIONAL TRANSPORTATION PLAN**TABLE 4-31
MODE OF TRANSPORTATION TO WORK**

Jurisdiction	Workers Age 16+	Bike	Percent Bike	Walk	Percent Walk
Kern County	213,526	1,542	0.72	5,085	2.37
Arvin	3,087	73	2.36	116	3.75
Bakersfield	76,223	409	0.54	1,382	1.81
Calif. City	2,632	24	0.91	5	0.19
Delano	7,421	30	0.40	247	3.33
Maricopa	442	0	0.00	17	3.85
McFarland	1,924	17	0.88	56	2.91
Ridgecrest	14,249	390	2.74	327	2.29
Shafter	2,943	18	0.61	175	5.95
Taft	2,493	22	0.88	261	10.47
Tehachapi	2,270	24	1.06	151	6.65
Wasco	4,030	26	0.65	106	2.63

Source: 1990 Census, Summary Tape File 3A

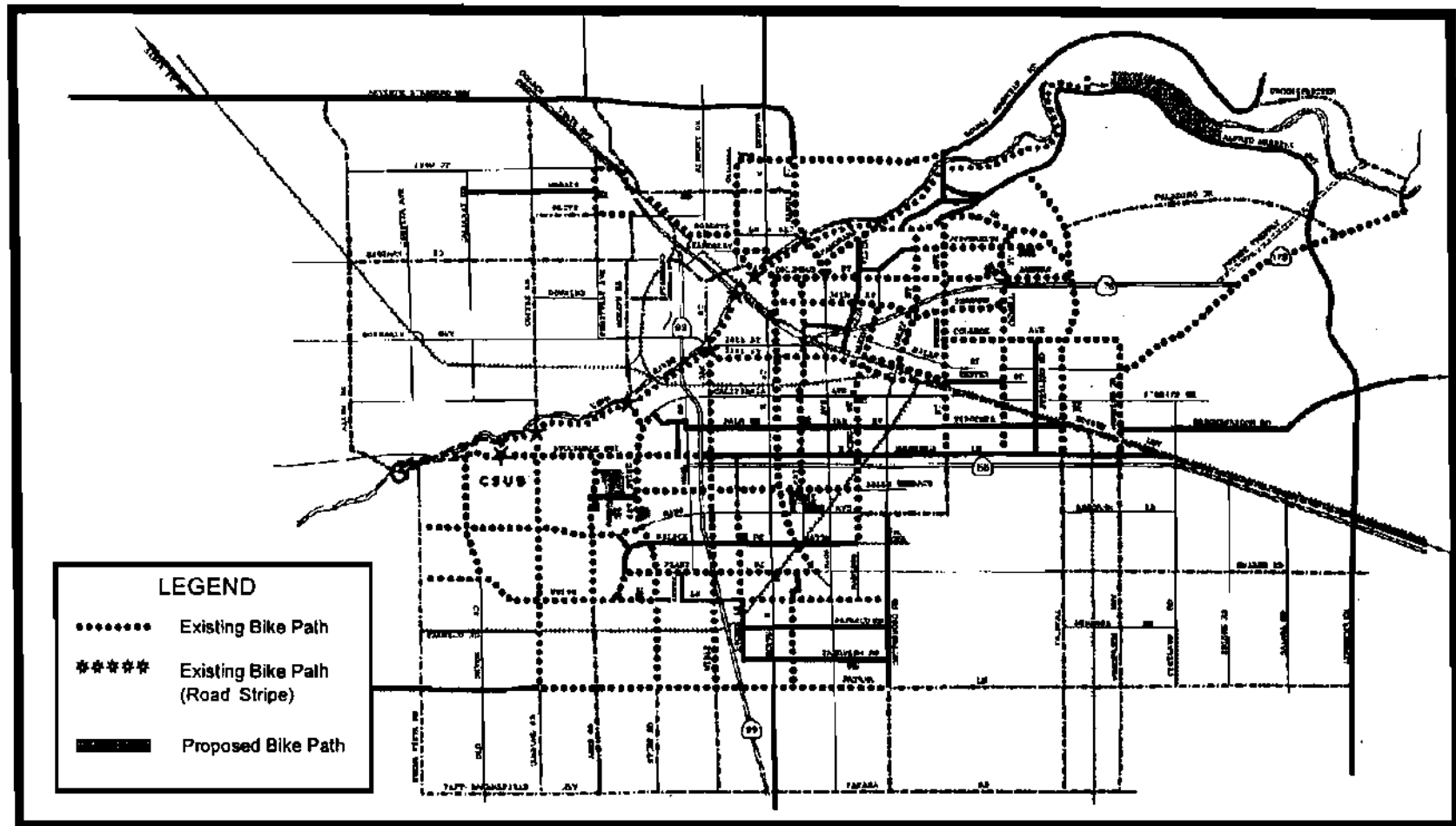
4.5.4.2 ISSUES, ACCOMPLISHMENTS AND NEEDS**Public Support**

For a number of reasons, bicycling has not realized its full potential for transportation purposes within the Kern region. Primarily, they are related to: (1) ease of short-distance travel that is possible with the private automobile; (2) long distances between residential areas and work sites; (3) relatively inexpensive and widely available sources of automotive fuel; (4) lack of shower and/or locker facilities at most employment centers; (5) general safety considerations as described earlier; and (6) a general aging of the population that may reduce the number of persons who are inclined to take bicycle trips.

Many of the planned bicycle facilities have not been physically implemented because of a lack of funding. Lack of maintenance (also funding related) on existing facilities is also a concern. In some instances, basic maintenance on bikeway facilities is provided by civic organizations, such as the Boy Scouts, who will sweep the facility for broken glass and loose gravel. While public support for increased bike path mileage is high, the main issue is how to implement additional miles within funding constraints.

Local Bikeway Plans**City of Bakersfield**

The City of Bakersfield has established a comprehensive bicycle route program that covers nearly all of the metropolitan area (Figure 4-65). Although many of the routes are designated for further development, some



BIKEWAY PLAN METROPOLITAN BAKERSFIELD



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FIGURE 4-65

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of the most critical links have been built, notably nine miles of Class I (completely physically separated from automobile traffic) bikeway from Manor Street to the Stockdale Highway bridge over the Kern River. In the spring of 1995, an additional five miles of the Kern River Bikepath was constructed east of Manor Street to Fairfax Road. In 1989, Kern COG sponsored the Kern River Bikeway Extension Study to examine possible bikepath route alignments from Lake Ming to the Buena Vista Recreation Area (east of Elk Hills and Taft). This study identified several feasible extensions of the existing Kern River bikepath. Further surveying, engineering and property acquisition is required prior to construction of additional bikepath mileage. The bikepath would be nearly 35 miles in length if fully completed between Lake Ming and Buena Vista Recreation Area.

During 1997, the City of Bakersfield constructed bikelanes along 24.4 miles of city streets using funding provided by the federal Transportation Enhancement Activities program. The extensive bikelane system provides a significant increase in the number of miles of bikelanes within the city, and connects in several places with the Kern River Bikeway.

City of California City

California City developed a bicycle master plan in 1979. The City has been actively working to integrate bicycle transportation into the existing system. The master plan calls for 32 miles of bicycle routes and the City has developed approximately four and one-half miles of bicycle routes (Figure 4-66).

City of Delano

The City of Delano has developed a plan for bicycle routes of approximately twelve miles. Included in this plan are provisions for bicycle parking and rest stops (Figure 4-67).

City of Maricopa

The City of Maricopa has adopted a pedestrian pathway and bicycle plan. The plan calls for a pedestrian pathway system through the downtown area along Route 33. The pathway system reduces conflicts between motor vehicles and pedestrians by separating the two rights-of-way and providing a designated area for pedestrians to walk. The plan calls for a bikeway system to be built in phases.

City of Ridgecrest

The City of Ridgecrest has developed a comprehensive bicycle plan that designates 38 miles of paths, including those developed by the Naval Air Weapons Station and Caltrans. The plan identifies regional access that needs to be developed, parking facilities and intermodal coordination. Approximately 12 miles of the system have been built. The plan identifies a phased implementation of the system through 1996 (Figure 4-68).

City of Taft

Taft has developed a six and 1/2-mile bicycle system (Figure 4-69) that consists primarily of Class III bikeways (signs designating routing, but no physical separation of traffic). The City plans to review the system and expand the facilities as development continues. Funding has been obtained to construct 3/4-mile of bikeway through the center of town on the Sunset Railway right-of-way.

In 1996, Taft completed the initial phase of the its Rails-to-Trails project by constructing nearly three-quarters of a mile of landscaped bikepath along the abandoned Sunset Railway corridor, which runs through the central business district. Funding has been obtained to construct phases two and three of the project. Phase two will extend the path further into the central business district, while phase three will extend the path along the



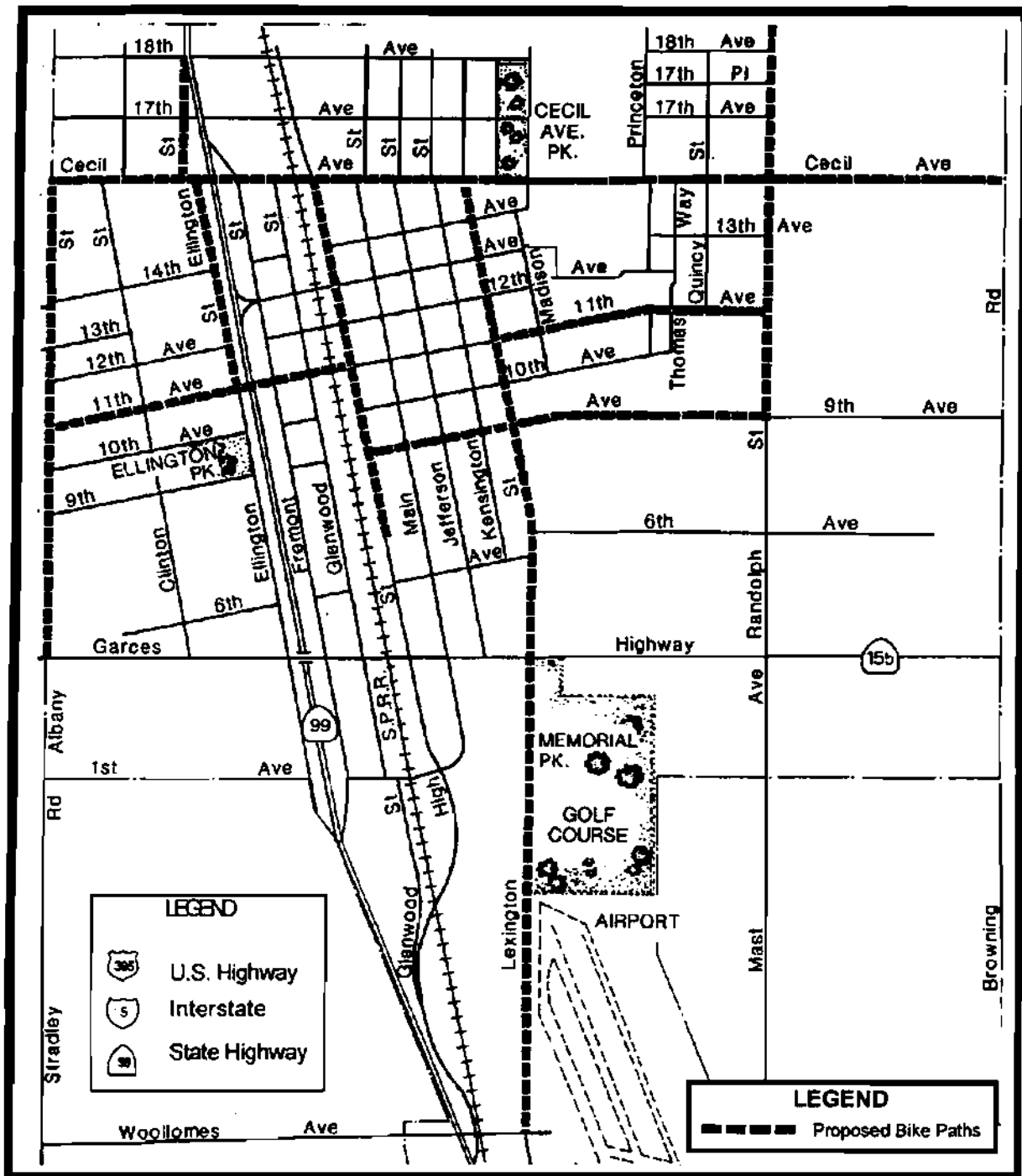
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A scale bar with markings at 0 and 15, labeled "MILES".



BIKEWAY PLAN CITY OF DELANO - PROPOSED CLASS II BIKE LANES

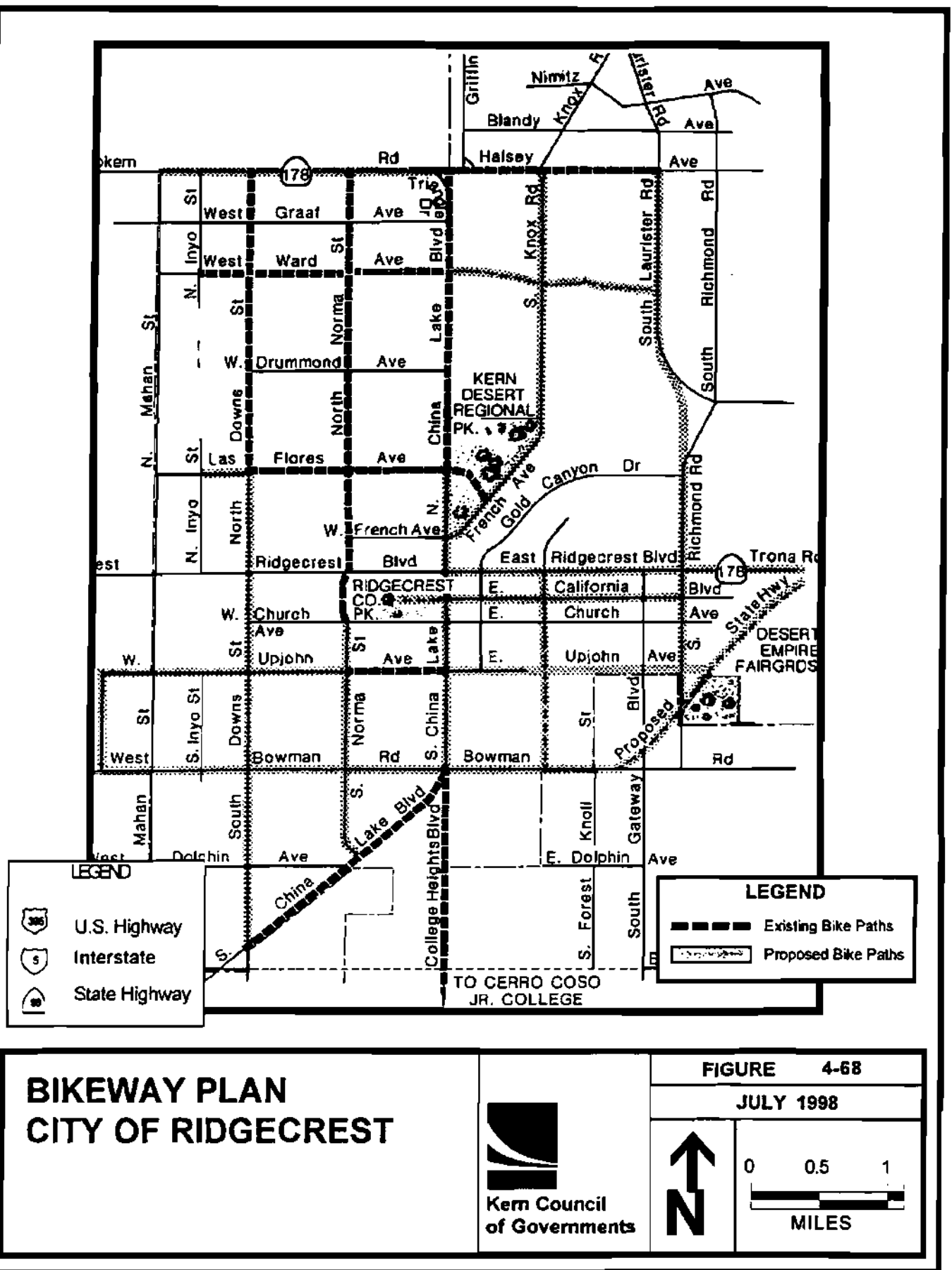


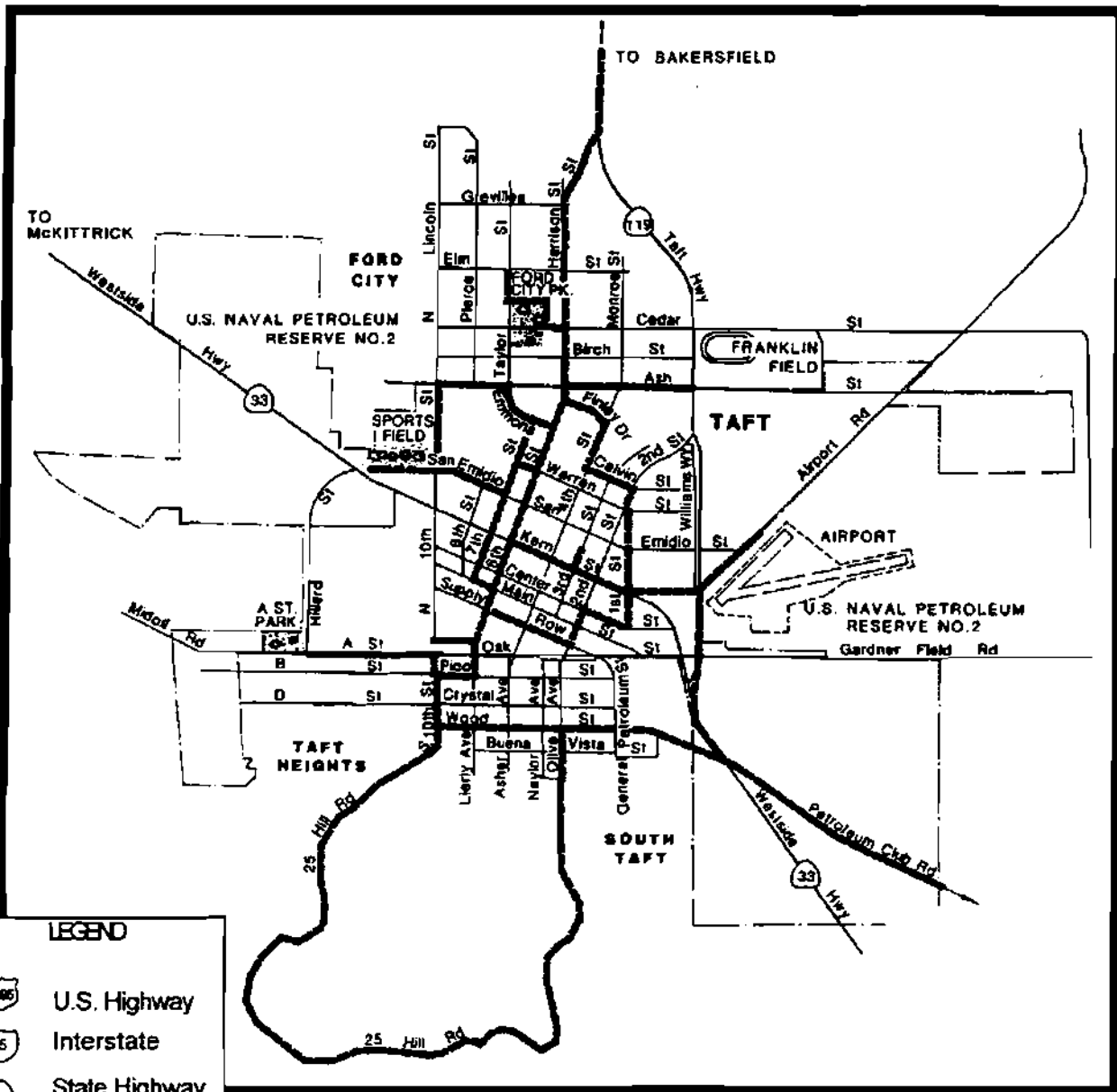
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FIGURE 4-67

JULY 1998







LEGEND

- U.S. Highway
- Interstate
- State Highway

LEGEND

- Existing Bike Path

<h1>BIKEWAY PLAN</h1> <h2>CITY OF TAFT</h2>	<p>Kern Council of Governments</p>	FIGURE 4-69	
		JULY 1998	
			<p>0 1 MILES</p>

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Sunset Railway right-of-way toward the community of Fellows. Funds from the Transportation Enhancement Activities program and the Transportation Development Act Article 3 program will be used to pay for the construction of these projects.

City of Tehachapi

The City of Tehachapi has developed a bikeway and pedestrian pathway system set forth in a 1985 consultant report (Figure 4-70). Funding has been allocated for three portions of the bikeway system, including the Antelope Run project, Cherry Lane and Tehachapi Boulevard.

Kern County

In 1974, Kern County developed a countywide bicycle plan that was far-reaching in scope and attempted to establish a bicycle system over very long distances (Figure 4-71). Kern County also adopted a bicycle plan for the unincorporated Bakersfield metropolitan area that ties in with the existing City of Bakersfield bicycle plan. Additionally, a Trails Study has been completed in conformance with the Kern River Specific Plan.

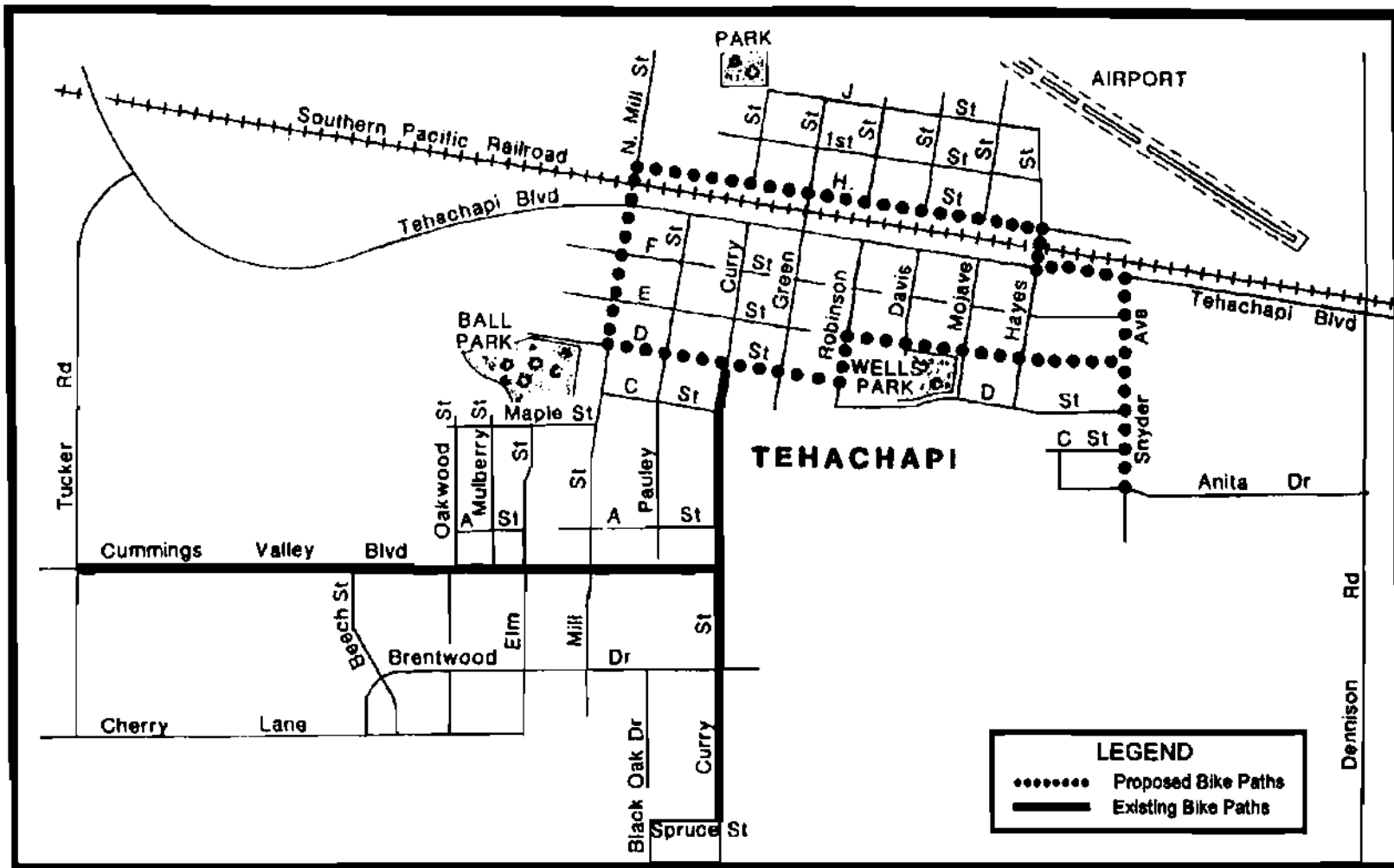
Recent activity includes completion of a bikeway in the Lake Isabella area and completion of a portion of the Kern River Bikeway between Hart Park and the California Living Museum in metropolitan Bakersfield. A funded TEA project to construct bikelanes from Fairfax Road to Hart Park was transferred to the city of Bakersfield because of right-of-way conflicts.

4.5.5 GOODS MOVEMENT

4.5.5.1 DESCRIPTION

Movement of goods plays an important role in Kern County's overall economy. Kern is the third most productive agricultural county in the United States (based on farm income), the leading oil producing county in the State and a prominent producer of other minerals. These industries all rely on bulk material movements by truck, rail, pipeline, and to a lesser extent, air.

Kern County is central to the rail and highway transportation network in California and the West Coast. Major highways, rail lines, pipelines and air corridors criss-cross the County in all directions. In 1990, trucks traveled over 803 million miles in the County, representing 24.43 percent of all vehicle miles traveled (VMT). Statewide, the average truck VMT was 9.83 percent.



BIKEWAY PLAN CITY OF TEHACHAPI

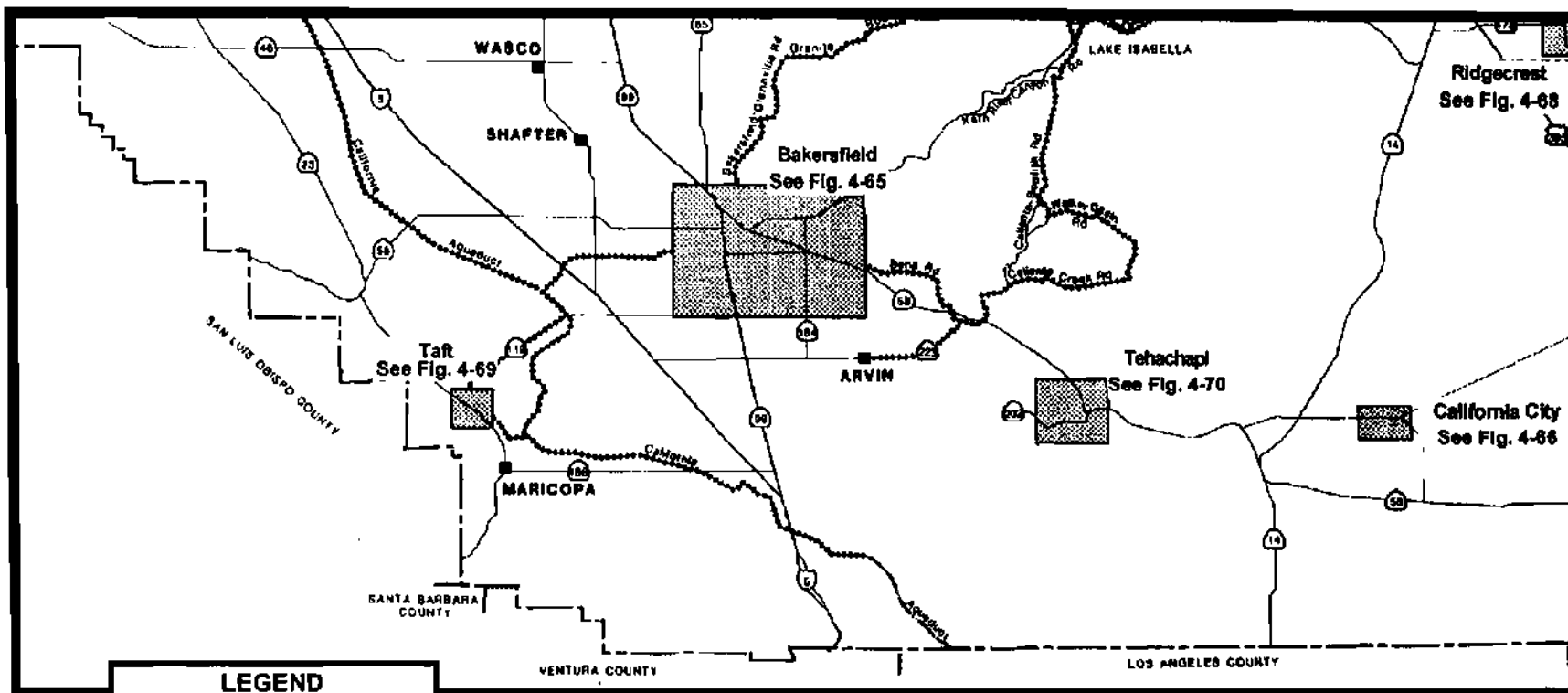


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FIGURE 4-70

JULY 1998





LEGEND

◆◆◆◆◆ Proposed Bike Paths

■ Other Bike Path Maps

BIKEWAY PLAN KERN COUNTY - SUGGESTED BIKEWAY ROUTES

LEGEND

395 U.S. Highway

5 Interstate

99 State Highway

Kern Council
of Governments

FIGURE 4-71

JULY 1998

0 8 16 18
MILES

↑
N

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Transportation planning often concentrates on the movement of people. In the past, truck and rail traffic is overlooked in the technical transportation planning process. Under new federal and state legislation, goods/material movement planning is given higher priority. Transportation plans must reflect the importance of goods movement, the unique requirements that this area of transportation possesses and the full integration with other transportation modes.

The highway and aviation transportation network has been described in detail in Sections 4.5.1 and 4.5.2, respectively of the RTP. Passenger rail service has been described in Section 4.5.3. This section addresses freight rail transport and pipelines.

Figure 4-63 illustrates the railroads of Kern County. Two major railroads, the Union Pacific and the Burlington Northern Santa Fe, operate mainline operations within the County. San Joaquin Valley Railroad operates a number of short-line operations.

Tehachapi Pass is the first rail crossing of the Sierra Nevada Mountains south of Donner Summit. At an elevation of just over 4,000 feet, the Pass receives relatively little snow in the winter and operations are rarely halted because of inclement weather. An average of 32 trains a day cross the Summit.

Petroleum production is a major industry in Kern County. As much of the refining capacity is located elsewhere (Los Angeles and San Francisco Bay Area), much of the crude oil is transported to the refineries by pipeline, which is safer and less costly than truck or rail transport. Major oil companies such as Chevron, Texaco and Unocal operate pipeline systems to transport crude oil to refineries. Other companies, such as Four Corners and All American Pipeline, provide long distance crude oil transportation. Other pipelines, such as the Mojave Pipeline, carry natural gas that is produced in Wyoming to Kern County fuel cogeneration plants. Figure 4-72 outlines the major pipeline routes in the region.

4.5.5.2 ISSUES, ACCOMPLISHMENTS AND NEEDS

GOODS MOVEMENT ISSUES

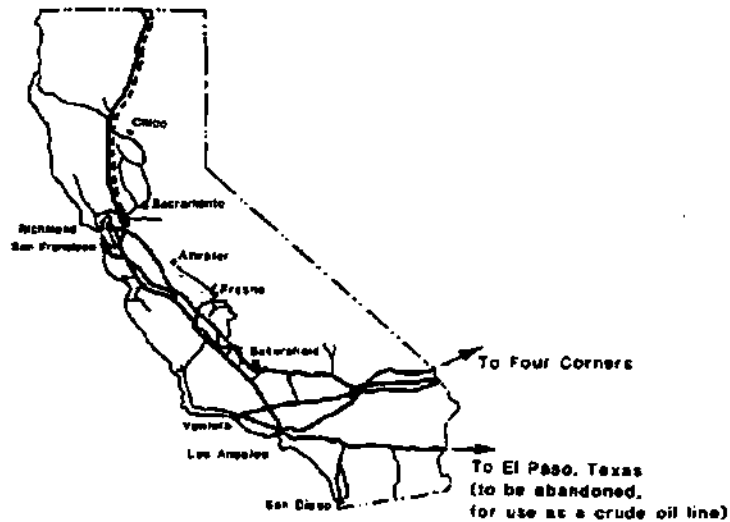
High Truck Volumes and Roadway Deterioration

Road deterioration is a major concern within the Kern region. Because of the relatively high percentage of truck traffic, roadways deteriorate more rapidly and require more frequent and costly maintenance. Trucks traveled 803,211,700 miles on Kern's state road network in 1990, up 30 million miles from 1989 and up from 265 million miles of truck traffic in 1975 (Source: *Truck Miles of Travel on the California State Highway System 1975-1990*, California Dept. of Transportation, Office of Traffic Improvement, November 1991). At the rate of increase exhibited from 1975 to 1990, 3.5 billion truck miles would be traveled on Kern's state highways by 2014.

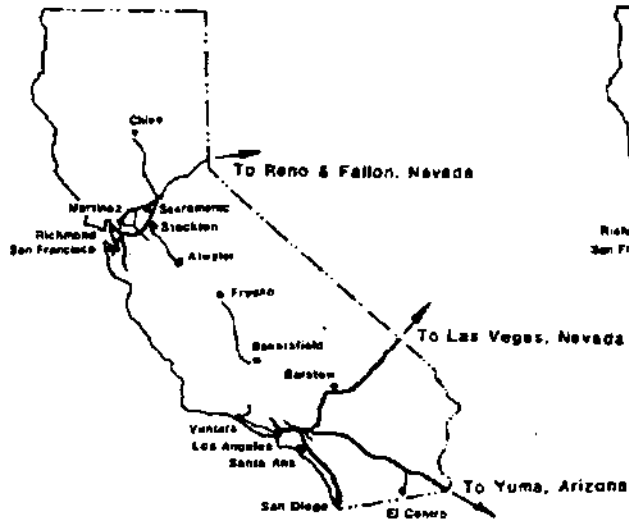
Tests conducted by the American Association of State Highway and Transportation Officials (AASHTO) reveal that a fully loaded truck, legally loaded to a maximum gross vehicle weight of 80,000 pounds (40 tons), causes as much wear and tear on a roadway as the passage of 9,600 passenger vehicles. If truck mileage were converted to passenger vehicle miles traveled, it would increase VMT in Kern County over seven trillion miles a year, with associated road damage.

In 1982, the U.S. Department of Transportation's Cost Allocation Study attempted to determine "fair share" of highway users fees that should be paid by cars, light trucks and heavy trucks. The study found that heavy trucks pay about 71 percent of their fair share of user fees, while cars pay 104 percent and light trucks 110 percent of their fair share to compensate for heavy trucks.

NATURAL GAS PIPELINES



PETROLEUM PRODUCT PIPELINES



CRUDE OIL PIPELINES



MAJOR PIPELINES OF CALIFORNIA



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of Governments

FIGURE 4-72

JULY 1998



NOT TO SCALE

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Truck Routing

The purpose of the National Highway System (NHS) is to provide an integrated national highway system that serves both urban and rural communities; connects major population centers, international border-crossings, ports, airports, public transportation facilities, and other major travel destinations; meet national defense requirements and serves interstate and interregional travel. The new NHS includes the Interstate Highway System.

The Federal Highway Administration has designated a national network of routes available to larger trucks. Called STAA truck routes, it includes the interstate system plus other designated highways. Certain categories of large tractor/semitrailer combinations, and double combinations allowed under federal law are restricted to the designated system of routes for STAA trucks. States must also allow vehicles with dimensions authorized by the STAA reasonable access between the national network and truck terminals and service facilities.

Several communities in Kern County have adopted truck routes through the urbanized areas. Special truck routes are posted to guide trucks to central business districts, industrial sites and commercial areas. The truck routes avoid low-clearance points, weight restricted bridges, school grounds, residential areas and noise sensitive local area. Prohibitions are also made against heavy truck travel on certain streets that are not designed to accommodate the weight.

Pipeline Safety

Pipelines move the vast majority of petroleum products into and out of Kern County. Trains and trucks can carry only a fraction of what a pipeline can carry, and at a greater per unit cost. The pipelines provide transportation of oil and gas from Kern County's production areas to local refineries and to refineries in other sections of the State and country. Natural gas pipelines bring in fuel for domestic and industrial uses, including steam/electricity co-generation plants. Pipelines of varying capacity carrying varied material criss cross the county.

A number of co-generation plants are active in Kern County. Because of the "heavy" nature of much of the crude oil produced in the County, steam is injected into the oil bearing strata, which heats the oil to make it more viscous and easier to pump. At a co-generation plant, fuel is burned to heat water that develops high-pressure steam, which is then injected into the well. Before the high pressure steam is injected into the oil bearing strata, it is directed onto a generating turbine to produce electricity, which is then sold to a contracting public utility and distributed over the power grid.

Pipelines are 40 times safer in transporting petroleum products than tanker trucks, according to the Transportation Research Board. Only tanker ships are safer, according to the same source. However, in May 1989, a fuel line exploded in San Bernardino County, killing three people and burning ten homes. The pipeline had been damaged from a train derailment a few days earlier and the pipeline damage had not been detected prior to the disaster.

Pipeline safety is a concern of the residents of Kern County. Issues such as the necessary setbacks and what land uses are allowable within the setback area need to be resolved.

Hazardous Materials Movement

More than half of all goods transported in the world are hazardous to some degree and have the potential of danger to human life and physical property. On the local level, concerns are with hazardous materials routing and training of emergency personnel in the event of an accidental spill. Kern County and the City of Bakersfield maintain Hazardous Materials Response Units.

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Large volumes of hazardous materials are transported by truck. In Kern County, several routes have been designated for the transportation of hazardous and explosive materials. Figure 4-73 indicates routes designated by the California Highway Patrol as having no restrictions to the movement of hazardous or explosive materials.

Foreign Trade Zone (FTZ)

Near the intersection of Santa Fe Way and Seventh Standard Road northwest of Bakersfield is the proposed International Trade and Transportation Center. Approved as a Free Trade Zone late in 1994, the 700 plus acre site is proposed as a manufacturing and distribution center. Kern County Board of Supervisors has approved construction of the project. The property was annexed into the City of Shafter in October 1996, and the City has processed a master plan and development agreement. Construction is underway.

GOODS MOVEMENT ACCOMPLISHMENTS

The rail line over Tehachapi Pass had several low clearance tunnels that restricted heights and precluded the use of double stacked containers. During the winter of 1994, the floors of these tunnels were lowered, and it is now possible to run double stacked containers over the Tehachapi line.

A grade separation project on Fairfax Road at the Union Pacific tracks was completed in 1992. This eliminated an at-grade crossing on a major arterial in metropolitan Bakersfield. In addition, a grade separation project was completed at Coffee Road in 1997.

In July 1994, a consultant contract was issued to study the Sunset Rail Line, which runs from western metropolitan Bakersfield to the outskirts of the City of Taft. The study was prepared to assess the value and possible uses for the rail line. It was completed in October 1994. The Sunset Line is jointly owned by Union Pacific and Burlington Northern Santa Fe, and operate in alternating five-year time periods by the respective rail company.

The Sunset Line is operating from Gosford Junction to the Levee siding at a speed of ten miles per hour. The line is unusable from the Levee to Taft. A short-line railroad company is investigating the purchase of the Sunset Line from SP and Santa Fe, but no agreement has been reached at this juncture.

The Sunset Line corridor is directly in line with the direction metropolitan Bakersfield is growing. Strong support has been given by the transportation planning community to preserve this transportation corridor for transit or non-motorized uses, should the rail line cease to operate.

The study provided information about the physical and monetary value of the existing line, cost of upgrading the facility to an operating railroad, property issues adjacent to the line, and issues regarding the transfer of the line to governmental ownership.

GOODS MOVEMENT NEEDS

Intermodalism, as defined under ISTEA, is "a closely coordinated multimodal network in which facilities, equipment, and related transportation resources are interlinked to move people and goods smoothly and efficiently." Although goods movement is segmented into specific modes such as trucking, rail and pipelines, much of the improvement needed regionally relates to the development of the intermodal connection between modes of good movement. For the Kern region, the link between rail, air cargo, pipelines and trucking has potential for enhancement through coordinated capital and operational improvements.

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SECTION 5.0 ACTION ELEMENT

5.1 PRESERVATION

5.1.1 RIGHTS-OF-WAY

Preservation of rights-of-way is necessary to long-range planning if new transportation corridors are to become a reality. Because of TEA's emphasis on the multimodal development of new transportation infrastructure, corridors must now be thought of as more than a freeway facility. Space for high occupancy vehicle (HOV) lanes, transit lanes, and high speed transit are all possibilities. Implementation of appropriate land use policies and street standards are also necessary to ensure smooth traffic flow as the various technologies are realized. Technical studies are performed to begin the process of defining transportation corridor needs. Environmental documentation is also required prior to acquisition of rights-of-way.

Corridor studies provide valuable data used to formulate alignments and develop long-range transportation plans. They assist in establishing short-range programs for budgeting purposes so that improvements are realized over time. Environmental studies also provide information about land use impacts that can be used to determine preferred alignments within a corridor study area. Kern COG, in cooperation with California Department of Transportation, Kern County, City of Bakersfield, and other local, state, and federal agencies, continues to direct regional transportation studies that define needed highway projects. Some of these studies are technical in nature while others are environmental documents. The following is a summary of the studies initiated by Kern COG.

Mojave Corridor Study

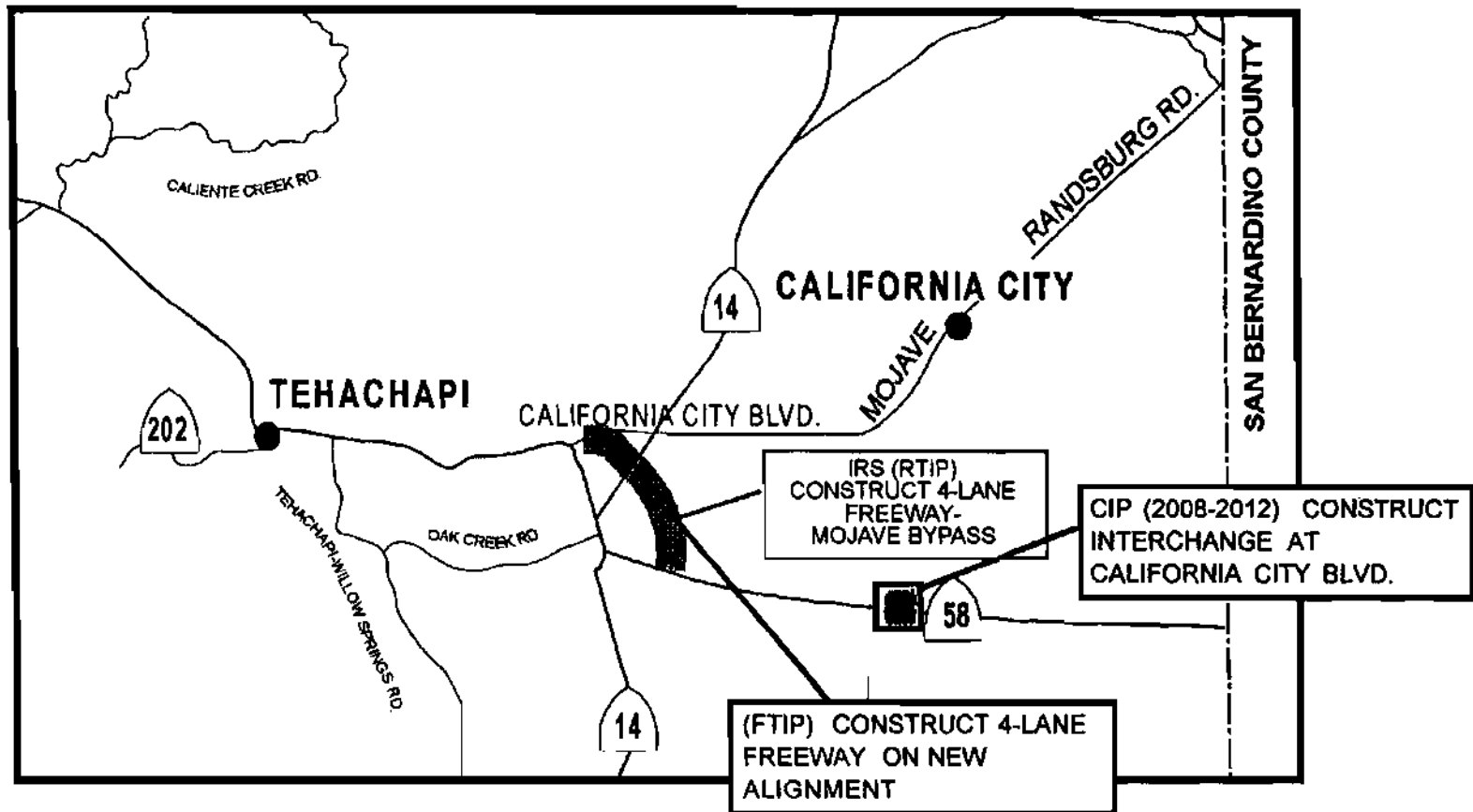
Completed in July 1990, the Mojave Corridor Study focused on Routes 14 and 58. Both routes support heavy traffic volumes, particularly along Sierra Highway, the combined one-mile stretch where the routes converge. Expansion of the present facilities is physically constrained because of an adjacent railroad switching yard on one side and commercial development on the other. The study examined alternative alignments for Routes 58 and 14 to maximize highway efficiency and minimize adverse safety effects. An eastern bypass of State Route 58 and additional Route 14 improvements were recommended. The EIR and plan lines have been finalized and construction is anticipated in 1999-2000. This project is funded in the current FTIP (Figure 5-1).

Route 178 - Downtown

The Route 178 Corridor Study was completed in December 1986. The project is reflected in the RTP Financial Element as the Crosstown Freeway. The study examines existing problems on Route 178 through central Bakersfield between the existing freeway structure and Route 99. The current freeway terminates into an older downtown area and bisects a well-established residential community prior to connecting with Route 99. The study identified a long-range improvement with a new freeway alignment around the south side of downtown, following the Burlington Northern Santa Fe Railroad tracks. Short-range improvements were identified for 24th Street, including beautification projects. This project is presently not funded. The CIP proposes partial funding in the last quinquennium of the RTP for rights-of-way purchase. Alternatives for this corridor are being studied in relation to the Kern River Freeway project. Funding for construction of the facility has not been identified.

Fairfax Road / Route 178 Interchange Study

Completed in December 1986, this study determined the impacts of future development in the vicinity of the Fairfax Road/Route 178 intersection. The study reviewed existing, near-term, and buildout traffic conditions. Recommendations were made for highway improvements, implementation schedules, and funding options. Route 178 is the main link to the Rio Bravo area and northeast Bakersfield from downtown. To accommodate



PROPOSED CAPITAL IMPROVEMENT PROJECTS

ROUTE 58 (EAST) PROPOSED CAPITAL IMPROVEMENTS

LEGEND



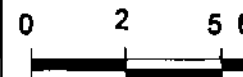
U.S. Highway
Interstate
State Highway



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FIGURE 5-1

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MILES

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long-term traffic growth, recommended improvements would include an interchange at Fairfax Road and Route 178. This interchange would serve as a gateway to Alfred Harrell Highway and Route 58. This project has been incorporated into the CIP.

Morning Drive Corridor Study

Completed in February 1990, this study evaluated alternative alignments for Morning Drive between Alfred Harrell Highway and Route 178, and weighed the traffic and environmental impacts of this extension. Recommendations for appropriate intersection locations along Alfred Harrell Highway were provided, including the necessary geometric design of those intersections. A 1995 transportation model shows a generation of approximately 10,600 daily trips using the corridor just north of Route 178. Additional studies are required prior to selection of a final alignment. Funding of improvements for this corridor have not been identified.

Route 178 through the Kern River Canyon

This study was completed in 1984 and investigated the portion of Route 178 that passes through the Kern River Canyon (Figure 5-2). This corridor commands attention during dangerous weather because of rockslides. The study addressed the feasibility of completing a previously approved alignment. The study investigated conditions and issues, and provided alternatives and recommendations. A portion of this alignment (in the Lake Isabella area) was completed in 1974 leaving approximately 22.5 miles incomplete. The study strongly recommended completion of the adopted alignment. Funding to construct the Kern Canyon Freeway has not been identified.

Route 202 Corridor Study/Tucker Road Traffic Analysis

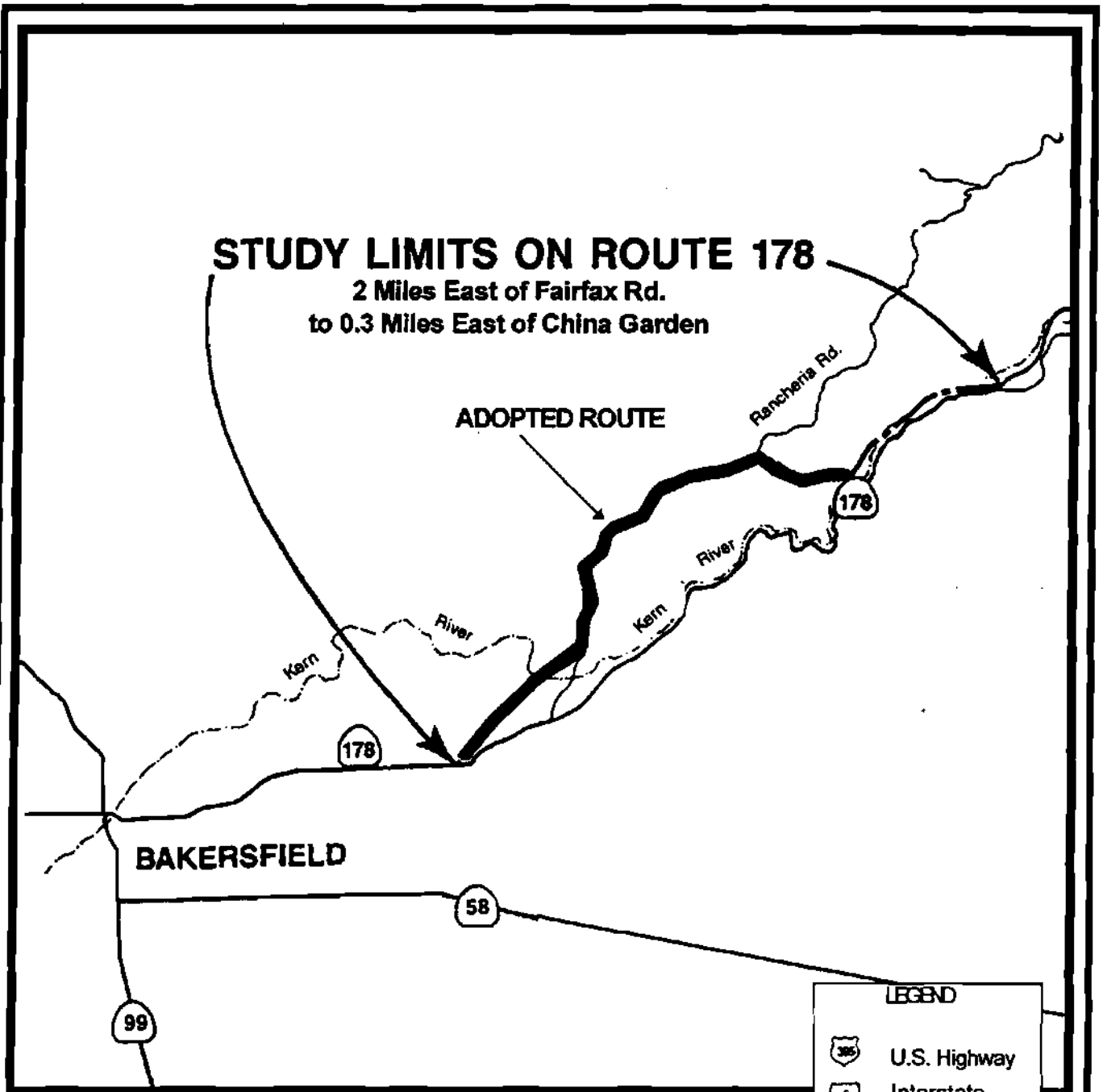
Completed in September 1987, this study identified alternatives for Route 202 to alleviate congestion. Expansion of the California Correctional Institution in Tehachapi, increased urbanization in the area and severe weather conditions have all contributed to traffic problems. Residents, workers, and visitors in Tehachapi are impacted by the decreased level of service on Route 202. The study includes both short- and long-range plans. In January 1990, the City of Tehachapi asked Kern COG for assistance in evaluating conditions at Route 202 and Tucker Road. The intersection needed to be evaluated as it was experiencing congestion, and proposed commercial projects would exacerbate impacts. A study has been completed to exchanging existing Route 202 within the city limits of Tehachapi for a Tucker Road alignment and the realignment process has begun. Additionally, a \$7.3 million SHOPP project is programmed in the FTIP to rebuild the Tucker Road bridge as part of the realignment effort.

West Beltway Study

Completed in January 1990, this study examined the future north/south transportation needs in west Bakersfield. The study was originally known as the Route 99 "Bypass" Study because of the need to alleviate congestion on Route 99 through Bakersfield. However, it was found through public meetings that the bypass concept was undesirable to western Bakersfield residents. Seven alternatives and a preferred "parkway" facility along Rudd Road between Seventh Standard Road and Route 119 were presented (Figure 5-3). No funding has been identified for construction of this facility; however, funding was identified in the last quinquennium of the RTP for partial purchase of rights-of-way.

Tehachapi Railroad Crossing Study

Completed in May 1985, this study assessed the need for an additional railroad crossing at Mill Street in the City of Tehachapi. Several alternatives were developed, and it was suggested that a crossing should be opened at Mill Street to relieve existing and projected congestion. No funding has been identified for this project.



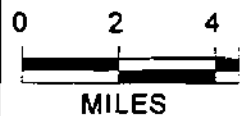
**CORRIDOR STUDY: ROUTE 178
 THROUGH KERN RIVER
 CANYON & PROPOSED KERN
 RIVER CANYON FREEWAY
 ALIGNMENT**

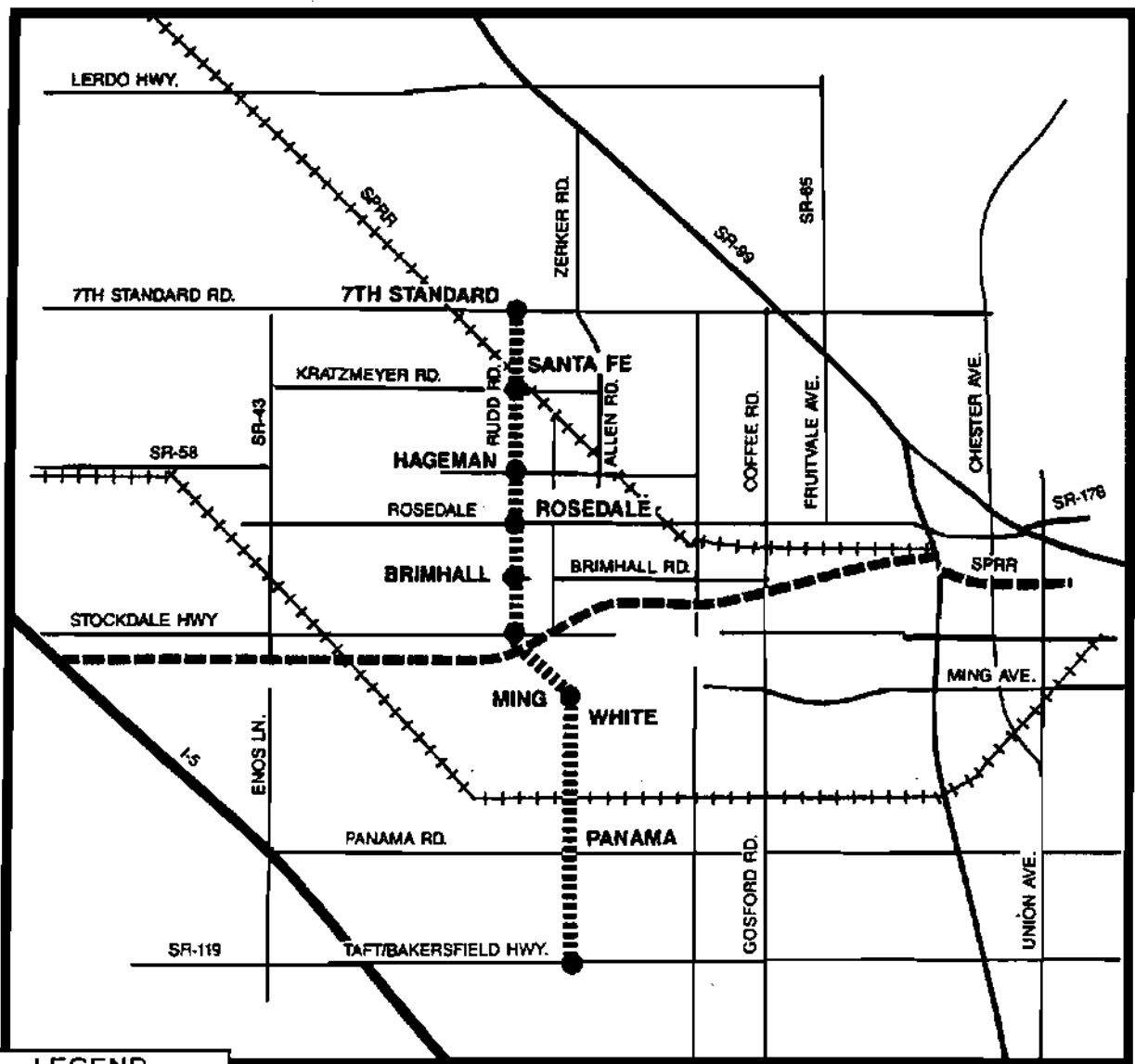


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FIGURE 5-2

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LEGEND

- U.S. Highway
- Interstate
- State Highway

LEGEND

- Proposed Kern River Freeway
- Recommended West Beltway Alignment
- Intersections of West Beltway

RECOMMENDED WEST BELTWAY ALIGNMENT



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FIGURE 5-3

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Route 33 Traffic Analysis

This study was completed in April 1989 and focused on Route 33 near Taft. Six tasks were identified, comprising: data collection; evaluation of existing conditions; short-term improvement program; 2010 traffic projections; and long-term improvements. No capacity projects are proposed for Route 33 at this time; however, \$8.2 million is constrained within the 1998 SHOPP program to resurface Route 33.

South Beltway

This proposed facility runs eastward from I-5, just south of Panama Lane, to just east of Weedpatch Highway where it turns northward by way of an east beltway and continues to Route 178 (Figure 5-4). The proposal is identified in the Bakersfield 2010 General Plan as a project that is beyond the twenty-year timeframe of the Plan. However, right-of-way should be reserved now. The facility would serve as a "bypass" for the heavily traveled Routes 58 and 178 corridors through Bakersfield, and in conjunction with other projects, would complete a freeway ring around Bakersfield. A Tier 1 EIR was certified in 1994. Funding has not been identified for construction of this facility. A portion of rights-of-way purchase was programmed into the last quinquennium of the Capital Improvement Plan. Although the Tier 1 EIR did not identify a preferred alignment, it did analyze 13 options/alternatives. The City of Bakersfield is preparing an environmental review of the South Beltway to establish a preferred alignment and adopt a specific plan line.

Westside Transportation Corridor Study

This was prepared as an environmental study for possible projects that were previously called for in the Westside Highway Study. That study presented short-term improvements along Rosedale Highway, as well as a long-term proposal to develop a new Route 58 freeway from Route 99 to I-5. This corridor is important for both local commuter traffic and highway connectivity between I-5 and I-40. Interim improvements are identified for Rosedale and Stockdale Highways. Projected traffic volumes for 2010 on the new freeway show over 80,000 trips per day. The Route 58 project from Route 99 to I-5. Caltrans is currently preparing a Tier I EIS/EIR scheduled for completion in 1998. The 1998 RTP proposes construction to begin in FY 2003-04. This project continues to be the first priority for the Kern region (Figure 5-5).

Sunset Rail Line Study

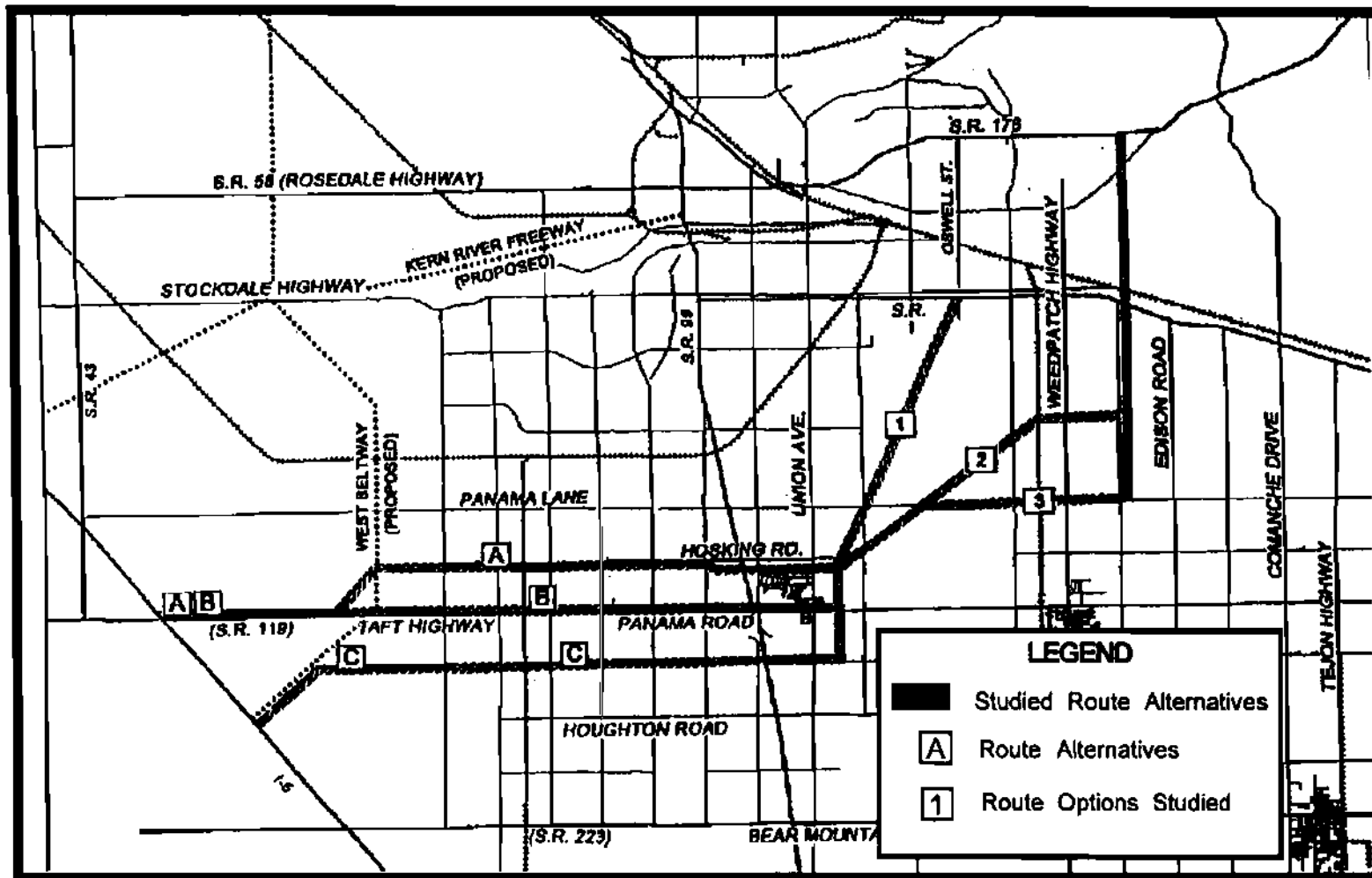
The Sunset Rail Line study was completed in 1994 to assess the feasibility of preserving an existing track facility as a future rail corridor. The study provided analysis of property rights issues, running speed improvements, operating costs, and revenue potential. This information was required to determine the viability of the Sunset Line as a future rail corridor for freight service, passenger service, or a combination of both.

Southeast Kern Transportation Study

This study was completed in 1995-96. Its scope focused on the integration of existing and proposed highway facilities. The geographic range of this study included the southeast corner of Kern County from west of the City of Tehachapi to north of the Route 14/California City Boulevard intersection. The study recommended various local road improvements and an interchange on Route 14 at California City Boulevard.

5.1.2 FACILITIES PRESERVATION

Preservation of facilities is directly affected by capital investments made in transportation infrastructure. Safe use of our highways, roadways, transit buses and municipal airports requires that they be maintained, repaired and replaced as the situation warrants. Much of the programming in the RTP is devoted to this end. Highways and roadways disintegrate from continued wear caused by the weight of vehicles passing over them as well as continued exposure to the elements. Highways that include electrical signs and lighting require certain levels



CORRIDOR STUDY: SOUTH BELTWAY

LEGEND

- U.S. Highway
- Interstate
- State Highway

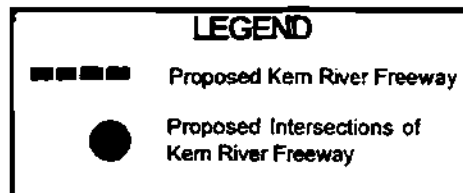
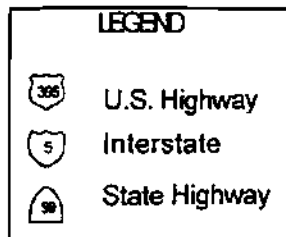
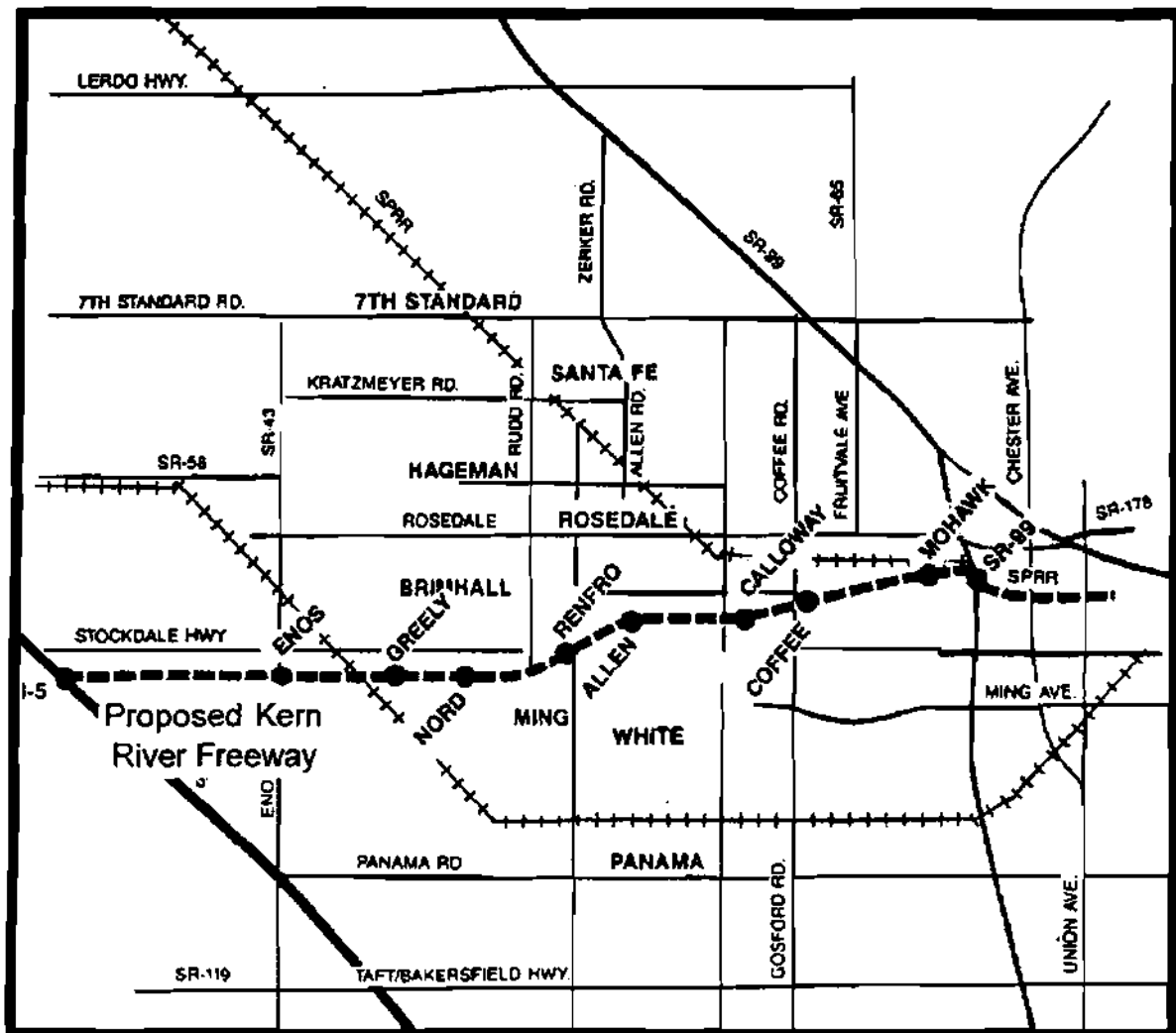


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FIGURE 5-4

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**CORRIDOR STUDY: ROUTE 58
HIGHWAY CORRIDOR STUDY
(KERN RIVER FREEWAY)**



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FIGURE 5-5

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of maintenance to keep those highways safe and usable. Drainage culverts, barrier fencing, median landscaping, stationary signs, signalization are part of the transportation facility that require upkeep. Bridges also require structural maintenance at times. Currently, many retrofit bridge projects are programmed for the Bakersfield area. From a policy standpoint, it is important that individual agencies continue to render whatever services necessary to maintain existing highways and roads in a safe and hazard-free manner. However, with continued funding shortages, local dollars may be less available to provide the required match to obtain federal funding for new infrastructure. Public transit must consider the eventual reliability of buses, so that they are not burdened with bus replacements all at one time. Programming of replacement buses must also consider maintenance costs. Aviation also has the burden of meeting minimum airport facility standards. With uncertain funding opportunities, much of the federal and state funding requests are used for repair, maintenance or upgrading of existing facilities to minimum standards.

5.1.3 CAPITAL INVESTMENTS

Roadways and transit service entail capital investments beyond the infrastructure normally associated with them. Highway maintenance workers use various pieces of heavy equipment to maintain or repair the roads, such as snow plows or bulldozers. Other capital investments for highways include lighting, various drainage structures, barrier fencing, signalization equipment, stationary traffic signs, electrical signs and landscaping. Some of these investments may add into the overall life cycle costing of a particular facility. Other items, such as traffic signs or signals, are necessary parts of the ongoing use and function of the facility. Various government agencies have the responsibility to finance personnel, equipment, office space, garage space and general overhead costs required to maintain and repair public transportation facilities. Transit requires bus purchase and other investments, including office space and equipment, bus maintenance shelter and equipment, as well as payroll. Transfer stations and bus turnouts, benches and shelters are examples of capital investments required to make the transit system usable.

5.1.4 MMTI CORRIDOR PROGRAMMING

Major Metropolitan Transportation Investment (MMTI) is a provision within ISTEA legislation pertaining to the planning of existing and future corridors within the State. As part of this region's efforts to preserve transportation corridors, major corridors have been identified for the movement of both people and goods. This provision requires corridor studies to include specific ISTEA mandated elements as part of the corridor analysis. Alternative transportation investment strategies are a key element in the MMTI process. Other key elements are discussed in greater detail in Section 5.4, Regulatory Consistency. The following MMTI corridors have been defined by Caltrans in conjunction with Kern COG:

1. Route 99 Corridor - Terminates at the intersection of I-5 and Route 99 south of metropolitan Bakersfield. Extends beyond Kern County into San Joaquin County. The corridor's limits extend westerly to Highway 43 and one mile east of Route 99, including both highway and rail.
2. Route 58 (West) Corridor - Extends from I-5 to Route 99.
3. Route 178 Corridor - Extends from Route 99 to San Bernardino County line.
4. Route 14 Corridor - Entire route is included in this corridor.
5. Route 46 Corridor - From San Luis Obispo County line to Route 99.
6. Route 58 (East) Corridor - From Route 99 to San Bernardino County line. This corridor also includes rail freight lines.
7. Route 184 Corridor - Entire route is included in this corridor.

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8. Route 65 Corridor - From Route 99 to Tulare County line.

This list defines Kern County, as well as San Joaquin Valley and statewide, transportation facility priorities.

SECTION 5.2 ENHANCEMENTS

5.2.1 PROJECT ALTERNATIVES

The following project alternatives were developed in consultation with the Project Advisory Committee (PAC), and are intended to meet minimum requirements set forth in ISTEA, other federal and State regulations, and the California Environmental Quality Act (CEQA). The alternatives were also developed to address various outcomes of the Air Quality Conformity analysis described in Section 7.0. As a result, the alternatives described below were only analyzed to address land use, air quality, transportation/circulation, noise, and energy impacts.

5.2.1.1 NO PROJECT ALTERNATIVE

This project alternative is required by the California Environmental Quality Act (CEQA), the federal Intermodal Surface Transportation Efficiency Act (ISTEA) and federal Air Quality Conformity Regulations. This alternative has been analyzed to determine whether environmental impacts associated with the Regional Transportation Plan and the Congestion Management Program (RTP/CMP) will be lessened if planned improvements to the future transportation system were not made; that is, if improvements are not implemented beyond existing projects and those projects are currently programmed in the State Transportation Improvement Program (STIP). This Project Alternative would, however, consider projected (2020) growth and development.

The No Project Alternative reflects all existing transportation systems, projects contained in the first seven years of the STIP, projects contained in the first seven years of local agency Capital Improvement Programs (CIPs), and all projects that are considered "exempt" under the Air Quality Conformity Regulations.

Possible significant impacts could result from this alternative. In particular, impacts to air quality, noise, land use, and transportation/circulation would occur. These impacts are discussed below.

IMPACTS

Air Quality

Projects identified in the RTP, if not implemented, will result in significant environmental impacts. In particular, air quality will be significantly impacted. Overall, air quality in future years will be worse without implementation of planned improvement projects scheduled for implementation between 1998 and 2020. A detailed assessment of such impacts is provided in Section 7.0, Air Quality Conformity. Even with significant trip reduction, air quality impacts associated with this project alternative cannot be mitigated. As a result, this project alternative is not considered viable.

Noise

Noise impacts are considered to be significant. As vehicular travel increases and congestion levels worsen, noise impacts are enhanced. Without implementation of planned transportation improvements, noise levels will increase significantly beyond what can be economically mitigated.

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Land Use

Land use impacts associated with this project alternative could be significant. In order for this alternative to be viable, and not significantly impact existing and planned land use, major trip reduction strategies would be required beyond what may be feasible. Further, major changes in land use planning would be required in order to support enhanced trip reduction.

Transportation/Circulation

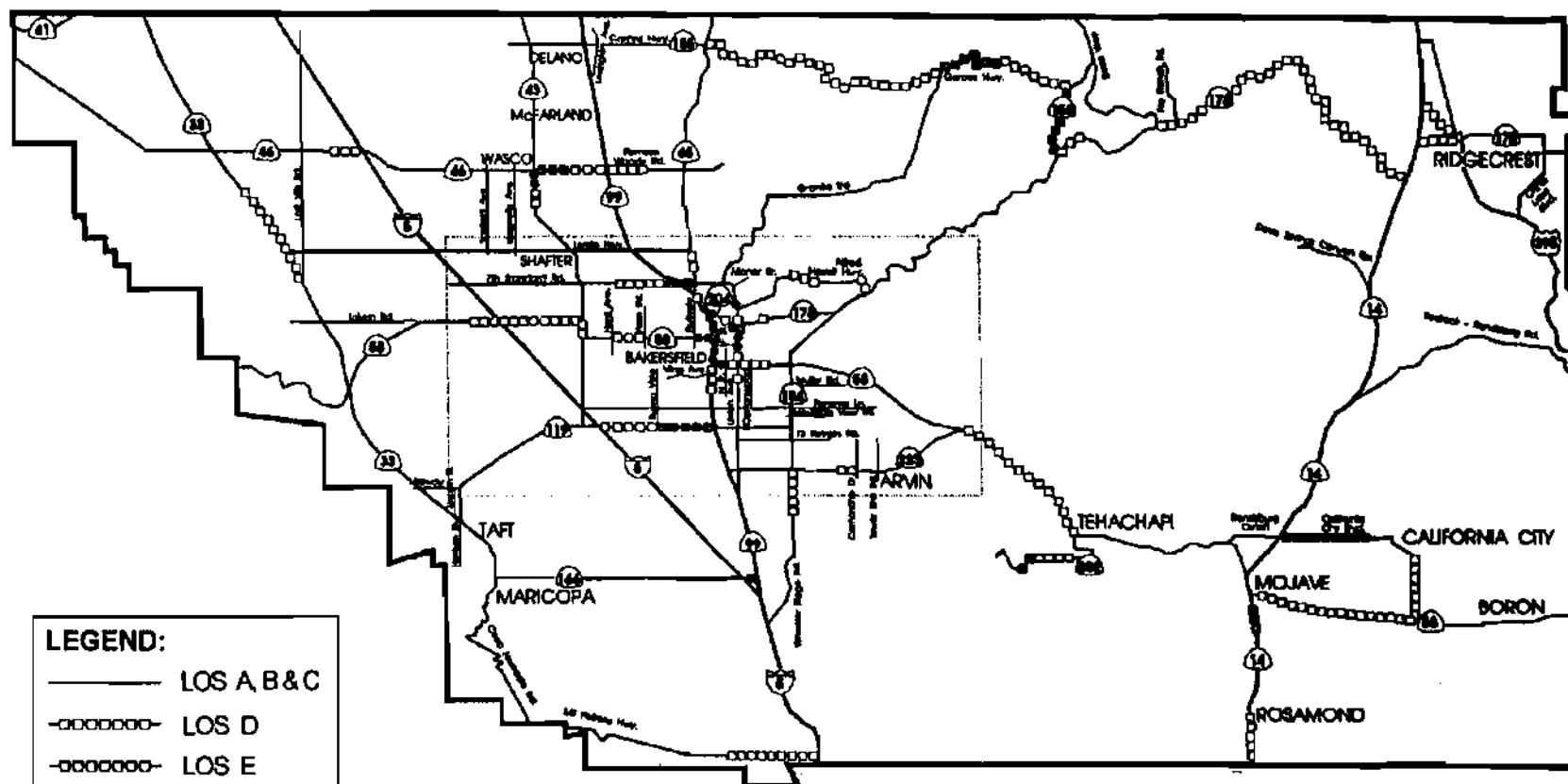
Numerous segments along the RTP Regionally Significant System would experience major level of service (LOS) deficiencies resulting from implementation of the No Build project alternative. These impacts are considered to be significant given the amount of average daily traffic that is projected by 2020. Significant delay and congestion well beyond the traffic capacity of these segments would be realized, resulting in significant environmental and economic impacts. The following segments are projected to fall to LOS "F" under this projected alternative. Figures 5-6 and 5-7 provide a graphic display of LOS conditions and Appendix C provides a detailed listing of LOS results.

Route 58 (Calloway - Fruitvale)	LOS "F"
Route 58 (Fruitvale - North junc. Rt 99)	LOS "F"
Route 58 (South junc. Rt 99 - South H)	LOS "F"
Route 58 (South H - South Union)	LOS "F"
Route 58 (South Union - Cottonwood)	LOS "F"
Route 58 (Rt 223 West -Woodford Tehachapi)	LOS "F"
Route 99 (Rt 65 North - Olive)	LOS "F"
Route 99 (Olive - Rt 204)	LOS "F"
Route 99 (Rt 204 - Rt 58 West)	LOS "F"
Route 99 (Rt 58 West - California)	LOS "F"
Route 99 (California - Rt 58 East)	LOS "F"
Route 99 (Rt 58 East - Ming)	LOS "F"
Route 99 (Ming - White)	LOS "F"
Route 204 (Rt 99 - F)	LOS "F"
Route 204 (Rt 178 - California)	LOS "F"
Route 204 (Monterey - Sumner)	LOS "F"
Manor St. (Roberts Lane - Panorama)	LOS "F"

In addition to street and highway impacts, major impacts on other modes of transportation would be realized. Without the implementation of planned mass transportation, aviation, non-motorized, and goods movement improvements, the transportation/circulation system will be severely impacted. These impacts would further reduce the ability of Kern County and its associated Air Districts to meet air quality standards and improve levels of congestion and delay.

Energy

Another impact associated with this project alternative would be on energy resources. Significant increases in fuel consumption will occur under this project alternative as a result of congestion and delay. When vehicles are not operating at their optimum speeds, engines use fuel inefficiently. In addition, the economic impacts associated with energy consumption under this project alternative would be considerable. Increased energy consumption would also cause direct increases in mobile source emissions and further degrade air quality.



2014 BUILD ALTERNATIVE

REGIONALLY SIGNIFICANT SYSTEM FUTURE YEAR CONDITION

LEGEND

-  U.S. Highway
-  Interstate
-  State Highway



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FIGURE 5-7

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5.2.1.2 MOBILITY IMPROVEMENTS/BALANCED SYSTEM PROJECT ALTERNATIVE

This project alternative would focus on reducing Vehicle Miles Traveled (VMT) and Vehicle Trips (VT) through enhanced improvements in Transportation Control Measures (TCMs), including rail, transit, and others, beyond that considered in the Traditional Project Alternative. Specifically, this project alternative involves "mode shift" activities that focus on lessening the use of the single-occupant vehicle (SOV) to "enhanced" alternative forms of transportation. Therefore, this project alternative would require financial investment to enhance the implementation and development of alternative transportation modes and TCMs necessary to achieve VMT and VT targets/budgets. The determination of how much VMT and VT to reduce was determined during the Conformity Analysis and considered VMT and VT targets/budgets for specific years that were provided by the California Air Resources Board (CARB) and San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD). The targets/budgets were approved by the SJVUAPCD Governing Board on November 3, 1994, and forwarded to the CARB for review and approval. The targets/budgets also will be incorporated into the Ozone State Implementation Plan (SIP).

In addition to this project alternative's emphasis on trip reduction strategies and alternative forms of transportation to reduce VMT and VT, mechanisms must be in place to ensure that the targets/budgets are achieved. This goal may only be possible if changes in land use planning practices are made by local jurisdictions. Such changes may include the provision for increased densities along major transportation corridors; provisions for "mixed-use" developments that would result in a "jobs to housing balance"; and the appropriate phasing of different types of development projects to ensure that the "jobs to housing balance" can be achieved.

To assist local agencies in addressing air quality concerns during the planning process, the SJVUAPCD has prepared the Air Quality Guidelines for General Plans. This document provides a resource to local agencies that they can use to implement local air quality programs, and contains goals, objectives, and policies designed to lessen air quality impacts from mobile, area, stationary, and indirect sources. Further, Kern COG will consider facilitating alternative land use planning seminars for local agencies, as well as development of handbooks that outline alternative strategies. In addition to meeting Air Quality Conformity and SIP requirements, this Project Alternative will assist with CMP compliance.

Based on the Air Quality Conformity Finding documented in Section 7.0, major adjustments to the planned multimodal transportation system will not be necessary. Further, because the RTP must be financially-constrained, enhancing the provision of alternative modes of transportation beyond those improvements included in Section 8.0, Financial Element, will not be possible.

While it could be argued that project funding for street and highway improvements under ISTEA (planned beyond the current STIP period) could be applied to provide for enhanced multimodal/balanced system project improvements instead, the amount of funding would not be sufficient to reduce significantly vehicle trips along RTP streets and highways to a level that would "offset" major LOS deficiencies. In other words, if a shift in funding from streets and highways to other modes of transportation was accommodated, it is expected that LOS deficiencies would increase, not decrease. This assumption is based on studies and findings made by other regional agencies' mode-split analyses.

Air quality is expected to worsen if planned streets and highway projects are not implemented beyond the STIP period, even considering a major shift to enhanced alternative modes of transportation. Referencing Section 7.0, Air Quality Conformity, the planned street and highway projects are benefiting air quality over time because the projects are expected to reduce delay and congestion significantly. A major shift to alternative forms of transportation, beyond that included in the preferred project alternative, would not be expected to capture all the trips that would be affected. The result would be significant delay and congestion and, therefore, significant air quality impacts.

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This alternative could have three types of land use impacts: (1) changes in land use patterns; (2) loss of existing or future land uses to expanded rights-of-way; and (3) impacts associated with compatibility of transit and rail improvements to adjacent land uses. In addition, noise impacts could occur along new rail lines and would increase along heavily congested streets and highways. Further, higher residential densities near transit corridors and employment centers could expose people to higher noise levels.

Once the mode-split model is developed, various studies and plans are completed (such as the Light Rail Study), and associated funding sources are identified, the RTP would be revised to identify potential benefits associated with major shifts to alternative transportation modes.

5.2.1.3 ENHANCED RAIL SERVICE PROJECT ALTERNATIVE

This project alternative focuses on various rail project improvements including: light rail, Amtrak passenger rail and high-speed rail, and truck/tractors on freight rail (that would reduce heavy-duty truck travel on regional streets and highways).

This project alternative must also be financially constrained; therefore, staff has coordinated development of this project alternative very closely with all affected agencies, including transit providers, Caltrans, Amtrak, and the affected railroad and trucking industries. In addition, this Project Alternative would require implementation of new land use planning practices as described above.

This project alternative would provide necessary VMT and VT reductions to meet minimum thresholds established either by the Air Quality Conformity analysis or by the VMT/VT targets/budgets.

Special attention was given, during development of this project alternative, to the air quality impacts associated with increased rail services. This project alternative has the potential to increase air quality impacts considering the need for increased railroad grade separations, diesel fuel emissions, and vehicle delay caused by an increase in the number of freight trains and slow moving passenger trains through urban areas.

Based on results of the Air Quality Conformity finding, documented in Section 7.0, major rail improvements will not be necessary at this time. Further, because the RTP must be financially-constrained, enhancing the provision of various rail improvements beyond those improvements included in Section 8.0, Financial Element, will not be possible.

While it could be argued that project funding for street and highway improvements under ISTEA (planned beyond the current STIP period) could be applied to provide for enhanced rail improvements, the amount of funding would not reduce trips along RTP/CMP streets and highways to a level that would "offset" major LOS deficiencies. If a shift in funding from streets and highways to high speed rail or freight rail was accommodated, it is expected that LOS deficiencies would increase, not decrease. This assumption is based on studies and findings made by other regional agencies' mode-split analyses. Kern COG will work toward such capabilities over the next year.

Air quality is also expected to worsen if planned streets and highway projects are not implemented beyond the STIP period, even considering a major shift to enhanced rail services. Referencing Section 7.0, Air Quality Conformity, the planned street and highway projects are benefiting air quality over time because the projects are expected to reduce delay and congestion significantly. A major shift to rail, beyond that included in the preferred project alternative, would not be expected to capture all the trips that would be affected. The result would be significant delay and congestion and, therefore, significant air quality impacts.

This alternative could also have three types of land use impacts: (1) changes in land use patterns; (2) loss of existing or future land uses to expanded rights-of-way; and (3) impacts associated with compatibility of major rail improvements to adjacent land uses. In addition, noise impacts could occur along new rail lines and would

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increase along heavily congested streets and highways. Further, higher residential densities near rail corridors and employment centers could expose people to higher noise levels.

Once the mode-split model is developed, various rail studies and plans are completed, and associated funding sources are identified, the RTP would be revised to identify potential benefits associated with major shifts to rail transportation.

5.2.1.4 TRADITIONAL PROJECT ALTERNATIVE

Per CEQA Guidelines, the preferred, "traditional," alternative has been identified and its impact has been analyzed. Discussion of this alternative's impacts is provided below.

5.2.2 PREFERRED ALTERNATIVE

PROJECT DESCRIPTION

Based on the results of Section 7.0, Air Quality Conformity and Section 8.0, Financial Element, the preferred alternative is the Traditional Project Alternative. This alternative was analyzed considering historical growth rates in VMT and VT, as well as anticipated growth in the use of other forms of transportation such as transit, rail, aviation, and non-motorized. Transportation control measures (TCMs) necessary to achieve positive air quality conformity findings have been identified and evaluated as part of this alternative.

This project alternative is characterized as the "worst case" alternative considering traditional transportation system improvements. Improvement projects identified and evaluated under this alternative are "financially constrained" in accordance with the Intermodal Surface Transportation Efficiency Act (ISTEA) and air quality conformity requirements. Further, this alternative focuses on "traditional" land use planning activities, i.e., designation of planned growth and development consistent with established land use density policies.

The following sections provide a description of the possible environmental effects associated with the preferred alternative. In addition, appropriate mitigation measures to lessen any significant impacts have been identified.

5.2.2.1 GEOLOGY/HYDROLOGY

Standards of Significance

An impact of project implementation is considered to be significant if one or more of the following conditions would occur:

1. Location of structures or transportation facilities within a known active fault zone;
2. Exposure of people or structures to geologic hazards, including: (a) ground rupture; (b) groundshaking; (c) liquefaction; (d) landslides or unstable slope conditions;
3. Construction of structures on soils with adverse engineering properties;
4. Obstruction of access to and extraction of mineral resources;
5. Substantial erosion of soils and/or degrade surface water quality;
6. Substantial increase in surface run-off;
7. Increased potential for flooding or exposure of people or structures to flood hazards; or

8. Conversion of prime agricultural land to nonagricultural uses or impairment of the productivity of prime agricultural land.

Direct and Indirect Impacts

Proposed Facilities and Projects

The RTP includes approximately 75 miles of regional transportation street and highway improvements shown on the map as funded projects. Improvement projects are planned for interstate, state, and federal highways. The proposed projects include highway widenings, right-of-way acquisition for future freeway projects, highway realignments, construction of passing lanes, and the conversion of existing highways to expressways. Implementation of these projects is intended to correct existing and anticipated highway deficiencies, improve highway efficiency, and result in improved air quality conditions within the local air basins.

In addition to regional street and highway projects, other transportation improvements are anticipated. The following sections provide descriptions of potential impacts associated with various transportation modes addressed in the RTP.

Streets and Highways

Geotechnical hazards and hydrological issues present a range of potentially significant impacts resulting from implementation of projects identified in the RTP. Specific impacts are identified below.

Aviation

The RTP proposes a number of expanded aviation facilities. As such, geotechnical and hydrological considerations could be potentially significant. Specific impacts are described below.

Mass Transit/Rail

The projects proposed within the RTP contain proposals for new or expanded mass transit facilities. As such, geotechnical hydrological considerations regarding such facilities could be potentially significant. Specific impacts are identified below. The RTP does not contain any financially constrained rail projects that would present geotechnical hazards or hydrological impacts.

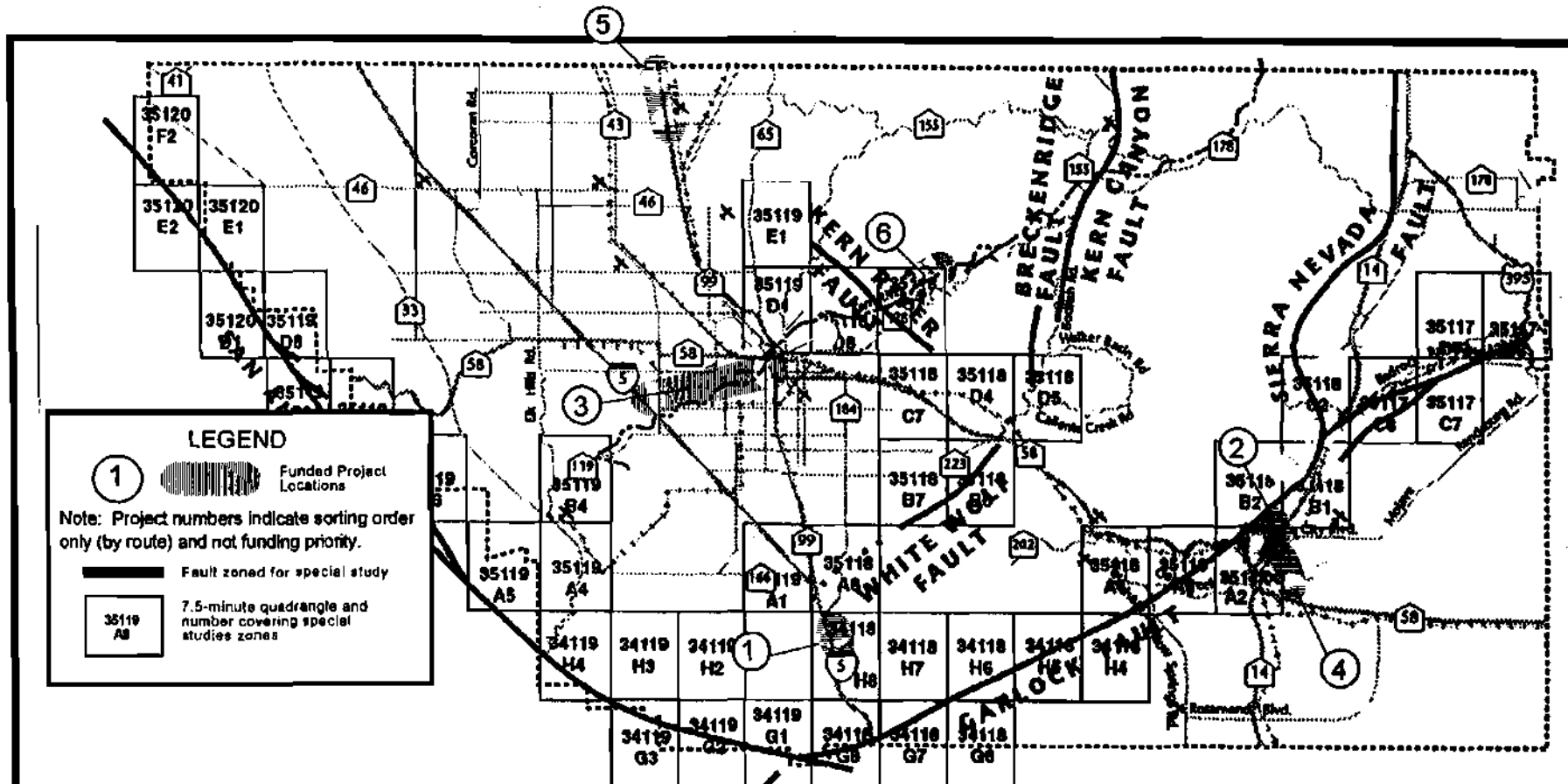
Non-Motorized Transport

The projects proposed within the RTP contain numerous proposals for new or expanded non-motorized transport facilities, such as walkways, bicycle trails and new bikeways. Specific impacts are described below.

Potential impacts associated with transportation projects are identified as follows:

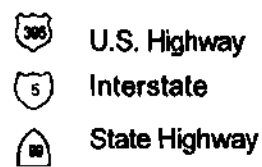
1. Because of Kern County's high level of seismic activity, projects constructed under the RTP may be susceptible to fault rupture and severe ground shaking. As shown on Figures 5-8 and 5-9, this potential is particularly acute for street and highway and other transportation projects along the Route 14 corridor near Mojave where the Garlock Fault lies in close proximity. Project susceptibility and potential damage to structures resulting from seismic action is considered a significant impact.

Seismic events also present a secondary, cumulative impact, as the proposed projects of the RTP may be growth inducing to residential development, which may in turn expose a larger number of persons to seismic activity.



FUNDED PROJECTS IN KERN COUNTY WITH PRINCIPAL FAULTS & FAULT HAZARD SPECIAL STUDIES ZONES

LEGEND

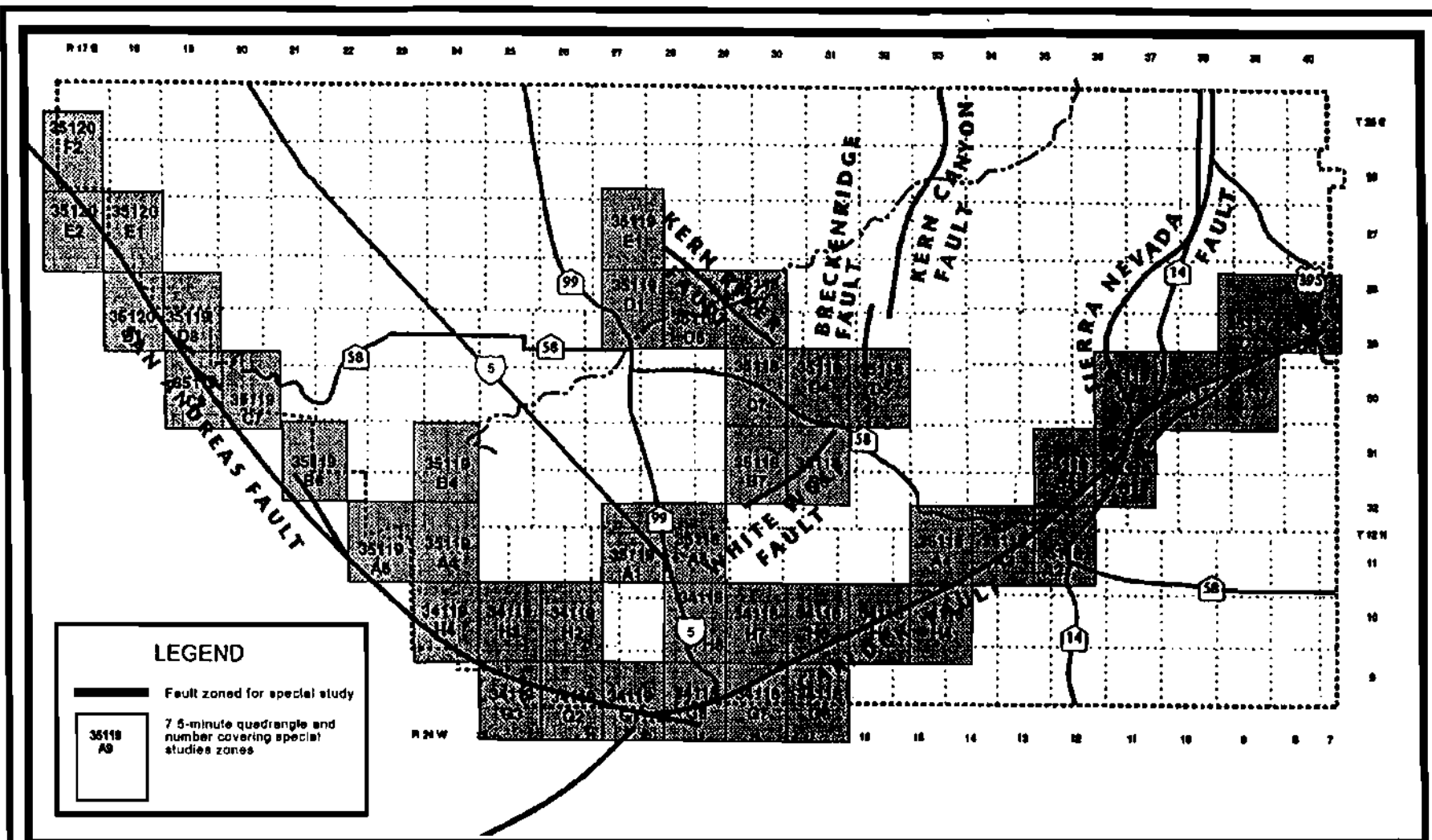


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FIGURE 5-8

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INDEX OF PRINCIPAL FAULTS & FAULT HAZARD SPECIAL STUDIES ZONES IN KERN COUNTY



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of Governments**

FIGURE 5-9

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2. Soil types and bedrock formations within Kern County range widely in terms of their potential for geologic hazards.¹ Although the scope of study performed for this EIR did not include a determination for project-specific liquefaction or seismic settlement potential, it is possible that liquefiable soils or soils susceptible to seismic compaction during groundshaking exist within areas of planned transportation improvement projects. This is a potentially significant impact that will require analysis as part of subsequent project specific environmental review.
3. Individual transportation project construction will require removal of vegetative cover and exposure of site soils to wind and surface water runoff. High erosion rates are typical of disturbed sites. Because of the high erosion potential of some soil categories, risk of erosion is considered a significant impact.
4. Implementation of proposed RTP projects potentially could have short- and long-term effects on water quality downstream from specific projects sites. The short-term impacts relate to the grading and construction phases of project implementation, while the long-term impacts may result from increased runoff flows from large asphalted areas. Figure 5-10 shows the location of funded projects in relation to drainage areas.
5. Street, highway and other transportation projects proposed for the RTP, particularly those along the Interstate 5, Route 46 and Route 99 corridors are in areas of prime agricultural land.² Although the majority of the proposed projects involve widening along existing rights-of-way, some projects may propose new segments of freeway or other transportation projects through areas of potential prime agricultural land. Projects that result in the conversion of prime agricultural land to transportation uses will result in a significant impact.
6. Truck travel accounts for accelerated roadway deterioration and increased maintenance costs of highways. Highway maintenance and deterioration from truck travel is primarily a result of the excessive weight of trucks, but is also linked to a roadway's construction and engineering. Geotechnical investigations required as a component of project implementation may result in a beneficial impact to roadway durability and, indirectly, the continued movement of goods.

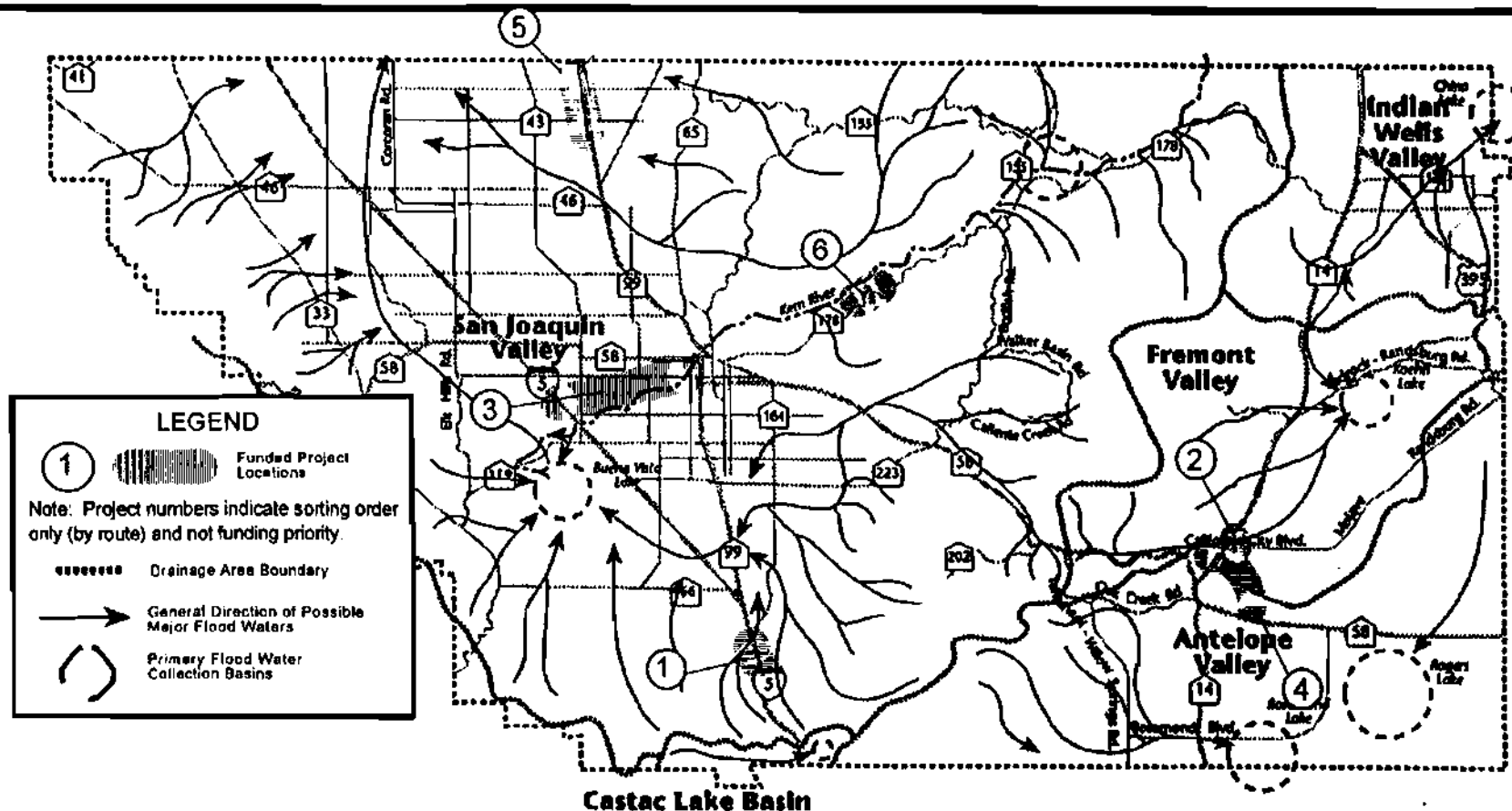
Mitigation Measures

1. Project structures shall be built to the seismic standards of the Kern County Code of Building Regulations, Ordinance No. G5791, as amended, and/or appropriate city building ordinances.
2. All project construction within areas of known historic landslides shall be approved only after a California-licensed geotechnical engineer demonstrates that the development will not be threatened by future landslides.

As part of the site-specific environmental review process for RTP street and highway and other transportation projects, Kern COG shall require the following studies by a California-licensed civil or geotechnical engineer, which will serve as project conditions of approval:

¹ Copies of the U.S. Soil Conservation Service General Soil Map for Kern County are available for review through the Kern Council of Governments.

² Kern County Subvention Act Lands Map, 1993, is available for review at Kern County Planning Department.



1. ROUTE 5 AT LAVAL RD. INTERCHANGE - UPGRADE BRIDGE AND INTERCHANGE
2. ROUTE 14 AT CALIFORNIA CITY BLVD. - INTERCHANGE
3. ROUTE 58 - CONSTRUCT FREEWAY ON NEW ALIGNMENT FROM STOCKDALE HIGHWAY (NEAR HEATH AVE.) TO MOHAWK ST.
4. ROUTE 58 NEAR MOJAVE - CONSTRUCT 4 LANE FREEWAY
5. ROUTE 99 NEAR MCFARLAND AND DELAND - 4 LANES TO 6 LANES AND REPLACEMENT PLANTING
6. ROUTE 178 NEAR DEMOCRAT ROAD - CONSTRUCT EAST BOUND PASSING LANE

KERN COUNTY DRAINAGE AREAS WITH FUNDED PROJECTS

LEGEND

- U.S. Highway
- Interstate
- State Highway



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of Governments

FIGURE 5-10

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- € Geotechnical investigations to identify adverse soil conditions and develop recommendations for design and construction that would limit the effects of adverse soil and bedrock conditions;
 - € Cut and fill plans for all projects where cut and fill will be required, whereby all fill materials are properly designed, placed, and compacted;
 - € Detailed erosion control plans to limit the effects of soil erosion and water degradation during construction, prepared in accordance with permit conditions and requirements of the State Water Resources Control Board's Best Management Practices (BMPs), or equally effective measures;
 - € Detailed mapping and analysis of earthquake faults and historic landslides, which may be used for determining appropriate project setback distances.
3. Engineering and design studies for capital improvement projects should take into consideration Kern County's higher than average truck traffic to reduce the rate of roadway deterioration, congestion, air pollution, and maintenance costs. In addition, such improvements would improve overall safety by both trucks and other vehicles traveling along the affected facilities.
 4. Where possible, capital improvement projects associated with the RTP shall consider alternative locations when a project will result in the conversion of significant areas of prime agricultural land. Where avoidance is not possible, such conversion will be considered a significant and unavoidable impact of project implementation.
 5. As a project condition of approval for subdivision maps, site plans, and grading permits, PM₁₀ control measures will be required.

5.2.2.2 AIR QUALITY

Air quality environmental impact analysis is provided in Subsection 7.5 of Air Quality Conformity.

5.2.2.3 BIOTIC RESOURCES

Standards of Significance

CEQA Guidelines identify the following potentially significant environmental effects on biotic resources:

1. Impacts (disturbance, taking, displacement, degradation) upon a population or critical habitat of a special-status plant or animal species;
2. Substantial interference with movement of any resident or migratory fish or wildlife species;
3. Substantial reduction in habitat for fish, wildlife, or plants.

Direct and Indirect Impacts

Proposed Facilities and Projects

The RTP includes approximately 75 miles of regionally significant street and highway improvements, shown on the maps as funded projects. Proposed projects include highway widenings, right-of-way acquisition for future freeway projects, highway realignments, construction of passing lanes, and the conversion of existing

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highways to expressways. Implementation of these projects is intended to correct existing and anticipated highway deficiencies, improve highway efficiency, and result in improved air quality conditions within the local air basins. In addition, improvements associated with other modes of transportation have been identified. Depending on their location, these capital improvement projects may impact areas of biological significance.

Streets and Highways

Street and highway improvements present a range of potentially significant impacts to the components of the 1998 RTP. Such impacts could result from the construction of new or expanded streets and highways on previously undisturbed land or across known biotic resources. Specific impacts are described below.

Aviation

The RTP contains proposals for new or expanded aviation facilities in undeveloped areas. As such, biological considerations regarding such facilities are nonsignificant. Specific impacts are described below.

Mass Transit/Rail

The RTP contains proposals for new or expanded mass transit facilities in undeveloped areas; therefore, impacts on biotic resources could be significant. The RTP/CMP does not contain any financially-constrained rail projects that would result in biotic resource impacts.

Non-Motorized Transport

The RTP contains numerous proposals for new or expanded non-motorized transport facilities, such as expanded bikeways or new bikeway facilities. Implementation of these projects is intended to result in improved air quality conditions within the local air basins and provide for enhanced mobility within the County. Depending on location, these capital projects may impact areas of biological significance.

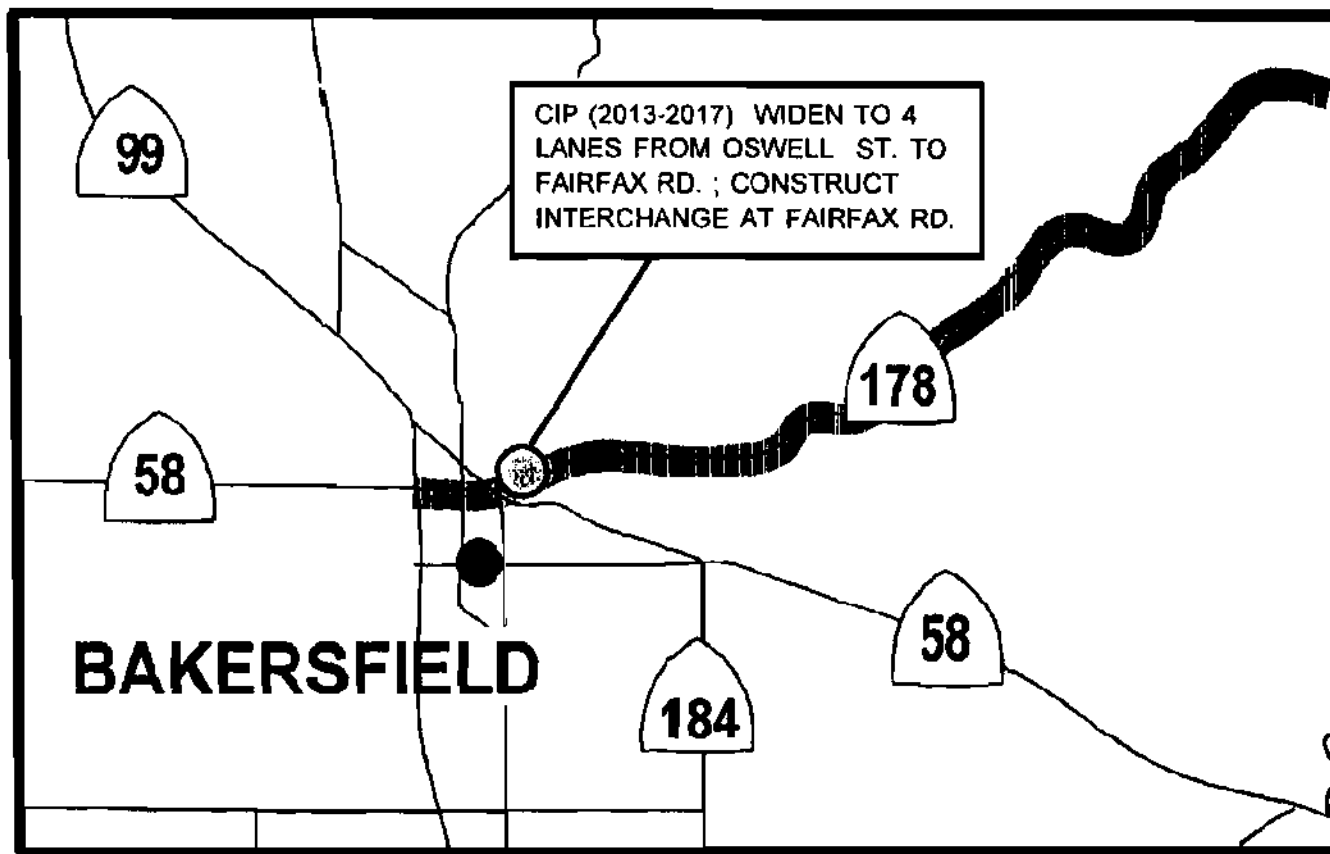
Goods Movement

Truck routes and improved goods movement are associated with roadway and rail projects, which have been previously addressed. As such, no direct connections are made between biological impacts and the movement of goods.

Potential impacts associated with transportation projects, including street and highway and other transportation improvements such as bikeways and bicycle trails, include:

1. **Countywide Vegetation.** Planned transportation projects would result in removal of existing vegetative cover. Impacts to native vegetation on a countywide basis, however, are anticipated to be nonsignificant. Kern County currently encompasses large areas of rangeland, resource management areas, and public land trusts that effectively preserve areas of significant botanical interest. The potential disturbance created by implementation of the RTP will be nonsignificant on a regional scale.
2. **Kern River Vegetation.** As shown on Figure 5-11, a number of roadway projects are planned along the Route 178 corridor (which parallels Kern River). A new freeway is also planned near metropolitan Bakersfield that will be in close proximity to the Kern River. Such projects present a potentially significant impact to riparian vegetation along its banks.

Riparian woodland along the Kern River results in a habitat type supporting a diversity of bird and wildlife species, some of which are dependent on the protection created by the woodland canopy.



**ROUTE 178
(METRO BAKERSFIELD) REGIONAL
HIGHWAY DEFICIENCIES & PROPOSED
CAPITAL IMPROVEMENT PROJECTS**

LEGEND

- U.S. Highway
- Interstate
- State Highway



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FIGURE 5-11

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riverbank vegetation also serves as protection and habitat for a number of fish species. Any loss of distinct riparian woodland habitat to accommodate proposed RTP projects is considered a significant impact.

3. **Wetlands and Sensitive Habitat Areas.** Potential impacts to wetlands could result from direct modifications to stream channels and seasonal wetlands to accommodate roadway widenings and crossings, as well as related flood control improvements. Impervious surfaces associated with the planned projects may magnify the volume of surface runoff and associated pollutants that may reach local streams and other wetland features. Erosion from increased surface runoff and construction could occur along stream channels where vegetative cover is poorly established, contributing to downstream sedimentation. These factors constitute a potentially significant impact to Kern County's wetland and sensitive habitat areas would be examined more fully as part of project level environmental review.
4. **Wildlife Movement.** Removal of vegetative cover in areas proposed for future transportation projects potentially could eliminate existing wildlife habitat, resulting in the displacement of wildlife during construction. To some extent, landscaping associated with capital improvement projects may provide limited wildlife habitat for species common to the individual project area, particularly trees and mature shrubs.

As shown on Figures 5-12 and 5-13, RTP impacts will be most pronounced in areas that are currently undisturbed, and where new roadways may constrain the mobility of wildlife. Projects that involve widening of existing roadways or the addition of bikeway improvements are less likely to result in wildlife impacts, as the habitat value along existing roads is generally disturbed.

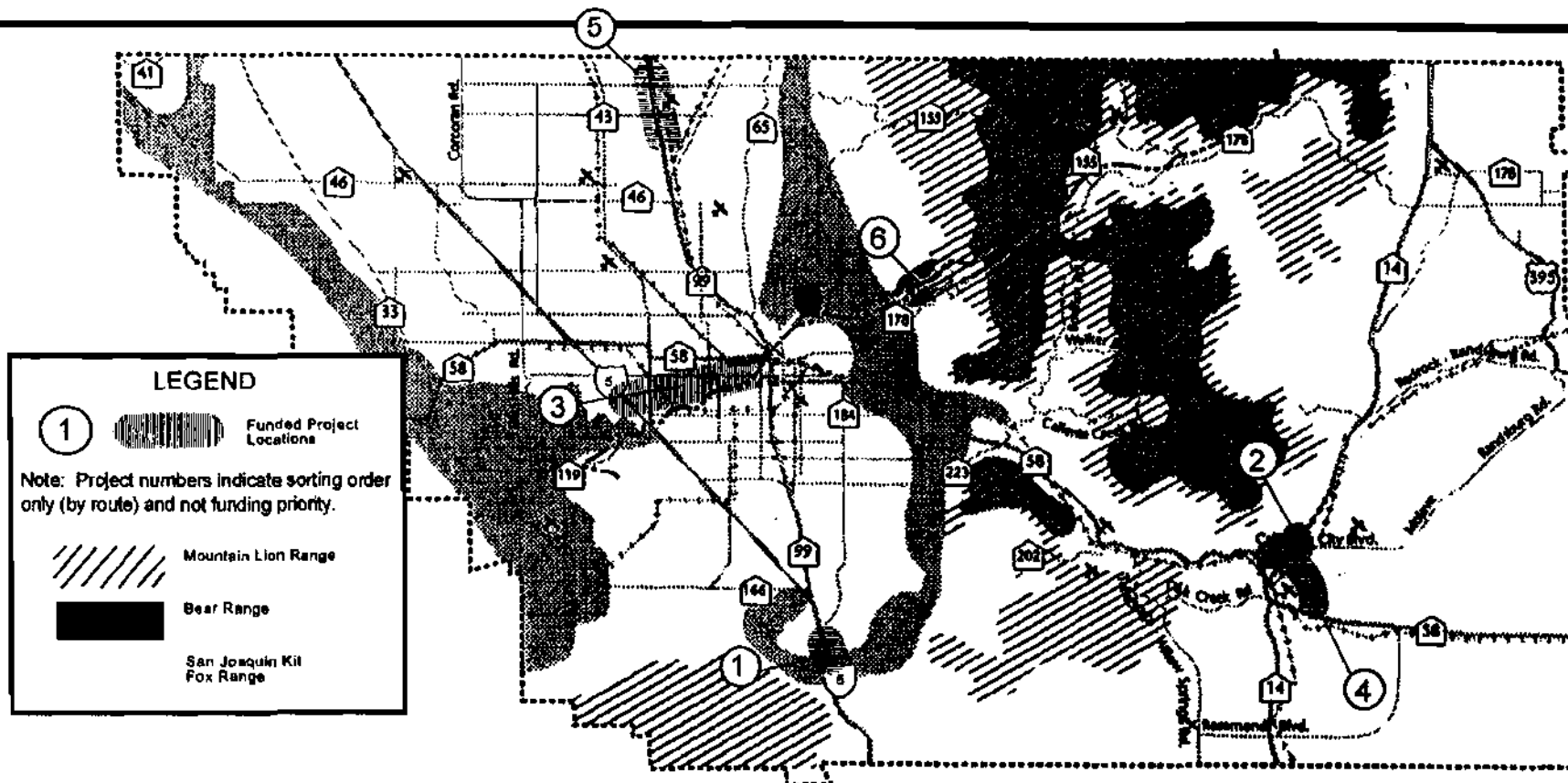
Although habitat values will vary throughout the various project areas, impacts to wildlife habitat and wildlife movement could be considered significant because of the location of potential projects within wildlife ranges.

5. **Special-Status Taxa.** Kern County sustains 46 plant species and 37 animal and insect species that are listed as either threatened, endangered, or of special concern to the U.S. Fish and Wildlife Service (USFWS) and/or the California Department of Fish and Game (CDFG).

Transportation projects may affect or reduce available habitat for a number of special-status species, and may affect critical habitat features such as nesting or denning sites, or plant populations. Although the extent of past disturbance in many of the proposed project areas limits the likelihood of occurrence for many species, additional studies will be necessary to determine conclusively whether taxa of concern occur in the areas planned for transportation improvement projects. Impacts to special-status species are, therefore, potentially significant.

Mitigation Measures

1. Prior to approval of individual capital improvement projects included in the RTP, appropriate environmental analysis shall be conducted. This may include studies and surveys for the affected area to document evidence of any special-status animal taxa, sensitive plant communities, wetlands, wildlife corridors, or other significant biotic features. Any required mitigation plans shall be developed in cooperation with the USFWS and CDFG.
2. Habitat for special-status plant and animal taxa shall be preserved to the extent possible, and adequate mitigation shall be provided for any loss considered significant by jurisdictional agencies. Proposed RTP projects in areas containing special status species shall be required to demonstrate a high degree of compatibility with, and minimal adverse impact on, existing habitat for populations with



1. ROUTE 5 AT LAVAL RD. INTERCHANGE - UPGRADE BRIDGE AND INTERCHANGE
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6. ROUTE 178 NEAR DEMOCRAT ROAD - CONSTRUCT EAST BOUND PASSING LANE

FUNDED PROJECTS WITH WILDLIFE RANGES - MOUNTAIN LION, BEAR & SAN JOAQUIN KIT FOX



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of Governments

FIGURE 5-12

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special-status. Individual projects shall be encouraged to incorporate design features or alignments that minimize impacts to such areas.

3. Plans to modify Kern River stream corridors, wetland features or channels (such as bridge crossings or flood control improvements) shall be designed to minimize disturbance to areas of dense riparian cover, mature trees, and other important habitat. Any proposed modifications shall be coordinated with representatives of the CDFG and Army Corps of Engineers to ensure that the requirements of both agencies are addressed. Jurisdictional determinations and appropriate mitigation shall be required subject to the provisions of Section 404 of the Clean Water Act and Sections 1601-1606 of the CDFG Code.
4. Projects within the Bakersfield area will require coordination with the City of Bakersfield regarding the Metropolitan Bakersfield Habitat Conservation Plan (HCP). Mitigation strategies developed for this area shall be consistent with the HCP.

5.2.2.4 NOISE

Standards of Significance

The impact from noise would constitute a significant impact if plan implementation resulted in a substantial increase to the ambient noise levels of adjoining areas.

Direct and Indirect Impacts

Traffic Noise

Moderate to high noise impacts generally can be expected along state highways, and moderate to low impacts along County roads. Table 5-1 lists the proportions of high, moderate, and low impact segments for the three future scenarios.

**TABLE 5-1
PROPORTION OF HIGH, MODERATE, AND
LOW NOISE IMPACT ROADWAY SEGMENTS FOR
FUTURE TRAFFIC SCENARIOS**

Impact Potential	Future Scenarios			
	2001 CMP (%)	2014 No-Build (%)	2014 Build (%)	2020 Build (%)
High	64 (27%)	84 (28%)	84 (28%)	96 (29%)
Moderate	112 (48%)	186 (62%)	183 (60%)	213 (64%)
Low	64 (27%)	28 (10%)	36 (12%)	24 (7%)
Source: Brown-Burton Associates, Inc.(1994); Kern Council of Governments				

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Table 5-1 also shows that on a percent basis the proportions of high, moderate and low noise, roadway segments are about equal for the two 2020 scenarios. The percentage of moderate and high noise impact segments will be greater in any of the future scenarios than the existing condition. A conclusion from this Table is that more adverse noise impacts can be expected along roadways regardless of which scenario is eventually implemented.

Rail Noise

Two additional passenger trains and physical improvements to the Kern County rail system County are proposed. Additional passenger trains would result in four additional trips per day. This added to approximately 20 existing freight train trips and 8 existing passenger train trips would result in an overall increase of 14 percent in the number of train trips. Since a 100 percent increase in trips is required to achieve a 3 decibel increase, it can be concluded that a 14 percent increase is insignificant. Physical improvements that are being considered would not result in any appreciable increase in train trips. Therefore, the improvements can be considered insignificant from a noise standpoint.

Airport Noise

Construction of airport improvements could increase or generate adverse noise levels that would be considered significant if adjacent to sensitive land uses, such as housing and schools.

Mitigation Measures

Factors that affect traffic noise, as measured by the Day/Night Average Level (L_{dn}), are traffic volume (AADT), the proportion of truck traffic, the proportion of nighttime traffic, speed, and distance from the road. Physical changes to the roadway such as widening may or may not affect noise levels, unless a substantial increase in traffic volume results from the widening or the right-of-way is significantly displaced. A doubling of traffic volume is required to achieve a 3 dB increase in traffic noise. An increase of 3 dB or more is usually required before most people can perceive the change. Therefore, a minimum 3 dB increase is usually required before a "significant" impact as defined by CEQA is produced. Hence, traffic increases that are less than 100 percent (all other factors affecting traffic noise remaining constant) will not result in a significant noise impact.

For trains, a doubling of operations is required to achieve a 3 dB increase in terms of L_{dn} , assuming all other factors remain the same.

Traffic

1. During project design, State and local agencies responsible for project implementation shall consider methods to reduce traffic noise, such as: (1) construct soundwalls adjacent to highways or affected receivers; (2) depress roadways; (3) increase the separation between the roadway and receivers; and (4) locate insensitive land uses between the roadway and noise-sensitive receivers.
2. Interior noise levels can be reduced by applying special building methods and materials. Window and glass door assemblies that are specially constructed to reduce sound are common techniques for reducing interior noise levels. It should be noted that treating for interior noise will not benefit the exterior noise environment, but techniques that reduce exterior noise levels also will benefit interior noise environments.
3. Kern County and the cities within the County have policies in their General Plan Noise Elements that establish land use compatibility standards with respect to noise. Such standards are required by the Government Code and the State General Plan Guidelines. These standards are implemented when

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a project that requires local approval is submitted. Similarly, Caltrans' road construction and improvement projects are governed by their own noise regulations.

Passenger and Freight Rail

1. During project design, Caltrans, Amtrak, and private railroad companies responsible for project implementation shall consider methods to reduce rail noise. Such measures include: (1) construct soundwalls adjacent to rail lines or affected receivers; (2) depress rail lines; (3) increase separation between the rail lines and receivers; and (4) locate insensitive land uses between the rail lines and noise-sensitive receivers. A demonstration project to depress rail lines has been successfully implemented in southern California. Not only has noise been almost completely mitigated, increased street level crossings have enhanced access.

Airports

1. Project specific acoustical studies are required as part of the environmental review and permit processes for specific airport improvements when sensitive land uses are located adjacent to the proposed improvements.
2. Local agencies are required to determine that airport land use compatibility objectives are being met in accordance with *Public Utilities Code* Sec. 21670 et seq. As a result, local agencies must review proposed land use developments in the areas surrounding airports to avoid new or increased noise impacts on sensitive land uses.

5.2.2.5 LAND USE

Standards of Significance

Some proposed RTP projects may have significant impacts on existing land uses if they would:

1. Disrupt or divide the physical arrangement of an established community;
2. Conflict with established recreational, educational, religious, or scientific land uses;
3. Convert prime agricultural land to non-agricultural land or impair the productivity of prime agricultural land; or
4. Conflict with adopted environmental plans and goals of the community where it is located and cause substantial change in the physical conditions which exist in the area affected by the proposed project (*CEQA Guidelines*, Sec. 15002g).

Direct and Indirect Impacts

Streets and Highways

The proposed highway improvements in the RTP would facilitate the movement of automobiles and trucks on the County's circulation system. Bypasses around congested urban areas would be constructed, and the capacity of numerous roadways would also be increased. This infrastructure capacity expansion would make it easier to travel around and through Kern County for both residents and visitors.

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While increases in the ease of travel might modestly reduce visitor demand for commercial land uses such as hotels, the greater desirability of the County as a travel destination would counterbalance this change in demand, resulting in no net impact. At the same time, residents might use the improved highway network to reside farther from where they work, producing a minor increase in urban sprawl. However, since the RTP proposed improvements represent only an incremental increase in transportation capacity, and because the RTP program serves the County's land use pattern, this impact would not be significant.

Aviation

The RTP proposes a number of airport improvements within Kern County. These enhancements would permit increased capacity at designated airports, allowing them to better serve the needs of passengers and air freight operators. This would result in an increase in urban land uses, particularly industrial and commercial, near the airport locations. This land use impact, while potentially significant in the immediate vicinity of the airports, would be minor within the regional context. Aviation-related land use impacts, therefore, would be non-significant.

Mass Transit

Mass transit systems within the County will have the opportunity to be enhanced through the RTP as funding sources and system alternatives are identified. As mass transit systems are implemented or enhanced, the potential for urban sprawl caused by extended and new roadways may be lessened as the potential for alternative forms of transportation are explored. Enhanced mass transit would result in beneficial land use impacts as alternatives to the automobile are actively pursued.

Non-Motorized Transport

Implementation of the RTP would permit construction of additional bike paths and pedestrian improvements throughout the urbanized areas of the county. These infrastructure enhancements would stimulate the use of non-motorized vehicles for completion of errands and other short-term trips, as well as reduce the amount of automobile and truck trips for recreational purposes. To the extent that demand for highway improvements is reduced, the RTP's non-motorized component may result in less urban sprawl. This would have a positive effect on land use.

Goods Movement

Inter- and intra-regional movement of goods occurs by highway, railroad and air. The RTP's highway and aviation improvements would facilitate this movement by allowing quicker access to, and departure from, Kern County's industrial and commercial areas. These improvements may provide a relative regional advantage for local businesses, resulting in increased opportunities for economic development. This may produce additional demand for urbanized land uses as new factories, warehouses and shops are built and new residences constructed. Such incremental development would reduce the proportion of agricultural and other rural uses within the County. These modifications to the County's land use pattern would have a less than significant impact.

Mitigation Measures

Since the RTP would not produce any significant impacts on land use, no mitigation measures are required or recommended.

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5.2.2.6 TRANSPORTATION/CIRCULATION

Standards of Significance

CEQA Guidelines identify potentially significant environmental effects on transportation/circulation to include the following:

1. Cause an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system; or
2. Disrupt or divide the physical arrangement of an established community.

The planned transportation/circulation system provides the basic network used for the movement of goods and people in the region. Regionally significant streets and highways are used by nearly all travel modes including automobiles, ridesharing vehicles, public and common carrier transit, the intra- and inter-regional trucking industry, bicyclists, pedestrians, and other non-motorized modes of transportation. These systems must operate efficiently in order to reduce traffic congestion, improve air quality, and move people and goods safely.

The RTP systems are composed of the Regionally Significant Street and Highway System and the CMP System of Highways and Roads that include federal, interstate and state highways, regional arterials, and other regionally significant street and road facilities. The RTP also addresses future transportation/circulation systems needs, including mass transportation, aviation, non-motorized, and goods movement. A list of planned improvement projects along each of these systems is provided in Section 8.0, Financial Element. These planned projects are considered to be "financially constrained"; therefore, implementation over the next 20 years is assumed. Impact analysis of each mode on the planned transportation/circulation system is provided below. The analysis was developed with the assumption that only financially constrained projects would be implemented during the life of the RTP. All other projects (systems resulting from future studies, unfunded capital improvement projects, etc.) have not been included in the impact assessment as required by ISTEA and the air quality conformity requirements specified in the federal Clean Air Act Amendments of 1990.

Direct and Indirect Impacts

Streets and Highways

New freeway and other street and highway improvement projects have the greatest potential for causing significant adverse environmental effects versus other modes of transportation. This RTP proposes the widening or modification of existing streets and highways, changes to the designation of regional streets and highways, a new freeway and expressway (Route 58, west of Route 99, and Route 178 between Morning Drive and Rancheria Road), and new interchange facilities along new or existing freeways. Other projects include signalization improvements (new signals, signal modifications, and signal synchronization), safety projects, right-of-way purchase for Route 178 (Kern River Canyon, the Crosstown Freeway and the South, West, and East Beltways in Bakersfield), and railroad crossing improvements (crossings and grade separations).

To identify potential impacts of the planned street and highway system, LOS for each facility along the RTP and CMP Systems was measured. Minimum LOS for purposes of both the RTP Regionally Significant System and the CMP System is LOS "E" (reference Section 3.0, Policy Element). The LOS analysis was conducted consistent with analysis applied to estimate current LOS in Section 4.5, Existing Systems. For segments along the future RTP Regionally Significant System, 2020 average daily traffic (ADT) estimated by Kern COG Regional Traffic Model was applied. For segments along the CMP System, 2001 ADTs were applied. The CMP System was evaluated for 2005 consistent with CMP provisions that require a seven-year Capital Improvement Program (CIP). LOS analysis for the future CMP System only considered those financially

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constrained projects that are scheduled for implementation by 2001. Results of both the RTP and CMP LOS analysis indicate whether or not planned improvements contained in the Financial Element will address the minimum LOS policy.

Results of the LOS analysis for the CMP indicate that a few facilities will fall below LOS "E" between 1998 and 2005, including:

Route 204 (Route 99. to F Ft.)	LOS "F"
Route 58 (Gibson St. to Route 99)	LOS "F"
Route 178 (Route 99 St. to Beech St.)	LOS "F"
Route 14/58 (Route 58 South to Route 58 North)	LOS "F"
Route 58 (Route 99 to Cottonwood)	LOS "F"
Route 58 (Coffee Rd. to Route 99)	LOS "F"
Route 99 (California Ave. to Route 178/58)	LOS "F"
Route 178 (Chester to Q St.)	LOS "F"
Route 178 (Route 184 to Rancheria)	LOS "F"
Route 184 (Edison Hwy to Route 58)	LOS "F"
Route 202 (Tucker to Westwood Blvd.)	LOS "F"

While these facilities are projected to fall deficient during the next seven years, the CMP does not require development of a deficiency plan until the facility (segment or intersection) actually fails deficient. Figures 5-14 and 5-15 provide a graphic display of the projected LOS along all CMP facilities, and Appendix C includes a list of CMP facilities, segment limits, projected 2001 volumes, LOS "C" capacities, and the resulting LOS along individual segments.

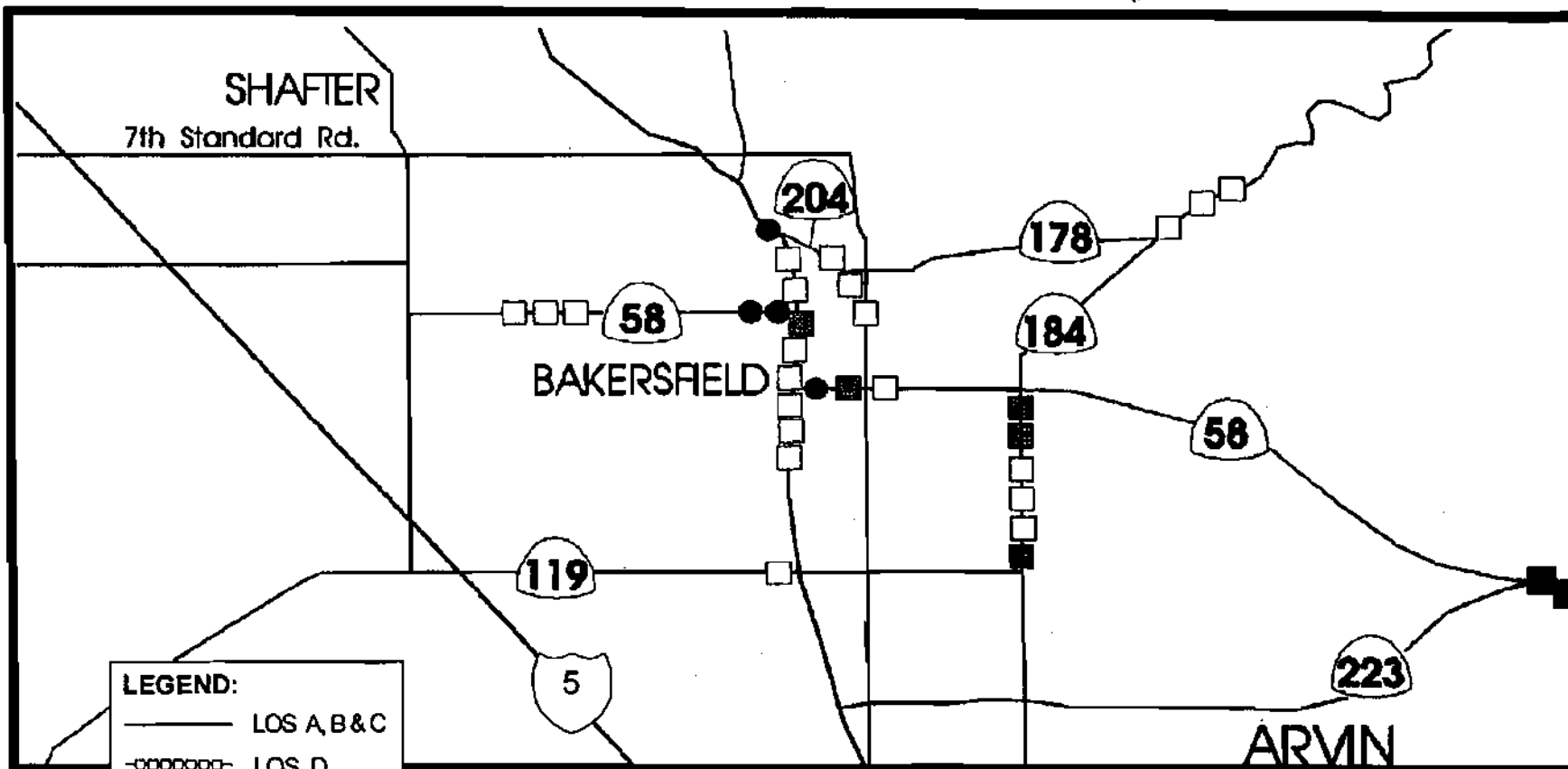
Results of the LOS analysis for the RTP, also indicate that some facilities will fall deficient between 1998 and 2020, including:

Route 43 (Route 46 - Filburn)	LOS "F"
Route 58 (Fruitvale - North Jct. Rt 99)	LOS "F"
Route 58 (South Jct. Rt 99 - South H)	LOS "F"
Route 99 (Olive - Route 204)	LOS "F"
Route 99 (Rt 58 West - California)	LOS "F"
Route 99 (California - Rt 58 East)	LOS "F"
Route 204 (Rt 99 - F St.)	LOS "F"
Route 204 (Rt 178 - California)	LOS "F"

Figures 5-16 and 5-17 provide a graphic display of the resulting levels of service for 2020 along the Regionally Significant System and Appendix C includes a list of regional facilities, segment limits, projected 2020 volumes, LOS "C" capacities, and resulting LOS along individual segments.

In addition to LOS deficiencies, Caltrans and local agencies are also facing the difficult task of maintaining regional streets and highways with inadequate funding. With increased congestion expected in the future, the typical road will require some maintenance every five to ten years, and major rehabilitation every ten to 20 years. If rehabilitation and maintenance activities are not implemented, County residents will continue to experience increased accident rates and reduced systemwide efficiency.

Short-term effects are anticipated because of project construction activities. These activities will cause significant short-term traffic congestion and delay resulting from street and highway closures, reduced lanes for travel, and/or detours.



CONGESTION MANAGEMENT PROGRAM 2001 FUTURE YEAR CONDITIONS - BAKERSFIELD AREA

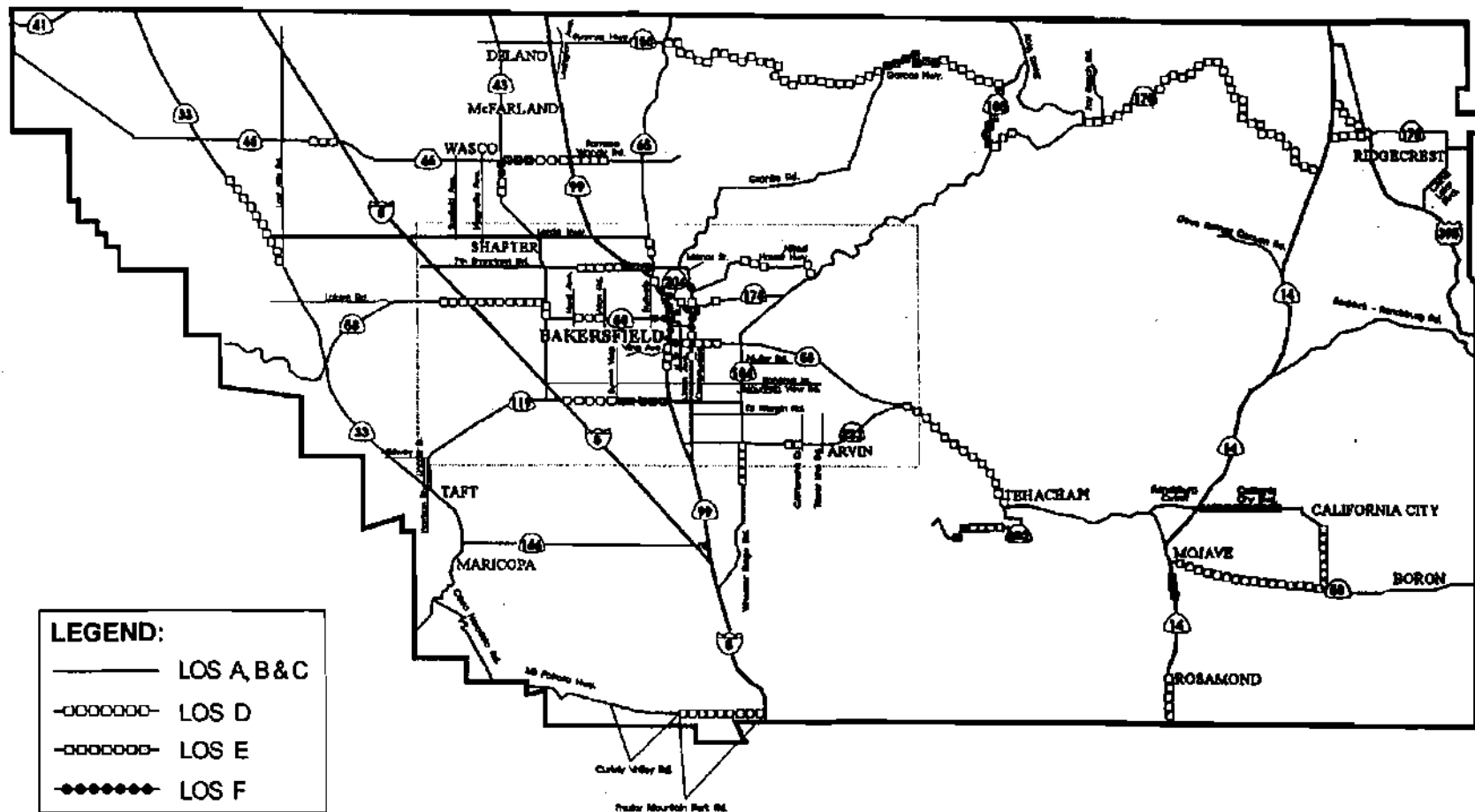


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FIGURE 6-15

JULY 1998

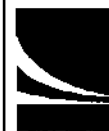




2014 BUILD REGIONALLY SIGNIFICANT SYSTEM FUTURE YEAR CONDITIONS - BAKERSFIELD AREA

LEGEND

- U.S. Highway
- Interstate
- State Highway



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FIGURE 5-17

JULY 1998



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Aviation

Increased air passenger service flights to accommodate demand will occur in Kern County. This projected demand will also increase the need for airport improvements. These improvements include: land acquisition for future improvements, runway and taxiway renovation and extension, new parallel taxiways, terminal remodeling, installation of lighting and signs, aircraft and transient parking, new helipads, security fencing and gates, development of Airport Layout Plans, and other minor improvements. These improvements have been identified to address aviation needs described in Section 4.5.2, Existing Systems - Aviation.

Referencing Section 8.0, Financial Element, a number of additional improvements are currently unfunded. Without such improvements, incremental deterioration of general aviation services may occur throughout the County.

Mass Transportation

Improvement and expansion of mass transportation services (public transit, common carrier service, and passenger rail) is expected to result in increased ridership. Removing vehicles from the region's roadways by enhancing public transportation and other mass transportation services, will relieve traffic congestion and improve air quality. Further, measures that encourage optimized use of mass transportation services will reduce energy consumption in the region.

Referencing Section 8.0, Financial Element, a number of financially constrained mass transportation projects are scheduled for implementation between 1998 and 2020. These improvement projects include: acquisition and replacement of transit buses or vehicles; development of park-and-ride lots, development of new transfer sites and maintenance facilities; reconstruction and upgrade of tracks along the Amtrak San Joaquin line; and, reconstruction and upgrade of the Wasco train station. In addition, Caltrans plans the expansion of Amtrak service from four to six trains each day by 2000. These improvements will partially address the need for enhanced mass transportation services in Kern County. Additional improvement projects, including implementation of the High Speed Rail Study, are identified in the Financial Element. However, funding is not currently available for these projects. Various studies are funded that may identify potential funding sources. Without such improvements, incremental deterioration of mass transportation services may occur.

Non-Motorized

The future of non-motorized travel within the Kern County region is encouraging. Increased use of bicycles and walking for commuter trips could decrease traffic congestion, and would result in decreased vehicular emissions. Further, a decrease in the number of vehicles would incrementally result in a decrease in transportation-related fuel consumption. Even with improved pedestrian and other non-motorized transportation services and facilities, the change in traffic volumes on major roadways would not be great enough, by itself, to create significant improvements in local or regional traffic congestion, delay, air quality or energy consumption.

Referencing Section 8.0, Financial Element, a significant number of financially constrained non-motorized improvement projects are planned, including: new bike lanes and paths, landscaping and streetscape improvements, and various pedestrian improvement projects. These planned improvements will help address needs for such services as described in other sections of this document. Additional funding would be necessary to address remaining needs between 1998 and 2020.

Goods Movement

Goods movement primarily addresses improving the efficiency of existing and planned facilities and transportation systems, including rail, truck, and air. Street and highway, rail, and aviation projects identified

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in Section 8.0, Financial Element, will indirectly improve goods movement in Kern County. Project impacts, therefore, have been addressed previously, with the exception of freight rail services. Freight rail improvements are scheduled between 1998 and 2020; however, most of these improvements will be made by the various private railroad companies (reference Section 5.2.4). These improvements include: various operational improvements along short line railroads; operation improvements along highways (referenced above under Streets and Highways), additional piggy-back facilities; and the identification of potential multimodal facilities.

Mitigation Measures

Streets and Highways

Implementation of RTP projects and programs generally will serve to improve traffic flows and reduce congestion and delay within Kern County. However, the RTP is constrained by limited funding sources that would be necessary to implement additional projects along both the Regionally Significant System of Streets and Highways and along the CMP system. As indicated in the previous section, LOS deficiencies are projected to occur along both systems, even considering the wide range of financially constrained street and highway improvements identified in Section 8.0, Financial Element.

To address these and other impacts identified in the previous section, the following mitigation measures are recommended:

1. Four segments along the CMP System will experience LOS "F" conditions by 2001. Further, eight segments along the RTP Regionally Significant System of Streets and Highways are projected to fall below LOS "E" prior to 2020. Mitigation measures for these segments have not been identified or programmed in the CMP CIP or in the RTP Financial Element. Intersection improvements and lane additions would improve the deficient LOS to acceptable levels consistent with the minimum LOS policies identified in Section 3.0, Policies, and in Section 6.3, CMP - Level of Service Standards.

Kern COG will coordinate efforts to identify appropriate strategies that would improve the deficient levels of service along both the Regionally Significant System and the CMP System. Kern COG will work with the City of Bakersfield, Kern County and Caltrans District 06 to identify alternative improvements, associated cost estimates, and an implementation plan and schedule. Various funding sources should be analyzed as part of the implementation plan.

2. Kern COG will continue to monitor and maintain the RTP System of Streets and Highways to the extent that the RTP can anticipate LOS problems and issues as they develop.
3. Short-term adverse impacts to mobility and access are associated with construction of new or upgraded facilities. Mitigation for these short-term effects should include traffic diversion/detour plans, subject to state and/or local review and approval on a project basis. Construction activities should occur outside hours associated with peak congestion.
4. Local agencies are encouraged to update general, community and specific plans to reflect the current status of future street and highway improvements. The timing of improvements also will be updated regularly. These measures will help Kern COG identify appropriate and available funding for planned street and highway improvements along the Regionally Significant System and the CMP System during development of the RTP Financial Element and the CMP CIP.
5. State and local lead agencies should ensure that future environmental review of specific planned street and highway improvement projects addresses site-specific impacts and that appropriate construction recommendations are presented prior to project approval.

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6. Kern COG will identify major street and highway improvement projects that must be evaluated through TEA-21 Metropolitan Transportation Investment Study process. These projects include those major projects identified in Section 5.1.4 - MMTI Corridor Programming.
7. Kern COG is committed to improved interagency coordination and integration of the National Environmental Policy Act (NEPA) and the Clean Water Act Section 404 procedures during three stages: transportation planning, project programming, and project implementation. Kern COG and affected state and local agencies should commit to ensuring the earliest possible consideration of environmental concerns pertaining to U.S. waterbodies, including wetlands, at each of the three stages identified above. The agencies should place a high priority on the avoidance of adverse impacts to waters of the U.S. and associated sensitive species, including threatened and endangered species. Implementation of NEPA-404 requirements will expedite construction of necessary transportation projects, with benefits to mobility and the economy at large. The process will also enable more street and highway projects to proceed on budget and on schedule. Finally, the process will improve cooperation and efficiency of governmental operations at all levels, thereby better serving the public.
8. Acting as the Congestion Management Agency (CMA), Kern COG will, to the extent possible and consistent with the intent of CMP legislation, prepare, monitor, and ensure implementation of the CMP in Kern County.
9. Kern COG will monitor the implementation of transportation control measures (TCMs) referenced in Section 7.9, Air Quality Conformity. These measures will not only be necessary to reduce nonattainment pollutants emitted by mobile sources, but will also be necessary to ensure that assumed trip reductions are achieved along the RTP Systems. In particular, trip reductions associated with rideshare and carpool programs have been assumed during development of future year average daily traffic projections. Resulting traffic was then applied to measure LOS. If rideshare goals are not met, LOS along certain RTP System facilities could be reduced.
10. Kern COG will coordinate with state and local agencies to develop a comprehensive financing strategy that ensures proper maintenance of the RTP Street and Highway Systems.

Aviation

1. The RTP identifies a number of both minor and major airport improvement projects. These projects are intended to improve aviation services in Kern County and address needs identified in Section 4.5.2. As additional needs and new or potential funding sources are identified, Kern COG, working with state and local agencies, should incorporate improvement projects in the RTP and participate in the development of Airport Master Plans and other aviation studies to address regional transportation needs.
2. The regional transportation planning process should continue to monitor and maintain the RTP Aviation System to the extent that the Plan can anticipate service deficiencies and issues as they develop.
3. Local agencies are encouraged to update Airport Systems Plans and other studies to reflect the current status of future aviation improvements. The timing of improvements should also be regularly updated. These measures will help Kern COG identify appropriate and available funding for planned aviation improvements in Kern County for updates of the RTP Financial Element.
4. State and local lead agencies should ensure that future environmental review of specific planned aviation improvement projects addresses site-specific impacts and that appropriate construction recommendations are presented prior to project approval.

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5. Kern COG is committed to improved interagency coordination and integration of the National Environmental Policy Act (NEPA) and the Clean Water Act Section 404 procedures during three stages: transportation planning, project programming, and project implementation. Kern COG and affected state and local agencies should commit to ensuring the earliest possible consideration of environmental concerns pertaining to U.S. waterbodies, including wetlands, at each of the three stages identified above. The agencies should place a high priority on the avoidance of adverse impacts to U.S. waterbodies and associated sensitive species, including threatened and endangered species. Implementation of NEPA-404 requirements will expedite construction of necessary aviation projects, with benefits to mobility and the economy at large. The process will also enable more aviation projects to proceed on budget and on schedule. Finally, the process will improve cooperation and efficiency of governmental operations at all levels, thereby better serving the public.
6. Kern COG will coordinate with state and local agencies to develop a comprehensive financing strategy to ensure proper maintenance of existing and planned aviation facilities.

Mass Transportation

Impacts on transportation/circulation associated with mass transportation projects, including public transit, common carrier service, and passenger rail service, are considered to be negligible once the following mitigation measures are implemented:

1. Kern COG will continue to monitor and maintain the RTP Mass Transportation System to the extent that the RTP can anticipate deficiencies and issues as they develop.
2. Short-term adverse impacts to mobility and access are associated with the construction of new or upgraded transit and passenger rail facilities. Mitigation for these short-term effects should include appropriate areas for shelter.
3. A long range plan is under preparation for a high speed rail corridor connecting the Bay Area with Sacramento-Fresno-Los Angeles. This project is a phased program that would commence with improvement of existing rail and would ultimately construct high speed rail lines, allowing top speeds of up to 300 mph. The preliminary report of the High Speed Rail Corridor Study describes a four level improvement program, with each level approaching the goal of very high speed rail passenger travel between northern and southern California. This project is very important to Kern County because Bakersfield will be a major stop along the corridor. For purposes of this RTP, the high speed rail corridor has not been evaluated since funding to implement the system is not currently available.

To the extent possible, Caltrans, Kern COG, and local agencies will participate in development of the Long Range High Speed Corridor Study to ensure that Kern County is provided with adequate facilities in proper locations to maximize ridership.

4. State and local lead agencies should ensure that future environmental review of specific planned mass transportation improvement projects addresses site-specific impacts and that appropriate construction recommendations are presented prior to project approval.
5. Kern COG will identify major mass transportation improvement projects that must be evaluated through TEA's Metropolitan Transportation Investment Study process.
6. Kern COG is committed to improved interagency coordination and integration of the National Environmental Policy Act (NEPA) and the Clean Water Act Section 404 procedures during three stages: transportation planning, project programming, and project implementation. Kern COG and affected state and local agencies should commit to ensuring the earliest possible consideration of

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environmental concerns pertaining to U.S. waterbodies, including wetlands, at each of the three stages identified above. The agencies should place a high priority on the avoidance of adverse impacts to U.S. waterbodies and associated sensitive species, including threatened and endangered species. Implementation of NEPA-404 requirements will expedite construction of necessary mass transportation projects, with benefits to mobility and the economy at large. The process will also enable more mass transportation improvement projects to proceed on budget and on schedule. The process will improve cooperation and efficiency of governmental operations at all levels.

7. Acting as the Congestion Management Agency (CMA), Kern COG, to the extent possible and consistent with the intent of CMP legislation, will prepare, monitor, and ensure implementation of the CMP in Kern County, in particular, transit standards identified and described in Section 6.4, CMP - Transit Standards.
8. Kern COG will monitor the implementation of TCMs referenced in Section 7.9, Air Quality Conformity. These measures will not only be necessary to reduce nonattainment pollutants emitted by mobile sources, but will also be necessary to ensure that assumed trip reductions along the RTP Systems are achieved. In particular, public transit and passenger rail will facilitate trip reduction along the RTP Systems of Streets and Highways. These services are necessary to support rideshare and carpool programs.
9. Kern COG will coordinate with state and local agencies to develop a comprehensive financing strategy to ensure adequate mass transportation services and proper maintenance of facilities.
10. Local agencies should implement specific recommendations identified in SRTPs and in LRTPs, where applicable. These Plans also support implementation of CMP transit standards and development of the CMP CIP.

Non-Motorized

The Air Quality Attainment Plans (AQAPs) for both the San Joaquin Valley Unified Air District (SJVUAPCD) and the Kern County Air Pollution Control District (KCAPCD) identify non-motorized TCMs that will enhance bicycle and pedestrian transportation modes. In addition, the following mitigation measures should be implemented to ensure proper planning and implementation of future non-motorized transportation projects:

1. Conflicts between bicyclists and automobiles or other types of vehicles can occur along heavier traveled streets and highways where high average speeds are common. Conflicts also occur along facilities with on-street parking. Expansion of bike paths and routes will help eliminate some of these conflicts.

Kern COG will coordinate efforts to identify appropriate strategies that would improve the regional bikeway system consistent with local general plan circulation elements and bikeway plans. Kern COG will work with Caltrans Districts and local agencies to identify associated cost estimates and implementation plans and schedules for those projects listed in the Financial Element that are not financially constrained. Various funding sources will be analyzed as part of the implementation plan.
2. Kern COG will continue to monitor and maintain the Regional Bikeway System to the extent that the RTP can anticipate bikeway needs and issues as they develop.
3. Short-term adverse impacts to mobility and access are associated with the construction of new or upgraded bikeway facilities. Mitigation for these short-term effects should include traffic diversion/detour plans, subject to state and/or local review and approval on a project-level basis. Construction is encouraged to occur outside hours associated with peak congestion.

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4. State and local lead agencies should ensure that future environmental review of specific planned bikeway improvement projects addresses site-specific impacts and that appropriate construction recommendations are presented prior to project approval.
5. Kern COG is committed to improved interagency coordination and integration of NEPA and the Clean Water Act Section 404 procedures during three stages: transportation planning, project programming, and project implementation. Kern COG and affected state and local agencies should commit to ensuring the earliest possible consideration of environmental concerns pertaining to U.S. waterbodies, including wetlands, at each of the three stages identified above. The agencies should place a high priority on the avoidance of adverse impacts to U.S. waterbodies and associated sensitive species, including threatened and endangered species. Implementation of NEPA-404 requirements will expedite construction of necessary bikeway projects, with benefits to mobility and the economy at large. The process will also enable more bikeway projects to proceed on budget and on schedule. The process will improve cooperation and efficiency of governmental operations at all levels.
6. Kern COG will monitor the implementation of TCMs referenced in Section 7.9, Air Quality Conformity. These measures will not only be necessary to reduce nonattainment pollutants emitted by mobile sources, but will also be necessary to ensure that assumed trip reductions along the RTP/CMP Systems are achieved. In particular, bikeway improvements will facilitate trip reduction along the RTP/CMP Systems of Streets and Highways. These services are necessary to support rideshare and carpool programs.
7. Kern COG will coordinate with state and local agencies to develop a comprehensive financing strategy to ensure proper maintenance of the Regional Bikeway System.

Goods Movement

The effects and proper mitigation of goods movement along the street and highway systems are addressed under the Streets and Highways section above. The exception is freight rail service. To address the possible impacts on transportation/circulation, the following mitigation measures have been identified:

1. Kern COG will continue to monitor the regional rail system to the extent that the RTP can anticipate deficiencies and issues as they develop.
2. Short-term adverse impacts to goods movement and access are associated with the construction of new or upgraded rail facilities. Mitigation for these short-term effects should include appropriate detour and safety plans that are reviewed by the CPUC and Kern COG prior to implementation.
3. State, regional, and local lead agencies, and private rail companies should ensure that future environmental review of specific planned freight rail improvement projects addresses site-specific impacts and that appropriate construction recommendations are presented prior to project approval.
4. Kern COG will identify major mass transportation improvement projects that must be evaluated through the Metropolitan Transportation Investment Study process.
5. Kern COG is committed to improved interagency coordination and integration of NEPA and the Clean Water Act Section 404 procedures during three stages: transportation planning, project programming, and project implementation. Kern COG and affected state and local agencies should commit to ensuring the earliest possible consideration of environmental concerns pertaining to U.S. waterbodies, including wetlands, at each of the three stages identified above. The agencies should place a high priority on the avoidance of adverse impacts to U.S. waterbodies and associated sensitive species, including threatened and endangered species. Implementation of NEPA-404 requirements will

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expedite construction of necessary freight rail projects, with benefits to mobility and the economy at large. The process will also enable more rail improvement projects to proceed on budget and on schedule. Finally, the process will improve cooperation and efficiency of governmental operations at all levels, thereby better serving the public.

6. Kern COG will monitor the implementation of TCMs referenced in Section 7.9, Air Quality Conformity. These measures will not only be necessary to reduce nonattainment pollutants emitted by mobile sources, but also to ensure that assumed trip reductions along the RTP Systems are achieved. In particular, freight rail improvements (e.g., double stacking of freight containers over the Tehachapi Summit) will facilitate trip reduction and improve air quality.
7. Kern COG will coordinate with other San Joaquin Valley Regional Transportation Planning Agencies to address air quality impacts associated with heavy-duty trucks. Strategies may include, but are not limited to, the following: (1) discussing appropriate controls on heavy-duty trucks with the SJVUAPCD and CARB; and (2) jointly preparing a study in coordination with Caltrans Districts that addresses the feasibility of "trucks on rail". These strategies would significantly reduce nonattainment emissions in Kern County and improve traffic congestion and delay on major highways and other arterials.

5.2.2.7 ENERGY

Standards of Significance

The impact on energy resources would be significant if plan implementation resulted in an increase in energy consumption of five percent or more when compared to the no-project condition.

Direct and Indirect Impacts

Table 5-2 indicates the anticipated energy consumption in Kern County in 2020 with the implementation of the RTP. Plan implementation would result in a total of 32,160,182 vehicles miles traveled in 2020. This would be an increase of 262,183 trips (0.82 percent) compared to the VMT that would occur without the proposed project. Total gasoline and diesel fuel consumption would be 2,672,907 gallons in 2014 with the RTP. This would be an increase of 21,791 gallons (0.82 percent) compared to anticipated conditions without plan implementation.

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Since the increase in energy consumption from proposed capital improvement projects is less than five percent, the impact of the RTP on energy resources would not be significant.

Mitigation Measures

Factors that affect traffic noise, as measured in terms of the Day/Night Average Level (L_{dn}), are traffic volume in terms of AADT, proportion of truck traffic, proportion of nighttime traffic, speed, and distance from the road. Physical changes to the roadway, such as widening, may or may not affect noise levels, unless a substantial increase in traffic volume results from the widening or the right-of-way is significantly displaced. A doubling of traffic volume is required to achieve a 3 Db increase in traffic noise. An increase of 3 Db or more is usually required before most people can perceive the change. Therefore, a minimum 3 Db increase is usually required before a "significant" impact, as defined by CEQA, is produced. Hence, traffic increases that are less than 100 percent (all other factors affecting traffic noise remaining constant) will not result in a significant noise impact.

For trains, a doubling of operations is required to achieve a 3 Db increase in terms of L_{dn} , again assuming all other factors remain the same.

TABLE 5-2 2020 ENERGY CONSUMPTION WITH PROPOSED PROJECT ³				
Vehicle Type	Percent of Total Vehicles	Vehicle Miles Traveled	Miles Per Gallon	Energy Consumption (gal)
Auto	45.06	14,491,378	23.377	619,899
Light Duty Truck	27.57	8,866,563	20.507	432,368
Medium Duty Truck	6.43	2,067,900	6.232	331,820
Heavy Duty Truck	5.16	1,659,465	4.797	345,938
Medium Duty Diesel Truck	15.05	4,840,107	5.159	938,187
Motorcycles	0.73	234,769	50.000	4,695
TOTAL	100.00	32,160,182	12.032	2,672,907

Sources: Percent of Vehicles and Total VMT - Kern COG; MPG for vehicle types - Caltrans; VMT - Kern COG; mpg for vehicle types - Caltrans.

³ Total VMT (vehicle miles traveled) has been calculated for the year 2014. The 2014 statistics for the percentage of total vehicles in each vehicle type and the miles per gallon achieved by type are not available; therefore, 2010 figures have been used in these instances. This is a conservative assumption, as mileage figures are expected to rise for all vehicle types during this time period.

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5.2.2.8 CULTURAL RESOURCES

Standards of Significance

Destruction or disturbance of cultural or historic resources will be determined to constitute a significant impact if a resource is found to:

1. Be associated with an event or person of recognized significance in California or American history, or is recognized as contributing to scientific knowledge in prehistory;
2. Provide information that is both of demonstrable public interest and useful in addressing scientific or archaeological research questions; or
3. Have a special quality, such as being the oldest, best example, largest or last surviving example of its kind.

Direct and Indirect Impacts

The RTP includes almost 75 miles of regional street and highway improvements shown on Figure 5-18 and Table 5-3 as funded projects. Proposed projects include highway widenings, right-of-way acquisition for future freeway projects, highway realignments, construction of passing lanes, and conversion of existing highways to expressways. In addition, improvements associated with other modes of transportation have been identified. Implementation of these projects is intended to correct existing and anticipated transportation deficiencies, improve transportation efficiency, and result in improved air quality conditions within the local air basins. As such, construction of these planned projects may result in significant impacts to areas of archaeological or historic significance. Figure 5-19 shows the location of these improvements in relation to areas of known archaeological resources.

Streets and Highways

Planned street and highway improvements present a range of potentially significant impacts to cultural resources. Specific impacts are described below.

Passenger and Freight Rail

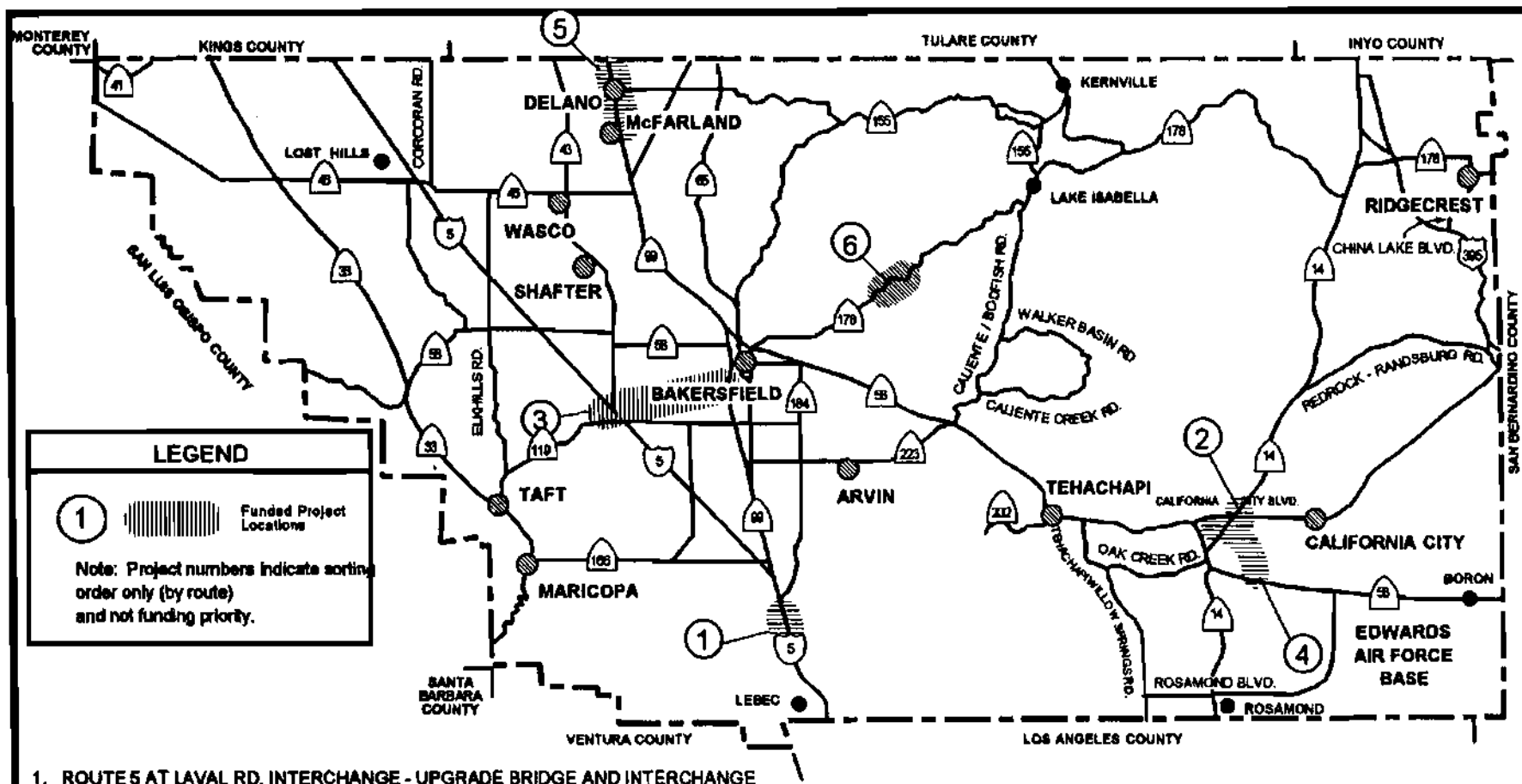
The RTP does not contain any financially constrained rail projects that would impact cultural or historical resources.

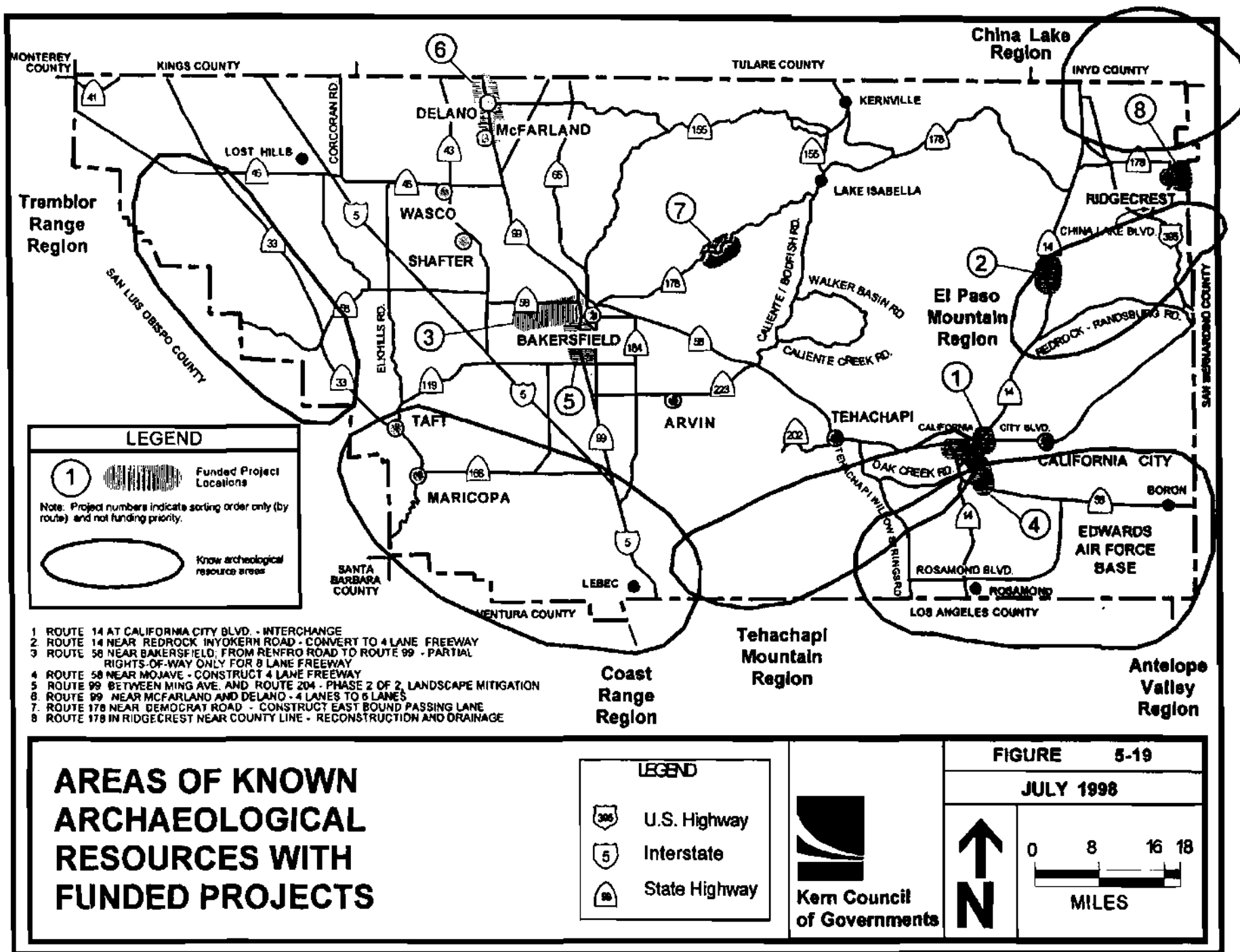
Mass Transit

The RTP contains proposals for new or expanded mass transit facilities. As such, archaeological and historical considerations regarding such facilities could be significant. Specific impacts are described below.

Non-Motorized Transport

The RTP contains numerous proposals for new or expanded non-motorized transport facilities, such as pedestrian facilities, bicycle trails, and new bikeways. Implementation of these projects is intended to reduce





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vehicle trips and correct existing and anticipated transportation deficiencies, improve transportation efficiency, and result in improved air quality conditions within the local air basins. As such, construction of these planned projects may result in significant impacts to areas of archaeological or historic significance. Specific impacts are described below.

Goods Movement

Truck routes and the ability to move goods are associated with roadway and rail projects. As such, no direct connections are made between cultural resource impacts and the movement of goods.

Potential impacts associated with transportation projects, including street and highway and other transportation improvements, include:

1. **Archaeological Resources:** Construction of planned street and highway and other transportation projects will result in the disturbance and grading of individual project areas. As a result, disturbance of undiscovered prehistoric cultural resources is possible. This potential will be greater along existing or historic water courses, as water courses were prime use areas for Native Americans. Although most of the proposed projects do not fall within identified areas of known archaeological sensitivity, the impact of disturbing undiscovered sites is considered a potentially significant impact.
2. **Historic Resources:** Construction of planned street and highway and other transportation projects may result in the removal or disturbance of historic sites or structures to accommodate expanded rights-of-way and/or new roadways. Should these structures or sites be listed or be eligible for listing on the California Register of Historical Resources, or National Register, such removal or disturbance would constitute a significant impact. A current listing of the historic resources in Kern County is on file with Kern County Museum.

Mitigation Measures

1. The agency responsible for implementation of any RTP capital project shall require, where feasible, the preservation of places, sites, areas, buildings, structures, and works of man that may have cultural, archaeological, or historical significance or other special distinction to the community. Where disruption is unavoidable, adaptive reuse or restoration will be considered before demolition.
2. Discovery of historic or prehistoric evidence during grading and construction of any RTP capital improvement project shall result in the cessation of such activities until the significance and extent of the resource can be ascertained by a certified archaeologist. If, in the archaeologist's opinion, the site would yield new information or important verification of previous findings, the site shall not be destroyed.
3. Contact shall be made with the agency responsible for Native American heritage preservation regarding any Native American resources.
4. As part of RTP project level environmental review, properties with potentially historic resources that may be impacted by RTP capital project development shall be subjected to in-depth archival research to determine the significance of the resource prior to any alteration.
5. If prehistoric archaeological deposits that include human remains are discovered during RTP capital project construction, the County Coroner and the Native American Heritage Commission shall be notified immediately.

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6. Site-specific RTP capital improvement project design shall attempt to avoid damaging identified archaeological sites to the extent feasible. Acceptable methods of mitigation include: (a) Planning and design of alignments to avoid identified sites; (b) "capping" or covering sites with layers of soil; or (c) deeding the site into permanent conservation or landscape easements.

5.2.2.9 OTHER IMPACTS

LIGHT AND GLARE

Impacts

Traffic along existing regional streets and highways is expected to increase significantly over the next 20 years. In addition, the RTP provides for a major new freeway project along a new Route 58 corridor located west of Route 99. These future circulation conditions and the addition of major transportation facilities will result ultimately in light and glare impacts above existing levels in both urban and rural areas of the County.

Light and glare is expected to result from several related sources including: vehicle headlamps, street lighting, and street and highway night construction activities.

Mitigation Measures

Adverse effects to the visual environment can be mitigated, in part, through design of new facilities and additions to existing facilities, proper scheduling of nighttime construction, proper lighting equipment, etc. For example, landscaping techniques can be applied to lessen the impact of light and glare generated by vehicle headlamps along a specific corridor. Further, appropriate nighttime construction and lighting equipment can be used to lessen the effects of light and glare on adjacent neighborhoods or other sensitive uses. Finally, proper hooding of street lamps and proper placement of lighting fixtures can significantly reduce light and glare effects in residential neighborhoods.

RISKS OF UPSET

Impacts

The State Hazardous Waste and Substances Site List indicates a number of hazardous waste sites in Kern County. Construction of various transportation improvements and new facilities identified in the RTP have the potential to disturb contaminated soil sites and/or hazardous waste areas. Without proper mitigation, negative impacts on adjacent sensitive areas could be realized during and/or following construction. Specific impacts resulting from transportation improvements identified in the RTP cannot be fully determined prior to actual construction. As a result, detailed evaluation of major transportation projects should be included in subsequent environmental analysis. In addition to contaminated sites, the potential exists for hazardous materials or waste spillage during transport along the regional transportation system.

Mitigation Measures

As major transportation improvements reach detailed planning stages and development, further consideration regarding impacts and proper mitigation should be provided when such improvements are located in areas of known risk. To reduce the impact of potential toxic or other hazardous waste spills

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along the transportation system, Kern County's Hazardous Materials Incident Response Plan should be implemented and periodically updated to ensure effective and efficient prevention of, and response to, hazardous waste spills and other accidents involving hazardous materials.

PUBLIC SERVICES

Impacts

Specific impacts to public services resulting from transportation improvements identified in the RTP cannot be fully determined prior to actual design. The only significant impact on public services may be on the provision for adequate street and highway maintenance.

The 1998 RTP includes the expansion of some existing facilities (additional street and road and bikeway lanes, transit amenities, rail support projects and services), as well as the identification of new transportation facilities along new alignments and major corridors. Implementation of these improvements could impact public services in a positive fashion by: (1) allowing easier access by the public to existing public resources, such as parks and hospitals; and (2) improving the provision of public services (fire, police, access to services, transit) by improving regional mobility.

Mitigation Measures

Minor negative impacts on public services are expected from increased maintenance costs associated with improved or new transportation facilities. Short-term impacts would most likely be negligible, while long-term impacts, such as street and highway maintenance, could be significant.

Overall, implementation of the RTP would result in positive impacts on public services. As the RTP is implemented, maintenance needs and costs will increase. Appropriate funds have been identified to address the historic level of street and highway maintenance provided in the County by local agencies and Caltrans. Allocation of this funding is expected to address street and highway maintenance needs to the extent feasible.

AESTHETICS

Impacts

The ability to provide for a transportation system that reduces environmental impacts can be negatively affected by other necessary mitigation measures. For example, to reduce noise levels in adjacent residential areas, freeways are often partially or fully recessed. This condition may actually mitigate aesthetic impacts if the freeway slopes are properly landscaped. Recently, however, landscaping freeway right-of-way has been difficult because of a lack of available financing. As a result, even recessed freeway improvements have limited aesthetic appeal. In the case of at-grade freeways or railroad lines, sound walls are often recommended when these corridors are adjacent to noise sensitive areas such as hospitals, parks, and residential neighborhoods.

Primary transportation modes that could potentially affect aesthetic quality in Kern County include: streets and highways, rail, and aviation. These, as well as other transportation systems, may affect aesthetic values because of the placement of bridge structures, elevated or recessed corridors, tunnels, or terminal facilities. As outlined in the RTP, the limited number of large scale, new transportation facilities, serves

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to limit potential aesthetic impacts. The only large scale freeway project scheduled for implementation over the next twenty years is the construction of a new four-lane freeway section between Route 99 and Interstate 5, south of the existing Route 58 (Stockdale Highway).

Mitigation Measures

Transportation improvements should not significantly impact aesthetic values. Generally, mitigation measures that could be considered at the time individual projects are assessed and design alternatives are known include: consistency with a neighborhood's architectural style, and application of appropriate landscaping and berms that lessen the effects of introducing a structure.

As part of the environmental review process for major highway, transit, rail, or other projects, visual impact studies must be completed as part of the environmental evaluation process under NEPA. Further, to mitigate potential visual impacts along rural highways, Caltrans is required to replace scenic features such as native vegetation, trees, and rock outcroppings. Also, project grading can be contoured to appear similar to surrounding terrain and rock cuts can be left rough to better match existing terrain.

5.2.3 TRANSPORTATION ENHANCEMENT ACTIVITIES (TEA)

Transportation enhancement funds are used for transportation related projects that enhance the quality of life in or around transportation facilities. These funds cannot be used in lieu of required mitigation for transportation projects, but the projects must be related to the transportation system. The projects should have quality of life benefits, and provide the greatest benefit to the greatest number of people.

Transportation enhancement activities are a means of more creatively and sensitively integrating transportation facilities into their surrounding communities. What distinguishes transportation enhancement activities from other worthwhile quality of life and environmental activities is their potential to create a transportation experience that is more than merely adequate. At the same time, they may protect the environment and provide a more aesthetic and pleasant interface between the transportation corridor and people adjacent to transportation facilities.

Ten project categories are eligible for TEA funding:

1. Provision of facilities for pedestrians and bicycles;
2. Acquisition of scenic easements and scenic or historic sites;
3. Scenic or historic highway programs;
4. Landscaping and other scenic beautification;
5. Historic preservation;
6. Rehabilitation and operation of historic transportation buildings, structures or facilities (including historic railroad facilities and canals);
7. Preservation of abandoned railway corridors (including the conversion and use thereof for pedestrian or bicycle trails);
8. Control and removal of outdoor advertising;
9. Archaeological planning and research;
10. Mitigation of water pollution caused by highway runoff.

The Kern region participated in the Transportation Enhancement Activities (TEA) program during the 1996-1997 funding cycle. Nine applications from six jurisdictions were recommended to the Federal Highway Administration for funding by the California Transportation Commission. The following projects were approved for funding under this program:

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1. City of Delano, Woollomes/Route 99 landscaping. Total cost: \$200,000.
2. City of Bakersfield, Chester Avenue streetscape. Total cost: \$1,869,000.
3. County of Kern, bike lanes through metropolitan Bakersfield. Total cost: \$415,000.
4. City of Taft, Sunset Rail Line bike and pedestrian pathways. Total cost: \$345,000.

Total TEA funding approved for allocation in Kern County was \$2,829,000.

The Surface Transportation Program (STP), as part of ISTEA legislation, includes a mandatory set-aside of ten percent of all STP funds for TEAs. Reauthorization of these funds will be required in 1998.

5.2.4 FREIGHT MOVEMENT

Several enhancements for freight movement are being made to the transportation system both within Kern County and the larger region. The improvements are described as follows:

1. Increased tunnel heights along the Tehachapi Summit train route. Tunnel floors were lowered to expand tunnel heights, thereby allowing container freight to be double-stacked. This project was completed in 1994.
2. Operational improvements on short line railroads. Several short line operators are running on route segments where major carriers have discontinued service. Short line operators include Kyle, San Joaquin and Port railroads. This enhances freight movement within the Kern and San Joaquin Valley regions by maintaining rail service to areas that may have lost service had the mainline railroads retained the operation and may lower costs to shippers because of the efficiency and enhanced services provided by the short line operators.
3. Operational improvements on highways. With incremental operational improvements on regional highways, freight movement is enhanced since the improvements reduce time for shipments in transit, as well as reduce possible damage to the materials being transported.
4. Piggy-back facilities. Freight movement is improved by the use of a "piggy-back" facility at the Bakersfield Burlington Northern Santa Fe rail yard. Piggy-backing is where trucks deliver trailers to the piggy-back facility and the trailers are loaded onto freight trains for movement to other destinations. This reduces fuel usage and associated costs and takes trucks off the highways.
5. Multi-modal facilities. Although no multi-modal facilities are currently operational in the Kern region, several locations have potential. High potential areas, such as Mojave, Bakersfield, and Delano, have railroads, highways and airports all in close proximity.

Freight movement has been and will continue to be primarily a private sector function. Although governmental action can help to provide freight movement improvements, such as improving roads and airports, day-to-day operational improvements are the responsibility of the individual companies involved in providing freight movement services. Railroads will improve their track if the cost/benefit scenario is positive. Conversely, if the profit/loss scenario is negative, then the improvements will not be made, and ultimately the operation will be halted.

Freight movement will become more important to the economic health of the Kern region. The ability to

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move goods through and within the region is gaining importance as the area continues to develop into a central distribution point for many areas of central and southern California. Also, the agricultural industry in the region has a critical need for fast, efficient and reliable transportation for out-of-area exports of agricultural goods, many of which are time sensitive.

5.2.5 TRANSIT ENHANCEMENTS

High Speed Rail

The United States is one of the few highly industrialized countries in the world without a high speed rail system. Many European and Asian countries have built and sustained high speed rail transportation to connect large urban centers that are relatively close to one another. In California, a high speed rail connection between the San Francisco Bay area and the Los Angeles basin is currently being studied.

To investigate whether high speed rail might be appropriate for California, the Governor and Legislature authorized Senate Concurrent Resolution 6 (SCR 6) in 1993. SCR 6 established a nine-member Intercity High Speed Rail Commission to assess the feasibility of a high speed rail system within California. The Commission determined that high speed rail is technically, environmentally and economically feasible once constructed, and would be operationally self sufficient. The Commission recommended a statewide high speed rail network 676 miles in length. The network would link all of California's major population centers: Sacramento, San Francisco Bay Area, Central Valley, Los Angeles, and San Diego. The Commission recommended that the service be routed through the Central Valley roughly parallel and adjacent to Route 99. The construction of a high speed rail system in California will be a public works program on the scale of the State Water Project or the creation of the state's freeway system.

Implementing the high speed rail project is the responsibility of the Indirect High Speed Rail Authority, created by Senate Bill 1420 in 1996 and signed by the Governor in September 1996. The Authority is required to direct the development and implementation of intercity high speed rail service that is fully coordinated with other public transportation services. The Authority is required to prepare a plan for the construction and operation of a high speed train network for the state capable of achieving speeds of at least 200 mph. This plan must be consistent with and continue the work of the original Intercity High Speed Rail Commission. The Authority has all the powers necessary to oversee the construction of a statewide high speed rail network, but will sunset should it fail to gain approval of a high speed rail funding measure by November 2000.

Costs associated with building a high speed rail system between San Francisco and Los Angeles are expected to be significant. A new high speed rail line will require a completely new alignment, with advanced technology and no at-grade crossings. The Authority has supported the Commission's conclusion that voters will need to agree to a tax increase in order for the rail network to be constructed. This tax increase may be on the order of a 1/4-cent sales tax or a five-cent per gallon gas tax.

Express Bus Service

To improve transit travel times, several areas in metropolitan Bakersfield have been analyzed for express bus service, including the northeast, northwest and southwest areas. Express bus service has been in place since January 1998. Running diagonally between the southwest and northeast sections of Bakersfield, the service connects two major trip generators/attractors: Valley Plaza and Bakersfield College. The only stop at the Downtown Transfer Station facilitates transfers to other bus routes. No additional fee is required to use the express service.

5.2.6 INTERCONNECTED TRANSPORTATION ACCESS

In the past, transportation planning relied heavily on the analysis of separate and discrete transportation modes; however, in the future as congestion and problems of air pollution are addressed, solutions must be evaluated within the context of an integrated/interconnected transportation system. Such an evaluation provides the opportunity to plan for transportation systems that can be financed while at the same time addressing travel needs and goods movement.

Systems defined in other sections of this RTP provide for the maximum connection between various existing and planned transportation modes. Each of the systems has been defined and evaluated to ensure that appropriate connections are included in the system design and implementation plan. For instance, the street and highway system includes planned improvement projects that will further enhance public and common carrier transit services, added shoulders for the designation of new bike lanes, mass transportation (transit and rail) terminals in locations that are easily accessed by the street and highway system, and improvements to airport access that will minimize ground transportation conflicts and enhance interconnectivity between these two modes of transportation.

In addition to the various forms of transportation identified above, the RTP includes projects that will preserve rights-of-way for future corridor improvements. These improvements will incorporate multimodal aspects that include amenities and services to enhance interconnectivity between the various modes.

It is important to plan for and facilitate interconnectivity between the different modes of transportation in Kern County because:

1. Kern County provides direct access to the major population center of Los Angeles.
2. Major access to places east of the County is provided along Route 58. This facility is used primarily for commodity transport by heavy duty trucks and for recreation trips.
3. Kern County produces two-thirds of the State's onshore petroleum. As a result, the industry must have appropriate access to transportation facilities (streets and highways, freight rail, associated terminal facilities, and pipelines) to improve production and reduce modal conflicts.
4. Kern County is traversed by several major highways that provide access to the Los Angeles basin, the desert region, the Central Coast and to the remainder of the San Joaquin Valley.
5. Kern County's Mediterranean climate enhances the use of pedestrian travel and bicycles for daily trip needs.
6. Kern County's extensive freight rail system and associated terminal facilities enhance and improve commodity flow.

To enhance the availability of improved interconnected transportation access, the following actions should be considered:

1. Land use design should be studied and densities should be increased.
2. Transit and bikeway systems should be expanded.
3. Non-motorized facilities should be interconnected with other forms of transportation, in particular transit, rail, and park and ride facilities.

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4. Incentives to use other than single occupant vehicles (SOVs) for all daily trips should be available and various transportation options should be identified, that benefit trip reduction and reduced congestion, energy conservation, and improved air quality.
5. Increased and appropriate financing should be identified to facilitate development of adequate interconnected transportation access in Kern County.

Since development of the 1990 RTP, Kern COG has prepared and/or authorized numerous major transportation studies aimed at enhancing various modes of transportation and the need for enhanced transportation connectivity. These studies include: the High Speed Rail Corridor Study, the GET Long Range Transit Plan, Southeast Kern, and South Beltway. In addition, Kern COG has identified, promoted, and financed TCMs aimed at enhancing alternative modes of transportation that reduce congestion and improve air quality.

The urban and rural transit systems continue to expand services and seek alternative funding sources to finance those systems. Kern County's diverse aviation facilities are intended to meet the demand of airport facility patrons by improving airport access and accommodating other modes of transportation, including transit, common carrier service, taxi and shuttle services, and the automobile. Numerous bikeway facility projects are planned between 1998 and 2020. These facilities will enhance trip reduction and facilitate connection with other modes. Rail, both passenger and freight, will continue to be a major focus in San Joaquin Valley and Kern County. Heavy duty trucks on rail is most feasible; Kern COG, with other Valley Regional Transportation Planning Agencies and Caltrans Districts, will study the potential benefits, needs, and major implementation issues. Goods movement is the mainstay of Kern County. Adequate terminal facilities for major industries and agriculture operations must be provided to ensure that commodities are transported safely and efficiently.

5.2.7 REGIONAL ROAD CONNECTIVITY

The network of arterials, highway and transit systems must be monitored to assure that as they proceed from one jurisdiction to another (i.e., from a city to the county), the integrity of the operating characteristics are maintained. Carrying capacity, operating speeds, operating headways and so forth must be a function of demand and/or safety and not just a change in jurisdiction.

Member agencies of Kern COG meet periodically to assure that the total system integrity is maintained. All federally funded roads are examined to assure that as city limits change or new facilities are built, the new facilities conform to the connecting facility in the adjoining jurisdiction. These studies are done on an as-needed basis.

Kern COG member agencies have recently adopted a study of the various transit providers. One aspect of this study has been a multi-jurisdictional transfer pass. This pass would allow a patron to board an intracity bus, transfer to an intercity bus and then transfer to still another city's intercity bus. Details of this proposal still must be worked out by the various member agencies. While Kern COG supports this concept, some agencies have concerns with the method of implementation.

Airport connectivity within the urban areas is provided by various agencies. Within metropolitan Bakersfield, Golden Empire Transit and local taxicab companies provide access to Meadows Field.

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5.2.8 PROJECTED DEMAND OF PERSONS AND GOODS

One of the requirements of the metropolitan transportation planning process as outlined under ISTEA is to identify the projected transportation demand of persons and goods in the metropolitan planning area over the period of the Regional Transportation Plan. Demand for transportation is anticipated to increase over the planning horizon for the following reasons:

1. Population growth is anticipated to be sustained and significant. Currently, Kern County has a population of over 639,798 (1998). The population is projected to grow to over 1,220,300 by 2020 which represents an increase of 125 percent over the 1990 Census figure. Similar increases are seen in households (up 119 percent from 1990) while total employment is projected to grow 123 percent during the same period. Aggregate demand for transportation services will be greater than what is being demonstrated at the present time.

Although total demand for transportation services will grow, individual demand for travel may decrease somewhat because of the aging of the population and advances in telecommunication abilities. Telecommuting may become more common, or other transportation demand management strategies more fully implemented, such as compressed work weeks or flexible time. Additionally, the aging of the population over the time period will see many individuals retiring from active, paid employment, which may reduce individual demand for transportation.

2. Types of transportation may change over the planning period. As the region's population expands, traditional trips may become more difficult to undertake. Roadways may become congested by increased traffic loads resulting from the population increases. The lag time between identification of over-demand for facilities, planning for capacity increases and uncertain funding availability for projects to move toward completion may exacerbate traffic congestion.
3. Demand for transit is anticipated to grow. As traffic congestion increases, the desirability of driving alone will decrease because of the stress and expense involved. (Private automobile operating expenses such as insurance, maintenance and fuel are anticipated to increase in both nominal and inflation adjusted terms.) Trips will be planned more carefully and result in more efficient use of the vehicle and the transportation facility.

Also as a result of the aging population, the number of people unable to drive because of physical limitations will increase. These people will become transit dependent and will demand enhanced transit services, both of a traditional fixed-route system and of a demand responsive system, such as GET-A-Lift.

4. Demand for non-motorized transportation facilities will increase. Funding availability for non-motorized transportation will continue over the planning period and will result in the construction of more complete bicycle and pedestrian facilities.
5. With more people, households and jobs, the demand for freight services will increase dramatically from current levels. The Kern region has a central location within California's transportation system and a considerable portion of the freight present in the region at any given time is transitory (in that the freight originated outside the Kern region and its destination is outside the region). With the projected growth in California rivaling Kern's, the amount of freight and passenger movement within and through the Kern region is anticipated to increase significantly on all types of transport, including rail, air and motor vehicle.

5.2.9 NONMOTORIZED FACILITIES

"Non-motorized" is used to define trips made by bicycle or on foot. Walking and bicycling are becoming more popular forms of travel for short trips, especially those in the immediate vicinity of an individual's residence. Physical fitness, cost, ease of travel, convenience and air quality considerations all influence a decision to bicycle or walk.

The future of non-motorized travel within the Kern region is encouraging. Over the past decade, a number of mixed use developments have been planned and constructed. These mixed-use developments have lessened demand for automobile travel while encouraging non-motorized trips. When residents of mixed use developments work within the development, benefits to the larger community include lessened traffic congestion, enhanced air quality and reduced fuel consumption.

For a number of reasons, bicycling has not realized its full potential for transportation purposes within the Kern region. Primarily, they are related to: (1) ease of short-distance travel that is possible with the private automobile; (2) long distances between residential areas and work sites; (3) relatively inexpensive and widely available sources of automotive fuel; (4) lack of shower and/or locker facilities at most employment centers; (5) general safety considerations as described earlier; and (6) a general aging of the population that may reduce the number of persons who are inclined to take bicycle trips.

Many of the planned bicycle facilities have not been implemented because of a lack of funding. Lack of maintenance (also funding related) on existing facilities is also a concern. In some instances, basic maintenance on bikeway facilities is provided by civic organizations, such as the Boy Scouts, who sweep the facility for broken glass and loose gravel. Public support for increased bike path mileage is high. The issue is how to implement additional mileage within funding constraints.

SECTION 5.3 INVESTMENTS

5.3.1 TRANSIT SECURITY INVESTMENTS

TEA-21 requires Kern COG address in its regional plan is how transit security could be increased or enhanced. The RTP contains proposals that are intended to increase and enhance transit security, including:

1. Improved bus headways to reduce the amount of time transit patrons must spend waiting for service at transit stops, which may, in turn, reduce incidents of patron assault at stop locations.
2. Increased ridership to improve safety at stops.
3. Training transit bus operators in security procedures.
4. Increased demand-responsive transit service to reduce potential for physical assault on elderly and physically handicapped.

5.3.2 LAND USE IMPLICATIONS

As Kern County has urbanized, development has dispersed generally along the available freeway and highway network. Traditional zoning laws that separate residential, commercial and industrial land uses

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have led to spatial disconnection of the various activities. These factors foster an ever-increasing dependence on the automobile as the main transportation mode.

TEA-21 stresses the integration of land use policies and transportation programs. The legislation provides funding for transportation programs that are consistent with short- and long-range land use planning and puts new emphasis on transit, pedestrian and bicycle facilities.

Jobs/Housing Balance

The aim of this land use strategy is to relieve the pressures of population and job growth on the transportation system by achieving more balanced future development and thus reducing increases in Vehicles Miles Traveled (VMT) resulting from new development. It should be recognized that phasing and timing of development are as important as achieving the proper jobs/housing balance to yield the desired transportation and environmental benefits.

Jobs/housing balance, as a Transportation Control Measure (TCM), has experienced implementation difficulties, and has been the subject of ongoing debate. Nevertheless, promotion of land use development patterns, including jobs/housing balance, that enhance the transportation systems' efficiency, remains an important goal of the RTP.

Concentrated development and mixing land uses throughout the region to increase proximity of housing to employment opportunities, recreation, goods and services, will increase pedestrian and bicycle access, and potentially result in VMT reduction brought on by local trip containment and consolidation. Many motorized work- and non-work-related trips may be eliminated and replaced by walking or cycling. The effects of such measures on vehicle trips and VMT reductions are hard to model. Nevertheless, abundant empirical evidence of the positive effects of land use on transportation is available.⁴

A study conducted by CARB indicated that mixed use development and increased densities can reduce 4 to 11 percent of a region's vehicle trips and 20 to 50 percent of site specific trips. A preferred approach to meeting mobility, air quality and sustainable economic development is the small-scale localized implementation of land use measures. This does not necessitate redirecting future development regionwide or massive concentration of new development along transit stations and transit corridors. Changes to existing zoning ordinances, general plans and specific plans that encourage concentrated, mixed-use, transit- and pedestrian-oriented development, are tools that can be used by local jurisdictions to foster land use policies which, along with adequate TDM programs and nonmotorized infrastructure, can reduce environmental and economic costs of motorized trips.

Local actions to effect site-specific patterns of development include: (1) allowing the combination of usually separated land uses within a single development; (2) increasing development density along transit corridors and/or stations; (3) clustering development to preserve open space; (4) achieving better jobs/housing balance at the micro-scale, and a better match between the types of jobs and the price of housing. Such actions can be carried out through local jurisdictions' regulatory powers.

Design standards/improvement actions are another strategy that could affect urban form at the local level.

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Calthorpe Associates, "Transit Oriented Development Design Guidelines," for City of San Diego, 1992. Holtzclaw/NRDC, "Explaining Urban Density and Transit Impacts on Auto Use," 1990. Local Government Commission, "Land Use Strategies for Livable Places," 1992. Transit/Residential Access Center, "Incentives for Trip Reduction Through Location of Housing Near Rail Transit Stations," 1991. Air Resources Board, "CCAA Guidance for the Development of Indirect Source Control Programs," 1990.

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These include the provision of physical features that encourage transit use, lessen automotive cold starts, and encourage pedestrian and bicycle travel. Amenities such as bus shelters and bus pullouts to improve transit use, physical improvements that support pedestrian traffic, construction of bike lanes and provision of secure bike racks, and parking arrangements that facilitate ridesharing can help achieve vehicle trip reduction goals.

Local land use policies that foster mixed- and higher-density uses should target both work and non-work trips. However, it should be recognized that localized changes in urban form are incremental, and their resulting impacts on mode split and congestion are not likely to be felt until after 2010.

Highest priority should be given to projects and programs designed to maximize the effectiveness of alternatives to solo driving. Kern COG, having the responsibility to determine transportation system conformity, could use this technique to ensure implementation of coordinated land use and transportation policies. Communities that demonstrate a commitment to adopt zoning and approve development consistent with proposed transportation projects would be given priority in funding.

Timing, financing and location of public facilities, utility systems and transportation systems should be used to implement the region's growth policies and to achieve a desirable regional form. In addition, Kern governmental agencies should encourage patterns of urban development and land use that reduce costs of infrastructure construction and make better use of existing facilities.

Centers/Resources Concepts

The Metropolitan Bakersfield 2010 Plan Land Use Element provides the general plan's development policies, and the land use designations for which pertinent policies and standards have been established. Two basic principles govern the plan: the focusing of new development into distinctive centers that are separated by low land use densities and the siting of development to take advantage of the environmental setting. These principles are referenced as the "centers" and "resources" concepts.

The "centers" concept provides for a land use pattern consisting of several concentrated mixed-use commercial and high density residential centers surrounded by medium density residential uses. Single-family residential uses are located primarily between these mixed-use commercial/residential centers. This concept encourages people to live and work in the same area and thus, serves to minimize sprawl and reduce traffic, travel time, infrastructure costs, and air pollution. In addition to promoting the formation of several large concentrated mixed-use centers, the plan also attempts to consolidate smaller, neighborhood-serving commercial developments by prescribing minimum distances between commercial parcels and by discouraging strip commercial development. The "resources" concept emphasizes the siting of development to reflect the site's natural and visual resources.

To the extent possible, the RTP has proposed transit and highway improvements to accommodate increased demand, but there is a practical limit to the effectiveness of these new facilities. Construction of new facilities plus the demand management and system management strategies included in the RTP are only a partial solution to the growing problems. The region should reconsider existing land use policies and take steps to bring future land use patterns into balance with the future transportation system.

Appropriate design is required to make the transit focus areas work. Therefore, design guidelines are recommended that specify: minimum densities for new development, interconnected local circulation systems, and a mix of uses adjacent to major bus transit corridors.

Telecommunications and other improvements in electronic technology can decrease the demand for travel both within and between urban areas. Historically, telecommunications facilities and services have been

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provided primarily by the private sector. The RTP addresses the appropriate role of telecommunications as one of many transportation control measures that reduce demand on transportation facilities.

5.3.3 INFRASTRUCTURE LIFE CYCLE COSTING

Improvements are continually needed in the upkeep and repair of transportation facilities. Over the past several years, minimal improvements have been made on the major state highways that serve Kern County. As a result, the transportation system continues to deteriorate, creating safety hazards, traffic congestion, escalation of roadway maintenance costs, increased risk of civil suits, increased costs to the motoring public and increased travel times. Infrastructure life cycle costing must be estimated to continue the ongoing task of repair, maintenance or replacement. These costs apply to both roadways and transit.

Transit expenses can include general engine maintenance and eventual replacement of buses plus the cost of overhead expenses such as office space, equipment and payroll. For highways and roadways, the main concern is the pavement condition while lighting, drainage structures, bridges, signalization and safety structures also require maintenance. Additionally, other costs to consider include maintaining road equipment used to repair pavement or remove obstructions, and labor.

The cost to repair, maintain or replace transportation infrastructure must be considered in financial programming simply because if left unchecked, more emphasis could be placed on new facilities or services at the risk of gradual failure to existing facilities or services. It is generally the case that maintenance projects are behind schedule because of dollar shortages within the local transportation agencies. The Financial Element (Section 8.0) provides for fiscal commitments toward this end. Funding sources vary for both highway and transit capital. Revenue projections for maintenance and operations in these categories and others are necessary elements of this document.

SECTION 5.4 REGULATORY CONSISTENCY

5.4.1 ISTEA/TEA-21

This RTP was developed consistent with the requirements of the Intermodal Surface Transportation Efficiency Act (ISTEA) and TEA-21 (Transportation Equity Act for the 21st Century) federal legislation adopted in 1998. Consistency with ISTEA and TEA-21 provisions was achieved by providing for thorough regional transportation, environmental, societal and fiscal analyses. Factors considered during development of the RTP as required by ISTEA and TEA-21 were as follows:

Preservation of existing transportation facilities and where practical, ways to meet transportation needs using existing facilities in a more efficient manner;

Consistency of transportation planning with applicable federal, state, and local energy conservation programs, goals and objectives;

Need to relieve congestion and prevent congestion from occurring where it does not yet occur;

Likely effects of transportation policy decisions on land use and development and the consistency of transportation plans and programs with provisions of all applicable short- and long-term land use and development programs;

Programming of expenditures on transportation enhancement activities as required in Section 133 of Title 23 (United States Code);

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Effects of all transportation projects to be undertaken within the metropolitan area without regard to whether such projects are publicly funded;

Access to ports, airports, intermodal transportation facilities, major freight distribution routes, national parks, recreation areas, monuments and historic sites, and military installations;

Need for connectivity of roads within and beyond the metropolitan areas;

Transportation needs identified through the use of the management systems required by Section 303 of Title 23 (United States Code);

Preservation of rights-of-way for construction and future transportation projects, including identification of those corridors for which action is most needed to prevent destruction or loss;

Methods to enhance the efficient movement of freight;

Use of life-cycle costs in the design and engineering of bridges, tunnels, or pavement;

Overall social, economic, energy and environmental effects of transportation decisions;

Expansion, enhancement, and increased use of transit services;

Capital improvements that would result in increased security in transit systems; and

Recreational and leisure travel.

More specific compliance with ISTEA and TEA-21 is provided through various adopted transportation plans and programs in Kern County.

5.4.2 CTP/RTP/CMP

State law provides for the preparation of a California Transportation Plan (CTP) consisting of three elements: Policy, Strategies, and Recommendations. The Policy Element describes the State's transportation policies and system performance objectives. It is intended to serve as a common guide for the further development of the State Transportation Plan Strategies and Recommendations Elements and to the update of the Regional Transportation Plans.

State transportation policy is contained in *Transportation Blueprint for the 21st Century*, and provides policy direction, a financial plan, and a planning process for several programs and activities focused on congestion relief and interregional access. The policy further provides that the transportation system consist of a variety of ways to travel that are safe, efficient, reasonably priced and interconnected. Government Code declares this as essential for the economic well-being of the State as well as maintenance of a high quality of life. This statement of policy recognizes the need to balance local and regional aspirations with statewide interests.

Regional transportation planning agencies are responsible for bringing together the transportation plans of cities, counties, districts, private organizations, and State and federal agencies. The vehicle for this is the Regional Transportation Plan (RTP), along with a Regional Transportation Improvement Program (RTIP). The plan and the improvement program are directed at the achievement of a coordinated and balanced

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regional transportation system, which includes mass transportation, highway, railroad, and aviation facilities.

The RTP establishes the regional transportation policy for Kern County. The Congestion Management Program (CMP) provides for the mechanisms necessary to maintain the region's principal streets and highways at adequate LOS. The CMP ensures that other forms of transportation, such as public transit, provide adequate services to meet growing demands. As such, the CMP identifies the facilities and programs which will be needed to meet travel demand along CMP facilities through 2014.

Other policy and law that further addresses the need to coordinate decisionmaking, integrate actions and develop comprehensive strategies is included in the requirements for CMPs for all counties and Circulation Elements for all local General Plans.

5.4.3 CCAA/FCAAA

California Clean Air Act

The California Clean Air Act (CCAA) of 1988 requires that areas with serious or severe air pollution problems meet three transportation performance standards as part of their strategy to reduce pollution from motor vehicles:

1. "Substantially reduce" (not defined by the Act) the rate of increase in passenger vehicle trips and miles traveled per trip;
2. Achieve 1.5 passenger vehicle occupancy during weekday commute hours by 1999;
3. No net increase in emissions after 1997.

The entire San Joaquin Valley basin is designated nonattainment for ozone by the CCAA. Kern County is also nonattainment for fine particulate matter.

The CCAA requires that the nonattainment pollutants of ozone and carbon monoxide be reduced five percent per year based on 1987 baseline emission levels. This equates to reductions of 35 percent by 1994, 50 percent by 1997 and 65 percent by 2000. Even with all feasible measures to reduce emissions implemented, the San Joaquin Valley Unified Air Pollution Control District anticipates that the State's standard of no net increase in emissions after 1997 for ozone and carbon monoxide are not attainable by that date. This classifies San Joaquin Valley as a severe nonattainment area under State law. The CCAA requires that all feasible measures to reduce emissions that can be implemented must be implemented.

A Transportation Control Measure Plan for San Joaquin Valley has been prepared and adopted by the San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD) and the Transportation Planning Agencies. The joint effort is the result of a memorandum of understanding signed by each of the agencies to coordinate air quality and transportation planning activities. The Transportation Control Measure Plan:

1. Establishes the quantity of emissions reductions;
2. Includes a schedule for implementation;
3. Identifies potential implementing agencies and funding sources;
4. Identifies agreements necessary for implementation;
5. Identifies procedures for monitoring effectiveness; and
6. Identifies procedures for monitoring compliance.

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Federal Clean Air Act Amendments.

The Federal Clean Air Act Amendments (FCAAA) require Regional Transportation Plans to contribute to annual reductions in emissions of carbon monoxide and ozone in nonattainment areas. The entire San Joaquin Valley is designated a serious nonattainment area for ozone by the FCAAA and serious nonattainment for small particulate matter. The Kern County portion of MDAB is also serious nonattainment for ozone and moderate nonattainment in the Indian Wells Valley for PM₁₀.

Extensive qualitative and quantitative analyses must be performed to show that the Regional Transportation Plan "conforms" with the FCAAA before federally funded or reviewed highway or transit projects proposed in the RTP or TIP can begin construction. As part of that requirement, the RTP and TIP must show expeditious implementation of TCMs from the air quality plan intended to implement the State and federal Clean Air Acts.

Local officials are challenged by the FCAAA to reduce emissions from vehicles, develop projects and programs that will alter driving patterns to reduce the number of single-occupant vehicles, and to make alternatives such as transit and bicycles an increasingly important part of the transportation network. An added incentive to achieve the standards is continued eligibility for federal transportation dollars through TEA-21.

The FCAAA makes federal agencies ensure that Kern COG and other federal fund recipients conform with the ambient air quality standards. Federal fund recipients who do not conform to the standards risk having federal transportation dollars withheld. Thus, transportation funding is now tightly linked with making our air more breathable.

The entire San Joaquin Valley Air Basin (SJVAB), of which Kern County is a part, is designated as "serious" nonattainment for federal ozone standards. The FCAAA required a 15 percent reduction in volatile organic compounds (VOC) emissions by 1996 and a demonstration of attainment by 1999. The SJVUAPCD Ozone Attainment Plan, adopted in November 1994, demonstrated attainment of the federal ozone standard by 1999.

A State Implementation Plan (SIP) Rate of Progress (ROP) Plan was submitted by SJVUAPCD in November 1994 for the SJVAB. This SIP contained an analysis of emission reductions for 1990 through 1996, a description of measures that SJVUAPCD and local governments have committed to implement, and any additional measures that are needed to meet the fifteen percent emission reduction requirements by 1996. The SJVAB's TCM and mobile source control measures SIP commitments are a part of the SIP ROP. The SJVAB's compliance with the FCAAA is reflected in the Air District's SIP of November 1994.

5.4.4 NEPA/CEQA

For any local transportation project identified in the RTP that may have a significant effect on the environment, the responsible local agency is required under California Environmental Quality Act (CEQA) to prepare an Environmental Impact Report (EIR). The RTP identifies facilities and programs that have not been designed and therefore, have not received detailed environmental study. The RTP does not seek to analyze environmental impacts for projects that have not been implemented. Major projects will require further environmental evaluation to address specific environmental impacts before design and construction.

The RTP provides program level evaluation for new roadway facilities. The RTP should be viewed as a program level document as referenced in CEQA. As a result, any adverse effects the RTP may generate have been analyzed and are referenced in the EIR with appropriate mitigation measures to lessen or resolve negative environmental impacts.

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As stated in the Notice of Preparation (NOP), the EIR is prepared considering the RTP and the potential environmental effects that its proposed programs can cause. Listed below are the fully assessed impacts of the RTP projects:

- air quality;
- circulation/transportation;
- biotic resources;
- cultural resources;
- noise;
- hydrology;
- geology;
- land use; and
- aesthetics.

Every element of the RTP has been evaluated by the EIR to identify any adverse environmental effects and to identify appropriate mitigation measures.

5.4.5 LONG-RANGE AREAWIDE PLANS

The 1998 Kern Regional Transportation Plan strives to implement the area's long-range land use plan and the metropolitan development objectives. This is being accomplished by increasing accessibility to transportation facilities, which allows for the realization of land uses that have been planned within the area. The RTP also addresses the metropolitan development objectives to the extent possible under the fiscal constraint requirement of TEA-21. Although the many projects forwarded for consideration far outweigh funding availability, key components of the metropolitan area's development objectives are included within the RTP and have demonstrated funding sources.

This RTP has considered the national, State and local housing goals and strategies, community development and employment plans and strategies and environmental resource plans. By improving transportation facilities, either by providing new service or expanding existing service, increased access is accomplished and new areas are available to accommodate additional housing opportunities.

Community development and employment plans are fulfilled with the expansion and enhancement of the transportation network. Improved transportation facilities complement employment opportunities by allowing employees and clients to more efficiently move to the business site, as well as providing for more cost-effective movement of goods from the place of employment. By improving the transportation system in the area, positive employment benefits can be realized.

Environmental resource plans are similarly implemented by improvements in the transportation system as outlined in the RTP. Improvements in air quality are expected as this RTP and the proposed TCMs are implemented.

Economic development is an important objective within the area. Improving accessibility to employment opportunities, especially for low-income households, is a critical consideration when developing the RTP. By improving the transportation system and making it more efficient, wider employment choices become available to low-income households. In addition, with improvements to the overall transportation system, enhancement that benefit the entire community become apparent. These improvements include better air quality, increased safety while in the transportation system, reduced cost of travel and increased accessibility to desired locations.

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This RTP addresses the area's overall social, economic environmental and energy conservation goals and objectives. It does this by increasing the efficiency (and lowering the cost) of transporting people, objects and information. This permits more interaction between people; improves the economic climate by lowering cost of production expenses, which provides for a wider group of customers who are able to purchase the product or service; and reduces environmental degradation by having a transportation system that reduces the dependence on private cars and decreases the amount of fossil energy expended for transportation purposes.

5.5 METROPOLITAN TRANSPORTATION INVESTMENT STUDY

While the population of metropolitan Bakersfield has nearly doubled over the past 25 years, the area's transportation system is essentially the same as it was in 1970. Up to now the metropolitan Bakersfield area has been able to absorb increased traffic and has met the community's transportation needs by adding some local roads and a few more buses.

However, because of the continuing growth of the metropolitan area, this is no longer possible. Kern COG estimates that by 2015 the population will increase by more than 50 percent. Congestion on arterial roadways and city streets will become intolerable unless significant new transportation facilities and services are provided.

The *Metropolitan Bakersfield Major Transportation Investment Strategy* (MTIS) developed a cooperative process that united six agencies responsible for both short- and long-range transportation and air quality planning. The agencies included City of Bakersfield, County of Kern, Golden Empire Transit, Kern Council of Governments, Caltrans, and San Joaquin Valley Unified Air Pollution Control District. These agencies signed a memorandum of understanding agreeing to participate in the MTIS process.

Representing local, regional and state perspectives, the agencies undertook an intensive strategic planning effort to develop a process for analyzing the future transportation needs of metropolitan Bakersfield. The strategy's objectives were: (1) to provide the most appropriate transportation response to the area's anticipated growth patterns; (2) to ensure mobility to and through southern San Joaquin Valley; (3) to offer residents more transportation choices and connections to major travel destinations; and (4) to reduce, or at least not increase, transportation-related emissions affecting air quality.

MTIS has instituted a set of core activities that will guide the implementation of new roadway and transit projects. These core activities are derived from the need to establish a strategy for setting priorities and timelines to successfully implement the various capital projects envisioned by the overall program.

To that end, an Action Plan has been developed that establishes those capital projects. Maintenance and rehabilitation initiatives for both the roadway network and transit system are also included. As timing and maximizing available resources are crucial, the implementation program has been designed to carefully outline critical success factors and steps necessary for each project.

The Locally Preferred Alternative (LPA) selected through the MTIS process is a broad-based program with eight distinct, yet interrelated, elements. They cover an 18-year horizon period from 1997 to 2015 and include eight distinct yet interrelated elements, comprising: (1) fundable roadway projects; (2) unfunded high-benefit roadway projects; (3) existing roadway maintenance; (4) GET service expansion; (5) unfunded transit component; (6) connections between transportation modes; (7) ridesharing and nonmotorized modes and pedestrian and bicycle facilities. The final element, land use, encourages mixed-use, infill and other balanced land development to minimize the increase of vehicular traffic. Local agencies will be responsible for implementing these projects in collaboration with one another. Since the timeframe of these projects is through 2015, an implementation, or action, plan is necessary to coordinate the efforts of scheduling

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and funding. The Action Plan serves to establish a general timeline for delivery of projects under financial constraints.

MTIS ACTION PLAN

This chapter outlines the action-oriented plan for capital projects. Maintenance and rehabilitation initiatives for both the roadway network and transit system are also included. The implementation program carefully outlines critical success factors and steps necessary for each project. A key factor underlying the success of the Action Plan will be its ability to deliver the projects.

The Action Plan contains three primary sections. The first section establishes an overall set of guiding principles that provides the foundation and the direction to be taken in carrying out the endorsed transportation program. These eight guiding principles promote a balanced transportation system and on-the-ground delivery of projects.

This section also describes a consensus agreement entered into by the Interagency Metropolitan Transportation Committee (IMTC) for the MTIS Action Plan. The agreement fosters ongoing interagency cooperation and coordination toward the implementation and updating of the endorsed transportation program. The IMTC will review the implementation status of the endorsed transportation program and produce both an Annual Report and an Annual Action Plan.

The second primary section contains the strategy timeline, which is a project implementation phasing plan. The phasing plan shows a schedule of activities that will direct the various timely efforts to be undertaken by the participating local agencies. The plan is composed of three separate sets of tables. The first set identifies roadway projects and non-motorized projects that are designated for delivery between 1997 and 2015. The second set of tables contains roadway projects that do not have funding but have been identified as highly beneficial to the community in the future. The third set of tables identifies transit activities that are planned through 2015.

The final primary section of this Action Plan describes the financial strategy that links project priorities, project development, and project delivery with anticipated future resources. It is recognized that insufficient resources are available to implement all the projects in the endorsed transportation program; therefore, the financial strategy defines a work plan to further the objective of obtaining additional funds. Tables and graphs conclude this section with cash flow projections and the anticipated distribution of available revenues.

Annual Update

The project timeline and lead agency identified for each specific project match the plans and programs in place in 1997. In all likelihood, many things will change over the next 20 years. Therefore, this MTIS Action Plan is dynamic because of future uncertainties stemming from budgetary, political, and economic stimulants that affect local, state, and federal levels. As needed, the MTIS will be modified and updated by the six participating agencies and jurisdictions to accommodate necessary changes. The governing boards of each participating agency in the MTIS will then endorse the updated Action Plan and project prioritization.

The IMTC has entered into a consensus agreement for this MTIS Action Plan to foster ongoing interagency cooperation and coordination toward the implementation and periodic updating of the endorsed transportation program. The IMC will review the implementation status of this endorsed transportation program and produce an Annual Report that will serve two primary purposes: to document the implementation status of the endorsed transportation program for each of the partner agencies, and to inform and receive endorsements from elected officials, local organizations, and the public of the progress toward implementation of this endorsed transportation program.

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An Action Plan implements the recommended elements of the Transportation Strategy. This plan addresses the following:

Phasing	Defining usable project segments
Timing	Managing available resources to maximize project implementation
Priorities	Demonstrating local commitment through early actions
Community Support	Promoting public awareness of the implementation strategy
Consensus	Linking these investments to the RTP and city and county plans and programs
Operations	Addressing maintenance and operations costs as well as capital costs
Planning	Annually updating priorities and periodically revising transportation plan elements
Shortfalls	Determining what additional funds are needed for unfunded projects with high-level benefits.

Based on the annual review and implementation status of the endorsed transportation program, the IMC will develop an Annual Report and a new Annual Action Plan that will update this plan. The Annual Action Plan will address the specific roles, responsibilities, and deliverables in following the guiding principles described above. More specifically, the Annual Report will serve two primary purposes: to document the implementation status of this endorsed transportation program for each of the partner agencies, and to inform and receive endorsements from elected officials, local organizations and the public toward implementing the transportation program. The annual update will give credence to the MTIS process in ensuring its continued implementation and flexibility to reflect future conditions.

Action Plan Principles

An overall set of guiding principles for the Action Plan has been identified to provide the foundation and direction for steps to be taken:

1. **Phasing: Define and deliver usable project segments that have high immediate benefits.**

Typically, large-scale projects are built in phases or segments. In order to generate and maintain community interest in the project, it is important that the sponsoring agency identify and deliver the fundable portions of a roadway or transit project that the community can immediately have access to and use for its benefit. For example, a large highway project may have various arterials constructed first so that the public may have access to them, even before completion of the entire highway itself. If an immediate public benefit is realized from the initial phases of construction, then continuous support for the entire project is likely to be realized.

2. **Timing: Manage revenues as they become available through effective partnering to maximize project implementation.**

Resources, both monetary and time, are limited and must be efficiently managed to achieve the maximum community benefit from a transportation investment. Many qualified transportation projects are vying for the same limited resources, which requires an effective prioritization plan of projects. Effective prioritization requires a close working relationship between the agencies sponsoring the projects to ensure that a consensus will be developed within the community on the important tradeoffs necessary when resources are limited.

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3. Priorities: Demonstrate local commitment through on-time delivery of projects.

Citizens are often skeptical about local government's ability to deliver on promises. If early actions through the delivery of the first phase of a transportation project are able to materialize in a timely and cost-effective manner, a commitment is demonstrated to citizens that local government can indeed follow up on projects. This demonstration will be an outgrowth of the first guiding principle to deliver projects for immediate public benefit.

4. Community Support: Promote public awareness of MTIS progress and strategy.

The MTIS process is the first step toward improving present and future mobility problems in the metropolitan Bakersfield area. Therefore, the public should be aware of the progress of the MTIS and its contents. Presentations by IMC members to community groups and public workshops are prime examples of promoting this project as well as receiving feedback. Enlisting the support of local transportation groups, such as the Kern Transportation Foundation, and business and professional organizations, such as the Building Industry Association, will strengthen the MTIS position and the strategies that have been developed from this process.

5. Consensus Planning: Link the Locally Preferred Alternative to the Regional Transportation Plan and the City and County General Plan Circulation Elements.

The overall transportation planning document for the metropolitan area is the Regional Transportation Plan (RTP) developed by Kern COG with input from local agencies and jurisdictions. The RTP is updated every two years and contains the major transportation projects that are planned for a 20-year period. The capital projects and strategies developed from the MTIS should be included in the RTP and in the biennial updates. In this way, interagency commitments can be achieved and maintained and MTIS projects can be recognized as having both local and regional significance. At the same time, the recommended elements should feed into the periodic updates of the City and County General Plan Circulation Elements.

6. O&M Requirements: Factor in operations and maintenance components as part of the transportation responsibility.

In some cases, operations and maintenance (O&M) for both roadways and transit have been de-emphasized in favor of construction of new facilities. However, O&M has been recognized as a major component in the feasibility of the MTIS and deserves significant attention because the replacement value of the existing transportation investment exceeds the cost of the new facilities. The present transportation system in the Bakersfield metropolitan area is beginning to weaken and crumble, leaving users of the system to voice demand for repairs and maintenance. For transit, the ability to expand services will be curtailed by insufficient funding to operate a larger fleet. O&M is a serious factor that must be integrated into the Action Plan so that the existing system is not left behind as new projects are constructed.

7. Dynamic Planning: Emphasize dynamic nature of project development and the need to regularly update the document.

With the development phase of the MTIS process completed, it is now up to the participating agencies to continue its deployment. The process of negotiating, selecting, and implementing infrastructure projects is not static and short-term, but rather a dynamic, long-term operation. The MTIS project horizon is through 2015, which is relatively a long time for project development. Therefore, it is more of a requirement than a choice to regularly update the document resulting from the MTIS. As the circumstances change over time, so should the document. Not doing so would possibly jeopardize the core strategies and reduce the effectiveness of the entire process on building the future transportation network in the Bakersfield metropolitan area.

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8. Shortfalls: Determine amount of additional revenues required and initiate a funding strategy.

Sufficient revenues are not available to fully fund all the transportation projects proposed in the endorsed transportation program. It is imperative to determine the funding that will be needed to fill this gap and develop a strategy to obtain additional funds. Reallocation of existing revenues and/or generation of a new funding source requires that priority projects be identified and be ready for delivery once funds become available.

Project Implementation Phasing Plan

This section presents the Action Plan's timeline for phasing in several of the MTIS projects through 2015. The Action Plan mirrors a schedule of activities that will direct the various timely efforts undertaken by the participating local agencies.

As shown below, a key part of the timeline for project implementation involves ongoing planning and programming activities by the city, county, state, and in particular Kern COG, the Metropolitan Planning Organization (MPO) for Kern County. It is paramount that all of these planning and programming activities be kept up-to-date to facilitate the expeditious implementation of transportation projects.

Ongoing Planning Activities for Kern County and Metropolitan Bakersfield 1997 to Horizon Year 2015

City and County

- € Updates to the General Plan Circulation Element
- € Updates to the Capital Improvement Program

Kern COG

- € Regional Transportation Plan updates
- € Regional Transportation Improvement Program updates
- € Federal Transportation Improvement Program updates
- € Major Transportation Investment Strategy updates

State

- € State Transportation Improvement Program updates
- € SR 178 route adoption (Crosstown Freeway)
- € SR 178 to SR 58 connection route adoption

Each MTIS project is applicable to one of seven core categories:

1. Roadway projects
2. Roadway operations and maintenance
3. Transit projects
4. Transit operations and maintenance
5. New connections between transportation modes
6. Nonmotorized modes

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7. Land use elements.

The project implementation phasing plan is illustrated in four separate tables. Table 5-3 identifies roadway projects and nonmotorized projects designated for implementation between 1997 and 2015. The timeline for delivery of these projects is divided into three phases: the first phase is from 1997 through 2002, the second is from 2003 through 2006, and the third is from 2007 through 2015. Roadway operations and maintenance programs are also shown and are continuous from 1997 to 2015.

The lead implementation agency (City of Bakersfield, County of Kern, or Caltrans) responsible for the project is identified on one axis while the various roadway activities, such as engineering and construction, are listed on the other axis. Planning activities will also be continuously underway through 2015. Specific roadway projects that are planned for delivery in each of the increments are contained in the appropriate phase. Planning and engineering studies, and right-of-way (ROW) preservation, are included in the tables, as these initiatives are important in the phasing of actual construction.

The transportation projects to be delivered between 1997 and 2002 are based on the respective agencies' Capital Improvement Programs. Target dates for the longer range projects have been endorsed based on the revised transportation impact fee program and the expected levels of revenues for the program from all funding sources.

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Table 5-3 - Fundable Roadway Projects

1997-2002 Eng. & Environ. & Design Right-of-Way	1997-2002 Construction	1997-2002 Road Maintenance	1997-2002 Pedestrian/ Bike
SR 178 ROW preservation SR 58 ROW preservation Bellevue ROW preservation 93 minor street widenings 5 street construction projects 58 new traffic signals 9 signal modifications Safety projects 2 off-street pavement or landscaping projects 2 street reconstruction projects 9 Bridge improvement/construction projects Canal crossings Other street improvements (culverts, etc.) Grade separation at Coffee Road Widen bridges/interchg on Panama Lane at SR 99 River crossing at Mohawk Q Street grade separation at BNSF RR 73 street resurfacing projects 5 chip sealing projects	SR 178 ROW preservation SR 58 ROW preservation Bellevue ROW preservation Minor road widenings and improvements New and modified traffic signals, and Signal coordination Safety projects Grade separation at Oswell street Grade separation at Calloway road	Overlay, at rate of \$2.5 million per year Reconstruction, at rate of \$4 million/yr Hazard elimination Safety improvements Grade crossing improvements Routine maintenance Road widening for Class 2 bikeway projects	SR 58 Stockdale to Trudun Widen bridges/interchanges on White Lane at SR 99 Preventive maintenance and rehabilitation
2003-2008 Eng. & Environ. & Design	SR 178 ROW preservation SR 58 ROW acquisition Bellevue ROW preservation Major widening project to Rosedale Highway Minor street widenings Other street improvements 45 new traffic signals SMART streets Canal crossings Safety projects River crossing at Allen Road Develop maintenance plan	SR 178 ROW preservation SR 58 ROW acquisition Bellevue ROW preservation Minor road widenings and improvements (1) New and modified traffic signals, and Signal coordination (2) Safety projects Overlay, at rate of \$2.5 million per year Reconstruction, at rate of \$1 million/yr Hazard elimination (3) Safety improvements (3) Grade crossing improvements (3) Routine maintenance Road widening for Class 2 bikeway projects	SR 178 engineering studies and environmental studies (Cross town) SR 58 from SR 178 Connection SR 58 from Stockdale to Trudun Widen SR 178 from Oswell to Morning Dr., including interchange at Fairfax Preventive maintenance and rehabilitation
2007-2018 Eng. & Environ. & Design	West/South beltway engineering West/South beltway environmental review		

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Right-of-Way	SR 178 ROW preservation Beltways ROW preservation	SR 178 ROW preservation Beltways ROW preservation	
Construction	Minor street widenings Other street improvements 90 new traffic signals SMART streets Canal crossings Safety projects	Minor road widenings and improvements New and modified traffic signals, and signal coordination Safety projects Grade Separation at McHale Widen bridge/interchange at Olive Drive at SR 99 Widen bridge/interchange at Fairfax Road and Alfred Herrell Highway Major widening projects to Rosedale Highway Build interchange on SR 58 at Fairfax Road	Widen SR 58 from SR 99 to Goldenwood SR 178 from Morning Dr to Alfred Herrell Highway SR 108 from Buena Vista to SR 99 SR 184 from Panama to SR 58 Major widening projects to SR 119 and SR 184 SR 58 from SR 178 connection
Road Maintenance	Develop maintenance plan	Overlay at rate of \$2.5 million/year Reconstruction at rate of \$1 million/year Hazard elimination Safety improvements Grade crossing improvements Routine maintenance Road widening for Class 2 blowway projects	Preventive maintenance and rehabilitation
Pedestrian/Bike	Various Class 2 and Class 3 blowway projects (primarily paving, road stripping, and signage)		

Table 5-4 contains roadway projects that do not have funding but have been identified as being highly beneficial to the community in the future. Funding should be sought for these projects. Tables 3 and 4 identify the transit activities that are planned through 2015. Capital as well as operations items for Golden Empire Transit District are included in the table, as are capital costs for the proposed multimodal Amtrak station.

The timeframe and lead agency identified for each specific project are accurate at the time the Action Plan was developed in late 1997. However, this Action Plan is dynamic because of uncertainties stemming from future budgetary, political, and economic constraints on local, state, and federal levels. Actions are also subject to modification through the annual update process, as described earlier in this section.

Early Deployment and Immediate Action Items

An integral part of the eight elements of the endorsed Transportation Strategy was the identification of immediate or early action items for roadways and transit. For roadways, the Bakersfield is moving ahead with several roadway widenings, grade separations, and traffic signalizations at key intersections.

For the Route 58 Kern River Freeway, Bakersfield is strategically acquiring rights-of-way. Caltrans, Kern COG, and the city are establishing route alignment, engineering concepts, and phasing plan. These agencies are also considering strategic early acquisitions of rights-of-way for other major roadway projects in the metropolitan area.

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Table 5-4 - Unfunded High Benefit Roadway Projects

		Cost (\$M)	Project Name	Cost (\$M)
Planning			PSR, SR 58 East-West Connection	
Eng. & Design			SR 58 East-West Connection	
Construction	E. Truxtun grade separation BNSF RR	14.0	SR 178 Crosstown Freeway	261.0
	Q Street grade separation at Union Pacific RR	7.0	East Beltway	40.0
	Grade separation at 7 th Standard	8.0	SR 58 West Interchange at SR 99	75.0
	Grade separation at Olive Drive	7.0	SR 58 West from I-5 to Stockdale Highway	125.0
	Airport Drive (expand existing overpass)	1.5		
	Extension of Hageman Road between Mohawk and SR 204	15.0		
	Grade separation at Weedpatch/Morning Dr. (SR 184)	1.5		
	River crossing at Chester Ave. (widen)	2.0		
	River crossing at Manor Drive (widen)	2.0		
	River crossing at Renfro Road	3.5		
	West Beltway	127.0		
	South Beltway	156.0		
	Total	344.5		501.0

For transit and connections between transportation modes, GET, Bakersfield, Kern COG, County of Kern, and Caltrans are moving ahead on several fronts. As shown in Table 5-5 and in Table 5-6, GET is purchasing 50 new compressed natural gas (CNG) buses over the next two years to expand and modernize its operating fleet.

In addition, GET is instituting new innovative bus routes to better serve the community. Early in 1998, GET initiated a new crosstown flyer (CT) route from Valley Plaza to the downtown area, and then to Bakersfield College. This new bus route provides high-speed, limited-stop service between these key activity centers and should attract new riders to transit. In the near future, GET will also initiate its first community circulator (CC) route as shown in Table 5-6. This service will be a point deviation type of service that allows buses to better penetrate neighborhoods; it can be used by people who call in advance for bus pick up service at their home or business.

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Table 5-5 - Fundable Transit Projects for GET and Other Local Agencies

Transit Project	Time Frame		
	1997-2002	2003-2006	2007-2015
New buses purchased to add to fleet (shown 2 years before service introduction)	18	28	18
New buses purchased to replace fleet	32	18	48
New minibuses	4	3	3
Demand response vans	4		1
GET facility expansion (adjacent land)	Expand	Operational	Operational
Transit center construction (location)	(1) East Hills	(2) Home Base (3) CSUB (4) Adult School	(5) Galloway (6) Intermodal (7) Airport (8) Columbus/Chester
CNG fueling station	Construction	Operational	Operational
Transit O&M costs	\$66.5 million	\$86 million*	\$280.9 million*
Multimodal station (modes connection)	Studies, ROW acquisition, initial construction	Construction	Operational
*Additional funding required.			

Table 5-6 - Long-Range Service Plan for Fundable Transit Component

Year	RT	Project Change	Cost (\$ mil.)	Benefit (\$ mil.)	Net (\$ mil.)	Service
97/98	CTG3	Initiate S. West/Danville East Hills Flyer		8	8	
	1	Improve Headways to 30 min.		1	2	
	4	Improve Headways to 20 min.		1	3	
	7	Improve Headways to 15 min. East End		3	8	
	8	Improve Headways to 15 min. East End		0	10	
						62
98/99						62
99/00						62
00/01	1	Extend Route to Northwest		1	3	
	5	Improve Headways to 15 min. Construct Home Base Transit Center		3	11	
						66
01/02	2	Shorten & Add 15 min. Headway All Day		-1	8	
	4	Improve Headways to 15 min.		1	4	
	13	Improve Headway to 15 min. & Combine with RT 15		3	4	
	15	Eliminate & Combine with RT 13		-1	0	
	CC3	Initiate Greenfield/South Circulator	2	2	2	
	CC4	Initiate Ridgewood/South Circulator Construct Home Base Transit Center	2	2	2	
						72
02/03	11	Improve Headways to 15 min.		5	10	
	CT1	Initiate Western Flyer		5	5	
	CT3	Improve Headways to 15 min. Construct CSUB Transit Center		3	6	
						85
03/04	7	Improve Headways to 15 min.		2	10	
						87
04/05	14	Improve Headways to 30 min.		2	4	
						89
05/06	6	Eliminate & Combine with CT4		-3	0	
	CT4	Initiate S. West/N. East Flyer		9	9	
	CC1	Initiate East Hills Circulator Construct Adult School Transit Center	3	3	3	
						98
06/07	10	Improve Headways to 15 min.		3	4	
						101
07/08	CT2	Initiate Roseville/ East Hills Flyer Construct Calloway Transit Center		7	7	
						108
08/08		Construct Internodal Transit Center				108
09/10	9	Improve Headways to 15 min.		2	10	
						110
10/11	CC2	Initiate Oldale/Airport/Pegasus Circulator Construct Airport Transit Center	3	3	3	
						113
11/12						113
12/13		Construct Columbus/Chester Transit Center				113
13/14						113
14/15	3	Improve Headways to 30 min.		1	2	
						114

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Financial Strategy

A financial strategy is necessary to link project priorities, project development, and project delivery with needed resources. This Strategy must be recognized by the community as the outgrowth of a process that defines community transportation investment requirements and it must be inclusive as to public participation. This has been developed with the assumption that expected revenues for each element of the strategy will be used in the most efficient manner possible and opportunities to generate new funds will be aggressively pursued by the agencies involved in the strategy. The various funding sources are shown in the pie chart shown below, which highlights the capital roadway and transit projects for the MTIS period 1997 through 2015.

To help further this objective the following conditions should be met:

Recognition of Need. The MTIS is a definition of need and possible solutions. This requires that the entire MTIS be adopted by the participating agencies. This action acknowledges the importance of the total transportation program for metropolitan Bakersfield with all eight elements addressed.

Program Legitimacy. The MTIS must be incorporated in the Regional Transportation Plan, the Circulation Elements for the City and County, and GET's Short-Range Transit Plan and Long-Range Strategic Plan. The appropriate elements must be incorporated into all appropriate agency planning and capital improvement programs.

Agency Performance. The responsible agencies must identify usable segments or components of MTIS projects that can be implemented using existing revenues. These projects must be delivered on time and within budget. This will undoubtedly require some adept programming on the part of Kern COG.

Each of the above actions provides an opportunity to draw attention to the agreed upon transportation needs of metropolitan Bakersfield and the agreed upon program of projects necessary to address those needs.

Assignment of Leadership Responsibility. It is also necessary to assign leadership responsibility to a project participant for managing the ongoing communication requirements that are necessary to build public support for the projects. In addition to reacting to the opportunities as they emerge, proactive efforts such as periodic reports on the state of transportation in the metropolitan region, at the beginning of the vacation season or the beginning of winter, might be an effective way of drawing attention to the region's transportation needs. It is also necessary to conduct annual polls on the public perception of transportation requirements and the alternatives available to fund them.

Build the Base of Support. Beginning with the city government and agencies, initiate activities (e.g., presentations) on the transportation requirements and what is being accomplished with the limited existing resources. After securing the base, the next group of potential supporters must be addressed. For example, a critical group to have on board is the senior community. Projects and programs that appeal to seniors should be highlighted.

Formation of a Transportation Coalition. It is necessary to create a broad-based coalition for the MTIS program. An existing organization could be used for this purpose, e.g., the Kern Transportation Foundation. However, other organizations may need to be brought into the coalition where appropriate.

Craft Strategies to Increase Revenues. A variety of approaches should be explored for increasing transportation revenues. These range from reallocation of existing revenues to transportation (e.g., monies raised from transportation services that now go elsewhere) to establishing new local revenue sources.

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If a new source of local revenues is to be pursued three basic conditions exist that must be followed for success:

1. Develop a sound investment program;
2. Develop a broad inclusive base of community support; and
3. Make informed political decisions through market research.

Potential New Revenue Sources

At the time of this plan's preparation, several potential new revenue sources were discussed as having some possible future application in metropolitan Bakersfield. However, given the size of the anticipated funding gap between currently available revenues and project costs, only a substantial new dedicated source of revenue could generate sufficient additional funds. A new countywide or metropolitan revenue source and potential federal demonstration funds could raise enough monies to implement most or all of the unfunded projects in the strategy.

For example, revenues from a possible sales tax could be used for any transportation purpose, including construction and maintenance programs for both roadways and transit, provided the uses are identified at the time of the vote. Certainly for other counties, sales tax revenues have proved to be a valuable commodity to add to the funding stream.

The Project Implementation Phasing Plan is reliant on a new local revenue source to fund many projects. As for timing of the need for the new local revenue, large unfunded infrastructure projects, such as the Route 178 Crosstown Freeway, are slated for construction sometime after 2006. Therefore, it would be prudent to have the new local source in place by then. Thus, the actions described above must be done in order to increase the support for whatever course of action is selected in the end for the MTIS.

As for federal demonstration funds, participating agencies submitted an application in February 1997 to the United States Congress requesting approximately \$55 million to build the SR-178 Crosstown Freeway. However, there is no guarantee to the receipt of these funds. These demonstration funds and their timely receipt would greatly improve the future delivery status for the Crosstown Freeway.

Fundable Program

Although a funding deficit exists to deliver all transportation projects, transportation revenues are available to fund various projects listed in the phasing plan. Transportation revenues from governmental sources typically can be used for certain uses, whether they be for road projects, maintenance, or transit projects. The levels set for transportation impact fees in the early years are based on current rates of collection, with an accelerated collection schedule in the later years.

The bar graph below presents the funded amounts for roadway and transit for the three Action Plan time increments. If a new local revenue source (such as a sales tax) becomes available, the revenues generated from the new source would increase funding for additional projects.

5.6 SOCIETAL AND MULTIMODAL EFFECTS

Federal law requires Kern COG to evaluate required effects of the RTP. Kern COG's responsibility is to ensure that transportation decisions reflect the quality of life for all residents of the Kern region, particularly the elderly, disabled and those with low incomes. The 1998 RTP is expected to have a positive effect on society and improve the multimodal transportation system. The anticipated benefits to society include:

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reduction in congestion; overall improvement in air quality; improvements in health and safety; savings in energy; and improvements in alternative modes of transportation.

It is expected that congestion along major arterials will be improved with implementation of the RTP. Various street and highway improvements, which are discussed in the Financial Element (Section 8.0), will provide for decreased travel times, more direct routes, and improved roadway levels of service. Further, reductions in mobile source emissions would improve air quality. These improvements will result primarily from less idling, and fewer stops and starts along heavily congested facilities. With improvement in the region's LOS, reductions in travel time, improvements in the provision of alternative modes of transportation, increased ridesharing, and implementation of other transportation control measures (TCMs) will reduce mobile source emissions by eliminating single occupant vehicle trips and reducing vehicle miles traveled.

Improved average speeds along major arterials will not only reduce congestion and improve air quality, but they will also have positive effects on commuters traveling in Kern County. Travel along congested roadways can be stressful and tiring. Reducing congestion and the amount of time commuters spend on the region's streets and highways will provide more free time and reduced stress levels. Further, improvements in safety may be noticed because of reductions in congestion.

Implementing the RTP will also result in energy savings in Kern County. With improvements and additions to the regional transportation system, reductions in energy use are expected to occur, especially considering enhancements in alternative modes of transportation and the implementation of TCMs designed to reduce SOV trips. Furthermore, implementation of the RTP will decrease travel time and improve the systemwide level of service along the region's street and highway systems, thereby reducing the amount of energy consumed.

Based on the above, implementing RTP projects and associated mitigation measures will result in positive effects on society and on mobility within and through Kern County.

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SECTION 6.0 INTELLIGENT TRANSPORTATION AND CONGESTION MANAGEMENT SYSTEMS

6.1 INTELLIGENT TRANSPORTATION SYSTEMS

6.1.1 INTRODUCTION

Intelligent Transportation Systems (ITS), is the application of advanced information processing, communications, vehicle sensing and traffic control technologies to the surface transportation system. The objective of ITS is to promote more efficient use of the existing highway and transportation network, increase safety and mobility, and decrease the environmental impacts of congestion. The Federal Highway Administration (FHWA) sponsored the preparation of Early Deployment Plans (EDPs) in different areas of the country to identify ITS application opportunities.

The primary focus of the EDP for the Kern County region is the maximization of safety, traffic flow, and efficiency in both rural and urban areas. It presents an integrated, multi-modal, phased strategic plan to address the surface transportation needs and problems of the Kern region through the use of ITS. By preparing the EDP, the Kern region will be in a position to take advantage of federal and other funding opportunities and implement various components of ITS.

Kern COG was the lead agency for this study, with key participation from California Department of Transportation (Caltrans) District 6, Caltrans New Technology and Research Program, as well as various cities and transportation agencies within the Kern region. The project consultant team was headed by Kimley-Horn and Associates, Inc., with specialty sub-consultant services provided by Ronald F. Ruetgers, civil engineer, and Moore, Iacofino, and Goltsman (MIG), Inc. (public participation).

The overall goal of the ITS EDP was to develop a multi-year strategic deployment plan for the Kern region that would result in a well-balanced, integrated, intermodal transportation system. Kern's transportation needs that have the potential of being addressed by ITS technologies have been identified and ITS elements that would be beneficial, cost-effective, and implementable have been evaluated. The strategic plan will facilitate the integration and coordination of ITS applications valley- and state-wide in conjunction with other EDPs being conducted throughout California.

Study Area

Jurisdiction for the design, construction, and maintenance of the transportation system within the Kern region is divided among Caltrans District 6, Kern County Roads Department, transit agencies (Golden Empire Transit [GET] and Kern Regional Transit), as well as public Works Departments of the eleven incorporated cities.

Public Participation

A key component to the success of a long-range ITS program is the involvement and support of the public. The Kern EDP initiated an extensive, innovative public participation program with two main objectives: (1) to educate the public about ITS and its benefits; and (2) to solicit input from a cross-section of the region's population in determining the needs, issues, and solutions for the region's transportation system. The following activities encompassed the public participation program:

☐ **Stakeholders Educational Workshop**

Key stakeholders from throughout the county were invited to attend this project awareness and brainstorming session at the beginning of the project.

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- ☐ **Rural Community Workshops** Three rural community workshops were held in order to solicit input on concerns from a rural perspective. Two sessions were held on the east side of the region and the third on the west side.
- ☐ **Urban Community Workshops** Two urban community workshops were held in the Bakersfield metropolitan area to obtain input about urban issues.
- ☐ **Newsletter** A newsletter, *Kern ITS Update*, was developed and distributed that introduced and defined ITS, described the Kern EDP project, and kept stakeholders updated on the progress of the study. Three newsletters were published during EDP development.

Needs and Issues

Poor visibility because of fog and blowing dust, large percentages of truck traffic, high winds in eastern Kern County, steep grades, snow and ice, rockfalls, and red-light violations all contribute to the growing concerns about highway safety. Tule fog, a problem through the entire central valley region, has caused some of the worst accidents in the state involving dozens of vehicles and closing Interstate 5, the main artery through the valley, for hours at a time. Blowing dust, related directly to seasonal agriculture, causes similar difficulties for travelers. In the urban area, red-light violations are an issue. In eastern Kern county, high winds cause high profile vehicles to overturn. Snow, ice, and rockfalls can make travel through the rural areas unpredictable. This EDP places traveler safety first in determining ITS solutions for Kern.

Additional issues were related to:

- ☐ Improved information sharing among agencies;
- ☐ Improved traffic progression across jurisdictional boundaries;
- ☐ Reduction in delays due to incidents;
- ☐ More informed traveler decision making through improved traveler information systems;
- ☐ Improved data collection through expanded coverage of information sources;
- ☐ Increased transit ridership;
- ☐ Enhanced transit coverage and efficiency;
- ☐ Improved air quality analysis; and
- ☐ Improved commercial vehicle operations.

6.1.2 KERN ITS PROGRAMS

Six programs were developed for Kern that integrate existing ITS efforts underway in the Kern region and will incrementally develop a sound base for future expansion of ITS in the region. These programs are:

- ☐ Communication Network Development Program
- ☐ Traffic and Incident Management Program
- ☐ Kern Traveler Safety Program
- ☐ Kern Informed Traveler Program (TravelKIT)
- ☐ Kern Smart Transit Program
- ☐ Enhanced Emergency Response Program.

Implementation of these programs will make transportation throughout Kern County safer, more efficient, and noticeably more pleasant for travelers.

These programs were developed specifically for the Kern region, but each was developed as a part of an open, expandable plan, in order to provide a starting point for valley-wide integration of ITS. This means that other

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counties in central California which have similar problems and needs will benefit from this plan and combine ITS programs for different regions. This region-wide integration will provide further opportunities for cost sharing and funding and ultimately result in cost savings to all agencies involved. The broader goal is to facilitate a seamless, statewide ITS network.

6.1.3 COMMUNICATION NETWORK DEVELOPMENT PROGRAM

The communication network is the most important and often the most expensive component of an ITS. Communication links are needed to connect different agencies within the region to allow coordination and cooperation in operating and managing the transportation system. Each field element requires a means of communication for receiving data, consisting of controls or display messages and for sending data, consisting of weather, traffic, or equipment condition information. Three major components comprise the communication network development program:

Communication Links with Bakersfield SONET Ring

The Bakersfield Communication Master Plan defined a fiber optic, Synchronous Optical Network (SONET) backbone for the City of Bakersfield, dedicated to signal communication, video, and limited ITS applications. This backbone will need to be enhanced in order to be used as the network for Kern ITS as well. Links to the SONET network will allow any connected agency to communicate with any other agency. Physical communication links will be either fiber, hardwire, or wireless. The microwave network owned and operated by the Office of the Superintendent of Schools in Kern should be analyzed and strongly considered to be used as the communication medium wherever possible. The cost effective use of the Internet (specifically the world wide web) should be considered as well. An extranet, or private internet (as opposed to intranets) could be easily used to provide the links between the different jurisdictions and agencies. Communication will allow operators from different agencies to share information and discuss strategies, to exchange weather and traffic information through the advanced traveler information system (to be described later), and, potentially, to share field elements, such as dynamic freeway signs and CCTV (closed circuit television) cameras.

Cooperative agreements will be necessary among all agencies in order to address control issues. Since the SONET is currently sized only for the City of Bakersfield's needs, upgrades will be necessary and included as part of this Communication Network Development Program. This means that any additional fibers which are needed for Kern ITS over and above the current SONET design, which accommodates only the City of Bakersfield projected future needs, will be funded as a part of this Kern Communication Network Development Plan.

Communication links should be installed between the Bakersfield SONET network and the following facilities or locations:

- ☐ Caltrans District 6 Traffic Management Center (TMC)
- ☐ Kern County traveler information workstation
- ☐ Each rural city traveler information workstation
- ☐ Kern COG traveler information workstation (primarily for ITS Planning data)
- ☐ Control 5 emergency services
- ☐ GET
- ☐ Kern Regional Transit.

Smart Call Boxes for Communication

The objective of Smart Call Boxes is to enhance the functionality of a number of the existing Kern Motorist Aid Authority call boxes so that they serve as communication nodes to ITS field devices. The call boxes, located throughout the Kern region, can be upgraded to provide a cost-effective communication infrastructure for ITS

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field elements in the rural areas. Field elements on rural highways can be connected to the call boxes, so that the data can be transferred to and from Caltrans via cellular phone technology.

An operational test was recently implemented in San Diego to test the application of this type of technology. The evaluation of Smart Call Boxes via the operational test should be closely monitored and conclusions for implementation in Kern should be based on the results. Dedicated cellular communications should be considered for field element communications if the evaluation proves that Smart Call Boxes are ineffective.

Links to Other Regions

The objective of the statewide/regional communication links is to enable travelers to receive information from areas outside of the immediate Kern region and to facilitate incident management and traffic control activities by sharing information among agencies.

Communication links are recommended:

- ☐ to Fresno and other Central Valley Transportation Management Centers and Traffic Operations Centers (TMCs/TOCs)
- ☐ to Southern California Showcase (the Southern California ITS program)
- ☐ to other TMCs and traveler information systems throughout California
- ☐ to I-40 traveler information systems in Arizona and California.

6.1.4 TRAFFIC AND INCIDENT MANAGEMENT PROGRAM

Traffic and incident management is already well established in Kern County. Two traffic management centers¹ (Caltrans Districts 6 and 9) are in operation serving the Kern region. Field elements including CCTV cameras, Changeable Message Signs (CMS), and Highway Advisory Radio (HAR) are in place on various freeways. Plans for improved traffic management in the urban area of Kern are underway, with the City of Bakersfield TOC under construction and plans already established for signal coordination and traveler information. The Traffic and Incident Management Program has been developed in order to meet current and future demands of Kern's transportation network in terms of safety and congestion. This program integrates current efforts of the various state, regional and local agencies serving Kern into a comprehensive, region-wide approach to traffic and incident management. It also expands upon current efforts to better achieve the objective of a safer, more efficient transportation network. Components of the program include:

Census Stations, System Detectors and Incident Detection

System detectors provide real-time traffic information to the TMC in the form of vehicle volume, speed, and/or occupancy. System detector coverage should be expanded to cover I-5 and Route 99, and portions of Route 58 and Route 204 through the urban area. Processes are needed for collecting and processing the raw data from the system detectors. A computer program is then needed to determine when an incident has occurred and to alert TMC operators. The census stations on the east side of the region (Caltrans District 9) should be expanded to cover the entire county. These stations will provide real-time planning data for agencies such as Kern COG and Caltrans. Smart Call Boxes should be used wherever possible to send the data to Caltrans.

¹ Traffic Management Center (TMC) is used in this report to describe any location that centralizes the remote control of ITS elements for traffic operations and management.

Decision Support System (DSS) Shared Among All Agencies

A Decision Support System (DSS) is a software program which receives real-time data from field devices (e.g., weather stations and system detectors), analyzes the data, and suggests strategies for incident management. The objective of the DSS is to assist transportation management agencies (Kern County, City of Bakersfield, Caltrans, and rural cities) in the coordination and implementation of traffic and incident management strategies. The strategies include the text to be displayed on CMS's and Trailblazers (see descriptions below), the locations of the signs to be used, ramp metering (when applicable) and/or signal timing changes, detour routes, HAR messages, and which agencies should be involved. Strategies are developed and agreed upon by all agencies involved in transportation and incident management in Kern County prior to inclusion in the DSS. Cooperative agreements and standard operating procedures will be drafted prior to DSS implementation. Only one DSS is designed for the Kern region, and the various agencies will share the use and cost of the system.

6.1.5 COORDINATED INCIDENT MANAGEMENT PROCEDURES

Whether incident management within Kern County is done manually or automatically (with the assistance of a DSS described above), coordinated incident management procedures will be necessary. Since there will be several agencies involved in the incident management in Kern County, it will be most efficient and beneficial to all if strategies are coordinated among the agencies. Strategies will include signal and ramp meter timing plans (when applicable), text for display on CMSs and Trailblazers, messages to be recorded on HARs, and other responses to incidents. Emergency response teams and, potentially, commuter services (similar to the Freeway Service Patrol in other regions) for different geographic areas of the region should be established as a part of this component.

Policies should also be developed that outline the responsibilities and limits of each agency under different scenarios. If field devices are to be shared as a part of traffic and incident management, details of the control agreements (standard operating procedures) should be logged along with the cooperative agreements. These procedures would outline details such as which field elements may be controlled by which agencies, and under what circumstances. Standard operating procedures also define after-hours operations of entire systems by other agencies (e.g., Caltrans District 6 operating the County of Kern's system after hours to enable monitoring on a 24-hour basis).

Freeway Field Elements

The objectives of the freeway field elements are to collect information about the status of weather or incidents and provide the general incident, weather, and congestion information to travelers to allow them to make informed decisions.

A Changeable Message Sign (CMS) is a dynamic sign, located on the roadway, that allows two to three programmable lines of communication, entered remotely from a TMC. The actual wording of the message displayed on the CMS is determined by the traffic control and information needs at the time.

A Trailblazer sign is a limited-capability CMS used primarily for relaying detour information to travelers on city streets. Each sign can display two lines of variable text (approximately ten characters per line) and either a left, through, or right arrow on the bottom line.

A highway advisory radio (HAR) system advises travelers by roadside signs to tune to a designated AM radio frequency for traffic information. The messages are short (30 - 60 seconds), and are pre-recorded and programmed to repeat end-to-end throughout the day.

Closed Circuit Television (CCTV) cameras are valuable tools for incident verification. Assessment of the incident and the associated impacts are equally critical. CCTV will be used to obtain remote video of large

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intersections, high accident and adverse weather areas, and to monitor special event activity. CCTV should be used in the rural areas of Kern for verification of data from weather stations, system detectors, and dynamic CMSs.

Urban Smart Corridors

A smart corridor is a roadway that focuses the deployment of advanced technologies on a particular route to provide better progression on a daily basis as well as during incidents. The objective of Urban Smart Corridors is to provide a higher level of efficiency and traffic flow quality on corridors that provide alternate routes to freeways and facilitate the movement of "through traffic" in the urban area of Kern County. Technologies include signal coordination, detection and communication, and ITS elements (CCTV, CMS, and Trailblazers). Signal coordination will require communications to link individual local controllers. Since many corridors will span several jurisdictional boundaries, multi-jurisdictional signal coordination and general cooperation will be necessary. Dynamic timing plans should be programmed for the length of each corridor as well, in order to better accommodate fluctuations in traffic caused by recurring and non-recurring congestion.

6.1.6 KERN TRAVELER SAFETY PROGRAM

The Kern Traveler Safety Program combines established, proven technologies with newer, less proven applications to provide Kern County with an aggressive, "cutting edge" approach to safety. Problems vary from adverse weather conditions to red-light violators (in both rural and urban settings). The following components encompass the Kern Traveler Safety Program:

Weather Stations

Weather stations, which combine a variety of technologies, coupled with CCTV cameras for verification (especially in rural areas), will provide an accurate picture of weather conditions region-wide in real-time. Available technologies include visibility sensors, precipitation intensity and type sensors, humidity/air temperature sensors, wind speed/direction sensors, and pressure transducer sensors to detect water levels in flood channels.

Extended coverage of weather stations for the entire Kern region is needed. Existing weather stations which are not within sight of the monitoring agency should be outfitted with CCTV cameras for verification of weather conditions.

Photo Radar for Red Light Enforcement

At high accident intersections, photo enforcement systems will automatically record red-light violations. The system consists of a camera, communications with the traffic signal controller to determine when the light is red, and detectors to determine when a violation has occurred. The company that supplies the technology will also be responsible for retrieving the exposed film from the system, processing the film and issuing warnings or tickets to the violator depending on the issuing agency. The objective of the photo radar system is to improve public compliance (and therefore, safety) through behavioral modification. It is not a tool for raising revenues; an effective system will reduce the incidence of violations and in fact, decrease revenues.

Railroad Grade Crossing Technology

Photo enforcement can also be employed to improve railroad crossing safety. This strategy would reduce the number of vehicles that drive around the barrier arms. The same photo-enforcement systems described for red-light enforcement can be used at the railroad grade crossings.

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Video technology, placed at highway-rail intersections, relays a view of the intersection to the approaching train. This provides the train operator with the information necessary to make a decision as to whether or not the train needs to be stopped. This technology is helpful in instances where barriers are stuck in the raised position, or when a vehicle is stalled or broken down on the tracks. The driver of the train receives information early enough to make a determination while there is still enough distance to stop the train. This video technology should be deployed as a test project.

Road Closure Enforcement During Flooding

Installing automatic barriers on routes that experience annual flooding will enable the County Roads Department to close flooded roads from a remote location. CCTV cameras will be installed at these locations (with adequate weatherproof housings) to enable staff to visually confirm the flooding and roadway safety conditions remotely.

Several portable systems, involving static or automatic barriers and CCTV cameras, should be developed for use in areas which experience less frequent flooding and for flooding in unpredictable locations. These systems will still require placement by maintenance staff, but, once in the field, will provide a valuable tool for confirmation of flooding status and roadway safety.

A potential additional module of this Kern Traveler Safety Program component is photo enforcement. Portable photo enforcement systems would be effective at reducing the number of vehicles that ignore the barriers. Initially, the systems may be used to issue warnings, but eventually could issue tickets to violators. Since the photo enforcement systems are portable, one can be purchased and rotated among the locations with high violation counts.

Rockfall Detection System

The rockfall problems are isolated on a fifteen-mile stretch of Route 178. Video detection will be set up in the problem areas to detect the movement of the falling rocks. The information would be transmitted to the Kern County system for dispatching maintenance personnel to clear the road if necessary. CMS, either static or dynamic, placed on the roadway upstream from the rockfall system would enable traveler information system operators at the City of Bakersfield TOC to disseminate information to travelers. The southern three miles of the route is the most problematic area with respect to rockfalls. This three-mile stretch should be outfitted first, and eventually the system should be expanded to cover the entire fifteen miles.

6.1.7 KERN INFORMED TRAVELER PROGRAM (TravelKIT)

Making Kern travelers *informed* travelers will reduce unnecessary accidents and congestion when advanced warnings are available. When adverse weather conditions prohibit safe travel on certain routes, or flooding makes segments of roadways unsafe, warranting closure of the segment, the best way to keep the transportation system working safely and efficiently is to get the information to travelers immediately. Prior knowledge of driving conditions allows travelers to select different routes, modes, or departure times. The base system, Advanced Traveler Information System (ATIS), is described as the first component of the Kern Informed Traveler Program. The various dissemination media are subsequently described as individual components. The following components will work together to provide Kern with a safer, more efficient transportation system.

Development of an Advanced Traveler Information System (ATIS)

The ATIS will require a basic system for collecting, processing, and disseminating information to the various components, which include two types of kiosks, a WWW site, workstations for transportation agencies, community access television (CATV), and an automated highway advisory telephone (HAT) system. The base

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system will need to be catered to Kern, in that it will need to collect information from the rural workstations (for rain, weather and manually input incident information), from the Caltrans TMCs, from the City of Bakersfield system, and from other sources. Since the City of Bakersfield TOC will (once built) be the only TOC in the immediate Kern region (others serving Kern are located in adjacent counties), the ATIS should be located at the City of Bakersfield TOC.

Standard ATIS messages, as defined by the standardization efforts of the National Architecture, should be used in order to allow for coordination among jurisdictions throughout the region and the nation. Interfaces should also be provided for Value Added Resellers (VARs) in order to allow for full or partial privatization of the Kern Informed Traveler Program.

Workstations for Traveler Information

The physical communication links from the different agencies to the Kern ITS network (Bakersfield SONET) were described as a component of the Communication Network Development Program. Given that these links are established, each incorporated rural city should have a workstation connected with the ATIS. Workstations should also be developed for Caltrans District 6, Kern COG, the County of Kern, GET and Kern Regional Transit. The workstations should have the capability of not only retrieving information from field elements and from the ATIS server, but also sending information such as field element data from that area and operator inputs for information such as incidents, detours, etc., back to the server. Workstations should be developed for all agencies involved in traffic and incident management and data collection.

Upgrade of Bakersfield TOC

In order to accommodate Kern ITS with the City of Bakersfield TOC acting as the regional TOC (particularly for traveler information) certain aspects and elements will require improvements. Spatial requirements will include additional racks for the ATIS server, a workstation for the traveler information system operator, including furniture; and all additional associated hardware, such as additional monitors. Future expansion plans of the TOC should consider region-wide ITS needs, especially the traveler information system, in addition to City of Bakersfield needs.

The upgrade can be achieved through one of the following alternatives:

- ☐ expanding the existing TOC if space is available;
- ☐ moving the TOC to Control 5;
- ☐ moving the TOC to the Superintendent of Schools building in downtown Bakersfield;
- ☐ moving the TOC to a new, dedicated building at a site to be determined at a later date.

Interactive and Commuter Kiosks

Placement of kiosks at major tourist attractions and traffic generators would provide travelers with easy-to-access, real-time information and travel aids. This type of kiosk should be interactive, providing the inquiring traveler with the ability to choose which type of information is to be displayed. Equipment would include a touch-screen monitor, computer, modem and a cabinet that conceals and protects all but the touch-screen. Examples of information to be provided are:

- ☐ real-time weather and traffic information;
- ☐ continuously updated road closure reports
- ☐ scheduled roadway maintenance and construction schedules;
- ☐ transit schedules and real-time schedule adherence
- ☐ community events
- ☐ maps and trip planning program

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- ☐ local points of interest
- ☐ traveler service listings such as hospitals, police stations, gas stations, etc.
- ☐ business yellow pages to offset program costs and provide local information.

Placement of smaller kiosks at major business centers that only provide quickly-accessible, important information for familiar travelers such as real-time weather and traffic information (familiar commuters will be less likely to request tourist information) would allow for maximum information dissemination at a minimum cost. This type of kiosk would be non-interactive, and display only real-time traffic and weather information that would update automatically on a pre-timed basis. Equipment would include standard monitors and a single server located at the Bakersfield TOC (with the traveler information system) to display information on the remote monitors. Weather- and vandal-proof cabinets will be necessary as well. The capital cost per unit of this type of kiosk will average one-fifth the cost of the "traditional" kiosks described above.

Live Video Feeds to the Media

Once CCTV cameras are in place throughout the region, live feeds of video images to the media will be established. This component of the traveler information system will provide an "early start" opportunity for real-time information dissemination. This type of feed is valuable to the media, gets the information to the traveler, and helps to establish a positive public opinion of the CCTV cameras (and ITS in general) which, very often, are initially frowned upon by the community. Any video feeds originating from Caltrans will involve full-time, active monitoring by TMC operators as per the active policy regarding such feeds.

Community Access Television (CATV)

CATV is a medium that could broadcast real-time weather and traffic information into every home with access to cable television. The system will display real-time information (weather, traffic, etc.) in the form of a clear, concise map of the entire region. The system would be displayed either during peak hours, or on a 24-hour basis. It is recommended that it be available 24 hours per day and that the system and channel be well-publicized to establish a user base. Live video can be included as well.

Highway Advisory Telephone (HAT)

Another component of the Kern Informed Traveler Program is to provide travelers with traffic information via a dedicated Highway Advisory Telephone (HAT) number. Similar information to the HAR messages will be accessible over the phone (though the information will not be localized as with HAR). The dial-in number should be well-publicized and the messages (recordings) should be made clear and concise.

WWW Site

A World Wide Web (WWW) site for the Kern region will be developed which is linked with other sites which provide similar information, such as Caltrans, Fresno and other central valley sites, southern California sites, and the Interstate 40/Route 58 sites.

6.1.8 KERN SMART TRANSIT PROGRAM

Advanced technologies will make transit systems "smarter" by providing increased flexibility, reliability, and efficiency. The overall objective of the Kern Smart Transit program is to increase transit's share of the commuting market by providing an alternative mode to automobiles which is flexible, convenient, and responsive to customer demand. The success of such a program will offer a range of benefits to commuters including reduced travel times, improved air quality, cost savings, and increased mobility. The combination of the following strategies into a cohesive, region-wide program will maximize the operational efficiency of the transit throughout Kern and allow the agencies to better serve the needs of the communities through extended

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hours of operations, weekend operations, and reduced headways. The Kern Smart Transit program consists of three main components.

Upgrade of the Golden Empire Transit (GET) and Kern Regional Transit Systems

Transit system upgrades will involve the installation of Automatic Vehicle Location (AVL) on the transit vehicles. Dispatching centers will require upgrades varying from changes to the control room layout to computer hardware to racks for housing new equipment. AVL provides the transit agency dispatcher with the capability of monitoring the location of all fixed route and demand responsive vehicles in real-time. The AVL will be integrated with digital communications to and from the vehicles and a GIS mapping system. Instructions from the dispatcher, regarding schedule corrections, will be sent directly to the vehicle. The AVL should be provided through Global Positioning System (GPS) technology.

Kern Smart Shuttles

The Kern Smart Shuttle is a demand responsive service which incorporates vehicle-based and dispatching technologies to achieve more effective vehicle and fleet planning, scheduling and operations. AVL will be required for the Smart Shuttles. Computerized Scheduling and Dispatching will automate the reservation process, improve the efficiency of trip assignments, allow for the accommodation of immediate service requests, and provide real-time information for maintaining schedule integrity and rectifying schedule delays. Trips are requested by users via telephone or internet and vehicle assignment, routing and schedule are automatically generated and dispatched to the driver, based on vehicle location, the number of passengers, etc.

Coordination of GET and Kern Regional Transit Schedules

The communication link between GET and Kern Regional Transit, established as a component of the Communication Network Development Program, will enable the two agencies to communicate with each other through a distributed communication network. Integrating the scheduling efforts of the two agencies will enable the two transit systems to be coordinated. In other words, just as within a single agency, routes for both agencies will be coordinated and optimized with respect to transfers between the two systems.

6.1.9 ENHANCED EMERGENCY RESPONSE PROGRAM

A multitude of agencies throughout the region provide emergency services to the general public. Whether the agency is responding to an incident related to transportation or something else, the vehicle and driver would benefit greatly from knowing which routes to take in order for responses to be timely. The Enhanced Emergency Response Program improves the safety of the surface transportation system as well as that of the general public, by providing police, sheriff, fire, ambulance, and other service providers with the tools to help them determine quickly and accurately which routes will be fastest. The components of the Enhanced Emergency Response Program are as follows.

Workstations for Emergency Response Providers

One component of the Kern Informed Traveler program provides emergency service providers located at Control 5 with workstations for traveler information. This component of the enhanced emergency response program recommends allowing any other emergency service providers in the region to obtain workstations as well. Communication links to the Kern ITS network will be required for those agencies which choose to incorporate real-time traveler information into their dispatch centers. The workstations should also allow the emergency service providers to input information regarding incidents or hazards.

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Emergency Corridor Routes (Signal Pre-emption)

Primary emergency corridor routes should be established with signal pre-emption capabilities for emergency vehicles. The three candidate corridors recommended for upgrade to primary emergency corridors through enhanced pre-emption are:

- ☐ Stine Road/California Avenue
- ☐ H Street
- ☐ Brundage Lane.

6.1.10 BUDGETS/IMPLEMENTATION PLAN

Estimated budgets for the recommended Kern ITS programs were developed based on discussions with vendors, through literature review, and by referencing historical cost data for similar projects. The latter method was used only as a starting point as technology costs have decreased substantially in recent years.

Factors such as funding availability will influence the magnitude, prioritization, and timing of projects as they are defined in this report. The key to successful phased implementation is to mix and match projects relative to each time period, thereby providing the capability to adjust to changing market trends and future needs. In this sense, the implementation plan should be used as a guide to developing the specific plans for each recommended project.

The six Kern ITS programs described thus far are scheduled for deployment over the next ten years. Commercial Vehicle Operations was addressed in the earlier stages of the planning process, and there were noted issues related to large volumes of commercial vehicles on the freeway system throughout the region. In the process of prioritizing needs, issues, benefits, and solutions, however, CVO did not rate as a high enough priority to warrant inclusion into the ten-year plan for early ITS deployment. CVO will be an issue for the future (beyond ten years), and will be readdressed in future updates of this strategic plan.

6.1.11 KERN FUNDING AND PROJECT MANAGEMENT STRATEGY

Table 6-1 describes a strategy by which Kern can obtain adequate funding to implement ITS over the next ten years as described in the following section.

Table 6-1 - Kern Funding Strategy

Funding Source	Potential Funding for Kern Region
TEA-21	
<input type="checkbox"/> CMAQ	\$ 3 - 4 million/year
<input type="checkbox"/> ITI	\$ 1 million/year
TSM	\$ 0.2 - 0.8 million/year
Public/Private Partnerships	varies

Program management of local projects will be provided by the corresponding local jurisdiction wherein the project is located. Regional projects, such as the Kern Informed Traveler Program will ultimately be managed

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by Kern COG or a delegate of the COG (e.g., the City of Bakersfield may serve as the lead agency on this project since it will be co-located with the TOC).

ITS Benefits

Over the past decade, deployment of ITS in the United States has resulted in substantial, quantifiable benefits. Several measured benefits of ITS in different areas of the country are summarized in Table 6-2 to demonstrate the potential for improvements in Kern.

**Table 6-2
Examples of ITS Benefits**

Freeway Management	Reduced accidents by 15% - 62% while handling 8% - 22% more traffic at 16% - 62% greater speeds compared to pre-existing congested conditions (quantified benefit through the use of ramp metering).
Incident Management	By providing video feeds from the field into a Traffic Management Center, the responding towing concession yielded a clearance reduction of 5 - 8 minutes.
Traffic Signal Control	The implementation of a transit signal priority system yielded a 5% - 8% decrease in transit run times.
Transit Management	On-time performance yielded improvements of 12% - 28% while reducing costs to generate a positive return on investment in as little as three years.
Signal Coordination	Has resulted in an average of 20% reduction in travel times in various locations throughout California.

Source: FHWA-JPO-96-008, *Intelligent Transportation Infrastructure Benefits: Expected and Experienced*.

SECTION 6.2 CONGESTION MANAGEMENT PROGRAM

6.2.1 OVERVIEW

Pursuant to California Government Code Section 65089(a), Kern Council of Governments (Kern COG) has been designated as the Congestion Management Agency (CMA) by the majority of the cities representing the majority of the population and the Kern County Board of Supervisors. Kern COG consists of representatives from the eleven incorporated cities and two representatives from the County of Kern. The Golden Empire Transit District, Kern County Air Pollution Control District, San Joaquin Valley Unified Air Pollution Control District, and Caltrans are represented on the Agency Board in an ex-officio capacity.

The CMA is responsible for developing, adopting, and biennially updating a Congestion Management Program (CMP). The CMP is developed in consultation with, and cooperation of, the regional transportation planning agency (Kern COG), regional transportation providers, local governments, Caltrans, and the air pollution control districts.

Because the CMP can be amended and must be updated biennially, it can be modified to reflect local conditions in traffic congestion and transportation funding. This document fulfills the statutory

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requirements for the Congestion Management Program as required under State law. Local governments that come under jurisdiction of this CMP include:

City of Arvin	City of Maricopa	City of Taft
City of Bakersfield	City of McFarland	City of Tehachapi
California City	City of Ridgecrest	City of Wasco
City of Delano	City of Shafter	County of Kern

The terms "local jurisdiction" and "jurisdictions" in this document shall refer to all those government agencies listed above.

6.2.1.1 PURPOSE OF THE CMP

The purpose of the CMP is to ensure development of a balanced transportation system that relates population growth, traffic growth and land use decisions to transportation system performance standards and air quality improvement. The CMP is an effort to more directly link land use, air quality, transportation, and the use of new advanced transportation technologies as an integral and complementary part of this region's plans and programs.

Under the Congestion Management Program, local jurisdictions are required to:

- o Use consistent LOS methodologies, performance standards, and travel forecasting techniques;
- o Adopt and implement a land use analysis program, which includes acting as lead agency for Traffic Impact Reports;
- o Participate in annual monitoring activities, maintain acceptable performance levels on the system, or if necessary, designate individual segments or intersections deficient through adoption and submission of a Deficiency Plan to Kern COG;
- o Adopt a Transportation Demand Management ordinance prior to the annual CMP conformity findings.

Failure of local jurisdictions to fulfill these responsibilities could engender loss of a portion of the state gas tax funding.

6.2.1.2 CONTENTS OF THE CMP

State law requires that the CMP include the following elements:

- ☐ **Land Use Analysis Program:** This program establishes a process to evaluate the impacts of proposed local land use decisions on Kern County's transportation system, including an estimate of the costs associated with mitigating requirements.
- ☐ **Level of Service (LOS) Standards:** The purpose of this element is to determine how much traffic, during peak hours, is acceptable on state freeways, highways and major streets within Kern County. These

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standards do not replace adopted city or county traffic goals, which generally establish more stringent standards.

- **Public Transit Standards:** This element identifies frequency and routing of bus service, and discusses the coordination of transit service provided by separate operators throughout Kern County.
- **Trip Reduction and Travel Demand:** This element describes programs to promote alternatives to driving alone. These include such activities as carpools, vanpools, transit, bicycles, and park-and-ride lots. These programs will improve air quality in the County and help meet the goals of the Air Quality Attainment Plans.
- **Capital Improvement Program:** The CIP contains information on transportation improvements that can be expected to improve traffic conditions over the next seven years; it has been developed to make the best use of currently available funds.

In addition to these components and as a part of developing and monitoring the CMP, Kern COG is required to develop a traffic data base for use in a countywide model and to monitor the implementation of the CMP elements.

The federal Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991 requires each state to develop and implement a traffic Congestion Management System (CMS) that will be incorporated into the regional planning process. The CMS will identify areas where congestion occurs or may occur, identify the causes of the congestion, evaluate strategies for managing congestion and enhancing mobility, and develop a plan for implementation of the most cost effective strategies. The strategies as identified in the federal Notice of Proposed Rulemaking (March 1993) regarding CMS include:

- o Transportation demand management measures;
- o Traffic operations improvements;
- o Measures to encourage high occupancy vehicle (HOV) use;
- o Congestion pricing;
- o Land use management and activity center strategies;
- o Incident management strategies;
- o Applications of intelligent vehicle highway systems (IVHS) technologies; and
- o Addition of general purpose (mixed flow) traffic lanes.

Given their close similarities, the CMP provides for the ISTEA-mandated CMS. Kern region's CMP will be revised as necessary to reflect any further federal CMS requirements.

Advances in telecommunications technology and networks provide an additional opportunity to further manage congestion by reducing the need for travel both within the region and between regions. To an extent, these telecommunications advances are occurring within the private sector without public sector initiatives. However, Kern COG is evaluating a potential public sector role.

6.2.1.3 CMP MONITORING AND IMPLEMENTING PROCESS

To ensure the CMP is being implemented, the cities and County will need to provide the CMA staff considerable information each year. This information is mostly in the form of technical data, as well as policy and planning summaries.

Traffic Level of Service - Each city, the County and Caltrans must provide peak hour traffic counts and level of service calculations on their designated streets and intersections.

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Local Traffic Models - Kern COG is required to approve (will review) any traffic models used by the cities and the County to evaluate impacts of proposed land use development on the transportation system. After the model has been initially approved by the Congestion Management Agency, only changes to the model will need to be submitted.

Land Use Database - Kern COG is required to establish and use a uniform land use database for the development and monitoring of the CMP. All current and future land use projections must be included in the database. Any changes to the land use database must be submitted to Kern COG.

Local Capital Improvement Program - Statute requires the CMP to include a seven-year Capital Improvement Program to maintain or improve the level of service on the CMP highway system and transit performance standards, and to mitigate regional transportation impacts identified through the CMP land use analysis program.

Section 6.2.10 discusses specific requirements of the Monitoring Program and Implementing Process

6.2.2 DESIGNATED REGIONAL TRANSPORTATION SYSTEM

6.2.2.1 PURPOSE

The purpose of defining the CMP network is to establish a system of roadways that will be monitored in relation to established LOS standards. At a minimum, all State highways and principal arterials must be designated as part of the CMP System of Highways and Roadways. Kern County has 18 designated State highways. The roads selected as principal arterials by the Congestion Management Agency (CMA) serve inter-regional traffic traveling between State highways, and also complete gaps in the CMP network.

6.2.2.2 REQUIRED COMPONENTS

California Government Code Section 65089(b)(A) requires that the CMA establish a system of highways and roadways that includes all of the State highways and principal arterials. Once a roadway is included in the network, it cannot be removed. All new State highways and principal arterials must be included in the system. However, if in the future, an existing segment of State highway is replaced by a new alignment, the new alignment would be added to the CMP network while the old alignment would be dropped from the network.

6.2.2.3 CMP PROVISIONS

Figure 6-1 provides a graphic display of the CMP System of highways and roadways. A listing of State highways and principal arterials on the designated CMP System is provided below.

State Highways

Interstate 5	Route 119
Route 14	Route 155
Route 33	Route 166
Route 43	Route 178
Route 46	Route 202
Route 58	Route 204
Route 65	Route 223
Route 99	Route 395

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Principal Arterials

China Lake Boulevard - Route 178 to Route 395
Rosamond Boulevard - Tehachapi-Willow Springs Road to Route 14
Seventh Standard Road - Route 99 to Route 5
Tehachapi-Willow Springs Road - Route 58 to Rosamond Boulevard
Wheeler Ridge Road (Rt 184) - Route 5 to Route 223

6.2.3 LEVEL OF SERVICE (LOS) STANDARDS

6.2.3.1 PURPOSE

The purpose of this section of the CMP is to establish LOS standards for the CMP road network in Kern County. California Government Code Section 65089(b)(1)(B) requires that LOS standards be established no worse than LOS E, or LOS F if that is the current level of service.

Level of Service, according to the Transportation and Traffic Engineering Handbook, is a "qualitative measure that represents the collective factors of speed, travel time, traffic interruptions, freedom to maneuver, safety, driving comfort and convenience, and operating costs provided by a highway facility under a particular volume condition." LOS is ranked from A to F.

6.2.3.2 REQUIRED COMPONENTS

Adopted Level of Service Standard

One of the most important elements of the CMP is to establish Level of Service standards to decide how much traffic is acceptable during peak hours. LOS is a way of measuring the amount of traffic congestion.

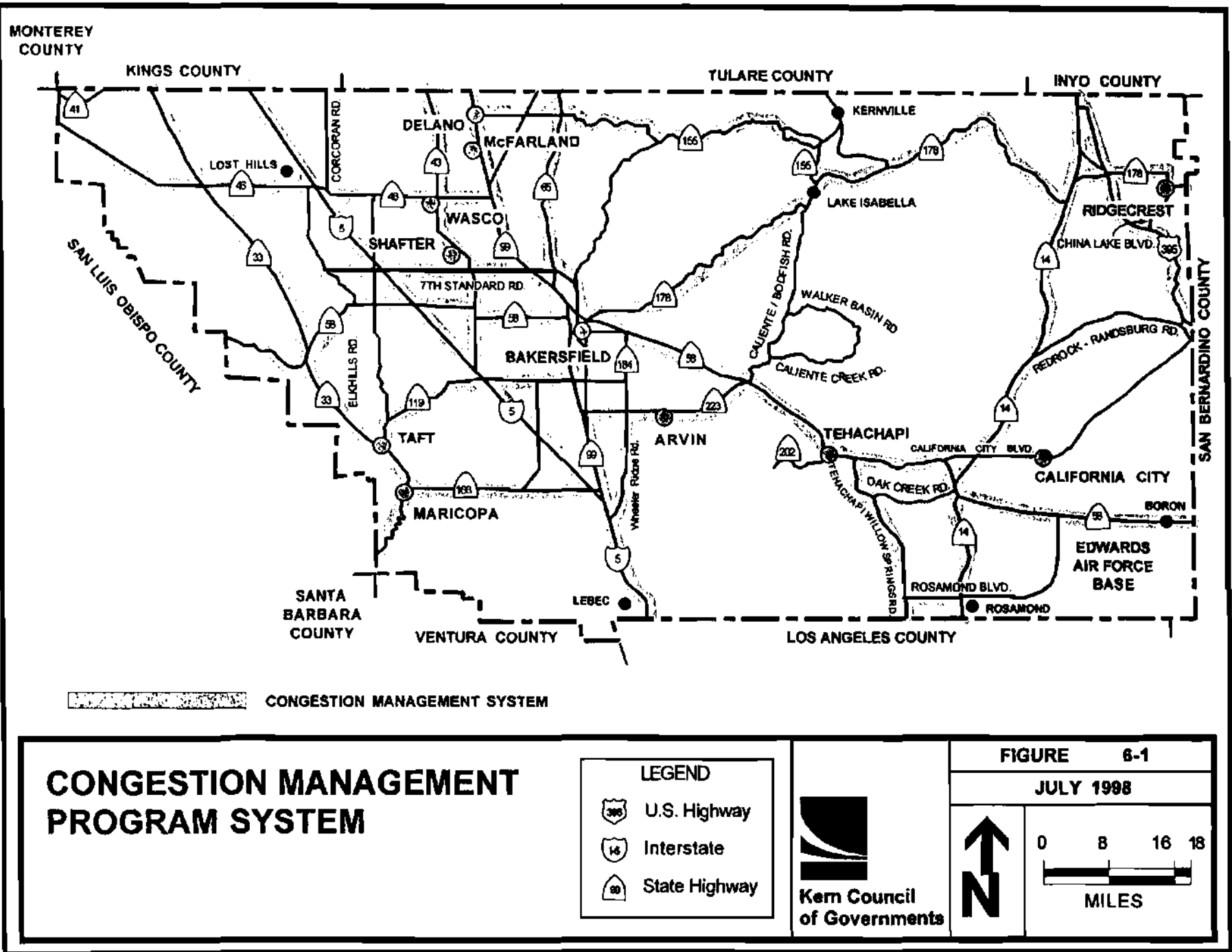
Level of Service "E" has been established as the minimum systemwide LOS traffic standard in the Kern County CMP. Those roads currently experiencing worse traffic congestion have been accepted at their existing traffic level of LOS F. By so doing, cities and the County will not be penalized through loss of gas tax funds for not meeting the new CMP LOS E standard.

Existing LOS F locations are:

Route 204 (Airport Drive to F St.)
Route 58 West (Gibson St. to Route 99)
Route 178 (Oak St. to Beech St.).

These LOS F designations are temporary. As improvements are built and congestion reduced, the designations will be upgraded to the systemwide standard of LOS E.

In addition to the LOS standards of the CMP, some cities and the County of Kern have adopted policies to help them maintain their own LOS standards. In most cases, these local policies are aimed at maintaining LOS C. The CMP standards are not intended to replace local policies by allowing greater congestion; they serve a very different purpose. The locally adopted LOS standards are tied to the city's and County's authority to approve or deny development, require mitigation measures, and construct roadway improvements. That is, the LOS standard is a planning tool to be used in the development review process. Failure to meet the standard does not have direct negative financial impacts.



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Kern CMA, on the other hand, has none of the development review and implementation responsibilities that the cities and County have. The CMA's authority is limited to establishing and monitoring a countywide LOS standard, and withholding state gas tax funds if the standard is not met. Because of these differences, the CMP standard is not viewed as being in conflict with locally-adopted LOS standards.

6.2.3.3 MONITORING LEVEL OF SERVICE

The CMA has responsibility to ensure that all cities within Kern County and unincorporated areas of Kern County are following the CMP. Of particular importance is the establishment of traffic counts. Kern COG completes one coordinated and comprehensive review each year; each city and the County is evaluated in the same manner. Annually, the cities, County and Caltrans undertake traffic counts on their roads. The use of recent peak hour traffic counts eliminates much of the "guesswork" and ensures that the review is based on actual traffic conditions, not estimates or forecasts.

6.2.3.4 CMP PROVISIONS

- A. All roadway segments on the CMP network shall maintain an LOS of E or better.
- B. Any roadway segments on the CMP network that are operating at an LOS worse than "E" on the adoption of the first CMP shall not further degrade.

6.2.4 TRANSIT STANDARDS

6.2.4.1 PURPOSE

The purpose of the transit element is to make the most effective use of transit services as an alternative to the automobile, thereby alleviating congestion on the CMP highway system and improving countywide mobility.

6.2.4.2 REQUIRED COMPONENTS

State law requires the CMP to adopt standards for routing, fixed route frequency and coordination with other operators. Jurisdictions not meeting these transit standards may be considered in violation of the CMP. Unlike traffic LOS standards, jurisdictions may not prepare deficiency plans if transit standards are not met.

Transit Services in Kern County

The Action and Implementation Plan for the Metropolitan CTSA included no plans for the implementation of social service transportation for the rural portions of Kern County. Ten incorporated cities and several unincorporated communities are within the rural portions of the County. However, public transit coverage is extensive and is provided by nine of the cities and Kern County. All these operations are accessible to elderly and disabled riders, and all provide door-to-door service. Most rural services in Kern County provide special service to senior citizens for their activities at senior centers.

Below is a description of services provided by each rural public transit provider. The description includes hours of operation, type of service provided, and number of vehicles used in the operation. Also included are current ridership figures.

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Arvin Transit

Arvin Transit operates a demand responsive service within city limits from 8 a.m. to 5 p.m. Intercity service is operated from Arvin to Bakersfield once daily. A route-deviated service is operated from Arvin to Lamont four times daily. Ridership in fiscal year 1996-97 was 56,999, an increase of 14.26 percent over 1995-96. Arvin Transit operates four vehicles.

California City Transit

This service is operated Monday through Friday from 8:30 am to 3:15 pm and on Saturday from 8:30 am to 3:15 pm. Intercity service is provided three times monthly to Mojave and once monthly to Lancaster. California City Transit carried 28,841 passengers in fiscal year 1996-97, an increase of 26 percent over 1995-96. California City Transit operates four vehicles.

Delano Transit

Delano Transit operates demand responsive service daily within the city limits and in the unincorporated areas surrounding the City. Delano also operates a medical transportation van Monday through Friday between Delano, McFarland, and Bakersfield. Delano operates fourteen vehicles and carried 215,692 passengers in 1995-96. Information for 1996-97 was not available at time of RTP publication.

McFarland Transit

City of McFarland operates one van in a demand responsive service strictly within the city limits. This service operates Monday through Thursday. McFarland Transit carried 14,891 passengers during fiscal year 1995-96. Information for 1996-97 was not available at time of RTP publication.

Ridgecrest Transit

Ridgecrest Transit System operates a demand-responsive service within and around the City of Ridgecrest. Ridgecrest Transit operates Monday through Saturday. Intercity service is offered between Ridgecrest and Inyokern and between Ridgecrest and Randsburg once a week. Ridgecrest operates four vehicles and carried 29,430 passengers in the 1996-97 fiscal year.

Shafter Transit

City of Shafter operates both a demand-responsive and a fixed-route transit system over an expanded area of northwestern Kern County. Shafter Transit operates Monday through Friday with two vehicles in service. In fiscal year 1996-97, Shafter Transit carried 27,499 passengers, an almost 20 percent increase over the previous fiscal year.

Taft Transit

City of Taft operates a demand-responsive transit service Monday through Friday both within the city limits and in the surrounding unincorporated communities. Taft Transit also operates a daily intercity run to Bakersfield with stops at several small communities along the route. Taft operates six vans and carried 86,786 passengers during the 1995-96 fiscal year. Information for 1996-97 was not available at time of RTP publication.

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Tehachapi Transit

City of Tehachapi operates a demand-responsive transit service both within city limits and throughout adjacent unincorporated communities. This system operates three vehicles Monday through Friday. During fiscal year 1996-97, 26,718 passengers took advantage of the service.

Wasco Transit

City of Wasco operates a demand-responsive transit service within its city limits. This service operates Monday through Friday. Two days a week, Wasco Transit offers service to Shafter and Bakersfield. Three vehicles are operated by Wasco Transit. During fiscal year 1996-97, Wasco Transit carried 26,263 passengers.

Kern Regional Transit

County of Kern operates Kern Regional Transit that includes service to the unincorporated communities of Lamont, Kern River Valley and Mojave. In addition, the County has service agreements with several Kern County cities to provide service in unincorporated areas surrounding city limits. KRT carried approximately 377,322 passengers in 1996-97.

6.2.4.3 CMP PROVISIONS

To meet Statute requirements, the following specific standards for the frequency and routing of public transit/alternative mass transit and coordination standards between providers in Kern County have been developed. Although Kern County supports several transit operators, most operate on a demand responsive basis and are not subject to "frequency" and "routing" standards. These operations are run largely to meet the needs of transit dependent residents rather than to relieve congestion. Public transit in rural Kern County are not subject to frequency and routing standards, but may be subject to coordination standards. Rural operators are encouraged to pursue desirable operating standards as defined by Transportation Development Plans, Transportation Development Act requirements, and transit management practices.

Interim Frequency and Routing Standards for Golden Empire Transit District

The following standards shall apply to fixed route transit service operated by the Golden Empire Transit District. Any transit service that does not comply with the standards will have a period of five years from the finding of non-compliance with the Congestion Management Program to conform to standard.

1. **Headways:** Ninety (90) minutes shall be the maximum amount of time between buses on all routes.
2. **Service Availability:** 80 percent of service area population shall be within 1/4 mile of a route.
3. **Directness of Service:** No more than 50 percent of the total system riders shall be required to transfer in order to reach their destination.

Coordination of Transit

All rural transit operations that provide service into Bakersfield shall stop at one of the following Golden Empire Transit transfer points:

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- GET Downtown Transfer Facility
- Southwest Transfer Site
- Bakersfield College (Panorama Campus)
- California State University Bakersfield
- East Hills Mall.

Exempt from this requirement are transit systems that operate solely to carry patients to medical appointments.

Interim Frequency and Routing Standards for General Public Rural Operators

The following general public rural operators currently provide service into Bakersfield and are subject to the transit coordination standards described above for GET:

Arvin Transit
Delano Transit
Kern Regional Transit
Taft Transit
Wasco Transit.

Demand Responsive/Rural Transit Operations

Except for the standards required for GET as discussed above, the following transit operations shall be operated under the provisions of the Transportation Development Act and are not subject to frequency, routing, or coordination standards:

Arvin Transit
California City Transit
Consolidated Transportation Services Agency (CTSA)
Delano Transit
GET-A-Lift
Kern Regional Transit
Ridgecrest Transit
Rosamond to Mojave Transit
Shafter Transit
Taft Transit
Tehachapi Transit
Wasco Transit.

Transit Coordination in the Local Jurisdiction EIR Process

Affected transit operators must be consulted regarding the potential impacts of proposed development projects on transit services. All development projects/programs for which an Environmental Impact Report (EIR) will be prepared shall be required to consult with affected transit operators through the California Environmental Quality Act (CEQA) process. This responsibility strengthens the existing CEQA link between the development process and transportation planning, and is required to be incorporated into the local jurisdiction's land use process.

6.2.5 LAND USE ANALYSIS PROGRAM

6.2.5.1 PURPOSE

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State law requires CMPs to include analysis of the impacts of land use decisions made by local jurisdictions on regional transportation systems, including an estimate of the costs associated with mitigating those impacts. In addition, the Code requires that each local jurisdiction adopt and implement a land use analysis program.

6.2.5.2 REQUIRED COMPONENTS

All of the cities within Kern County and the County itself are required to adopt and implement the land use analysis program outlined below. The CMA is required to monitor program implementation.

Local jurisdictions shall catalog on a quarterly basis all approved general plan amendments and submit to CMA staff. Each GPA submittal will include the following information:

1. Initial environmental study;
2. Vicinity map(s);
3. Map identifying specific land uses proposed within and adjacent to the GPA location;
4. Traffic impact analyses, if prepared;
5. For residential uses: density of development and total planned population; and
6. For nonresidential uses: density of development and gross acreage of each proposed use.

CMA staff will incorporate this information into the existing CMP transportation model data base.

At least annually, the CMA will conduct a transportation model run with level of ultimate growth for all new general plan amendments in order to analyze the traffic impacts on the CMP network. Based on the model analysis, CMA staff will notify local jurisdictions of potentially deficient segments within the CMP network.

The local jurisdiction responsible for the potentially deficient segment will determine the current LOS of that segment. If the deficient segment is on a State route, the local jurisdiction, with the cooperation of Caltrans, will determine the current LOS of that segment. If the responsible local jurisdiction determines that all or part of the deficient segment is below the adopted LOS standard, the responsible jurisdiction may designate individual deficient segments or intersections after the local jurisdiction has prepared and adopted a deficiency plan at a noticed public hearing. Deficiency plans are discussed in Section 9.0 of this document.

If the local jurisdiction determines that the LOS is above the adopted LOS standard, the local jurisdiction shall submit a report describing the methodology for calculating LOS along the segment in question. This report would be submitted to the CMA in lieu of a deficiency plan.

6.2.5.3 CMP PROVISIONS

The Land Use Analysis Program is designed to meet the following goals:

1. Identify local land use decisions that have a significant impact on the CMP system and establish a process that mitigates these impacts;

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2. Meet the legal requirements of the CMP relating to land use impact analysis;
3. Provide information that is useful to local jurisdictions; and
4. Facilitate interjurisdictional cooperation in analyzing and mitigating impacts of land use decisions

The Land Use Analysis Element of the Congestion Management Program establishes three tiers of analysis:

1. General Plan Amendments that generate 1,000 or more average daily vehicle trips above the number that would be produced by the land uses allowed under the adopted General Plan;
2. General Plan updates; and
3. Cumulative analysis of all General Plan Amendments.

In addition, the CMP will review annually new information that affects land use assumptions incorporated in the Regional Traffic Model.

6.2.6 TRANSPORTATION DEMAND MANAGEMENT/TRIP REDUCTION

6.2.6.1 PURPOSE

This element of the CMP satisfies requirements of State law that mandate inclusion of a trip reduction and travel demand element to promote alternative transportation modes and methods. Transportation Demand Management (TDM) programs are designed to reduce the need, or demand, for automobile trips, especially during congested commute times. TDM strategies reduce the number of cars driven, which generally results in less congestion and improved air quality.

Conditions that lead motorists to view carpooling and vanpooling as attractive options to driving alone are not as prevalent in Kern County as they are in more metropolitan California counties. Traffic congestion in the County is generally light (although certain roads are congested during rush hours) and parking at work sites is typically free.

Commute trip distances and times are not lengthy for most commuters in Kern County. Work commute trip times are shorter on the average in the County compared to the Los Angeles metropolitan area. Significantly fewer work commute trips are 30 minutes or longer. This difference is significant, since persons commuting over 30 minutes each day are more likely to consider carpooling and vanpooling as an alternative to driving alone.

6.2.6.2 REQUIRED COMPONENTS

Trip Reduction Program

State law (SB 437) rescinded the requirement that all cities and the County adopt and implement an Employer Trip Reduction and Travel Demand Ordinance (Rule 9001). However, the San Joaquin Valley Unified Air Pollution Control District is urging local agencies to adopt voluntary trip reduction programs. The underlying trip reduction goals, cleaner air and reduced congestion still remain an important issue. The SJVUAPCD's portion of the State Implementation Plan that predicts attainment of the federal ozone standards by 1999 counted on 1.07 tons per day reduction in ROG emissions and 1.04 tons per day

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reduction in No_x emissions from Rule 9001. The obligation to achieve these emission reductions remains, either through a totally voluntary trip reduction program or by another measure to reduce mobile and stationary source emissions.

Local jurisdictions should emphasize strategies that relieve congestion. Congestion relief strategies sometimes alter the characteristics of an automobile trip rather than eliminate the trip entirely. Examples of these methods include car- and van-pools, park and ride lots, telecommuting either at home or at neighborhood work centers, jobs/housing balance and flextime to move trips away from the more congested peak periods. Efforts also include incentives for local governments to make information and services available to the public via computer modem or public electronic terminals.

Although these types of strategies have a beneficial effect on congestion, the air quality benefits are somewhat lessened by the detrimental effects of the cold starts of automobiles. The warmer the engine and components, the greater the evaporation of volatile fuel constituents that are a source of ROG emissions. The colder the engine, the less efficient combustion is and the greater the emissions of unburned hydrocarbons. By reducing the number of trips, overall vehicle emissions are decreased both by reducing the miles traveled and by reducing the emissions related to start up and fuel evaporation.

City and County Development Review Process

As part of their development review process, cities may establish TDM goals for proposed new developments. The City of Bakersfield has required developers of certain master planned communities to design and implement TDM programs as a condition for obtaining project approvals.

Transit

One of the most important strategies making up the CMP's TDM element is the development of public transit service improvements in the County. The importance of transit stems from its ability to provide a reliable and inexpensive alternative to driving alone. Without transit services, it will be difficult for Kern County to reach its trip reduction goals.

Ridesharing Programs

Free rideshare matching services are provided by Kern Rideshare, funded through Caltrans and administered by Kern Council of Governments. Kern Rideshare actively promotes rideshare in several ways:

1. Carpool matchlists are provided to commuters who request information about carpooling and finding carpool partners.
2. Vanpool programs are encouraged through workshops for employers, meeting with worksite groups and/or interested employees.
3. Companies with worksites in outlying areas are assisted in establishing buspools for employees who commute to and from the worksite.

These programs, along with promotional efforts, have aided many employers in the County to establish carpooling and vanpooling programs. Other programs have offered additional incentives to encourage ridesharing by employees.

Trip Reduction Strategies

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Several strategies are being implemented throughout the County to reduce the number of work trips and vehicle miles traveled. These strategies include: (1) telecommuting, where employees work at their home or at a neighborhood work center on one or more days per week; (2) compressed work weeks and/or flexible working hours for employees; (3) use of telephones, fax machines and computers to provide or exchange information; and (4) work site services such as day care, restaurants, and banking.

While several employers in the County are interested in offering telecommuting for employees, few have implemented this program to date. However, many Kern County employers have incorporated compressed and/or flexible work hours as an important component of their trip reduction programs. Compressed work weeks offer employers a reliable method of determining average vehicle ridership versus reliance on participation in carpooling programs.

6.2.6.3 CMP PROVISIONS

The November 1990 Resource Handbook on CMPs, distributed by Caltrans, states that the Trip Reduction and Travel Demand element has at least five purposes:

1. To improve system efficiency by developing measures that will increase the capacity of persons trips on the system with a minimum of capital improvements;
2. To integrate modal options by ensuring that measures chosen are supportive of alternative mode choices;
3. To reduce vehicle trips and vehicle miles traveled by encouraging alternative choices;
4. To improve system LOS by reducing vehicle demand; and
5. To integrate air quality planning requirements with the transportation planning and programming functions.

6.2.7 REGIONAL TRAFFIC MODEL

6.2.7.1 PURPOSE

CMP statute requires the development of a Countywide transportation model and database to quantify the impacts of congestion on the CMP system. The model is used for countywide planning to analyze how various highway, transit, and TDM improvements will assist in addressing congestion. The model also enables Kern COG to conduct air quality analysis on a recommended program of projects, to ensure that the agency recommends a package of projects in local TIP development that work toward air quality goals.

6.2.7.2 REQUIRED COMPONENTS

Kern COG maintains a sophisticated transportation modeling program supported by local agencies and Caltrans that provides the technical basis for all transportation planning activities in the Kern region.

Trip Generation Model

Kern COG has developed a detailed socioeconomic database to support its transportation planning effort. Drawing on information provided by the 1990 U.S. Census, 1990 Dun & Bradstreet employer listings, and California Department of Finance population projects, Kern COG has developed population, housing and

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employment projections to 2020 for each of the region's 703 Transportation Analysis Zones (TAZs). TAZs, which are smaller than census tracts, were developed from Census base maps. The data collected include retail employment, non-retail employment, households and auto availability.

Socioeconomic data within each TAZ determines the amount of internal-internal (i-i) generated trips. The trip generation model provides person trip productions and attractions by the following trip types: (1) Home-based work (HBW); (2) Home-based other (HBO); (3) Non home-based (NHB).

External to external trips (x-x) trips for 1990 gateways or external cordons were developed from the Caltrans 1987 Statewide Model. The actual numbers were not used, but the x-x distribution as a percentage of the total trips were updated to 1990. These percentages applied to half the 1990 traffic count at each external cordon. Then, the two halves of the matrix were averaged and added together. The total of these x-x trips was used to compute the percentages of x-x trips to the traffic count at the cordon. These percentages, for the most part, were similar to the Statewide Model.

The remaining trips at the cordons were distributed external to internal (x-i) productions and internal to external (i-x) attractions. These extra productions and attractions were split up among the three trip types, i.e., HBW (15 percent), HBO (50 percent) and NHB (35 percent), with these percentages taken from the Caltrans 1991 Travel Survey.

The trip generation model was derived from the National Cooperative Highway Research Program Report 187 and adjusted for the Kern region. Caltrans 1990 survey data provided the percentage breakdowns for trips produced and attracted for each trip type. The HBW trips are normalized by multiplying productions by the ratio of total attractions and total productions. The HBO and NHB trips are normalized by multiplying attractions by the ratios of total productions and total attractions.

The objective of trip distribution is to create, by trip type, a person trip table, which is a TAZ-to-TAZ table of trip values. This is done by connecting the productions and attractions between TAZs. These trip connections are based on the relative degree of attractiveness compared to those of all TAZs and the relative degree of travel time between TAZs.

Road Network Model

The Road Network Model includes all freeways, expressways, major arterials, minor arterials and a number of collectors sufficient to serve the travel patterns of the region and relevant to the number and size of the TAZ system. The road network contains streets represented by intersection points and curve points called nodes and by connections between the nodes called links. The network also contains centroids, which are special nodes that contain trip data and socioeconomic data of TAZ's. The centroids are then connected to the rest of the network by centroid connectors that represent a series of local streets. All trips (i-i, x-i, i-x and x-x) are distributed over the capacity constrained network by the model.

Assignment Validation

More than one thousand traffic counts from streets and highways throughout the region were used to validate assigned vehicle volumes on the network. Individual street volumes were examined for reasonableness to the associated counts. An acceptability range of traffic volumes within certain percent differences of the traffic count was established using Caltrans standards. The model's daily Vehicle Miles Traveled (VMT) of 14,865,009 when compared to the HPMS VMT of 15,069,000 was also very close and reasonable (within 1.4 percent).

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6.2.8 CAPITAL IMPROVEMENT PROGRAM

6.2.8.1 PURPOSE

California Government Code Section 65089(b)(5) requires the Congestion Management Program (CMP) to include a seven-year Capital Improvement Program (CIP) to maintain or improve the traffic level of service and transit performance standards developed in Sections 3.0 and 4.0 of this CMP. The CIP also mitigates regional transportation impacts identified by the land use analysis program developed in Section 5.0 of this document. The CIP must conform to transportation-related vehicle emissions air quality mitigation measures.

6.2.8.2 REQUIRED COMPONENTS

The Capital Improvement Program (CIP) is composed of projects along the CMP System that are to be financed with federal, state, local, or private funding over the next seven year period. Most of these projects are currently programmed in the State Transportation Improvement Program (STIP). Some additional projects along CMP principal arterials, however, are programmed with local and/or private funds.

The Financial Element of the 1996 Regional Transportation Plan contains a list of these projects by transportation mode.

Flexible Congestion Relief Projects

Flexible congestion relief projects are defined as those which reduce or avoid congestion on existing routes by increasing the capacity of the transportation system, including new facilities. Projects may be on city streets, county roads, state highways, as well as commuter and urban rail corridors.

Traffic Systems Management Projects

Traffic systems management (TSM) projects are those that increase the number of person trips on the highway system in the peak period without significantly increasing the design capacity of the system (as measured by vehicle trips) and without increasing the number of through traffic lanes.

It should be noted that a TSM project off the State Highway network is not required to be a part of the CMP principal arterial network; however, Government Code requires that it "maintain or improve traffic level of service and transit performance standards developed in the CMP."

Funding Sources

Public funding for CMP projects includes a variety of local, state and federal sources. State and federal programs available for streets and highway projects include: Flexible Congestion Relief, Interregional Road System, and State and Local Partnership programs. These funding programs are subject to the annual budget process of the California Transportation Commission and the legislature. The Flexible Congestion Relief and State and Local Partnership programs must be included in the Regional Transportation Improvement Program (RTIP).

Local funds that can be used include: impact fees, Combined Road Program funds (federal funds returned to local agencies), gas tax revenues, and Transportation Development Act funding. Revenues from a local option sales tax could also be used for projects identified in the CMP. Transit funding includes UMTA Section 9 (operating) Transportation Development Act (Article 4, Transit), Propositions 108 and 116 Rail Bond funds.

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6.2.9 DEFICIENCY PLANS

6.2.9.1 PURPOSE

Because of the complexity involved in measuring and meeting traffic level of service standards, the CMP allows local jurisdictions to prepare Deficiency Plans. Specifically, California law states that "a city or the County may designate individual road segments or intersections (as being deficient) which do not meet the established level of service standards...if the city or the County has adopted a Deficiency Plan" which outlines the means to improve LOS on the specific roadway or CMP system.

In effect, the deficiency plan statutes mean that failure to meet the LOS standard at any given location does not automatically require a finding of nonconformance by Kern COG and the withholding of gas tax funds. A local jurisdiction with a location operating below the LOS standard could remain in conformance with the CMP if they have adopted, and Kern COG has accepted, a deficiency plan.

6.2.9.2 REQUIRED COMPONENTS

Section 65089.3 of the California Government Code describes in detail the required elements of the deficiency plan. The requirements are summarized as follows:

1. An analysis of the causes of the deficiency;
2. A list of improvements necessary for the deficient segment or intersection to achieve the adopted LOS standard and estimated costs of the improvements;
3. A list of improvements, programs or actions, and estimates of costs that will measurably improve the LOS of the CMP network;
4. A list of improvements, programs or actions that will contribute to significant improvements in air quality. The improvements, programs or actions shall be taken from the approved list established by the Air Pollution Control District. The list will include measures such as improved public transit service and facilities, improved nonmotorized transportation facilities, high occupancy vehicle facilities, and transportation control measures;
5. An action plan consisting of improvements identified in Item 2, or improvements, programs and actions identified in Items 3 and 4, that are found to be in the interest of the public's health, safety and welfare. The action plan shall also include a specific implementation schedule and identify a specific funding program.

In those cases where the deficiency plan involves more than a single jurisdiction, Items 1 and 4 above should clearly address the traffic and financial responsibilities of each entity.

6.2.9.3 CMP PROVISIONS

Deficiency Planning Responsibilities

The preparation of a deficiency plan is required when the annual review of traffic circulation indicates that a location is operating below its adopted LOS. Responsibility for the preparation and adoption of a deficiency plan lies with the jurisdiction within which the deficient segment or intersection is located.

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In some cases, however, a location in one city or the County will be deficient because of traffic generated entirely or in part from another city. If this occurs, the responsibility for preparing and adopting the deficiency plan still remains with the city in which the problem is located. Nevertheless, the plan should be developed cooperatively by all of the jurisdictions contributing to the problem. The result should be a deficiency plan that identifies the needed improvements and the "fair share" financial responsibility of each jurisdiction. Caltrans' participation and cooperation is essential for freeway or state highway locations.

Multi-Jurisdictional Deficiency Plans

In those cases where a deficient location in one jurisdiction is caused in part by traffic generated in another jurisdiction, it is suggested that the deficiency plan be prepared cooperatively. At the request of the local jurisdictions, Kern COG would be available to assist in the development of the plan. Kern COG will provide trip data from the countywide transportation model and any other information that would contribute to a mutually acceptable deficiency plan. Kern COG staff, at the request of the local jurisdictions, would also assist in the development of the plan.

Although the deficiency plan must be adopted only by the jurisdiction in which the problem is located, it is strongly recommended that all jurisdictions which participated in its development, and would fund a share of the recommended improvements, adopt the deficiency plan prior to submittal to Kern COG.

In the event that the affected local jurisdictions cannot reach agreement as to the recommended improvements and/or financial participation, or any other element of the plan, the jurisdiction in which the problem is located must still adopt and submit a plan per the schedule described above. Kern COG, following a public hearing, will then make a determination as to the acceptability of the deficiency plan. The COG's acceptance, or its findings along with its rejection, of the plan will serve to resolve outstanding local issues.

Deficiency Plan Approval Process

If, following a noticed public hearing, the CMA determines that a local jurisdiction is not conforming to the adopted LOS standard, the local jurisdiction will be given written notice of the specific area(s) of nonconformance. The local jurisdiction will then have 90 days to prepare and adopt a deficiency plan for submittal to the CMA.

Within 60 days of receipt of the deficiency plan, the CMA will hold a public hearing and either accept or reject the deficiency plan in its entirety. If the plan is rejected, the local jurisdiction will be given written notice of the reasons for that rejection.

The local jurisdiction will then have 60 days to revise, adopt and resubmit the deficiency plan to the CMA. The CMA will again hold a public hearing and either accept or reject the deficiency plan. If the revised deficiency plan is rejected, the CMA will notify the State Controller to withhold gas tax funding from the responsible local jurisdiction. The CMA will not reconsider the deficiency plan for 180 days following notification of the State Controller.

The timelines included in the deficiency plan preparation and approval process have been largely prescribed by State law. However, it is very possible that a deficiency plan would include improvements that require CEQA review. If this occurs, it would be impossible to complete the environmental review prior to submittal of the deficiency plan to CMA. In this instance, the deficiency plan must include a specific schedule for completion of the environmental review process.

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Similarly, it is possible that a deficiency plan would include improvements that are subject to preparation of a Project Study Report (PSR) for Caltrans. If this occurs, the deficiency plan should include a schedule for preparation of the PSR, and a schedule for construction of whatever improvements are expected to be recommended in the PSR.

6.2.10 CONFORMANCE MONITORING

6.2.10.1 PURPOSE

This section identifies specific CMP conformance monitoring procedures to determine if the local jurisdictions are complying with the traffic level of service standards, the interim transit frequency, routing, and coordination requirements, adoption and implementation of the program to analyze the impacts of land use decisions on the CMP System, and compliance with the Transportation Demand Management/Trip Reduction Element.

6.2.10.2 REQUIRED COMPONENTS

California Government Code Section 65089.3(a) states that, "The agency (CMA) shall monitor the implementation of all elements of the CMP. Annual, the agency shall determine if the county and the cities are conforming to the CMP, including, but not limited to, all of the following:

1. Consistency with levels of service and performance standards, except as provided in subdivisions (b) and (c).
2. Adoption and implementation of a trip reduction and travel demand ordinance.
3. Adoption and implementation of a program to analyze the impacts of land use decisions, including the estimate of the costs associated with mitigating these impacts."

6.2.10.3 DETERMINATION OF NONCONFORMANCE

Pursuant to the annual monitoring process, if the CMA finds that a local jurisdiction is not conforming with the provisions of the CMP, the CMA shall hold a noticed public hearing for the purpose of determining conformance. Further, the CMA shall notify the nonconforming jurisdiction in writing of the specific areas of nonconformance. A nonconforming jurisdiction may appeal the determination of nonconformance for the purpose of scheduling a re-hearing before the CMA within 100 days of the initial notice of nonconformance.

The nonconforming jurisdiction shall have 90 days from the date of the receipt of the written notice on nonconformance to come into conformance with the CMP, in accordance with Section 65089.4(a). If the nonconforming jurisdiction has not come into compliance with the CMP, the CMA shall make a finding of nonconformance and shall submit the finding to the California Transportation Commission (CTC) and the State Controller.

In accordance with Government Code Section 65089.4(b), the State Controller shall withhold apportionments of funds required to be apportioned to that nonconforming jurisdiction by Section 2105 of the Streets and Highways Code, until the Controller is notified by the CMA that the city or county is in conformance. If, within the 12-month period following the receipt of a notice of nonconformance, the Controller is notified by the agency that the city or county is in conformance, the Controller shall allocate the apportionments withheld pursuant to this section to the city or county.

If the Controller is not notified by the CMA that the city or county is in conformance pursuant to paragraph (2), the Controller shall allocate the apportionments withheld to the CMA. The CMA shall use the funds

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apportioned for projects of regional significance that are included in the capital improvement program (CIP) required in Section 6.8 of this RTP/CMP/EIR. The funds may also be used for projects identified in a deficiency plan that has been adopted by the CMA. The CMA cannot use the funds for administrative or planning purposes.

6.2.10.4 APPEALS PROCESS

A local jurisdiction found to be in nonconformance with a provision of the CMP may file a written request of appeal within 90 days of the date of the receipt of the written Notice of Nonconformance. Within 100 days of receipt of the written Notice of Appeal from a local jurisdiction previously found to be in nonconformance, the CMA shall schedule a Noticed Public Hearing for the purpose of reconsidering the finding of nonconformance.

Within 60 days of the date the appeal is filed, the local jurisdiction filing the appeal may submit information pertaining to the written Notice of Nonconformance. After the public hearing on the Appeal of the Finding of Nonconformance is concluded, the CMA shall:

1. Notify the local jurisdiction that, because of the information considered at the Appeal Hearing, the Finding of Nonconformance is being withdrawn, or
2. Notify the CTC and the Controller's Office that the local jurisdiction has not come into conformance with the CMP.

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SECTION 7.0**AIR QUALITY CONFORMITY****7.1 INTRODUCTION**

The 1990 Federal Clean Air Act Amendments (CAAA), promulgated November 15, 1990, placed tough new requirements on sources and causes of air pollution in areas failing to meet federal air quality standards, including the San Joaquin Valley Air Basin and the Mojave Desert Air Basin. The CAAA require substantial reductions from all pollution sources, including pollutants from the transportation sector. The CAAA included more stringent requirements for demonstrating that transportation plans and projects contributed to improvements in air quality, contained in the conformity provisions in section 176(a). On November 15, 1993, the EPA published a conformity rule delineating specific criteria and procedures for fulfilling the conformity requirements of the CAAA. This rule was recently updated, published in the Federal Register August 15, 1997 and became effective September 15, 1997.

This conformity assessment fulfills all applicable requirements in the most recent final conformity rule. All references to applicable sections refer to the 1997 final rule, which in many cases differs from the 1993 final rule.

Kern County is contained within two air basins: the San Joaquin Valley Air Basin (SJVAB) and the Mojave Desert Air Basin (MDAB). Each air basin has its own Air Pollution Control District, Plans, and pollutant budgets. Kern COG makes conformity findings for each air basin.

The boundary between air basins in Kern County was amended in September 1995 and approved by ARB. The 1999 Ozone budgets for each air basin do not reflect this change.

Basis and Justification for Single County Conformity Determinations in the San Joaquin Valley

The San Joaquin Valley is an eight-county area containing six Metropolitan Planning Organizations (MPOs) and two rural regional transportation planning agencies (RTPAs). The San Joaquin Valley is a single air pollution planning area (air basin) served by the San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD).

Section 93.132(d) of the 1993 conformity final rule and section 93.124 (d) of the 1997 conformity final rule (40 CFR Part 93) allows for conformity determinations with subregional emission budgets by MPOs if the "applicable implementation plans" (or implementation plan submission) explicitly indicates an intent to create such subregional budgets for the purpose of conformity.

Additionally, section 93.132(e) of the 1993 EPA final rule, and section 93.124 (e) of the 1997 final rule states, "...if a nonattainment area includes more than one MPO, the implementation plan SIP may establish motor vehicle emission budgets for each MPO, or else the MPOs must collectively make a conformity determination for the entire nonattainment area." Each applicable implementation plan in the San Joaquin Valley lists motor vehicle emission budgets by county, to facilitate county-level conformity findings.

The San Joaquin Valley conformity implementation plan (also referred to as the Conformity SIP) was adopted by the SJVUAPCD on January 19, 1995 and submitted to EPA. This plan, never acted on by EPA, specified that conformity determinations in the San Joaquin Valley be performed by the MPOs on a county level. As required by the new conformity final rule, an updated conformity implementation plan is in preparation in order to implement the new section numbering. The conformity procedures in the new conformity SIP, including those pertaining to county-level conformity findings, will not be changed. Conformity determinations have always been performed on a county level in the San Joaquin Valley. In order to ensure that the emission budget for the entire Valley is not exceeded, each county must ensure that

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their motor vehicle emissions do not exceed the emission budget specified for their county, or face a finding of nonconformity and resulting loss of federal funding and approvals.

Mojave Desert Air Basin

The Kern County Air Pollution Control District, the air district for the Mojave Desert Air Basin portion of Kern County, adopted a conformity SIP on April 6, 1995 and adopted the 1997 final conformity rule on January 8, 1998. MDAB is the eastern portion Kern formerly called the South East Desert Air Basin. The name change was effective May 30, 1996.

Organization of Conformity Finding

This conformity documentation is organized in the same order as the FHWA conformity documentation checklist developed by Region IX of FHWA,¹ to facilitate review. Covered are: (1) Plan and TIP status; (2) nonattainment and maintenance designations; (3) SIP status; (4) general conformity criteria and procedures; (5) emissions reduction tests and the budget test; (6) specific consultation; (7) projects in the transportation plan and program; and (8) serious and above ozone and CO nonattainment areas with urbanized area populations over 200,000.

7.2 PLAN AND TIP STATUS

Kern Council of Governments (Kern COG), the MPO for Kern County, has made a conformity determination for the 1998 FTIP and 1998 Regional Transportation Plan (RTP) pursuant to federal EPA Final Rule section 93.104 which was adopted by the Kern COG Board on September 17, 1998. Documentation of this finding is provided on page 24. Consistent with 23 CFR 450 (93.108), the RTP is financially constrained. In addition, both the FTIP and the RTP comply with all applicable conformity requirements of implementation plans and court orders (93.109). Further, the RTP and FTIP include all federal and non-federal regionally significant projects expected in the nonattainment areas (93.122) and meet the content requirements of 93.106 to the extent that it has been the previous practice of Kern COG. The regional transportation emissions analysis was developed in accordance with the requirements of 93.122.

7.3 NONATTAINMENT OR MAINTENANCE AREA DESIGNATIONS

San Joaquin Valley Air Basin

Slightly more than half of Kern County is located in California's San Joaquin Valley Air Basin. The borders of the air basin are defined by mountain and foothill ranges to the east and west. The northern border is consistent with the county line between San Joaquin and Sacramento Counties. The southern border is less defined, but is roughly bounded by the Tehachapi mountains and, to some extent, the Sierra Nevada range. Conformity for the San Joaquin Valley portion of Kern County includes analysis of existing and future air quality impacts for each applicable pollutant. Table 7-1 below lists the federal attainment/maintenance status of each applicable pollutant. There are also State nonattainment designations that differ in some cases from the federal classifications. Since the State classifications are not applicable for conformity, they are not listed here.

¹ This checklist was updated in November 1997 because of the new conformity final rule. This conformity finding follows the updated checklist.

TABLE 7-1
Federal Attainment and Maintenance Status of Air Pollutants
in the San Joaquin Valley Portion of Kern County

Pollutant	Status	Attainment/Maintenance Deadline (Federal)
Ozone (VOC and NO _x)	Nonattainment - Serious	1999
PM ₁₀ (PM ₁₀ , VOC and NO _x)	Nonattainment - Serious	2006
CO	Maintenance	2005

Mojave Desert Air Basin

Mountain ranges define the northwestern border of the Mojave Desert Air Basin. The Kern County Air Pollution Control District (KCAPCD) is responsible for the Kern portion of the Mojave Desert. Conformity for the Mojave Desert portion of Kern County includes analysis of existing and future air quality impacts for each applicable pollutant.

TABLE 7-2
Federal Attainment and Maintenance Status of Air Pollutants
in the Mojave Desert Portion of Kern County

Pollutant	Status	Attainment Deadline (Federal)
Ozone (VOC & NO _x)	Nonattainment/Serious	1999
PM ₁₀ ²	Nonattainment/Moderate ³	2000
CO	Attainment	N/A

This conformity documentation documents conformity for each of these pollutants in each air basin, under all applicable requirements.

7.4 SIP AND MAINTENANCE PLAN STATUS

The CAAA requires adoption of an implementation plan for areas that exceed air quality standards established under the Act. SJVAB and MDAB have approved or operationally complete SIPs for all nonattainment pollutants. No FIPs have ever been developed for SJVAB or MDAB. No NO_x waivers have been approved for either ozone nonattainment area.

² The Indian Wells Valley portion of the Mojave Desert Air Basin (part of the Searles Valley Planning Area) is classified as moderate nonattainment for PM₁₀.

³ ARB requested redesignation to Attainment/Maintenance in 1997.

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Current SIPs in the SJVAB include those developed by the SJVUAPCD, which covers the entire San Joaquin Valley, and some SIPs developed prior to the formation of the SJVUAPCD, applicable only to a specific county. Current SIPs for KCAPCD include those developed for the entire Kern County and those specific to KCAPCD planning areas. Table 7-3 documents the status of all SJVUAPCD SIPs and Table 7-4 documents KCAPCD SIPs.

Prior to the formation of the SJVUAPCD in May 1992, the KCAPCD developed plans for all of Kern County. The Kern County 1978 AQAP/NAP was conditionally approved by EPA in 1981.

At present, applicable SIPs submitted to EPA and which are either approved, or have not yet been acted upon but are complete by operational law, cover all relevant pollutants in SJVAB and MDAB. There are approved motor vehicle emission budgets for the ozone precursors VOC and NO_x in both Kern County air basins, and CO in the San Joaquin Valley portion.

EPA has not taken any formal action on PM₁₀ and PM₁₀ precursor emission budgets for the San Joaquin Valley, submitted July 17, 1997. If EPA takes no action after six months, a Plan is considered to meet minimum requirements by operational law. This six month period ended January 17, 1998.

KCAPCD also submitted a PM₁₀ Plan in January 1997 which included emission budgets. No action has been taken on this Plan, making the budgets applicable for this conformity analysis.

Therefore, motor vehicle emission budgets are in place for all applicable pollutants. In addition, a number of TCMs implemented in previous approved SIPs are still in force. The status of these measures is documented in the section "Status of TCMs in Approved Plans."

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TABLE 7-3
San Joaquin Valley Unified Air Pollution Control District SIP Status

SIP Element	Effective Date	Original SIP Deadline	Current Status	Approval Effective Date
Ozone				
Revised 1993 Rate of Progress Plan (Ozone 1990 - 1996)	November 3, 1994	November 15, 1994	Found Complete April 18, 1995	Approval effective 2/7/97
Ozone Attainment Demonstration Plan	November 14, 1994	November 15, 1994	Found Complete April 18, 1995	Approval Effective 2/7/97 ⁴
Revised Post 1996 Rate of Progress Plan Ozone 1997 - 1999)	September 20, 1995 (revised)	November 15, 1994	Found Complete April 18, 1995	Approval Effective 2/7/97
Carbon Monoxide				
1992 Federal Attainment Plan for Carbon Monoxide	November 18, 1992	November 1992	No Action (became complete by operational law)	
CO Redesignation to Attainment (Federal)	N/A	July 3, 1996		Approval Effective June 1, 1998
PM₁₀				
Moderate Area PM ₁₀ Plan	November 7, 1991	December 7, 1991	Incomplete	None
1994 Serious Area PM ₁₀ Plan (no emission budgets)	September 14, 1994	October 12, 1994	Found Complete February 15, 1995	
1997 PM ₁₀ Attainment Demonstration Plan	May 15, 1997 ⁵	July 17, 1997	Complete by operational law	

⁴ EPA Approved 9/25/96; Approval published FDR on 1/8/96. February 7, 1997 also triggers an 18 month time frame for conformity demonstration.

⁵ Approved by CARB June 26, 1997.

TABLE 7-4
Kern County Unified Air Pollution Control District SIP Status

	Adoption by District	Approval by EPA	Operational Completion	EPA Approval
Ozone				
90-96 15% Ozone Rate of Progress Plan	November 1, 1993	November 15, 1993		
Post 96 Ozone Rate of Progress Plan	December 1, 1994	December 28, 1994		
Ozone Attainment Demonstration Plan	December 1, 1994	December 28, 1994		Approval Effective February 7, 1997
PM10				
Searles Valley Planning Area PM10 SIP (revised)	September 7, 1995	January 8, 1996	February 22, 1994 (Kern Portion Only)	
SVPA PM10 Attainment Demonstration, Maintenance Plan, and Redesignation Request	January 9, 1997	July 28, 1997		

Tables 7-3 and 7-4 show that there are approved or operationally complete plans for all nonattainment pollutants. The latest plan for each pollutant contains motor vehicle emission budgets for use in conformity demonstrations.

7.5 GENERAL CONFORMITY CRITERIA AND PROCEDURES

This section documents general conformity criteria and procedures, including the latest planning assumptions, emission models, consultation procedures, public involvement procedures, and the status of TCMs in approved plans.

Latest Planning Assumptions and Sources

1. The socioeconomic data was developed considering estimates/projections of growth consistent with the County of Kern, the cities, Caltrans, the U.S. Census, Dun and Bradstreet, and State of California Department of Finance (DOF) figures. Kern COG's Transportation Technical Advisory Committee adopted these projections on April 1, 1998. Other modeling parameters were developed or identified by Kern COG consistent with information/data provided by the California Department of Transportation's Caltrans Office of Traffic Improvement and Caltrans District 6, the U.S. Census Bureau and other sources.

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2. The future year networks were developed considering local agency Capital Improvement Program (CIP) and General Plan Circulation Element projects, and financially constrained projects currently programmed in the Federal Transportation Improvement Program and/or the State Transportation Improvement Program (FTIP/STIP), and/or other planned improvement projects along the regionally significant system (reference Section 8, Financial Element).

The modeling assumptions made by Kern COG for the transportation networks using MINUTP modeling software cover the entire County of Kern, its cities, unincorporated areas and air basins. There are 794 Traffic Analysis Zones in the model. The link facility types covering this area are: freeway, expressway, major arterial, minor arterial, collector, diamond ramp, loop ramp and centroid connector in rural, urban and central business district fringe areas.

3. Vehicle miles of travel are validated to a 1994 base year. The Highway Performance Monitoring System VMT is 17.8 million, the model VMT of 17.8 is 1.8% lower than HPMS. This model incorporates a feed-back loop, mode split for transit, and peak period factoring for am, pm, noon, and off peak.

The Calibration-Validation Documentation of the Kern COG Transportation model, developed by Barton-Aschman Associates is contained in Appendix D of the RTP.

VMT and trips by analysis year are shown in the following table.

TABLE 7-5
Countywide Population, Trips and VMT Projections

YEAR	POPULATION	TRIPS	VMT
1999	662,191	1,346,383	20,292,879
2000	676,487	1,733,980	20,813,105
2001	700,460	1,791,203	21,489,575
2003	750,460	1,909,356	22,865,494
2005	805,157	2,019,300	23,810,594
2006	833,690	2,101,987	25,088,660
2010	958,300	2,389,214	28,335,880
2018	1,164,010	3,246,089	36,675,446
2020	1,220,300	3,346,023	38,746,094

Employment Projections

State of California Employment Development Department projections were used where available for 1990 through 1998. The ratio of jobs to households was held relatively constant. These jobs were allocated into TAZs that had appropriately designated land for employment purposes (i.e., industrial or commercial). Employment projections are shown in Table 7-6.

TABLE 7-6
Countywide Employment

YEAR	RETAIL	SERVICE	BASIC	TOTAL EMPLOYMENT IN KERN COUNTY
1999	35,422	150,058	81,014	266,494
2000	36,187	153,297	82,762	272,246
2001	37,469	158,730	85,695	281,894
2003	40,172	170,180	91,877	302,229
2005	43,070	183,455	98,504	324,029
2006	44,596	188,921	101,995	335,512
2010	51,262	217,158	117,240	385,660
2018	69,205	307,499	156,444	533,148
2020	72,901	324,521	165,248	562,670

Documentation of Latest Emission Model

Section 93.111 of the conformity rule requires the use of the latest emission model in development of emission factors to estimate motor vehicle emissions. In California, the official latest emission model is EMFAC7F. In addition, the subsequent version of EMFAC, MVEI7G, is now allowable for use in development of attainment plans.

This conformity analysis uses the officially approved latest model, EMFAC7F, for comparison to motor vehicle emission budgets developed with EMFAC7F. These emission budgets include the VOC and NO_x budgets in the SJVUAPCD and KCAPCD Ozone Attainment Plans, the CO budget in the CO Maintenance Plan and the PM₁₀ budgets in the KCAPCD PM₁₀ Maintenance Plan.

The MVEI7G model was used to develop the San Joaquin Valley PM₁₀ Attainment Demonstration Plan, and associated motor vehicle emission budgets for PM₁₀, VOC, and NO_x. In order to maintain consistency with the emission models used in the attainment plans and to use the applicable latest emission model, the EMFAC7G model is used to assess consistency with the emission budgets in the San Joaquin Valley PM₁₀ ADP.

In addition, some control measures such as heavy duty truck engine requirements are not included in EMFAC7F or EMFAC7G. In order to account for the effects of these measures, control factors developed

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and used by ARB for these measures are applied to the emission factors or to the emission totals as applicable.

This conformity analysis was begun on June 8, 1998. Other air quality and transportation models used include MINUTP and BURDEN.

7.6 DOCUMENTATION OF GENERAL AND SPECIFIC CONSULTATION PROCEDURES

The following interagency, conflict resolution and public involvement consultation procedures have been followed consistent with the draft Conformity SIP adopted by the SJVUAPCD on January 19, 1995 and submitted to EPA, and the draft Conformity SIP adopted by KCAPCD and submitted to EPA on January 8, 1998. These procedures are consistent with the consultation procedures specified in 93.105 (a) (2), 93.105 (c) (1) and the public involvement procedures consistent with 23 CFR 450 (93.112). The procedures have been followed during development of the 1998 RTP and FTIP and the associated air quality finding. General requirements are outlined below.

1. Kern COG, SJVUAPCD, KCAPCD, and Caltrans must consult with each other and with local or regional offices of the EPA, CARB, FHWA, and FTA regarding development of the RTP, the TIP, and associated conformity determination.
2. Interagency consultation procedures, to be implemented by Kern COG, shall include the general factors listed below:
 - a. Develop RTPs and TIPs and make transportation conformity assessments (on a county level) on these plans, including transportation and emission modeling and TCM documentation. Findings on transportation conformity assessments will be made pursuant to interagency consultation and comments received;
 - b. Designate a transportation conformity representative to coordinate with other agencies and attend meetings with other agencies. The transportation conformity representative will solicit input from other agencies during the consultation process;
 - c. Distribute meeting notices and agendas and be responsible for reviewing draft transportation conformity documents and assumptions. Distribute minutes of meetings to invitees;
 - d. Distribute draft and final RTPs and TIPs, as well as associated transportation conformity assessments to all agencies, providing adequate opportunity to comment;
 - e. Review and consider all comments received during the interagency consultation process. Address comments in writing when requested by commenting agency;
 - f. Participate in conflict resolution processes as appropriate;
 - g. Identify regionally significant and exempt projects in accordance with Section 51.392 of the final transportation conformity rule and determine when these definitions should be enhanced to include previously excluded projects because of potential emission impacts;
 - h. Determine which regionally-significant, non-federal projects will be subject to transportation conformity, revision of TIPs and RTPs when conformity is not shown, implement (when appropriate) and monitor progress of TCMs, ensure and coordinate public participation, and

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- coordinate with other TPAs and agencies as appropriate, including coordination of development and distribution of agendas for interagency consultation meetings;
- i. Consult with SJVUAPCD, KCAPCD and other relevant agencies when TPAs are determining whether any new projects are regionally significant. This consultation provides an opportunity to discuss the classification of projects as regionally significant although they may not meet the definition provided in Section 93.101;
 - j. Insure that all project sponsors perform required project-level conformity determinations;
 - k. Solicit early and continuing input from the other agencies in the development of RTPs, TIPs, amendments to these documents, and other transportation-related projects;
 - l. Distribute contents of draft documents and copies of final documents and supporting materials to the agencies; and
 - m. Provide a period of at least 30 days for review and comment by other agencies prior to taking final action to adopt an RTP, TIP, amendments to these documents, and other projects.

Each of the factors identified above include specific procedures that must be followed by Kern COG. A synopsis of procedural requirements and how Kern COG has complied with each procedure is provided below.

1. *Evaluating and choosing a model (or models) and associated methods and assumptions to be used in hot-spot analyses and regional emissions analysis.*

a. Hot Spot Analysis

Hot spot analysis may be performed by local agencies during development of environmental documents for specific improvement projects and also during development of funding applications and funding compliance procedures.

b. Regional Emissions Analysis

To assist with development of the regional emissions analysis, Kern COG developed a countywide transportation model using MINUTP. In 1995, the model was calibrated/validated in accordance with acceptable modeling practice and in consultation with Caltrans Headquarters' Transportation System Information Program in Sacramento and Caltrans District 06 and in accordance with 40 CFR 93 (93.122). Information regarding the calibration/validation process is provided in Appendix D of the RTP.

Following development of various analysis scenarios using MINUTP, transportation model output was used as input into BURDEN to produce estimates of on-road mobile source emissions. BURDEN runs applied in this conformity analysis were made using CARB's mobile emission factor programs EMFAC7F and MVEI7G (also called EMFAC7G) in accordance with guidance available at the time of the runs. As described earlier, EMFAC7F is used to assess consistency with the ozone, PM₁₀, and CO emission budgets while EMFAC7G must be used to demonstrate consistency with the San Joaquin Valley PM₁₀ budgets. The resulting emissions estimated by BURDEN include: TOG, ROG, NO_x, CO, and PM₁₀ (tire wear and exhaust).

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The use of BURDEN provided for consistency between the emissions estimates and the BURDEN developed emissions budget.

The analysis for on-road particulate emissions (PM_{10}) was made using CARB approved methodologies incorporated into EMFAC7G for exhaust emissions and developed on spreadsheets for re-entrained road dust, using methods developed by CARB in development of the 1997 emission inventories. These methods involve growing re-entrained road dust emissions for freeways and major arterials according to increases in the number of centerline miles for these facilities. Emissions for other facility classes are grown in proportion to VMT increases. Both methods utilize CARB emissions factors. This same method was used by CARB to develop the PM_{10} Plan emission inventories and motor vehicle emission budgets.

2. *Determine which minor arterials and other transportation projects (if any) should be considered "regionally significant" for the purposes of regional emissions analysis (in addition to those functionally classified as principal arterial or higher, or fixed guideway systems or extensions that offer an alternative to regional highway travel), and which projects should be considered to have a significant change in design concept and scope from the RTP or TIP in accordance with 40 CFR 93 (93.105).*

Kern COG applied specific criteria to determine which facilities should represent the regionally significant system including:

- ▶ facilities that are designated interstate or state highways; and
- ▶ facilities that are classified as "principal arterials" on the federal Functional Classification System.

In addition to the regionally significant street and highway system, public transit services are also designated as part of the multi-modal transportation system. The planned transit systems are identified in the various Short and Long Range Transit Plans prepared jointly by Kern COG and various transit agencies. Other modes of transportation are also designated as part of the multi-modal system including freight and passenger rail and bikeways. These systems are further described in the RTP. Each of these systems and associated improvement projects are nominated by local agencies for review and approval through the transportation planning process during development of various regional plans or studies.

3. *Evaluating whether projects otherwise exempted from meeting the requirements of Section 93.136 and 93.127 of the transportation conformity rule should be treated as non-exempt in cases where potential adverse emissions impacts may exist for any reason.*

Kern COG has evaluated each improvement project programmed or planned for implementation over the 20 year planning period to determine whether projects are consistent with criteria established by the CAAA. If the project was specifically listed as an exempt project in accordance with the CAAA, then the project was not evaluated. Further, only certain types of projects can be modeled using MINUTP. The types of projects evaluated for purposes of conformity include projects where lanes are added (thereby increasing overall capacity), projects that are changing classification (providing for increased capacity by reducing traffic conflicts which results in increased speeds), and other projects that may enhance the speed of traffic flow along a particular corridor.

As individual projects are funded and evaluated through the environmental review process, emissions are quantified consistent with federal and State emission quantification methodologies.

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4. *Making a determination, as required by Section 93.113(c)(1) of the transportation conformity rule, whether past obstacles to implementation of TCMs that are behind the schedule established in the applicable SIP have been identified and are being overcome, and whether Caltrans or the TPAs are giving maximum priority to approval or funding for TCMs. This process shall also consider whether delays in TCM implementation necessitate revisions to the SIP to remove TCMs or substitute TCMs or other emission reduction measures.*

All TCMs, referenced in Kern County SIPs, have been implemented. Various agencies in Kern County have initiated implementation of additional TCMs contained in the SJVUAPCD's Air Quality Attainment Plan, KCAPCD's AQAP, SJVUAPCD's Revised 1993 Rate of Progress (ROP) Plan and KCAPCD's ROP. The Financial Element of the RTP contains an extensive list of TCM implementation projects including: enhanced transit, passenger rail, bicycle facilities, etc., which are programmed or planned through 2018. Financial resources have also been targeted for implementation of these TCMs during the life of the RTP and the FTIP.

It is not envisioned that delays in TCM implementation will occur or that substitute TCMs will be necessary to meet air quality goals. Further, agencies in Kern County have implemented TCMs committed to in the SIPs. As a result, it is not anticipated that those TCMs will be substituted by other TCMs. SIPs will be revised following EPA approval of the final Post '96 ROP Plans for each Air District. These TCMs will be identified during future conformity findings to help achieve FCAAA and CCAA requirements.

5. *Notification of RTP or TIP revisions or amendments that merely add or delete exempt projects listed in Section 93.126 of the transportation conformity rule.*

Kern COG notifies all affected agencies or persons of proposed amendments or revisions to TIP and RTP projects regardless of whether or not a project is exempt from conformity findings. Kern COG, through its various committees, discusses, evaluates, and recommends the addition, modification, or deletion of any project based on established criteria. The criteria are also developed and evaluated through the Technical Advisory Committee structure. Evaluation criteria applied by Kern COG is consistent with ISTEA Funding Programs, including but not limited to the CMAQ, STP, Public Transit, and other funding programs. Committee recommendations are then made to the Kern COG Policy Board for review and approval. The public is notified of all proposed amendments or revisions to TIP and RTP project listings through the established public hearing process.

6. *Kern COG shall consult with the SJVUAPCD, KCAPCD, CARB, USEPA, Caltrans, FHWA, FTA, and other agencies that receive transportation funds on the following conformity issues: evaluating events that trigger new transportation conformity determinations in addition to those triggering events established in Section 93.104; and consulting on emissions analysis for transportation activities that cross the borders of Kern COG or nonattainment areas or air basins.*

Kern COG staff and staff representatives have consulted with the SJVUAPCD, KCAPCD, CARB, EPA, Caltrans District 06 and Headquarters, FHWA, and FTA during development of the air quality conformity determinations. This consultation process occurred at several levels, including: phone conversations and scheduled meetings, during meetings with other San Joaquin Valley RTPAs to ensure Valleywide consistency, scheduled workshops either held by SJVUAPCD, Caltrans, CARB, EPA, FHWA, and/or FTA, Statewide Air Quality meetings, and Statewide Modeling Group meetings. Kern COG has contacted each of these agencies to clarify specific issues related to the conformity process. Kern COG has, and will continue to request verification regarding conformity requirements to ensure that determinations are thorough and consistent with conformity rules.

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In addition, Kern COG together with other RTPAs in the San Joaquin Valley, have formed various groups to ensure Valleywide consistency during development of the RTP, TIP, transportation models, TCMs, and associated conformity determinations. Kern COG staff has met with appropriate committees or groups to accomplish this high level of consistency. Such groups or committees include:

- ▶ Valley COG Directors Group composed of the executive directors of each San Joaquin Valley RTPA (the Group also invites to each of the meetings both Caltrans Districts 06 and 10 which have jurisdiction within the San Joaquin Valley, the SJVUAPCD, as well as other federal, state, or local agency representatives dependent on the issue of discussion);
- ▶ Valleywide RTP and TIP Committee, which discusses the general content of RTPs and TIPs in the Valley and develops the Valleywide RTP; and
- ▶ Valleywide Transportation Modeling Group, which meets to discuss conformity issues of concern to all the COGs and to discuss conformity requirements. This group has met to review modeling procedures and conformity rule requirements specific to the development of RTP and TIP determinations. In addition, the Group meets with the SJVUAPCD, Caltrans, CARB, EPA, and FHWA to assist with preparation of emissions budgets, development and applicability of TCMs, review of conformity issues, and development of ROP and SIP amendments.

7. *Where the metropolitan planning area does not cover the entire nonattainment or maintenance area, Kern COG and Caltrans shall undertake cooperative planning and analysis for purposes of determining conformity of all projects outside the metropolitan area and within the nonattainment or maintenance area.*

Compliance with this requirement has been ensured through procedures outlined in the Memorandum of Understanding (MOU) between Kern COG, other San Joaquin Valley RTPAs, and the SJVUAPCD. Kern COG, in conjunction with the other seven Valley RTPAs, has entered into the agreement with the SJVUAPCD to ensure maximum compatibility in air quality, transportation planning, and project implementation. A declared intent is to address the conformity provisions of ISTEA. The MOU specifically provides for participation in the development of TCMs, emissions inventories, and emissions budgets for use by the SJVUAPCD during development of the San Joaquin Valley ROP/SIP pursuant to the 1990 FCAA.

A similar MOU is maintained with KCAPCD for the Mojave Desert Air Basin area of Kern County.

8. *Kern COG shall ensure that member jurisdictions regularly disclose plans for construction of regionally significant projects that are not FHWA/FTA projects (including projects for which alternative locations, design concept and scope, or the no build option are still being considered), including those by recipients of funds designated under Title 23 USC of the Federal Transit Act, and ensure that any changes to those plans are regularly disclosed.*

Kern COG, in accordance with State law, prepares an RTP and a TIP every two years. During that two year period, local agencies and Caltrans are consulted to determine if any projects along the Regionally Significant Roads System are to be funded by funds other than federal or State. For purposes of the 1998 RTP, the Financial Element contains a list of projects by funding source. These projects are proposed for implementation using a variety of funding sources, including local funds along the regionally significant system. A similar list is provided in the 1998 FTIP.

9. *The TPAs and other recipients of funds designated under Title 23 USC or the Federal Transit Act shall assign a location and design concept and scope of projects that are disclosed to Kern COG by its member agencies, but whose sponsors have not yet decided these features in sufficient detail to perform the regional emissions analysis according to the requirements of section 93.122. These assignments will be*

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based on the judgement of Kern COG and will be discussed at the technical level; issues of regional importance requiring policy-level decisions will be addressed by the TPA Directors' Committee.

Kern COG has coordinated development of the Transit and Financial Elements with all local agencies, transit providers, Caltrans, and the FTA. Transit improvements listed in the RTP Financial Element are intended to address future growth (consistent with projected population growth) in transit dependent services.

10. *Kern COG shall consult on the design, schedule, and funding of research and data collection efforts and regional transportation model development (e.g., household/travel transportation surveys) initially at the technical level through the Valleywide Modeling Group. Issues of regional and/or policy significance will be presented to the TPA Directors' Committee.*

Kern COG developed review and comment procedures related to development and update of the regional transportation model and databases. A model peer review committee was formed before the calibration and validation of the model. Each step of the model (trip generation, auto occupancy, etc.) was taken through the peer review process for review and approval.

In addition, Kern COG meets regularly with the Valleywide Modeling Group to discuss important modeling issues related to air quality conformity and transportation forecasting. When issues are identified that require Valleywide policy direction or approval, Modeling Group issues, research, findings, and recommendations are presented to the Valleywide COG Directors' Group for consideration.

7.7 CONFLICT RESOLUTION

Conflicts relating to transportation conformity determinations among State agencies, or between State agencies, or between State agencies and Kern COG, or among Kern COG member jurisdictions, shall be identified by Kern COG in writing to another TPA or agency and (as appropriate) the SJVUAPCD, KCAPCD, CARB, Caltrans, FHWA, FTA, and USEPA. The TPA or member jurisdiction initially identifying the conflict has the responsibility for determining which agencies should be notified. Kern COG's or agency's written notice shall: explain the nature of the conflict, review options for resolving the conflict, describe Kern COG's or agency's proposal to resolve the conflict, explain the consequences of not reaching resolution, and request that comments on the matter be received within two weeks.

Kern COG has not been involved in disputes with other TPAs in the San Joaquin Valley, or with SJVUAPCD, KCAPCD, Caltrans, CARB, EPA, FHWA, or FTA during development of the 1998 RTP, the 1998 FTIP, or the associated conformity determination. Further, Kern COG member agencies have not been in conflict with either Kern COG or with each other. Should conflicts arise, Kern COG will follow conflict resolution procedures outlined in the Final Conformity Rule and consult with all affected agencies or parties to the maximum extent possible.

7.8 PUBLIC CONSULTATION PROCEDURES

1. *Affected agencies making conformity determinations on transportation plans, programs, and projects shall establish a proactive public involvement process and will allow opportunity for public review and comment prior to taking formal action on a transportation conformity determination for all RTPs and TIPs, consistent with the requirements of 23 CFR part 450. In addition, any such agency must specifically address in writing all public comments about known plans for a regionally significant project that is not receiving FHWA or FTA funding or approval and that has not been properly reflected in the emissions analysis supporting a proposed conformity finding for a transportation plan or TIP. These agencies will also provide opportunity for public involvement in transportation conformity determinations for projects where otherwise*

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required by law. Local entities specified in Section 450.31(b)(4) of FHWA/FTA's Statewide Planning: Metropolitan Planning are to be included in the public consultation process.

During development of the 1998 RTP and 1998 FTIP, Kern COG has prepared and carried out the following public involvement program. A more detailed description of Kern COG's Public Participation Process is provided in Appendix A of the 1998 RTP.

The Negative Declaration for the 1998 RTP was distributed to a large number of interested/affected agencies and the public. A 30 day review and comment period was provided consistent with CEQA requirements. Comments received were distributed to responsible Kern COG staff (or staff representatives) to assist with development of the Negative Declaration. A copy of the Negative Declaration, a list of agencies/persons consulted, and a copy of all comments on the Environmental Assessment are provided in Appendix C of the 1998 RTP.

Kern COG conducted public and local agency meetings/workshops during development of the RTP and EIR. These workshops were conducted in the City of Bakersfield and in California City. These two cities were chosen since they represent the highest concentrations of population in the County. A list of workshop attendees and comments received, are on file at Kern COG.

A public hearing was held before the Kern COG Policy Board regarding review and approval/adoption/certification of the 1998 RTP, and the 1998 FTIP. Copies of all notices, persons/agency comments, and Kern COG responses are provided in Appendix C.

7.9 STATUS OF TCMS IN APPROVED PLANS

This conformity determination establishes that local air quality planning programs are sufficient to demonstrate that TCMs have been identified through a legitimate planning process; that these measures have received the necessary federal, state, and local commitments to ensure implementation; and that these commitments are being maintained through identification in the 1998 RTP and 1998 FTIP. These TCMs are mitigation measures as identified in Section 4.4.2. Description of SIP TCMs that have been or are currently being implemented, is provided.

1978 Air Quality Nonattainment Area Plan TCMs⁶

This SIP contains a limited number of TCMs and a commitment to implement them in an effort to reduce emissions and assist in meeting National Ambient Air Quality Standards. Since adoption of the SIP, these TCMs have been implemented as have a number of additional measures not identified in the SIP. The plan identified four TCMs as reasonably available for implementation in Kern County.

Control Measure: **Inspection/Maintenance**

Status: Ongoing

Agency: State

Mandatory annual CO and HC emissions testing for all on-road vehicles and repair of those vehicles which fail the test.

Control Measure: **Transit Improvement**

Status: Ongoing

Agency: Golden Empire Transit

⁶ As described in original 1978 document.

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Program to accommodate projected growth in ridership on the Golden Empire Transit (GET) system.

Control Measure: Traffic Flow Improvement

Status: Ongoing

Agency: County, cities

Traffic flow improvement to minimize congestion on non-freeway streets, increase average speed 10 percent, reduce stop-starts of vehicles.

Control Measure: Bikeways Plan

Status: Ongoing

Agency: Kern COG, county, cities

An extensive bikeways plan was prepared by the Kern County Planning Commission in cooperation with the cities. The plan included community as well as regional routes and a schedule for implementation.

SJV 1994 Ozone Attainment Demonstration Plan

The Employer Trip Reduction Ordinance (TRO), which is a TCM in the 1994 Ozone ADP, required a regulation in order to be implemented. Rule 9001, the Employer TRO, was adopted by the SJVUAPCD Governing Board on January 20, 1994. In October 1995, Governor Wilson signed SB437, creating H&SC section 40929(a) which prohibits any public agency from requiring an employer to implement an employee trip reduction program unless expressly required by federal law.

Although Rule 9001 was subsequently repealed by the Air District Governing Board, the TRO remains in the Ozone SIP, and thus requires a demonstration of timely implementation. To address this issue, Kern COG has done considerable research into the TCMs currently being implemented in Kern County that are not part of the TCMs in applicable SIPs. This effort was to demonstrate the fulfillment of the intent of Rule 9001, since mandatory implementation is not lawful at this time.

Kern COG conducted an informal survey within Kern County to determine to what extent the TRO was being implemented on a voluntary basis. Contact names and company addresses were derived from old Rule 9001 Employee Transportation Coordinator lists as well as from the Kern Commuter Connection database.

The Employer Survey was sent to employee representatives to determine the types of programs offered by the company. Eighty-five surveys were sent out by mail, with a 45 percent return rate. The results of this survey are summarized in the following Table.

**TABLE 7-7
EMPLOYER SURVEY RESULTS**

TCM PROGRAM	% of Responding Employers Implementing Program
Bus/Shuttle Service	21
Sale of or Subsidized Transit Passes	0
Company Sponsored Vanpool	11
Employee Formed Vanpool	5
Ridesharing	66
Preferential Rideshare Treatment	11
Guaranteed Ride Home	8
Bike Racks/Lockers	47
Changing Rooms/Showers	47
Compressed Work Week	42
Telecommuting/Work at Home	13

As these results indicate, programs contained within the original TRO are currently being implemented on a voluntary basis at companies located throughout Kern County. These numbers serve as an indication that there are numerous employers in Kern County implementing the intent of the TRO on a voluntary basis.

Date of Last Conforming TIP and Plan

As required by the FHWA and FTA in section 93.114, this section documents the date of last conforming transportation plan and program. The FTIP and RTP were last conformed and approved on August 7, 1998.

7.10 EMISSION REDUCTION TESTS AND THE BUDGET TEST

The 1997 conformity final rule requires the use of emission budget tests (section 93.118) or, if emission budgets are not available, the use of emission reduction tests (section 93.119). The emission budget test is met when emissions resulting from when the transportation plan or program is implemented are consistent with the motor vehicle emission budget specified in the applicable SIP. Consistency is satisfied if it is demonstrated that emissions are less than or equal to the motor vehicle emissions budget.

The emission reduction tests include the build/no-build (Action/Baseline) test and the "1990 test," as follows: emissions when the transportation plan or program is implemented (build case) must be (1) less than when the plan or program is not implemented and (2) less by any nonzero amount than 1990 emissions. The Baseline case is not modeled unless emission reduction tests must be met.

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Currently all applicable pollutants have emission budgets in effect. SJVUAPCD has EPA-approved ozone and CO plans containing emission budgets and KCAPCD has EPA-approved ozone budgets, and submitted PM₁₀ budgets. In addition, the San Joaquin Valley PM₁₀ ADP, submitted to EPA on July 17, 1997, is considered complete and adequate by operational law. Below, the status and requirements for each pollutant are discussed. This conformity assessment documents consistency with all applicable emission budgets. These include VOC and NO_x under both Ozone Plans, CO under the CO Plan, PM₁₀ under the KCAPCD PM₁₀ Plan, and VOC, NO_x, and PM₁₀ under the SJVUAPCD PM₁₀ Plan. Air Basin splits are made consistent with budget development of each applicable SIP.

TABLE 7-8

Pollutant	Applicable Test	EPA Adequacy
Ozone (VOC, NO _x) - SJVAB	Budget	Yes
Ozone (VOC, NO _x) - MDAB	Budget	Yes
PM ₁₀ (PM ₁₀ , VOC, NO _x) - SJVAB	Budget	Yes
PM ₁₀ - MDAB	Budget	Yes
CO - SJVAB	Budget	Yes

7.11 OZONE

San Joaquin Valley Portion of Kern

The emission budgets from the San Joaquin Valley Ozone Attainment Plan are specified for the year 1999 for VOC and NO_x in tons per average summer ozone season day. The Ozone Attainment Plan was approved by EPA on February 7, 1997. These budgets must be maintained for all years subsequent to 1999. The budgets were developed by CARB using the EMFAC7F model with ozone season temperatures, and all currently applicable control measures in the San Joaquin Valley. The same procedures were followed in developing the emission results detailed in Table 7-9.

TABLE 7-9
VOC and NO_x in the San Joaquin Valley Air Basin (Kern Portion)
(tons per day)

	VOC	NO _x
1999 BUDGET	15.88	26.21
1999	14.66	23.51
2003	11.46	21.85
2010	7.29	17.65
2018	9.49	23.45
2020	10.18	25.60

Mojave Desert Portion of Kern

The emission budgets from the Mojave Desert Ozone Attainment Plan are specified for the year 1999 for VOC and NO_x in tons per average summer ozone season day. The Ozone Attainment Plan was approved by EPA on February 7, 1997. These budgets must be maintained for all years subsequent to 1999. The budgets were developed by CARB using the EMFAC7F model with ozone season temperatures, and all currently applicable control measures in MDAB. The same procedures were followed in developing the emission results detailed in Table 7-10.

TABLE 7-10
VOC and NO_x in the Mojave Desert Air Basin (Kern Portion)
(tons per day)

	VOC	NO _x
1999 BUDGET	3.05	7.46
1999	2.68	6.65
2003	2.21	6.44
2010	1.42	5.11
2018	1.83	6.77
2020	1.98	7.37

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7.12 CARBON MONOXIDE (CO)

San Joaquin Valley Portion of Kern

The emission budget for CO for the Bakersfield Metropolitan Area portion of Kern County is specified in the 1996 California CO Redesignation Request and Maintenance Plan as 223 tons per average winter day. EPA has proposed approval for this plan. These budgets are effective now and must be maintained for all subsequent years.

In this conformity analysis, emission estimates were made using the EMFAC7F model, and the same temperature and control measure conditions assumed by CARB in development of the budget.

Table 7-11 documents the conformity tests for CO.

TABLE 7-11
CO in the San Joaquin Valley Air Basin, Kern Portion
(tons per day)

	CO
1995 BUDGET	223
2003	140
2005	129
2010	118
2018	158
2020	160

Mojave Desert Portion of Kern

MDAB is in attainment for CO.

7.13 PARTICULATE MATTER LESS THAN 10 MICRONS (PM₁₀)

San Joaquin Valley Portion of Kern

Emission budgets for PM₁₀ and precursors VOC and NO_x are specified in the 1997 San Joaquin Valley PM₁₀ Attainment Demonstration Plan. Documentation of conformity for PM-10 and its precursors is documented in the Table 7-10. Emissions of VOC, NO_x, and PM-10 exhaust were calculated with EMFAC7G. Summer and winter conditions are averaged: summer emission factors are multiplied by 8/12 and winter factors by 4/12. PM₁₀ emissions from re-entrained road dust are calculated consistent with CARB methods. These involve growing emissions in proportion to the growth in centerline miles of freeways and major arterials, and in proportion to VMT for all other facility classes. These calculations utilize facility-specific emission factors for re-entrained road dust developed by ARB. Local control factors (such as dust control programs) are also applied, using control factors developed by ARB for these measures in the San Joaquin Valley.

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Budgets are provided for 1993, 2001, 2006, and 2020. As stated in the San Joaquin Valley PM₁₀ Attainment Demonstration Plan, motor vehicle emission budgets for intervening milestone years are to be interpolated. A required milestone year, due to Reasonable Further Progress requirements, is 2003.

TABLE 7-12
PM₁₀ and PM₁₀-Related NO_x and VOC
in the San Joaquin Valley Air Basin (Kern Portion)

	PM ₁₀	NO _x	VOC
2001 BUDGET	13.97	35.13	22.77
2001	13.74	29.29	17.60
2003 BUDGET	14.39	32.85	19.80
2003	14.04	27.05	15.31
2006 BUDGET	15.03	29.43	15.35
2006	14.72	23.66	11.70
2010 BUDGET	15.56	28.59	12.93
2010	15.18	20.93	8.46
2018 BUDGET	16.61	26.93	8.10
2018	16.48	22.53	6.38
2020 BUDGET	16.87	26.51	6.89
2020	16.65	22.24	5.66

Mojave Desert Portion of Kern

The submitted PM₁₀ Attainment Demonstration and Maintenance Plan for the Mojave Desert anticipates attainment by the year 2000. This Plan contains budgets for the attainment year of 2000, and for 2010, the end of the maintenance period.

TABLE 7-13
PM₁₀ in the Mojave Desert Air Basin (Kern Portion)
(tons per day)

	PM ₁₀
2000 BUDGET	2.18
2000	1.91
2003	1.95
2010 BUDGET	2.17
2010	2.06
2018	1.56
2020	1.73

PM₁₀ for the SVPA in 2018 is 2.28 tpd which exceeds the budget. In the approved 1994 RTP, PM₁₀ in MDAB in the year 2016 was reduced by 7.23 tpd by taking credit for the paving of unpaved shoulders and roads. The SVPA is approximately 10% of MDAB. Ten percent of 7.23 is .72 tpd. This amount applied to 2.28 makes the total tons per day of PM₁₀ 1.56 which is under the budget. This same amount was applied to the year 2020 total of 2.45 bringing down to 1.73, which is also under the budget of 2.17.

The analysis documented in the Tables above was performed according to 93.122 (a) and 93.122 (c).

Documentation of Transportation Modeling Requirements (93.122 (b))

According to 93.122 (b) network-based travel models used in developing travel activity estimates for the Plan and Program must, at a minimum, satisfy the following requirements (directly quoted from the final rule).

(i) Network-based travel models must be validated against observed counts (peak and off-peak, if possible) for a base year that is not more than 10 years prior to the date of the conformity determination. Model forecasts must be analyzed for reasonableness and compared to historical trends and other factors, and the results must be documented.

The Kern COG MINUTP model is validated against more than 1000 counts taken in 1995. See Appendix D of the RTP.

(ii) Land use, population, employment, and other network-based travel model assumptions must be documented and based on the best available information.

See Section 7-5 and Appendix D of the RTP.

(iii) Scenarios of land development and use must be consistent with the future transportation system alternatives for which emissions are being estimated. The distribution of employment and residences for different transportation options must be reasonable.

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Land use projections reflect reasonable expectations of growth distribution based on actions being taken.

(iv) A capacity-sensitive assignment methodology must be used, and emissions estimates must be based on a methodology which differentiates between peak and off-peak link volumes and speeds and uses speeds based on final assigned volumes.

The model has am, pm, midday and off-peak capabilities and a feedback loop. See Appendix D of the RTP.

(v) Zone-to-zone travel impedances used to distribute trips between origin and destination pairs must be in reasonable agreement with the travel times that are estimated from final assigned traffic volumes. Where use of transit currently is anticipated to be a significant factor in satisfying transportation demand, these times should also be used for modeling mode splits.

The current level of transit ridership in Kern County is less than one percent. This percentage is not projected to increase significantly in the future.

(vi) Network-based travel models must be reasonably sensitive to changes in the time(s), cost(s), and other factors affecting travel choices.

Trip distribution and mode choice are not sensitive to pricing. Pricing is not a significant factor in Kern County because of the lack of toll roads and bridges. Parking and transit costs are not enough to impact mode choice at this time. If and when pricing becomes a sensitive issue and improvements are made in modeling, pricing sensitivity will be applied.

(2) Reasonable methods in accordance with good practice must be used to estimate traffic speeds and delays in a manner that is sensitive to the estimated volume of travel on each roadway segment represented in the network-based travel model.

Speeds were based on posted speed limits and then adjusted by observation. The following speeds were initially used: Rural Freeway, 70; Urban Freeway, 65; Major Arterial, 45; Minor Arterial, 40; Collector, 35; Diamond Ramp, 40; Loop Ramp, 35; Centroid, 15. No cap was assigned to speeds. Speed studies from the City of Bakersfield were used for facilities within the Metropolitan Bakersfield area.

(3) Highway Performance Monitoring System (HPMS) estimates of vehicle miles traveled (VMT) shall be considered the primary measure of VMT within the portion of the nonattainment or maintenance area and for the functional classes of roadways included in HPMS, for urban areas which are sampled on a separate urban area basis. For areas with network-based travel models, a factor (or factors) may be developed to reconcile and calibrate the network-based travel model estimates of VMT in the base year of its validation to the HPMS estimates for the same period. These factors may then be applied to model estimates of future VMT. In this factoring process, consideration will be given to differences between HPMS and network-based travel models, such as differences in the facility coverage of the HPMS and the modeled network description. Locally developed count-based programs and other departures from these procedures are permitted subject to the interagency consultation procedures of §93.105(c)(1)(i).

Vehicle miles of travel is validated to a 1994 base year. The Highway Performance Monitoring System VMT is 17.8 million, the model VMT of 17.8 is 1.8% lower than HPMS. See Appendix D of the RTP.

PM₁₀ From Construction-Related Fugitive Dust

For areas in which the implementation plan does not identify construction-related fugitive PM₁₀ as a contributor to the nonattainment problem, the fugitive PM₁₀ emissions associated with highway and transit

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project construction are not required to be considered in the regional emissions analysis. The 1997 San Joaquin Valley PM₁₀ Attainment Demonstration Plan does identify construction-related dust as a contributor to the nonattainment problem; however, these emissions are not included in the inventory or emission budget and therefore cannot be evaluated.

7.14 PROJECTS IN THE TRANSPORTATION PLAN AND PROGRAM

As per 93.125 of the Conformity Rule, projects listed in Section 8 have been collectively mitigated within this document. All projects have PM₁₀ construction impacts but are mitigated given implementation of PM₁₀ Plan Rules and Regulations by the SJVUAPCD. All projects are from a conforming plan or program per EPA Final Rule 93.102c and have been included for conformity determinations. Projects that are exempt from regional analysis per 93.127 are listed in the FTIP, as amended. Exempt projects are found in the categories of State Highway Operation Protection Plan (SHOPP), Safety, Minors, Rail and Nonmotorized (Landscape and Bike Path Projects). Most projects within the Transit and Surface Transportation Program (STP) categories are also exempt or have been mitigated.

7.15 SERIOUS AND ABOVE OZONE AND CO NONATTAINMENT AREAS WITH URBANIZED POPULATION OVER 200,000

Kern COG certifies that a network-based travel model MINUTP is in use that was validated against observed counts (peak and off-peak if possible) for 1994, a base year that is not more than 10 years prior to the date of this conformity assessment. See Appendix D of the RTP, Calibration/Validation Documentation.

The model results have been analyzed for reasonableness and compared to historical trends and other factors.

7.16 CONFORMITY FINDINGS

The following conformity findings are made considering projects contained in the 1998 RTP:

- The 1998 RTP for Kern County is consistent with the latest available mobile source emissions estimates. Social and economic data projections have been developed by Kern COG in its capacity as the Affiliate State Census Data Center for Kern County. Further, the data has been approved by the cities and the County. Kern COG traffic model has applied these projections using generally accepted modeling practices to forecast future year travel. Resultant travel characteristics have been processed using BURDEN including the appropriate emissions factor model approved for this period, either EMFAC7F1.1A or EMFAC7G, to forecast emissions for VOC, NO_x, CO and PM₁₀.
- The 1998 RTP for Kern County provides for the expeditious implementation of TCMs. All TCMs identified in the 1978 SIP have been implemented and are now ongoing programs. This finding is also consistent with, and supportive of, TCMs contained in both Air Basins' Air Quality Attainment Plans and the San Joaquin Valley TCM Program. The TCM Rate of Progress Plan (currently being revised by SJVUAPCD) and the Plan for the Mojave Desert Air Basin, indicate that significant progress has been and will continue to be made to implement applicable TCMs.
- The 1998 RTP for Kern County contributes to annual reductions in VOC, NO_x, PM₁₀ and CO emissions. This finding is based on an analysis of each emission budget scenario. Positive conformity findings have been made for each pollutant by analysis year in SJVAB and MDAB.

**DOCUMENTATION IN THE CONFORMITY ANALYSIS
FOR TRANSPORTATION PLANS AND PROGRAMS
FHWA CHECKLIST
Updated November 1997**

PAGE 7-	1. PLAN AND TIP STATUS
2	Indicate the date that the MPO will officially adopt, accept or approve the transportation plan and/or program and make a conformity determination (93.104).
2	Indicate that the transportation plan and/or program is financially constrained consistent with 23 CFR 450 (93.108).
2	Where applicable, indicate that the transportation plan and /or program complies with all applicable conformity requirements of implementation plans and court orders (93.109).
2	Indicate that the transportation plan and/or program includes all federal and non-federal regionally significant projects expected in the nonattainment or maintenance area (93.122).
2	Indicate that the content of the transportation plan meets the content requirements of 93.106(c), to the extent it has been the previous practice of the MPO.
	2. NONATTAINMENT OR MAINTENANCE AREA DESIGNATION
3	Discuss the applicable pollutants and precursors for which the area is classified as nonattainment or maintenance.
	3. SIP, MAINTENANCE PLAN OR FIP STATUS
5	Provide, if applicable, a status of any control strategy SIP and any findings related to submittal, completeness, approval or disapproval by EPA.
3	Document, if applicable, whether an EPA promulgated FIP includes a mobile source emissions budget for each applicable precursor or pollutant.
N/A	Indicate whether EPA has approved a NO _x waiver for the ozone nonattainment area.
	4. GENERAL CONFORMITY CRITERIA AND PROCEDURES
6	Document the latest planning assumptions (93.110).
8	Document the use of the latest emissions model, the date that the conformity analysis was started, and the type of other air quality models and transportation models used (93.111).

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9	Until the Conformity SIP is approved by EPA, document the fulfillment of the consultation procedures specified in 93.105(a)(2), 93.105(c)(1) and 93.105(e) and public involvement procedures consistent with 23 CFR 450 (93.112).
15	List all TCMs in an EPA approved SIP or promulgated FIP and indicate their schedules. Discuss their status in terms of implementation consistent with the schedules in the applicable implementation plan and state that nothing interferes with implementation (93.113).
N/A	List any delayed TCMs in the applicable implementation plans and describe the measures being taken (commitments, approvals, resources, staffing, etc.) to overcome obstacles to implementation (93.113).
N/A	List all projects, programs, or activities which are used in the conformity analysis and require a regulation in order to be implemented and the date that the regulation was adopted or the date of an opt-in to a federally enforced program approved by EPA (93.122 (a)(3)).
17	Identify the date of the last conforming transportation plan and program by the FHWA and FTA (93.114).
	5. EMISSIONS REDUCTION TESTS AND THE BUDGET TEST
18	Provide a table that shows for each pollutant and precursor, whether the emissions reduction tests or the budget test apply to conformity. Indicate whether the emissions budget has been deemed adequate.
N/A	If the emissions reduction tests apply, provide in a table the conformity analysis according to 93.119.
19	If the budget test applies, provide in a table, the conformity analysis according to 93.119.
22	Document that the regional transportation-related emissions analysis was done according to 93.122 (a) and 93.122 (c) (including consistency with the assumptions for the emissions budget in the SIP).
24	In areas that are serious and above for ozone and CO and have an urbanized area over 200,000, document the requirements of 93.122(b).
23	In areas where the PM10 SIP identifies construction-related fugitive PM10 as a contributor to the nonattainment problem, document consideration of PM10 emissions in the conformity analysis.
	6. SPECIFIC CONSULTATION

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9	Document the consultation with the EPA Regional Office, and include responses to any concerns from EPA.
9	Document the consultation with the transportation and air quality agencies and responses to any written concerns.
9	Document all agreements with public and private entities related to consultation on the transportation plan and program.
9	State that the public involvement procedures developed by the MPO as required under 23 CFR 450 were fully carried out and document any responses to concerns from the public.
7. PROJECTS IN THE TRANSPORTATION PLAN AND PROGRAM	
24	List all projects in the transportation plan or program that require mitigation to determine conformity of the transportation plan or program (93.125).
24	List all projects in the transportation plan or program that are exempt from regional analysis (93.126).
24	List all projects that have not completed a major step as defined in 93.102(c), and state that these projects have been included in the action scenario for one transportation plan and program conformity determination.
24	List all traffic signal synchronization projects that have been approved or implemented, and have been included in the conformity analysis.
8. SERIOUS AND ABOVE OZONE AND CO NONATTAINMENT AREAS WITH URBANIZED AREA POPULATIONS OVER 200,000	
22	Document that a network-based travel model is in use that is validated against observed counts (peak and off-peak, if possible) for a base year that is not more than 10 years prior to the date of the conformity determination.
22	Document that the model results have been analyzed for reasonableness and compared to historical trends and other factors.
22	Document the land use, population, employment, and other network-based travel model assumptions.
22	Indicate that the scenarios of land development are consistent with the future transportation system alternatives, and the distribution of employment and residences for different transportation options is reasonable.

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23	Document that a capacity-sensitive assignment methodology must be used, and the emissions estimates are based on a methodology which differentiates between peak and off-peak link volumes and speeds, and uses speeds based on final assigned volumes.
23	Document that the zone-to-zone travel impedances used to distribute trips is in reasonable agreement with the travel times that are estimated from final assigned traffic volumes.
23	Where transit is a significant factor, indicate that zone-to-zone travel impedances used to distribute trips are also used for modeling mode split.
23	Indicate that travel models are reasonably sensitive to changes in time, cost, and other factors affecting travel choices.
23	Indicate that reasonable methods were used to estimate traffic speeds and delays in a manner that is sensitive to the estimated volume of travel on each roadway segment represented in the travel model.
23	Document the use of HPMS to estimate VMT or a locally developed count-based program or procedures that have been subject to the consultation process.

SECTION 8.0

FINANCIAL ELEMENT

8.1 OVERVIEW

The Financial Element provides a twenty-year Capital Improvement Plan (CIP) of multi-modal transportation projects in Kern County. The CIP is presented in five year increments, or quinquenniums. Transportation projects are listed in seven groups: State Highways; Local Streets and Roads, Transit, Passenger Rail, High Speed Rail, Non-Motorized Transportation and Aviation. Revenue projections for each group are divided into two areas: 1) Capital Improvement, and 2) Operations and Maintenance. The CIP for Kern County is financially constrained within a twenty-year time period. Projects not financially constrained are also presented in each CIP grouping to indicate the anticipated overall need of the region's transportation system. Section 8.2 provides an overview of transportation funding sources identified in the CIP. Section 8.3 defines assumptions used for revenue projections. Seven groups of projects are identified in Sections 8.4 through 8.10. A funding summary is presented in Section 8.11. The twenty-year CIP presented in the next six sections (there is no CIP for Aviation) provide a constrained of project list for each group. Section 8.12 provides a discussion of future funding sources.

As discussed in Section 6, Intelligent Transportation and Congestion Management Systems, Kern COG has completed a study that includes a funding estimate for the ITS Deployment Plan. The plan identified six proposed programs that integrate ITS efforts already underway in the Kern region. The six programs include:

1. Communication Network Development Program
2. Traffic and Incident Management Program
3. Rural Traveler Safety Program
4. Kern Informed Traveler Program
5. Transit Operation Program
6. Enhanced Emergency Response Program.

The implementation of these programs as recommended in the Early Deployment Plan will make transportation throughout Kern County safer, more efficient, and noticeably more pleasant for travelers.

Funding projections for the ten year deployment plan total \$29.6 million. Annual operations and maintenance costs are projected at \$1.3 million. The Federal Transportation Improvement Program includes signal synchronization projects throughout the metropolitan Bakersfield area and a traffic operations center (TOC) in Bakersfield. These projects have been partly funded using Congestion Mitigation and Air Quality (CMAQ) dollars. State highways in the Kern region have included changeable message sign projects at various locations. The deployment plan will require the full cooperation by all member agencies to identify funding sources and to implement the program effectively.

Lastly, recent state legislation has made provisions for MPO's to set aside one-half percent of their STP allocation for programming and monitoring of transportation projects. Kern Council of Governments will avail themselves of this provision.

Senate Bill 45, approved in October 1997 (Chapter 622 of the *Government Code*) precipitated changes in the State's transportation programming process for regional planning agencies throughout California. The bill changed the seven-year state transportation improvement program to a four-year program, with a six-year interim cycle for 1998. It eliminated many state transportation programs, replacing them with a streamlined funding distribution formula for state and federal transportation dollars. SB 45 transferred the burden of project prioritization and selection from the state to regional agencies. This legislation has impacted transportation project planning and development by placing emphasis on accountability, flexibility

and simplicity. Transportation Improvement Program submittals must be accepted by the State in their entirety or rejected altogether. New STIP procedures also provide a stable funding source for future planning and programming.

8.2 FUNDING SOURCES

Federal Funding Sources

Regional Surface Transportation Program (RSTP)

Transportation projects functionally classified higher than a local road or rural minor collector are eligible under the RSTP. Projects in this category are proposed by the Regional Transportation Planning Agencies (RTPAs) and Metropolitan Planning Organizations (MPOs) in cooperation with the State. Projects must be included in an approved Federal Statewide Transportation Improvement Program (FSTIP). Eligible projects include:

1. Construction, reconstruction, rehabilitation, resurfacing, restoration, and operational improvements for highways and bridges;
2. Capital costs for transit projects and publicly owned intracity or intercity bus terminals and facilities;
3. Car pool projects, fringe and corridor parking facilities and programs, and bicycle transportation and pedestrian walkways;
4. Highway and transit safety improvements and programs, hazard eliminations, projects to mitigate hazards caused by wildlife, and railway-highway grade crossings;
5. Highway and transit research and development, and technology transfer programs;
6. Capital and operating costs for traffic monitoring, management, and control facilities and programs;
7. Surface transportation planning programs;
8. Transportation enhancement activities (TEAs);
9. Transportation control measures (TCMs);
10. Participation in wetlands mitigation efforts.

State legislation allows an RTPA to exchange RSTP funds for State Highway Account (SHA) funds. Exchange funds are required to be apportioned for projects in the same way as RSTP funds. When RSTP funds are exchanged, the local match and federal design and environmental standards are not required. Kern County is currently a recipient of RSTP exchange funds.

Congestion Management and Air Quality (CMAQ)

This region's non-attainment status for ambient air quality standards qualifies the Kern MPO to obtain Congestion Management and Air Quality (CMAQ) funding. Project eligibility for CMAQ funding is stringent compared to other programs. Based on FHWA guidelines, the following criteria may be used to determine project eligibility:

1. The project or program must be a transportation project or program consistent with Title 23 and the Federal Transit Act;

2. The project or program must have demonstrated emissions reduction and contribute to attainment of the national ambient air quality standards;
3. The project or program must be located in a carbon monoxide or ozone nonattainment area;
4. Under certain conditions, projects or programs may be implemented in PM₁₀ nonattainment areas;
5. The project or program must be a new or expanded activity with the exception of transit bus replacements and rail fleets, including locomotives;
6. The project or program must be a capital improvement project or program, including inspection and maintenance programs and conversion or replacement of centrally-fueled fleets to alternative fuels including leasing of vehicles, with the following exceptions:
 - a. Operating expenses are eligible for a period of two years from the inception of new or expanded traffic monitoring, management and control operations;
 - b. Operating expenses are eligible for a period of two years for new or expanded transit services;
 - c. Operating expenses are eligible for a period of two years for other new or expanded air quality beneficial projects and programs;
7. The project or program must be in public ownership or meet the guidance criteria for public/private initiatives including pay-back or depreciated value of asset provisions;
8. CMAQ funds should be programmed for the implementation of transportation control measures in the nonattainment area's EPA-approved State Implementation Plan or promulgated Federal Implementation Plan. TCMs are the highest priority projects for implementation. The use of CMAQ funds for transportation control measures must also comply with all other eligibility criteria. In addition, TEA-21 specifically excludes two transportation control measures from the CMAQ Program: (1) reducing emissions from extreme cold-start conditions; and (2) programs to encourage removal of pre-1980 vehicles;
9. The project or program should be programmed for implementation prior to the latest scheduled attainment date for the nonattainment area;
10. For transit projects and programs, the project's sponsor must meet all of the Federal Transit Administration requirements, such as Section 13c, Title VI, Eligible Grantee;
11. The project or program should be selected by the MPO through a cooperative process involving Caltrans, the MPO, state and local air quality agencies;
12. The project or program must be in a transportation plan and a transportation improvement program that has a conformity determination by the MPO, FHWA and FTA;
13. The project or program must meet the National Environmental Policy Act (NEPA) requirements, as well as the requirements of the California Environmental Quality Act (CEQA);
14. The project or program must be included in an approved Federal Transportation Improvement Program;
15. The project or program is considered eligible at the time that funds are obligated to the project sponsor;
16. Congestion Management, Public Transportation Facilities and Equipment, and Intermodal Transportation Facilities and Systems are eligible for CMAQ funds where it can be demonstrated that they are likely to contribute to the attainment of the national ambient air quality standards;
17. Only project planning and feasibility studies and air quality monitoring that lead directly to construction of facilities or new services and programs are eligible for CMAQ funds. General planning activities or air quality monitoring are not eligible for CMAQ funds.

Transportation Enhancement Activities (TEA) Program

Projects must have a direct relationship to the intermodal transportation system by function, proximity or impact. Also, projects must be over and above required project environmental mitigation and fall within the established ten categories for project eligibility (See Section 5.2.9). The selection process includes an application submittal from the project sponsor to the RTPA or MPO. Priorities are established for the projects and presented to the California Transportation Commission (CTC) for adoption. FHWA approves the projects in the FSTIP. The funding source for TEA projects also stems from TEA-21 legislation. These funds constitute a ten percent set-aside of California's STP funds and may be used in the following ways:

1. Facilities for pedestrians and bicycles;
2. Acquisition of scenic easements and scenic or historic sites;
3. Scenic or historic highway programs;
4. Landscaping and other scenic beautification;
5. Historic preservation;
6. Rehabilitation and operation of historic transportation buildings, structures, or facilities (including historic railroad facilities and canals);
7. Preservation of abandoned railway corridors (including conversion and use of pedestrian or bicycle trails);
8. Control and removal of outdoor advertising;
9. Archaeological planning and research;
10. Mitigation of water pollution caused by highway runoff.

Bridge Replacement and Rehabilitation Program (HBRR)

Local agency bridges, regardless of functional classification, are eligible. Also included are the Low-Water Crossing Program and the Bridge Rail Replacement Program. Replacement and rehabilitation projects must be on a priority list of eligible bridges developed in cooperation with local agencies and Caltrans Division of Structures. Low-water crossing replacement projects are not on the priority list. Paint, rail, and seismic projects are funded by transfer of HBRR funds to Regional Surface Transportation Program (RSTP) and, therefore, need not be on the priority list. Bridge replacement and rehabilitation projects are nominated by the local agencies and selected from Division of Structures' Eligible Bridge List. The prioritized list of bridges is based on sufficiency ratings. Replacement candidates are picked from among each agency's ten most deficient bridges. Seismic projects are selected from the Division of Structures' list of bridges that passed initial screening but on analysis were found ineligible as Category 1 or mandatory seismic retrofit. Projects must be included in the Federal Statewide Transportation Improvement Program (FSTIP).

Highway/Railroad Grade Crossing Safety Improvement Program

Eligible projects include any at-grade crossing between a road and a railroad track recommended for improvement by the California Public Utilities Commission (CPUC) and where a ten percent match funding source is identified. The selection process begins with any project identified by Caltrans, a local agency, or a railroad as requiring investigation. The investigation consists of field review, discussion between all parties, a jointly developed recommended improvement plan and a preliminary schedule of funding. The final selection criteria is initiated when the local agency provides the ten percent matching funds to a project on the CPUC list of recommended highway/rail grade crossing projects. An eligible project must be in the FSTIP.

Public Lands Highway Program (PLH)

Highway improvement or construction projects within, adjacent to, or providing access to public lands are eligible under the Forest Highway or Discretionary portions of the PLH Program. Projects may also include transportation planning for tourism and recreational travel that benefit recreational development; adjacent vehicular parking areas; interpretive signs; acquisition of scenic easements and scenic or historic sites; provision for pedestrians and bicycles; construction and reconstruction of roadside rest areas including sanitary and water facilities; and other appropriate public road facilities such as visitor centers.

Hazard Elimination Safety Program (HES)

Eligible projects include highway safety improvement projects on the federal-aid system, including rural minor collectors and local roads. Projects must correct an identified hazardous condition. A statewide HES list is established on a two-year cycle. Applications are solicited by Caltrans from all interested local agencies. Two lists are developed; one based on a calculated Safety Index, accounting for about 25 percent of the funding. The other 75 percent is a list prioritized by work type, i.e., signs, guardrail, etc., based on a Federal Highway Administration (FHWA) "Annual Safety Report," which rates work categories by a nationwide benefit/cost ratio. Historically, out of the applications received, only about 25 percent of the applications are funded. Projects must be in an approved FSTIP.

Emergency Relief Program (ER)

Emergency Relief (ER) funds are intended to aid states and local highway agencies in paying unusually heavy expenses of repairing serious damage to federal-aid highways resulting from natural disasters or catastrophic failure. Only work that exceeds heavy maintenance, is extraordinary, and restores the facility to its previous level of service is eligible. After a disaster has been declared and the Federal Highway Administration (FHWA) has received approval from the Secretary of Transportation that ER funds are available, damage assessment forms are completed and approved by a team composed of representatives of Caltrans, FHWA and the local agency on a project-by-project basis. Emergency opening work and preliminary engineering for restoration can begin immediately, and reimbursements is retroactive to the beginning of the disaster. All restoration work must begin an approved FSTIP and an authorization to proceed must be approved before any construction for restoration can begin.

Federal Transit Administration (FTA)

The federal department of mass transportation, under US DOT (Department of Transportation), administers various transit funds described below. It is the sister agency of FHWA (Federal Highway Administration). The Federal Transit laws, 49 USC, Sections 1602 and 1607(a), requires that recipients of federal funding for operating and capital expenses be listed in the FTIP.

49USC5307: This program provides financial operating and capital purchase assistance to operators of urban public transportation services. Funds are apportioned to urbanized areas with population of over 50,000 based on a formula using population and population density.

49USC5310: This program provides funding to private nonprofit corporations for capital expenses to support the provision of transportation services to meet the special needs of elderly and disabled persons. Capital assistance is provided for up to 80 percent of the net project cost.

49USC5311: This program provides funding, based on a formula, to urban areas with a population under 50,000. These funds are for capital and/or operating assistance. Capital assistance is provided for up to 80 percent of the net project cost. Operational assistance has a 50 percent federal participation ceiling. The

State also uses a discretionary pot of Section 18 funds to make discretionary grants to rural operators.

Federal Airport Improvement Program (AIP)

The Federal Airport Improvement Program (AIP) is a Federal Aviation Administration (FAA) formula grant that provides funding to local airports based on number of annual passengers enplanements. A local match of ten percent is required.

State and Local Funding Sources

Motor Vehicle Fuel Tax

Approximately 51 percent of these revenues are retained by the State, with the remainder split between the counties and cities. Funds for this program are generated by the nine cents per gallon gasoline and diesel tax. The State uses these revenues for construction, operation, and maintenance of state highways. Cities and counties use the funds for roadway construction, operation, and maintenance.

State Transit Assistance Fund (STAF)

These funds are derived from a portion of the local state use tax on petroleum fuels, but subject to legislative appropriation. These funds may be used for mass transit only.

California Aid to Airports Program

This program includes the Acquisition and Development Program, Annual Grant Program and the Airport Loan Program.

Bikeway Account

State law provides a minimum of \$360,000 annually in the Bikeways Account to be used for statewide capital improvements.

Grade Separation Program

Projects that involve a structure separating the vehicular roadway from the railroad tracks are eligible for this funding source. A project may include all approaches, ramps, connections, drainage, and other construction required to make the grade separation operable and to effect the separation of grades. The Public Utilities Commission (PUC) establishes a list of prioritized projects.

Environmental Enhancement and Mitigation (EEM) Program

To be eligible for this funding, the proposed project must demonstrate that it directly or indirectly mitigates an identified impact to a new or existing facility. The project cannot, however, interfere with the operation or safety of the facilities or limit the facility from current planned improvements or anticipated future improvements. Categories for Environmental Enhancement and Mitigation Program projects include: (1) Highway Landscape and Urban Forestry, (2) Resource Lands and (3) Roadside Recreational. Highway Landscape and Urban Forestry projects must offset vehicular emissions of carbon dioxide by planting trees. Although the project may occur outside or within the facility right of way, this category is not intended to replace the landscaping projects normally funded by the responsible public agency. Resource Lands include projects involved with the acquisition, restoration or enhancement of resource lands in reparation for loss of the same within the corridor of a proposed facility. Eligible Roadside Recreational projects are those

projects that enhance the use of nearby land by providing rest areas, scenic overlooks, trails, trail heads, snow-parks and parks. The selection process include proposal submittal to the State Resources Agency for evaluation. A determination is made that the project meets CEQA requirements and a list of recommended projects is then submitted to the CTC for approval on a project by project basis.

Petroleum Violation Escrow Account (PVEA)

These funds are available to projects that save energy and provide restitution to the public resulting from federal court decisions that order refunds to the states for petroleum product price overcharges. The project selection process requires special legislation to implement. The California Department of Finance determines which court case will fund the project. The project is then submitted to the California Energy Commission and approved by the U.S. Department of Energy (DOE).

Local Transportation Fund (LTF)

The Transportation Development Act (TDA) creates a Local Transportation Fund for transit and streets and roads in each county. This fund is derived from 1/4 cent of the 7.25 cent retail sales tax collected statewide. These funds are apportioned based on population to cities within Kern County, Kern County, and Golden Empire Transit District and the Consolidated transportation Service Agency (CTSA). Before any TDA funds are used for streets and roads, the claimant must hold an unmet transit needs hearing to determine whether any unmet transit needs can be reasonably met. LTF funds are expected to increase in future years based on forecast increases of retail sales for Kern County. Portions of the LTF funds are also used as local match for the funding of bike path and landscape projects.

Transit Fares

TDA requires that rural transit operators recover at least ten percent of operating costs and urbanized area transit operators recover at least 20 percent. Fare revenues go directly into operation of the transit system. Fare structures vary from operator to operator.

Private Contribution

As a condition to development or mitigation, developers are often required to fund transportation improvements. For example, the new freeway ramps at State Route 178 and Mount Vernon Avenue were financed through private monies. Kern County and the City of Bakersfield have also instituted a site impact fee. Other impact fee programs in effect include: 1) the Rosamond Impact Fee Program and 2) the Bakersfield Impact Fee Program. These fees are used as local funding for transportation projects within the Metropolitan Bakersfield area and the Rosamond-Willow Springs area.

8.3 FINANCIAL REVENUE PROJECTIONS

Methodology

Kern COG has assembled a comprehensive inventory of the transportation revenue programs currently in use by all governmental entities (federal, state and local) and has projected these revenues based on historical averages over the twenty year life of the plan. The financial revenue projects developed for each revenue source are documented and based upon the best available data from existing sources, (i.e. FHWA, Caltrans, Kern COG historical data, member agency Capital Improvement Programs, etc.) When making long range transportation revenue projections for a twenty-year time frame, a number of factors need to be recognized. Foremost among these factors is that federal/state funding has a long history of not

materializing as originally promised because of:

- Ever-changing political, economic and social conditions and resultant public policies that impact transportation funding;
- Gasoline-based fuel efficient technologies that reduce gas tax revenue streams;
- Less than 100 per cent federal allocation of transportation dollars;
- Escalation of project and administrative costs beyond original expectations;
- Increased costs based on additional federal and state regulations and environmental mitigation requirements;
- Unforeseen natural disasters (i.e., earthquakes) and the subsequent requirements (i.e., seismic retrofit) that take dollars away from programmed projects.

Revenue Projection Assumptions

- National Highway System (NHS) and Surface Transportation Program (STP) dollars are combined with State Highway Account dollars to fund the State Transportation Improvement Program, or STIP. Total funding available for the STIP is apportioned into county shares. The state highway program has been divided into two funding groups, the Regional Improvement Program (RIP), which programs 75 percent of STIP funding and the Interregional Improvement Program (IIP), which programs 25 percent of the funding. Of the 25 percent, only 10 percent at the State's discretion, can be used in urban areas. The remaining 15 percent is dedicated toward rural highway projects and other programs such as rail.
- The County-share estimates to fund state highway projects are based on Caltrans projections of Kern County's share and projected out over 20 years. Inflation rates were not applied. The first five years assumed current FTIP project funding plus one additional year of funding. The second five years assumes a RIP rate of \$45 million per year for four years plus an initial \$57 million and \$20 million per year from the discretionary (IIP) source. The last two quinquenniums assume \$45 million (RIP) and \$20 million (IIP) per year.
- State Highway Operations and Protection Program (SHOPP) - The assumption of this funding projection is to calculate the last five years of SHOPP projects based on the FTIP.
- Safety Program - Safety dollars had been programmed in three separate lump sums: HBRR, Section 130 and Rail. These were averaged over the last 5 years based on FTIP information and extrapolated. No inflation factors were applied.
- Regional Surface Transportation Program - Annual apportionment amounts were averaged and projected out over 20 years. Inflation factors were not applied.
- Congestion Mitigation and Air Quality (CMAQ) Program - Annual apportionment amounts were averaged and projected out 20 years. Inflation factors were not applied.
- Bakersfield Impact Fee and Rosamond Impact Fee - This program is based on development which is difficult to predict. An average amount was determined to have been collected over the last few years. Amounts were projected lineally with growth and inflation factors applied.
- FTA Funding -49 USC 5307 - This value was projected out using inflation, growth factors and past FTIP programming.

- **FTA Funding -49 USC 5310** - This value was projected out using inflation, growth factors and past FTIP programming.
- **FTA Funding - 49 USC 5311** - This value was projected out using inflation, growth factors and past FTIP programming.
- **Local Transportation Fund** - This local tax fund was projected out using inflation, growth factors and past FTIP programming.
- **Transportation Enhancement Activity (TEA)** - This federal fund is 10 percent of the estimated county share. That value was projected out without inflation factors.

8.4 STATE HIGHWAYS CAPITAL IMPROVEMENT PROGRAM

State Highways Operations and Maintenance

Preventive maintenance expenditures are essential in order to avoid the costly repairs of neglected transportation infrastructure. Studies show that reconstruction costs are approximately five times the cost per mile of preventive maintenance. The operations and maintenance of our state highways are programmed in the State Highways and Operations Protection Program (SHOPP). Projected revenues shown in Table 8-1 are derived from past SHOPP programming as reflected in the FTIP. SHOPP revenues are combined with smaller discretionary safety programs.

**Table 8-1
State Highways Operations and Maintenance Revenues**

QUINQUENNium		1998-2002	2003-2007	2008-2013	2014-2018
NHS and STP (SHOPP) - State Highway Operations and Protection Plan	Federal	\$180,000,000	\$180,000,000	\$180,000,000	\$180,000,000
NHS and STP (Minors) - Non-capacity projects only	Federal / State	\$2,500,000	\$2,500,000	\$2,500,000	\$2,500,000
NHS and STP (Safety) - Includes HBRR, Section 130 and Rail	State / Federal	\$7,000,000	\$7,000,000	\$7,000,000	\$7,000,000
Sub-totals		\$189,500,000	\$189,500,000	\$189,500,000	\$189,500,000
TOTAL		\$758,000,000			

State Highways Constrained Capital Improvement Revenues

State highway funding for capital projects are shown in Table 8-2 below. The estimate for the first quinquennium is made up of currently funded state projects in the FTIP for approximately \$90 million, plus one half of the 1998 STIP funding estimate of \$115 million projected out for the 2002/03 and 2003/04 federal fiscal years. The second quinquennium is comprised of the county share estimate of \$57.5 million, \$140 million of the estimated county share rate of \$45 million per year plus an additional \$20 million per year for discretionary highway dollars. Included in the estimates for the last three quinquenniums are both the county share estimate of \$45 million per year (RIP) and a projected estimate of \$20 million per year for discretionary funding (IIP).

**Table 8-2
STIP Capital Improvement Revenues**

QUINQUENNIAL		1998-2002	2003-2007	2008-2013	2014-2018
NHS and STP	State/ Federal	\$460,000,000	\$295,000,000	\$300,000,000	\$300,000,000
Local match	Local	\$1,000,000	\$8,000,000	\$6,000,000	\$7,000,000
Sub-total		\$461,000,000	\$304,000,000	\$306,000,000	\$307,000,000
TOTAL		\$1,378,000,000			

State Highways Constrained Capital Improvement Program

The highway capital improvement program is based on recent projected funding estimates for the current 1998 State Transportation Improvement Program (STIP). The estimates reflect funding for two state transportation project groups: the Regional Improvement Program and the Interregional Improvement Program (IIP). The STIP program consists of the apportioned county share for state and federal dollars. *In addition to state highway projects, there are regionally significant local road projects listed in this section. For the sake of clarity, these projects are included as part of the state highway group because they are programmed using state highway funding.*

The regional list of State Transportation Improvement Program (STIP) projects listed in the CIP were developed using a ranking system. The ranking system allows for analysis of a proposed project in two areas, performance and impact. The performance criteria are comprised of five areas: safety, delay, volume capacity deficiencies, demand and system continuity. Projects in this group have been reviewed and ranked on their technical merits and regional impact. The 100 point technical and regional criteria are summarized below:

PART I - PROJECT ELIGIBILITY

Is the proposed project identified in one or more planning documents, such as local circulation plans, state planning documents, corridor studies or other planning studies?

PART II - REGIONAL IMPACT CRITERIA MAXIMUM OF 25 POINTS

Is the project identified on the Congestion Management System (CMS) Network? 2 Points

Does the project identify air quality benefits? 3 Points

Does the project enhance existing transportation facilities? 5 Points

Does the project identify multi-modal benefits? 5 Points

Does the project identify economic benefits to the community? 5 Points

Will there be a local funding contribution? 5 Points

PART III - PERFORMANCE CRITERIA MAXIMUM OF 75 POINTS

Safety Index 21 Points

Fatality Index 2 Points

Injury Index 2 Points

Volume Capacity 8 Points

Demand 11 Points

System Continuity / Completeness 6 Points

The process to review and rank projects for potential funding in either the Regional Improvement Program (RIP) or the Interregional Improvement Program (IIP) is currently under review by staff to refine not only the technical criteria but policy level guidance in the course of action taken as projects move from the RTP to the funding document or RTIP and FTIP.

**Table 8-3
Constrained STIP Capital Improvement Program**

1ST QUINQUENNium - 1998/99 TO 2002/03			
ROUTE	POSTMILE	PROJECT DESCRIPTION	TOTAL
LOCAL ROAD		(ENVIRONMENTAL STUDY) IN DELANO ON CECIL AVENUE FROM ALBANY ST. TO BROWNING RD. - SAFETY UPGRADE; TRAFFIC SYSTEMS MANAGEMENT (TSM) RECONSTRUCTION	\$1,000,000
LOCAL ROAD		(ENVIRONMENTAL STUDY) NEAR SHAFTER ON 7TH STANDARD RD. FROM RTE. 99 TO SANTA FE WAY - INTERCHANGE IMPROVEMENTS; CONSTRUCT FOUR LANE EXPRESSWAY	\$3,000,000
LOCAL ROAD		(ENVIRONMENTAL STUDY) IN CALIFORNIA CITY ON CALIFORNIA CITY BOULEVARD FROM RTE. 14 EAST SIX MILES - WIDEN TO FOUR LANES	\$1,000,000
14	020.8/021.8	NEAR MOJAVE FROM 0.8 KILOMETERS SOUTH TO 0.8 KILOMETERS NORTH OF CALIFORNIA CITY BLVD. - WIDEN TO FOUR LANE EXPRESSWAY AT INTERSECTION	\$2,300,000
14	042.0/46.2	NEAR CANTIL (RED ROCK) FROM 3.1 MILES SOUTH TO 1.1 MILES NORTH OF RED ROCK INYOKERN RD. - WIDEN TO FOUR LANE EXPRESSWAY	\$8,400,000
14	16.2/26.0	NEAR MOJAVE/CALIFORNIA CITY FROM OLD RTE. 58 N. IN MOJAVE TO PHILLIPS RD. - WIDEN TO FOUR LANES AND CONSTRUCT INTERCHANGE AT CALIFORNIA CITY BLVD.	\$30,000,000
46	46/51.22	(ENVIRONMENTAL STUDY) IN WASCO FROM JUMPER AVE. (NORTH) TO RTE. 43 - GRADE SEPARATION; SIGNALIZATION; INTERSECTION IMPROVEMENTS; WIDEN TO FOUR LANES	\$2,000,000
58	045.3/52.3	RTE. 58 - NEW ALIGNMENT - BUILD FREEWAY / EXPRESSWAY FROM STOCKDALE HIGHWAY NEAR HEATH RD. TO MOHAWK ST.	\$175,000,000
58	52.3/52.6	RTE. 58 CONSTRUCT BRIDGE OVER KERN RIVER AT TRUXTUN AVE.	\$45,000,000
58/178		CENTENNIAL TRANSPORTATION CORRIDOR (RTE. 58/178) - ALTERNATIVE ALIGNMENT STUDY EAST OF RTE. 99	\$15,750,000
58	107.7/118.0	NEAR MOJAVE FROM 0.1 MILES EAST OF CACHE CREEK BRIDGE TO 5 MILES EAST OF RTE. 14 SOUTH - CONSTRUCT FOUR LANE FREEWAY ON NEW ALIGNMENT	\$86,700,000
99	049.4/57.6	MCFARLAND AND DELANO FROM 0.2 MILES SOUTH OF SHERWOOD AVE. TO TULARE COUNTY LINE - WIDEN FROM FOUR TO SIX LANE FREEWAY	\$15,800,000
118	6.2/R13.32	(ENVIRONMENTAL STUDY) NEAR TAFT FROM CHERRY AVE. TO TUPMAN RD. - WIDEN TO FOUR LANES	\$1,000,000
178	10.0/28.0	(ENVIRONMENTAL STUDY AND ROUTE ADOPTION) EAST OF BAKERSFIELD FROM CHINA GARDEN TO KERN CANYON - CONSTRUCT FOUR LANE EXPRESSWAY	\$5,000,000
184	L0.0/4.05	(ENVIRONMENTAL STUDY) NEAR ARVIN FROM RTE. 223 TO PANAMA LN. - WIDEN TO 4 LANES	\$1,000,000
Sub-total			\$392,950,000

**Table 6-4
Constrained (STIP) Capital Improvement Program**

2ND QUINQUENNIAL - 2003/04 TO 2007/08			
ROUTE	POSTMILE	PROJECT DESCRIPTION	TOTAL
LOCAL ROAD		IN DELANO ON CECIL AVE. FROM ALBANY ST. TO BROWNING RD. - SAFETY UPGRADE RECONSTRUCTION (TRAFFIC SYSTEMS MANAGEMENT)	\$3,900,000
LOCAL ROAD		NEAR SHAFTER ON 7TH STANDARD RD. FROM RTE. 99 TO SANTA FE WAY - INTERCHANGE IMPROVEMENTS; CONSTRUCT FOUR LANE EXPRESSWAY	\$22,200,000
LOCAL ROAD		IN CALIFORNIA CITY ON CALIFORNIA CITY BLVD. FROM RTE. 14 EAST SIX MILES - WIDEN TO FOUR LANE EXPRESSWAY	\$8,700,000
LOCAL ROAD		NEAR SHAFTER ON 7TH STANDARD RD. FROM PALM AVE. TO I-5 - WIDEN TO FOUR LANE EXPRESSWAY	\$9,300,000
LOCAL ROAD		IN RIDGECREST ON WEST RIDGECREST BLVD. FROM MAHAN ST. TO CHINA LAKE BLVD. - RECONSTRUCTION; OVERLAY; WIDEN PORTION TO FOUR LANES	\$1,800,000
14	57.0/62.1	NEAR RIDGECREST FROM 0.8 MILES SOUTH OF 178 WEST TO 1.5 MILES SOUTH OF ATHEL RD. - WIDEN TO FOUR LANES	\$11,000,000
46	0.0/7.3	FROM SAN LUIS OBISPO COUNTY LINE TO KECKS CORNER - WIDEN TO FOUR LANES	\$35,000,000
46	46/51.22	IN WASCO FROM JUMPER AVE. TO ROUTE 43 (NORTH) - GRADE SEPARATION; SIGNALIZATION; INTERSECTION IMPROVEMENTS; WIDEN TO FOUR LANES	\$8,500,000
58/178		RTE. 58 NEW ALIGNMENT FROM STOCKDALE HIGHWAY NEAR HEATH RD. TO MOHAWK ST. - WIDEN FREEWAY TO SIX LANES; CONSTRUCT INTERCHANGES AT ALLEN RD., RENFRO RD. AND CALLOWAY DR.; PURCHASE RIGHT-OF-WAY FROM MOHAWK ST. EAST; BEGIN CONSTRUCTION OF CENTENNIAL TRANSPORTATION CORRIDOR	\$200,000,000
119	6.2/R13.32	NEAR TAFT FROM CHERRY AVE. TO TUPMAN RD. - WIDEN TO FOUR LANES	\$9,400,000
155	R0.0/R1.5	IN DELANO FROM RTE. 99 TO BROWNING RD. - WIDEN TO FOUR LANES CONVENTIONAL HIGHWAY (RTE. 99 BRIDGE WIDENING); SEPARATION OF GRADE AT RAILROAD	\$21,600,000
184	L0.0/4.05	NEAR ARVIN FROM RTE. 223 TO PANAMA LN. - WIDEN TO FOUR LANES	\$5,200,000
223	R10.15/R16.01	NEAR ARVIN FROM RTE. 184 TO RTE. 99 - WIDEN TO FOUR LANES	\$10,000,000
223	R16.01/R20.15	NEAR ARVIN FROM COMANCHE RD. TO RTE. 184 - WIDEN TO FOUR LANES	\$8,500,000
Sub-total			\$356,100,000

**Table 8-5
Constrained (STIP) Capital Improvement Program**

3RD QUINQUENNIAL - 2008/09 TO 2012/13			
ROUTE	POSTMILE	PROJECT DESCRIPTION	
LOCAL ROAD		NEAR SHAFTER ON ZACHARY RD. FROM 7TH STANDARD RD. TO LERDO HWY. - WIDEN FIRST TWO MILES TO FOUR LANES; LAST TWO MILES NEW CONSTRUCTION TO FOUR LANES	\$7,270,000
LOCAL ROAD		IN SHAFTER ON ZACHARY RD. FROM 7TH STANDARD RD. TO LERDO HWY. - WIDEN FIRST TWO MILES TO FOUR LANES; NEW CONSTRUCTION LAST TWO MILES - WIDEN TO FOUR LANES	\$1,690,000
LOCAL ROAD		IN TEHACHAPI ON RED APPLE RD. FROM TUCKER RD. TO WESTWOOD ST. - CONSTRUCT NEW FOUR LANE RD.	\$4,500,000
LOCAL ROAD		NEAR DELANO ON GARCES HIGHWAY FROM CORCORAN RD. TO WILDWOOD - WIDEN TO FOUR LANE EXPRESSWAY	\$9,100,000
LOCAL ROAD		NEAR DELANO ON GARCES HIGHWAY FROM WILDWOOD RD. TO ROUTE 43 - WIDEN TO FOUR LANE EXPRESSWAY	\$5,700,000
LOCAL ROAD		IN DELANO ON GARCES HIGHWAY FROM RTE. 43 TO HIETT AVE. - WIDEN TO FOUR LANE EXPRESSWAY	\$4,600,000
LOCAL ROAD		NEAR DELANO EXTEND GARCES HIGHWAY VIA CORCORAN RD. FROM INTERSECTION OF CORCORAN RD. AND GARCES HIGHWAY EAST TO TWISSELMAN RD. (EXTENSION) - WIDEN TO FOUR LANE EXPRESSWAY	\$6,800,000
14	45.9/57.5	NEAR RIDGECREST FROM 0.8 MILES NORTH OF REDROCK / INYOKERN ROAD TO 0.3 MILES SOUTH OF RTE. 178 - WIDEN TO FOUR LANES	\$24,000,000
43	12.2/16.4	NEAR SHAFTER FROM 7TH STANDARD RD. TO EUCLID AVE. - WIDEN TO FOUR LANES	\$9,600,000
58/178		CENTENNIAL TRANSPORTATION CORRIDOR - FROM MOHAWK ST. EAST - COMPLETE CONSTRUCTION OF FOUR TO SIX LANE FACILITY ON FUTURE ALIGNMENT	\$201,000,000
58	40.0/45.0	RTE. 58 FROM RTE. 43 TO RENFRO RD. - WIDEN TO FOUR LANES	\$14,400,000
58	R126.6/R128.8	SOUTH OF CALIFORNIA CITY FROM 1 MILE WEST OF CALIFORNIA CITY BLVD. TO 1 MILE EAST OF CALIFORNIA CITY BLVD. - CONSTRUCT INTERCHANGE	\$7,200,000
99	54.5/57.6	IN DELANO FROM WOOLLOMES AVE. TO COUNTY LINE RD. - CONSTRUCT RAMP UPGRADES	\$6,500,000
166	0.00/0.04	IN MARICOPA AT THE INTERSECTION OF RTE. 33 AND RTE. 166 - UPGRADE STOP SIGN WITH FLASHING WARNING LIGHTS	\$150,000
223	21.38/25.13	NEAR ARVIN FROM EAST CITY LIMITS OF ARVIN EAST 4 1/4 MILES EAST - WIDEN TO FOUR LANES	\$7,000,000
223	25.64/31.92	NEAR ARVIN FROM 4 1/4 MILES EAST OF EASTERN CITY LIMITS OF ARVIN TO RTE. 58 - WIDEN TO FOUR LANES	\$9,100,000
395	R15.2/R23.0	SOUTH OF RIDGECREST FROM SOUTH CHINA LAKE BLVD. TO RTE. 178 - WIDEN TO FOUR LANES	\$12,000,000
395	7.0/11.2	NEAR RIDGECREST FROM 1.25 MILES SOUTH OF SEARLES RD. TO 0.4 MILES SOUTH OF RANDSBURG RD. - WIDEN TO FOUR LANES	\$6,300,000
Sub-total			\$336,910,00

**Table 8-6
Constrained STIP Capital Improvement Program**

4TH QUINQENNIUM - 2013/14 TO 2017/18			
ROUTE	POSTMILE	PROJECT DESCRIPTION	TOTAL
LOCAL ROAD		NEAR DELANO ON GARCES HIGHWAY FROM TWISSELMAN RD. TO CORCORAN RD. - WIDEN TO FOUR LANE EXPRESSWAY	\$15,000,000
LOCAL ROAD		NEAR DELANO ON GARCES HIGHWAY FROM HIETT AVENUE EXTENSION TO RTE. 99 (ELLINGTON STREET) - WIDEN TO FOUR LANE EXPRESSWAY	\$7,400,000
LOCAL ROAD		NEAR DELANO EXTEND GARCES HIGHWAY VIA TWISSELMAN RD. FROM I-5 TO LOST HILLS RD. - CONSTRUCT NEW FOUR LANE EXPRESSWAY	\$6,800,000
LOCAL ROAD		NEAR SHAFTER ON 7TH STANDARD RD. FROM RTE. 43 TO SANTA FE WAY - WIDEN TO FOUR LANE EXPRESSWAY	\$5,330,000
LOCAL ROAD		IN RIDGECREST ON BOWMAN RD. FROM CHINA LAKE BLVD. TO COUNTY LINE ROAD - RECONSTRUCT 1 MILE AND RAISE GRADE; ADD SHOULDERS AND DRAINAGE	\$2,000,000
LOCAL ROAD		(ENVIRONMENTAL STUDY) ON TEHACHAPI WILLOW SPRINGS RD. FROM RTE. 58 TO ROSAMOND BLVD. - WIDEN TO FOUR LANES	\$6,580,000
LOCAL ROAD		IN RIDGECREST ON SOUTH CHINA LAKE BLVD. (BUSINESS RTE. 395) FROM RTE. 395 TO COLLEGE HEIGHTS BLVD. - RECONSTRUCTION; OVERLAY AND SHOULDER WIDENING	\$5,000,000
LOCAL ROAD		IN RIDGECREST ON MAHAN ST. FROM INYOKERN RD. TO SOUTH CHINA LAKE BLVD. - WIDEN TO FOUR LANES	\$4,000,000
LOCAL ROAD		NEAR SHAFTER ON 7TH STANDARD RD. FROM PALM AVE TO RT. 43 - WIDEN TO FOUR LANE EXPRESSWAY	\$9,730,000
33	19.3/20.3	IN TAFT FROM 0.2 MILES WEST OF 10TH ST. TO 1.2 MILES WEST OF 10TH ST. - WIDEN TO FOUR LANES	\$5,000,000
33	11.5/17.5	MARICOPA TO TAFT FROM WELCH ST. (MARICOPA) TO WOOD ST. (TAFT) - WIDEN TO FOUR LANES	\$7,000,000
33	20.3/23.3	IN TAFT FROM 1.2 MILES WEST OF 10TH ST. TO MIDWAY RD. - WIDEN TO FOUR LANES	\$7,000,000
46	7.3/20.5	FROM KECKS CORNER TO RTE. 33 - WIDEN TO FOUR LANES	\$35,000,000
46	20.5/32.5	FROM RTE. 33 TO I-5 - WIDEN TO FOUR LANES	\$8,000,000
46	32.5/46.0	NEAR WASCO FROM I-5 TO JUMPER AVE. - WIDEN TO FOUR LANES	\$8,300,000
46	51.2/57.8	IN WASCO FROM RTE. 43 (NORTH) TO RTE. 99 - WIDEN TO FOUR LANES	\$5,050,000
58	31.0 / 40.0	WEST OF THE BAKERSFIELD AREA (ROSEDALE HIGHWAY) FROM I-5 TO RT. 43 - WIDEN TO FOUR LANES	\$18,000,000
119	0.0/6.2	IN TAFT FROM CHERRY AVE. TO RTE. 33 - WIDEN TO FOUR LANES	\$9,900,000
119	R13.32/20.1	FROM TUPMAN RD. TO I-5 - WIDEN TO FOUR LANES	\$9,900,000
178	6.1/7.5	IN BAKERSFIELD FROM 0.4 MILES WEST OF OSWELL ST. TO 0.5 EAST OF FAIRFAX RD. - CONSTRUCT FOUR LANE FREEWAY AND INTERCHANGE AT FAIRFAX	\$16,800,000
184	4.05/10.0	NEAR ARVIN FROM PANAMA LN. TO RTE. 178 - WIDEN TO FOUR LANES	\$10,300,000
395	11.2/R15.2	NEAR RIDGECREST 15 MILES NORTH OF JOHANNESBURG AT BUSINESS RTE. 395 TURNOFF TO 1/4 MILE NORTH OF SOUTH CHINA LAKE BLVD. - WIDEN TO FOUR LANES	\$6,300,000
Sub-total			\$208,390,000
TOTAL			\$1,396,000,000

State Highways Funding Shortfall

If additional funds were identified, other highway projects would be constructed and could bring the metropolitan Bakersfield area closer to achieving a congestion-free transportation system. Multi-modal enhancements, together with projects such as bridges, road widening, and grade separation projects and the highway projects listed in Table 8-7, would serve to maintain an acceptable level of service for transportation in Bakersfield and throughout Kern County in future years.

Table 8-7
State Highways Capital Improvements

FUNDING NOT IDENTIFIED			
ROUTE	POSTMILE	DESCRIPTION	
48	57.4	NEAR WASCO (PHASE 3) AT RT. 99 AND RT. 48 INTERCHANGE - INTERCHANGE AND BRIDGE WORK (REALIGNMENT WORK ONLY)	\$11,000,000
58	92.75	NEAR TEHACHAPI AT DENNISON ROAD CONSTRUCT NEW INTERCHANGE (RAMPS)	\$3,000,000
65	0.2 / 25.2	NORTH OF BAKERSFIELD FROM 7TH STANDARD RD. TO COUNTY LINE - WIDEN TO FOUR LANES	\$60,000,000
166	4.98	IN MARICOPA INTERSECTION AT BASIC SCHOOL ROAD - RECONSTRUCT (ELEVATE) INTERSECTION GRADE (FLOODING HAZARD)	\$240,000
178		KERN CANYON FREEWAY - CONSTRUCT FOUR LANE FREEWAY / EXPRESSWAY ON NEW ALIGNMENT	\$102,000,000
395	0.0/7.0	NEAR JOHANNESBURG FROM SAN BERNARDINO COUNTY LINE TO 1 MILE SOUTH OF SEARLES ROAD WIDEN TO 4 LANES	\$11,000,000
395	23.0/29.4	NEAR INYOKERN FROM ROUTE 178 TO ROUTE 14 JUNCTION WIDEN TO FOUR LANES	\$12,000,000
		WHEELER RIDGE ROAD FROM I-5 TO RT. 223 (16 MILES) WIDEN TO FOUR LANES	\$32,000,000
		NEAR RIDGECREST RICHMOND ROAD FROM BOWMAN ROAD TO EAST RIDGECREST BLVD. (1.0 MILE) RECONSTRUCTION INCLUDING WIDENING TO 4 LANES	\$1,000,000
		IN DELANO AT WOOLOMES AVENUE INTERCHANGE BRIDGE WIDENING TO 4 LANES AND RAMP MODIFICATIONS	\$8,000,000
		IN DELANO BUS TRANSFER STATION FOR DELANO PUBLIC TRANSIT	\$750,000
		SOUTH BELTWAY - CONSTRUCT FOUR TO SIX LANE FREEWAY	\$115,000,000
		WEST BELTWAY - CONSTRUCT FOUR TO SIX LANE FREEWAY	\$115,000,000
		EAST BELTWAY - CONSTRUCT FOUR TO SIX LANE FREEWAY	\$115,000,000
TOTAL			\$345,000,000

8.5 LOCAL STREETS AND ROADS CAPITAL IMPROVEMENT PROGRAM

Capital improvements on local streets and roads serve to maintain or improve the level of service throughout the transportation system. Projects identified in this section include new bridges, bridge widenings, grade separation projects or the addition of new lanes. These projects alleviate stress on the overall transportation network by accommodating increased demands. While consideration must still be given to improvements that increase capacity and enhance the level of service, existing infrastructure must be maintained.

A safe and reliable transportation network requires continued preventive and rehabilitative maintenance. Kern County's local road network is comprised of 934 miles of county roads in the metropolitan Bakersfield area and 715 miles of city streets. Deterioration of the roadways is always a concern because of age, the cost of deferred maintenance and increased traffic.

Local Streets and Roads Operations and Maintenance

Estimates presented in Table 8-8 reflect an aggregation of all communities in Kern County. However, the largest area of need is the metropolitan Bakersfield area. Kern County maintains a road system of over 3,000 miles but ranks 37th out of 58 counties in the state in the amount spent per mile on maintenance. The County reports that roads require \$10 million annually for routine preventive maintenance. Approximately \$13.5 million is required for rehabilitative maintenance to keep up with the service for the existing system. There are over 1,700 miles of city owned roads in Kern County. The City of Bakersfield street maintenance efforts have also experienced average annual declines from FY's 1991 to 1995 resulting in deferment of maintenance, which accumulates with each passing year. Historical data show increased deferment of necessary maintenance and constant or even smaller annual roadway budgets.

Table 8-8
Local Streets and Roads Operations and Maintenance Revenues

QUINQUENNium		1998-2002	2003-2007	2008-2013	2014-2018
RSTP - Regional Surface	State/Fed.	\$15,000,000	\$15,000,000	\$15,000,000	\$15,000,000
Local - All Cities and County of	Local	\$120,000,000	\$120,000,000	\$120,000,000	\$120,000,000
Sub-total		\$135,000,000	\$135,000,000	\$135,000,000	\$135,000,000
TOTAL		\$540,000,000			

Local Streets and Roads - Capital Improvement Revenues

Funding sources for this group include Regional Surface Transportation dollars (federal), Congestion Mitigation and Air Quality dollars (federal) and an assortment of local fund programs. Included in local funding are dollars from the Bakersfield Impact Fee Program and the Rosamond Impact Fee Program. Some of the local transportation dollars budgeted for transportation use are used to match federal dollars.

**Table 8-9
Local Streets and Roads Capital Improvement Revenues**

QUINQUENNium		1998-2002	2003-2007	2008-2013	2014-2018
RSTP - Regional Surface Transportation Program	Federal	\$150,000	\$150,000	\$150,000	\$150,000
CMAQ - Congestion Mitigation and Air Quality	Federal	\$5,200,000	\$5,200,000	\$5,200,000	\$5,200,000
Local Funding - All Cities and County of Kern	Local	\$5,610,000	\$610,000	\$610,000	\$610,000
Bakersfield Impact Fee	Local	\$9,000,000	\$18,430,000	\$20,960,000	\$23,630,000
Rosamond Impact Fee	Local	\$1,250,000	\$1,540,000	\$1,750,000	\$1,990,000
Sub-total		\$21,210,000	\$25,930,000	\$28,670,000	\$31,780,000
TOTAL		\$107,590,000			

**Table 8-10
Constrained Local Streets and Roads Capital Improvement Program**

1ST QUINQUENNium - 1998/99 TO 2002/03	
DESCRIPTION	COST
BAKERSFIELD IMPACT FEE	
STATE HWY. BRIDGE AT WHITE LN. AND RTE. 99 - WIDEN TO SIX LANES	\$1,500,000
STOCKDALE HWY. 1/4 MILE WEST OF ASHE ST. TO OAK ST. - WIDEN TO SIX LANES	\$1,000,000
STOCKDALE HWY. FROM OLD RIVER RD. TO ALLEN RD. - WIDEN TO SIX LANES	\$1,300,000
MOHAWK ST. AT THE KERN RIVER - CONSTRUCT NEW BRIDGE (FOUR LANES)	\$4,000,000
ASHE RD. FROM HARRIS RD. TO SJRR - WIDEN TO FOUR LANES	\$108,000
BRIMHALL RD. FROM ALLEN RD. TO OLD FARM RD. - WIDEN TO FOUR LANES	\$240,000
CALLOWAY DR. FROM ROSEDALE HWY. TO BRIMHALL RD. - WIDEN TO FOUR LANES	\$1,800,000
SUB-TOTAL	\$9,948,000
ROSAMOND IMPACT FEE	
WIDEN ROSAMOND BLVD. TO FIVE LANES FROM EAGLE WAY TO 35TH STREET WEST	\$800,000
LEFT TURN CHANNELIZATION ON ROSAMOND BLVD. AT MOJAVE-TROPICO	\$55,000
WIDEN ROSAMOND BLVD. AT RAILROAD TRACKS (EAST OF SIERRA HWY.)	\$165,000
SIGNALS ON ROSAMOND BLVD. AT 10TH ST. WEST, 15TH ST. WEST, 30TH ST. WEST	\$360,000
SUB-TOTAL	\$1,020,000
OTHER FUNDING	
I-5 AND LAVAL RD. - RECONSTRUCT INTERCHANGE (LOCAL FUNDING ONLY)	\$5,900,000
SIGNALIZATION, SIGNAL SYNCHRONIZATION, AND OTHER SAFETY RELATED, TSM / ITS PROJECTS AT VARIOUS LOCATIONS	\$5,200,000
SUB-TOTAL	\$5,200,000
TOTAL	\$16,168,000

**Table 8-11
Constrained Local Streets and Roads Capital Improvement Program**

2ND QUINQUENNIAL - 2003/04 TO 2007/08	
DESCRIPTION	COST
BAKERSFIELD IMPACT FEE	
ALLEN RD. FROM ROSEDALE HWY. TO BRIMHALL RD. - WIDEN TO SIX LANES	\$1,100,000
ALLEN RD. FROM BRIMHALL RD. TO STOCKDALE HWY. - WIDEN TO SIX LANES	\$1,100,000
ASHE RD. FROM PANAMA RD. TO HARRIS RD. - CONSTRUCT TO TWO LANES	\$400,000
BRIMHALL RD. FROM RENFRO RD. TO ALLEN RD. - WIDEN TO FOUR LANES	\$505,000
BRIMHALL RD. FROM OLD FARM RD. TO JEWETTA AVE. - WIDEN TO FOUR LANES	\$349,000
BRIMHALL RD. FROM JEWETTA AVE. TO VERDUGO LN. - WIDEN TO FOUR LANES	\$245,000
BRIMHALL RD. FROM VERDUGO LN. TO CALLOWAY DR. - WIDEN TO FOUR LANES	\$245,000
BRIMHALL RD. FROM CALLOWAY DR. TO COFFEE RD. - WIDEN TO FOUR LANES	\$349,000
BUENA VISTA RD. FROM WHITE LN. TO STOCKDALE HWY. - WIDEN TO FOUR LANES	\$280,000
CALLOWAY DR. FROM ROSEDALE HWY. TO MEACHAM RD. - WIDEN TO SIX LANES	\$540,000
COFFEE RD. FROM ROSEDALE HWY. TO TRUXTUN EXT. - WIDEN TO SIX LANES	\$968,000
HAGEMAN RD. AND AT&SFRR - IMPROVE GRADE CROSSING (SAFETY)	\$100,000
HAGEMAN RD. FROM SANTA FE WAY TO OLD FARM RD. - WIDEN TO SIX LANES	\$491,000
HAGEMAN RD. FROM JEWETTA AVE. TO VERDUGO LN. - WIDEN TO SIX LANES	\$482,000
HAGEMAN RD. FROM VERDUGO LN. TO CALLOWAY DR. - WIDEN TO SIX LANES	\$482,000
HAGEMAN RD. FROM CALLOWAY DRIVE TO 1300 FT. EAST - WIDEN TO SIX LANES	\$54,000
HAGEMAN RD. FROM FRUITVALE AVE. TO MOHAWK ST. - WIDEN TO SIX LANES	\$317,000
MOUNT VERNON AT RTE. 178 - CONSTRUCT EAST BOUND RAMP	\$250,000
PANAMA LN. FROM SO. H ST. TO UNION AVE - WIDEN TO FOUR LANES	\$362,000
ROSEDALE HWY. AT JEWETTA - TURNING MEDIAN (SAFETY)	\$120,000
ROSEDALE HWY. AT CALLOWAY WEST AND EAST CANALS - WIDEN TO SIX LANES	\$600,000
ALLEN RD. CANAL BRIDGE @ CROSS VALLEY CANAL - CONSTRUCT FOUR LANE BRIDGE	\$1,000,000
MOHAWK ST. @ CROSS VALLEY/CALLOWAY CANALS - CONSTRUCT FOUR LANE BRIDGE	\$1,000,000
CANAL BRIDGES AT VARIOUS LOCATIONS - NEW CONSTRUCTION	\$2,000,000
TRAFFIC SIGNALS AT 17 LOCATIONS IN THE METROPOLITAN BAKERSFIELD AREA	\$2,300,000
IMPROVE CANAL CULVERTS AT VARIOUS LOCATIONS	\$140,000
SUB-TOTAL	\$15,779,000
ROSAMOND IMPACT FEE	
ROSAMOND BLVD. FROM SIERRA HWY. TO EDWARDS AFB - WIDEN TO FIVE LANES	\$860,000
INSTALL TRAFFIC SIGNAL ON ROSAMOND BLVD. AT 40TH ST. WEST	\$120,000
SUB-TOTAL	\$980,000
OTHER FUNDING	
SIGNALIZATION, SIGNAL SYNCHRONIZATION, AND OTHER SAFETY RELATED, TSM / ITS PROJECTS AT VARIOUS LOCATIONS	\$5,200,000
SUB-TOTAL	\$5,200,000
TOTAL	\$21,959,000

Table 8-12
Constrained Local Streets and Roads Capital Improvement Program

3RD QUINQUENNium - 2008/09 TO 2012/13	
DESCRIPTION	COST
BAKERSFIELD IMPACT FEE	
HAGEMAN RD. FROM MOHAWK ST. TO RTE. 204 - WIDEN AND EXTEND SIX LANES	\$7,500,000
MOHAWK ST. FROM ROSEDALE HWY. TO OLIVE DR. - WIDEN AND EXTEND TO SIX LANES	\$4,000,000
OLD RIVER RD. FROM PANAMA LN. TO CAMPUS PARK DR. - WIDEN TO FOUR LANES	\$1,000,000
OLIVE DR. AT RTE. 99 BRIDGE/INTERCHANGE - WIDEN TO SIX LANES	\$500,000
ROSEDALE HWY. FROM MOHAWK ST. TO ALLEN RD. - WIDEN TO SIX LANES	\$3,500,000
STINE RD. FROM TAFT HWY. TO PANAMA LN. - WIDEN TO FOUR LANES	\$1,170,000
INSTALL TRAFFIC SIGNALS AT 38 LOCATIONS IN THE METRO. BAKERSFIELD AREA	\$4,600,000
IMPROVE CANAL CULVERTS AT VARIOUS LOCATIONS	\$300,000
SUB-TOTAL	\$22,270,00
ROSAMOND IMPACT FEE	
INSTALL TRAFFIC SIGNAL ON ROSAMOND BLVD. AT 35TH ST. WEST	\$120,000
AVE. A FROM 10TH ST. WEST TO 30TH ST. WEST - WIDEN TO FOUR LANES	\$2,500,000
AVE. A AT RTE. 14 RAMPS - INSTALL TRAFFIC SIGNALS	\$300,000
SUB-TOTAL	\$2,920,000
OTHER FUNDING	
SIGNALIZATION, SIGNAL SYNCHRONIZATION, AND OTHER SAFETY RELATED, TSM / ITS PROJECTS AT VARIOUS LOCATIONS	\$5,200,000
SUB-TOTAL	\$5,200,000
TOTAL	\$30,390,00

TABLE 8-13
CONSTRAINED LOCAL STREETS AND ROADS CAPITAL IMPROVEMENT PROGRAM

4TH QUINQUENNium - 2013/14 TO 2017/18	
DESCRIPTION	COST
BAKERSFIELD IMPACT FEE	
ALLEN RD. AT THE KERN RIVER - CONSTRUCT FOUR LANE BRIDGE	\$4,000,000
BUENA VISTA RD. FROM PACHECO RD. TO WHITE LN. - WIDEN TO FOUR LANES	\$430,000
FAIRFAX RD. FROM PANORAMA DR. TO NILES ST. - WIDEN TO SIX LANES	\$108,000
FAIRVIEW RD. FROM MONITOR ST. TO UNION AVE. - WIDEN TO FOUR LANES	\$195,000
HOSKING RD. FROM STINE RD. TO AKERS RD. - WIDEN TO FOUR LANES	\$145,000
MOHAWK AVE. AT THE CALLOWAY CANAL - CONSTRUCT FOUR LANE BRIDGE	\$500,000
MORNING DRIVE AT RTE. 178 - CONSTRUCT INTERCHANGE	\$1,700,000
OLIVE DR. FROM JEWETTA AVE. TO CALLOWAY DR. - CONSTRUCT TWO LANE ROAD	\$780,000
OLIVE DR. FROM CALLOWAY CANAL TO FRIANT-KERN CANAL - CONSTRUCT FOUR LANE BRIDGES	\$1,000,000

TABLE 8-13 CONSTRAINED LOCAL STREETS AND ROADS CAPITAL IMPROVEMENT PROGRAM (Continued)	
OLIVE DR. FROM CALLOWAY DR. TO RIVERLAKES DR. - WIDEN TO SIX LANES	\$430,000
OLIVE DR. FROM RIVERLAKES DR. TO COFFEE RD. - WIDEN TO SIX LANES	\$54,000
OLIVE DR. FROM COFFEE RD. TO AIRPORT DRIVE - WIDEN TO SIX LANES	\$1,200,000
OSWELL ST. FROM RTE. 178 TO BRUNDAGE LN. - MEDIAN RECONSTRUCTION	\$430,000
PACHECO RD. FROM BUENA VISTA RD. TO GOSFORD RD. - WIDEN TO FOUR LANES	\$580,000
PANAMA LN. FROM RENFRO RD. TO GOSFORD RD. - WIDEN TO FOUR LANES	\$3,130,000
PANAMA LN. FROM STINE RD. TO WIBLE RD. - WIDEN TO SIX LANES	\$240,000
ROSEDALE HWY. AT AT&SF RR (WEST OF LANDCO) - IMPROVE CROSSING (SAFETY)	\$100,000
ROSEDALE HWY. AT AT&SF RR (JEWETTA) - WIDEN TO SIX LANES	\$480,000
ROSEDALE HWY. FROM ALLEN RD. TO 1.5 MILES WEST OF RENFRO RD. - WIDEN TO SIX LANES	\$4,700,000
RTE. 184 FROM EDISON HWY. TO NILES ST. - WIDEN TO FOUR LANES	\$960,000
RTE. 184 AT SPRR - CONSTRUCT GRADE SEPARATION	\$500,000
SNOW RD. FROM CALLOWAY DR. TO FRUITVALE AVE. - WIDEN TO FOUR LANES	\$1,230,000
STINE RD./NEW STINE RD. FROM PANAMA LN. TO HARRIS RD. - WIDEN TO FOUR LANES	\$200,000
IMPROVE AT GRADE RR CROSSINGS AT VARIOUS LOCATIONS	\$100,000
RECONSTRUCT CULVERTS, BRIDGES AND DITCHES AT VARIOUS LOCATIONS	\$1,000,000
SUB-TOTAL	\$23,192,000
ROSAMOND IMPACT FEE	
AVE. A FROM RTE. 14 TO 30TH ST. WEST - WIDEN TO FOUR LANES	\$1,500,000
WIDEN ROSAMOND BLVD TO SIX LANES FROM RTE. 14 RAMPS TO SIERRA HWY.	\$535,000
WIDEN ROSAMOND BLVD AT RTE. 14 INTERCHANGE	\$1,965,000
SUB-TOTAL	\$4,000,000
OTHER FUNDING	
SIGNALIZATION, SIGNAL SYNCHRONIZATION, AND OTHER SAFETY RELATED, TSM / ITS PROJECTS AT VARIOUS LOCATIONS	\$5,200,000
SUB-TOTAL	\$5,200,000
TOTAL	\$32,392,000
GRAND TOTAL	\$100,909,000

Local Streets and Roads Funding Shortfall

The costs of capacity enhancing local street and road projects exceed projected funding. Bridge widenings, new bridges, grade separations and reconstruction of intersections are just some of the project types that enhance the capacity of the transportation system and reduce congestion. Funding shortfall for these types of local projects total almost \$900 million; a large portion of that estimate would be for projects in the metropolitan Bakersfield area.

Table 8-14
Unconstrained Local Streets and Roads Capital Improvement Program

FUNDING NOT IDENTIFIED	
DESCRIPTION	COST
ROSAMOND IMPACT FEE PROJECTS AT VARIOUS LOCATIONS	\$18,000,000
BAKERSFIELD IMPACT FEE PROJECTS AT VARIOUS LOCATIONS	\$858,200,000
TOTAL	\$877,200,000

8.6 TRANSIT

The transit capital improvement program includes replacement and new service buses, transit infrastructure such as shelters for transit providers in the Kern region. Funding for capital projects consist mainly of federal and local dollars. If a transit program is to grow to keep up with demand, rolling stock must be acquired not only to start new service but to replace older buses. (Projections of buses favor the replacement stock in estimating out the purchase of buses). Therefore, the assumption here is that existing service must be maintained before new service can be implemented.

Table 8-15
Transit Operations and Maintenance Revenues

QUINQUENNium		1998-2002	2003-2007	2008-2013	2014-2018
Farebox	Local	\$11,702,000	\$13,608,000	\$16,536,000	\$19,568,000
STA - State Transit Assistance	Federal	\$3,260,000	\$3,500,000	\$4,000,000	\$5,000,000
49 USC 5307	Federal	\$3,070,000	\$5,090,000	\$5,090,000	\$5,090,000
49 USC 5311	Federal	\$800,000	\$850,000	\$900,000	\$1,000,000
LTF- Local Transportation Fund	Local	\$58,510,000	\$68,040,000	\$82,680,000	\$97,840,000
Sub-total		\$77,342,000	\$91,088,000	\$109,206,000	\$128,498,000
TOTAL					\$406,134,000

Table 8-16
Transit Capital Improvement Revenues

QUINQUENNium		1998-2002	2003-2007	2008-2013	2014-2018
49 USC 5307	Federal	\$9,000,000	\$9,000,000	\$9,000,000	\$9,000,000
49 USC 5310	Federal	\$400,000	\$450,000	\$500,000	\$600,000
49 USC 5311	Federal	\$1,000,000	\$1,150,000	\$1,300,000	\$1,500,000
CMAQ - Congestion Mitigation & Air Quality	Federal	\$11,000,000	\$9,000,000	\$9,000,000	\$9,000,000
LTF- Local Transportation Fund	Local	\$4,520,000	\$4,520,000	\$4,520,000	\$4,520,000
Sub-total		\$25,920,000	\$24,120,000	\$24,320,000	\$24,620,000
TOTAL					\$98,980,000

**Table 8-17
Constrained Transit Capital Improvement Program**

1ST QUINQUENNIUM - 1998/99 TO 2002/03	
25 replacement natural gas buses	\$10,500,000
30 new natural gas buses	\$8,750,000
4 new midsize natural gas midsize buses	\$680,000
12 replacement natural gas midsize buses	\$1,980,000
21 replacement gas/diesel minibuses	\$1,260,000
2 park and ride lots	\$500,000
1 transfer site	\$500,000
Sub-total	\$24,150,000

**Table 8-18
Constrained Transit Capital Improvement Program**

2ND QUINQUENNIUM - 2003/04 TO 2007/08	
40 replacement natural gas buses	\$14,000,000
15 new natural gas buses	\$5,250,000
3 new midsize natural gas midsize buses	\$495,000
12 replacement natural gas midsize buses	\$1,980,000
20 replacement gas/diesel minibuses	\$1,200,000
1 park and ride lot	\$500,000
1 transfer site	\$500,000
Sub-total	\$23,925,000

**Table 8-19
Constrained Transit Capital Improvement Program**

3RD QUINQUENNIUM - 2008/09 TO 2012/13	
40 replacement natural gas buses	\$14,000,000
15 new natural gas buses	\$5,250,000
3 new natural gas midsize buses	\$495,000
12 replacement natural gas midsize buses	\$1,980,000
21 replacement gas/diesel minibuses	\$1,260,000
1 transfer site	\$500,000
Sub-total	\$22,985,000

Table 8-20
Constrained Transit Capital Improvement Program

4TH QUINQUENNIUM - 2003/04 TO 2007/08	
40 replacement natural gas buses	\$14,000,000
15 new natural gas buses	\$5,250,000
20 replacement gas/diesel minibuses	\$1,200,000
3 new natural gas midsize buses	\$495,000
12 replacement natural gas midsize buses	\$1,980,000
2 transfer sites	\$1,000,000
1 maintenance station	\$5,000,000
Sub-total	\$28,925,000
TOTAL	\$99,985,000

Table 8-21
Transit Capital Improvement Program

FUNDING NOT IDENTIFIED	
80 new buses	\$28,000,000
15 replacement gas/diesel minibuses	\$1,000,000
1 transfer station	\$1,000,000
2 maintenance stations	\$10,000,000
Park and ride lots (750 spaces)	\$3,000,000
TOTAL	\$43,000,000

8.7 PASSENGER RAIL

the Amtrak station relocation project in Bakersfield is currently programmed for construction in 1998/99. The project cost is \$12,395,000 and will use local, state and federal dollars to complete. With the completion of this project, passenger rail services will be greatly enhanced because of the improvements in passenger comfort and safety.

Table 8-22
Passenger Rail Capital Improvement Program

CAPITAL IMPROVEMENT PROGRAM	
Bakersfield Amtrak Relocation - Phase 2	
TOTAL	\$12,395,000

8.8 HIGH SPEED RAIL

A recent report prepared for the Intercity High-Speed Rail Commission presented cost estimates of the high-speed rail project. Construction costs are specifically identified by the type of terrain the corridor would pass through. The Central Valley portion is estimated at \$13.9 million per mile. The Tehachapi Crossing segment costs, which involve tunnels and steep grades, are estimated at \$35 million per mile. The Los Angeles basin portion costs involve congested urban areas and are estimated at \$44 million per mile. The overall cost of the base "Route 99 system" in the San Joaquin basin is estimated to be \$3 billion.

Estimates for operations and maintenance costs of a high-speed rail system were presented in the study based on operating cost per train mile. The base Route 99 alignment costs, which would run from Los Angeles to Sacramento, are estimated at \$243 million per year.

Funding sources have not been identified at this time to pay for the construction of the high-speed rail network. The study does recommend that a detailed financial plan be submitted to the Secretary of State for placement on the November 1998 or 2000 general election ballot.

8.9 NON-MOTORIZED TRANSPORTATION PROGRAM

Non-motorized transportation is defined as trips made on foot or by bicycle. Bicycling, walking or jogging have become popular modes of travel for neighborhood trips. According to a study conducted by Caltrans, approximately 2.6 percent of all trips made in California were made on a bicycle and approximately 10.5 percent were made by walking.

Transportation enhancement activity (TEA) funding is a federal source used for bicycle and pedestrian projects. Projects are locally ranked and submitted to the CTC for their final approval.

Table 8-23
Non-motorized Operations and Maintenance Revenues

QUINQUENNIAL		1998-2002	2003-2007	2008-2013	2014-2018
Local	Local	\$100,000	\$100,000	\$100,000	\$100,000
TOTAL		\$400,000			

Table 8-24
Non-motorized Capital Improvement Revenues

QUINQUENNIAL		1998-2002	2003-2007	2008-2013	2014-
TEA - Transportation Enhancement Activity	Federal	\$2,400,000	\$2,400,000	\$2,400,000	\$2,400,000
Local Funds including TDA and Section 3	State / Local	\$1,500,000	\$1,500,000	\$1,500,000	\$1,500,000
Sub-total		\$3,900,000	\$3,900,000	\$3,900,000	\$3,900,000
TOTAL		\$15,600,000			

The non-motorized capital improvement program includes both bicycle projects and pedestrian projects. The bicycle projects were derived from bike plans for each identified agency. The class of construction defines the type of bike project: 1) Class I bicycle paths are separated from the main street and are exclusively used for bicycles; 2) Class II bicycle paths are restricted for either exclusive use by bicycles or partly exclusive typified by a strip on an existing roadway; and 3) Class III bicycle paths are shared with automobile traffic and designated by signs or stencilled onto the pavement only.

Table 8-25
Non-motorized Constrained Capital Improvement Program

1ST QUINQUENNium - 1998/99 TO 2002/03	
BIKE PATH PROJECTS	
ARVIN - BIKE LANES	\$103,000
ARVIN - MEYER ST., FRANKLIN ST. AND CAMPUS DR. - BIKE LANE	\$29,000
BAKERSFIELD - FAIRFAX RD. - BIKE LANE	\$157,000
BAKERSFIELD - VARIOUS LOCATIONS - BIKEPATH WIDENING	\$92,000
KERN COUNTY - ALFRED HARRELL HWY.. - BIKE LANE	\$123,000
KERN CO. - FAIRFAX-HART PARK BIKE PATH	\$677,000
RIDGECREST - CHELSEA LN. - BIKE LANE	\$51,000
WASCO - WESTSIDE PARK - BIKE LANE	\$32,000
WASCO - BARKER PARK - BIKE LANE	\$32,000
TAFT - SUNSET RAIL LINE BIKE PATH - PHASE II AND III	\$416,000
CLASS 2 - METRO BKFD. RD. WIDENING FOR CLASS 2 BIKEWAY PROJECTS AT	\$137,000
LANDSCAPING & PEDESTRIAN PROJECTS	
DELANO - PRINCETON ST. - SIDEWALKS	\$61,000
SHAFTER - LERDO AVE. - SIDEWALKS	\$84,000
WASCO - LANDSCAPING	\$170,000
SHAFTER - LANDSCAPE GATEWAY ON LERDO HWY..	\$433,000
DELANO - LEXINGTON ST. - PEDESTRIAN PROJECT	\$144,000
RIDGECREST - BALSAM ST. PEDESTRIAN MALL	\$539,000
RIDGECREST - DRUMMOND AVE. PEDESTRIAN WALKWAY	\$188,000
DELANO - SCHOOLS/PARKS PEDESTRIAN PROJECT	\$119,000
ARVIN - DOWNTOWN STREET SCAPE IMPROVEMENTS	\$162,000
TOTAL	\$2,453,000

Table 8-26

Non-motorized Constrained Capital Improvement Program

2ND QUINQUENNium - 2003/04 TO 2007/08	
BIKE PATH PROJECTS	
CLASS 2 - KERN CO. (LAKE ISABELLA) - LAKE ISABELLA BLVD/HIGH SCHOOL	\$100,000
CLASS 2 - ROSAMOND - ROSAMOND BLVD. H.S. TO ELEMENTARY	\$50,000
CLASS 2 - TAFT - WOOD ST.	\$50,000
CLASS 2 - TAFT - PICO/HARRISON	\$100,000
CLASS 2 - KERN CO. - EAST KERN	\$50,000
CLASS 2 - KERN CO. (MOJAVE) - KOCH TO 14 ON OAK CREEK	\$50,000
CLASS 2 - KERN CO. (LAMONT) - MYRTLE AVE.	\$50,000
CLASS 2 - KERN CO. (LAMONT) - PALM ST.	\$50,000
CLASS 2 - KERN CO. (LAMONT) - PANAMA ST.	\$25,000
CLASS 2 - TEHACHAPI - CURRY LN. / "D" ST. TO TOMPKINS SCHOOL	\$25,000
CLASS 3 - TEHACHAPI - "D" ST. / SO. MILL TO ROBINSON - SIGNS	\$37,000
CLASS 3 - TEHACHAPI - "E" ST. / ROBINSON TO SNYDER - SIGNS	\$1,000
CLASS 3 - TEHACHAPI - SNYDER / ANITA TO TEHACHAPI BLVD. - SIGNS	\$1,000
CLASS 3 - TEHACHAPI - TEHACHAPI BLVD., SNYDER TO HAYES, - WIDEN AND INSTALL	\$1,000
CLASS 3 - TEHACHAPI - "H" ST., HAYES TO S. MILL ST. - SIGNS	\$4,000
CLASS 2 - TEHACHAPI / GOLDEN HILLS ALONG VALLEY BLVD. FROM TUCKER RD. TO	\$1,000
CLASS 2 - DELANO - CECIL AVE FROM BROWNING RD. TO ALBANY ST. - STRIPE	\$152,000
CLASS 2 - DELANO - 11TH AVE FROM RANDOLPH TO ALBANY ST. - STRIPE	\$50,000
CLASS 2 - DELANO - 9TH AVE FROM RANDOLPH TO HIGH ST. - STRIPE	\$50,000
CLASS 2 - DELANO - RANDOLPH ST. FROM 20TH ST. TO 9TH AVE - STRIPE	\$50,000
CLASS 2 - DELANO - HIGHS ST. FORM CECIL AVE TO 9TH AVE - STRIPE	\$50,000
CLASS 2 - DELANO - ELLINGTON ST. FROM 18TH AVE TO 11TH AVE - STRIPE	\$50,000
CLASS 2 - DELANO - ALBANY ST. FROM CECIL AVE TO GARCES HWY.. - STRIPE	\$50,000
CLASS 3 - METRO BKFD. - ALTA VISTA KENTUCKY TO PANORAMA - SIGNS	\$7,000
CLASS 2 - METRO BKFD. - KING ST. 4TH ST. TO POTOMAC RD. - STRIPE	\$3,000
CLASS 2 - METRO BKFD. - BAKER ST. POTOMAC TO TRUXTUN - STRIPE	\$1,000
CLASS 2 - METRO BKFD. - BAKER ST. TRUXTUN TO JACKSON - STRIPE	\$6,000
CLASS 2 - METRO BKFD. - BAKER ST. JACKSON TO BERNARD - STRIPE	\$7,000
CLASS 2 - METRO BKFD. - HALEY FROM CALIFORNIA TO SUMNER - STRIPE	\$33,000
CLASS 2 - METRO BKFD. - HALEY ST. FROM KENTUCKY TO 178 OVERPASS - STRIPE	\$10,000
CLASS 2 - METRO BKFD. - HALEY ST. FROM 178 TO COLUMBUS - STRIPE	\$4,000
CLASS 2 - METRO BKFD. - MT VERNON FROM CALIFORNIA TO CENTER - STRIPE	\$3,000
CLASS 2 - METRO BKFD. - MT VERNON FROM CENTER TO NILES - STRIPE	\$5,000
CLASS 2 - METRO BKFD. - AKERS FROM WHITE LN. TO PLANZ AVE - STRIPE	\$4,000
CLASS 3 - METRO BKFD. - WESTHOLME FROM WILSON TO MING - SIGNS	\$1,000
CLASS 2 - METRO BKFD. - NEW STINE FROM WILSON TO MING AVE. - STRIPE	\$6,000
CLASS 3 - METRO BKFD. - HUGHES LN. FROM PACHECO TO WHITE LN. - SIGNS	\$1,000

CLASS 2 - METRO BKFD. - HUGHES LN. FROM HOLDEN TO MING - STRIPE	\$3,000
CLASS 3 - METRO BKFD. - BALDWIN FROM LA FRANCE TO TERRACE WAY - SIGNS	\$1,000
CLASS 3 - METRO BKFD. - TERRACE WAY FROM HUGHES TO BALDWIN - SIGNS	\$1,000
CLASS 3 - METRO BKFD. - HUGHES LN. FROM TERRACE TO HWY 58 OVERPASS	\$13,000
CLASS 3 - METRO BKFD. - HUGHES LN./A ST. FROM HWY 58 TO CALIFORNIA IMPROVE	\$2,000
CLASS 3 - METRO BKFD. - CAMPUS/14TH ST. FROM CALIFORNIA TO "F" ST. - SIGNS	\$1,000
CLASS 3 - METRO BKFD. - SOUTH "H" ST. FROM TAFT HWY.. TO PANAMA LN. - SIGNS	\$3,000
CLASS 2 - METRO BKFD. - SOUTH "H" ST. FROM BELLE TERRACE TO STOCKDALE -	\$8,000
CLASS 2 - METRO BKFD. - SOUTH "H" ST. FROM 24TH ST. OT 204 FRONTAGE RD. -	\$4,000
CLASS 3 - METRO BKFD. - 204 FRONTAGE RD. FROM "H" ST. TO "F" ST. - SIGNS	\$1,000
CLASS 2 - METRO BKFD. - OSWELL ST. FROM BRUNDAGE TO BERGUIST - STRIPE	\$2,000
CLASS 2 - METRO BKFD. - OSWELL ST. FROM BERGQUIST TO ALLOWAY - STRIPE	\$2,000
CLASS 2 - METRO BKFD. - OSWELL ST. FROM COLLEGETO BERNARD - STRIPE	\$15,000
CLASS 2 - METRO BKFD. - OSWELL ST. FROM BERNARD TO COLUMBUS	\$5,000
CLASS 3 - METRO BKFD. - STERLING FROM EDISON HWY TO COLLEGE - SIGNS	\$2,000
CLASS 3 - METRO BKFD. - COMANCHE RD. FROM SOUTH OF PANAMA RD. TO HWY..	\$8,000
CLASS 3 - METRO BKFD. - PANAMA LN. FROM BUENA VISTA TO GOSFORD - SIGNS	\$3,000
CLASS 3 - METRO BKFD. - FAIRVIEW FROM S. "H" ST. TO CENTRAL AVE - SIGNS	\$4,000
CLASS 3 - METRO BKFD. - PACHECO FROM HUGHES TO COTTONWOOD - SIGNS	\$4,000
CLASS 2 - METRO BKFD. - WHITE LN. FROM GOSFORD TO STINE - STRIPE	\$30,000
CLASS 2 - METRO BKFD. - WHITE LN. FROM REAL RD. TO "H" ST.	\$2,000
CLASS 3 - METRO BKFD. - WILSON RD. FROM WHITE TO NEW STINE - SIGNS	\$2,000
CLASS 2 - METRO BKFD. - WILSON RD. FROM NEW STINE TO EDMONDTON - STRIPE	\$2,000
CLASS 2 - METRO BKFD. - WILSON RD. FROM EDMONDTON TO AKERS - STRIPE	\$4,000
CLASS 2 - METRO BKFD. - WILSON RD. AKERS TO REAL RD. - STRIPE	\$3,000
CLASS 3 - METRO BKFD. - WILSON RD. FROM "P" ST. TO UNION - SIGNS	\$1,000
CLASS 3 - METRO BKFD. - WATT'S FROM UNION TO MADISON - SIGNS	\$1,000
CLASS 2 - METRO BKFD. - MING AVE FROM GOSFORD TO NEW STINE - STRIPE	\$16,000
CLASS 3 - METRO BKFD. - SUNDALE ASHE TO NEW STINE - SIGNS	\$1,000
CLASS 3 - METRO BKFD. - GARNSEY AVE FROM STOCKDALE TO GARNSEY LN. - SIGNS	\$1,000
CLASS 3 - METRO BKFD. - GARNSEY LN. FROM CALIFORNIA TO REAL - SIGNS	\$2,000
CLASS 2 - METRO BKFD. - PALM ST. FROM REAL TO "H" ST. - STRIPE	\$10,000
CLASS 2 - METRO BKFD. - 4TH ST. FROM "H" TO CHESTER - STRIPE	\$2,000
CLASS 2 - METRO BKFD. - 4TH ST. FROM CHESTER TO UNION - STRIPE	\$7,000
CLASS 2 - METRO BKFD. - VIRGINIA ST. FROM KINGS TO WILLIAMS - STRIPE	\$6,000
CLASS 2 - METRO BKFD. - CALIFORNIA FROM WASHINGTON TO EDISON HWY - STRIPE	\$8,000
CLASS 2 - METRO BKFD. - 21ST ST. FROM UNION TO BAKER - STRIPE	\$5,000
CLASS 2 - METRO BKFD. - 24TH ST. FROM "W" ST. TO UNION - STRIPE	\$6,000
CLASS 3 - METRO BKFD. - CENTER ST. FROM MT. VERNON TO OSWELL - SIGNS	\$2,000
CLASS 3 - METRO BKFD. - BRECKENRIDGE FROM MORNING TO COMANCHE - SIGNS	\$6,000

CLASS 2 - METRO BKFD. - COLLEGE FROM MT. VERNON TO OSWELL - STRIPE	\$8,000
CLASS 2 - METRO BKFD. - COLLEGE FROM OSWELL TO FLINTRIDGE - STRIPE	\$8,000
CLASS 2 - METRO BKFD. - BERNARD FROM KERN TO BEALE - STRIPE	\$2,000
CLASS 2 - METRO BKFD. - COLUMBUS FROM CHESTER TO UNION - STRIPE	\$8,000
CLASS 2 - METRO BKFD. - COLUMBUS FROM UNION TO RIVER - STRIPE	\$8,000
CLASS 2 - METRO BKFD. - AUBURN FROM REDLANDS TO COLUMBUS - STRIPE	\$2,000
CLASS 3 - METRO BKFD. - ROUND MTN. RD. - CHINA GRADE LOOP TO METRO BKFD.	\$6,000
CLASS 3 - METRO BKFD. - UNIVERSITY FROM RIVER TO HALLEY - SIGNS	\$1,000
CLASS 2 - METRO BKFD. - UNIVERSITY FROM HALEY TO PANORAMA - STRIPE	\$18,000
CLASS 3 - METRO BKFD. - HAWTHORNE FROM RIVER TO BAKER - SIGNS	\$1,000
CLASS 3 - METRO BKFD. - SKYLINE FROM BAKER TO POPLAR - SIGNS	\$1,000
CLASS 3 - METRO BKFD. - POPLAR FROM SKYLINE TO ALTA VISTA - SIGNS	\$1,000
CLASS 2 - METRO BKFD. - PANORAMA FROM UNION/MANOR TO LOMA LINDA - STRIPE	\$3,000
CLASS 2 - METRO BKFD. - PANORAM FROM LOMA LINDA TO MOUNT VERNON - STRIPE	\$6,000
CLASS 3 - METRO BKFD. - CHINA GRADE FROM OILDALE AVE TO CHESTER - SIGNS	\$1,000
CLASS 3 - METRO BKFD. - CHINA GRADE FROM ROUND MOUNTAIN RD. TO PANORAMA - SIGNS	\$3,000
CLASS 3 - METRO BKFD. - NORRIS CALLOWAY TO FRUITVALE - SIGNS	\$3,000
CLASS 2 - METRO BKFD. - NORRIS FROM ROBERTS TO AIRPORT - STRIPE	\$10,000
CLASS 2 - METRO BKFD. - NORRIS AIRPORT TO CHESTER - STRIPE	\$8,000
CLASS 2 - METRO BKFD. - OLIVE FROM VICTOR TO KNUDSEN - STRIPE	\$2,000
CLASS 2 - METRO BKFD. - OLIVE AIRPORT TO CHESTER - STRIPE	\$10,000
CLASS 2 - METRO BKFD. - FRUITVALE FROM OLIVE TO NORRIS - STRIPE	\$8,000
CLASS 3 - METRO BKFD. - OILDALE FROM BEARDSLEY TO CHINA GRADE - SIGNS	\$2,000
CLASS 3 - METRO BKFD. - WILLOW DR OILDALE TO RIVERVIEW - SIGNS	\$1,000
CLASS 2 - METRO BKFD. - NORTH CHESTER FROM 34TH ST. TO COLUMBUS - STRIPE	\$6,000
CLASS 2 - METRO BKFD. - NORTH CHESTER COLUMBUS TO BEARDSLEY - STRIPE	\$9,000
CLASS 2 - METRO BKFD. - NORTH CHESTER BEARDSLEY TO NORRIS - STRIPE	\$8,000
CLASS 3 - METRO BKFD. - BEARDSLEY FROM OILDALE TO NORTH CHESTER - SIGNS	\$1,000
CLASS 2 - METRO BKFD. - MANOR ST. ROBERTS ST. ON RAMP TO CARRIER CANAL - STRIPE	\$1,000
CLASS 2 - METRO BKFD. - MANOR ST. FERGUSON RD. TO CHINA GRADE LOOP - STRIPE	\$1,000
CLASS 3 - METRO BKFD. - MANOR ST. CHINA GRADE LOOP TO CHESTER AVE - SIGNS	\$2,000
CLASS 3 - METRO BKFD. - GLENNVILLE RD. FROM MANOR ST. 1 MILE NORTH - SIGNS	\$2,000
CLASS 2 - METRO BKFD. - 21ST ST. FROM BEACH PARK TO EYE ST. - STRIPE	\$8,000
CLASS 2 - METRO BKFD. - BERNARD FROM BEALE TO HALEY - STRIPE	\$4,000
CLASS 2 - CALIFORNIA CITY - CAL CITY BLVD - STRIPE	\$100,000
CLASS 2 - CALIFORNIA CITY - NORTH LOOP - STRIPE AND SIGNS	\$50,000
CLASS 2 - CALIFORNIA CITY - NEATHER/CONKLIN - STRIPE AND SIGNS	\$25,000

CLASS 1- RIDGECREST - DESERT REGIONAL PARK	\$200,000
CLASS 1- RIDGECREST - EAST RIDGECREST BLVD.	\$150,000
CLASS 2 - RIDGECREST - NORTH NORMA FROM DRUMMOND TO INYOKERN RD.	\$25,000
CLASS 3 - RIDGECREST - CALIFORNIA FROM RICHMOND TO CHINA LAKE BLVD - SIGNS	\$13,000
CLASS 3 - RIDGECREST - NO. HELENA ST. FROM WEST FRENCH TO JEAN - SIGNS	\$3,000
CLASS 2 - METRO BKFD. RD. WIDENING AT VARIOUS LOCATIONS	\$137,000
LANDSCAPING & PEDESTRIAN PROJECTS	
LUMP SUM	\$600,000
SUB-TOTAL	\$1,356,000

Table 8-27
Non-motorized Constrained Capital Improvement Program

3RD QUINQUENNIAL- 2008/09 TO 2012/13	
CLASS 2 - LAKE ISABELLA - ISABELLA TO KERNVILLE	\$1,250,000
CLASS 2 - ROSAMOND - ROSAMOND 20TH ST.	\$25,000
CLASS 2 - TAFT - OAK ST.	\$25,000
CLASS 2 - TAFT - SAN EMIDIO	\$50,000
CLASS 2 - TAFT - HARRISON	\$50,000
CLASS 2 - TAFT - ASH ST.	\$50,000
CLASS 2 - MOJAVE - HOLT ST.	\$50,000
CLASS 2 - MOJAVE - DOUGLAS ST.	\$13,000
CLASS 2 - MOJAVE - KOCH ST.	\$25,000
CLASS 2 - MOJAVE - "K" ST.	\$25,000
CLASS 2 - MOJAVE - INYO ST.	\$13,000
CLASS 2 - MOJAVE - MYER ST.	\$25,000
CLASS 2 - LAMONT - PANAMA RD.	\$75,000
CLASS 2 - TEHACHAPI - VALLEY BLVD TUCKER TO CURRY ST.	\$93,000
CLASS 2 - TEHACHAPI - VALLEY BLVD TO "D" ST. - STRIPE AND SIGN	\$1,000
CLASS 3 - GOLDEN HILLS - JEFFERY BLVD VALLEY BLVD TO OLD TOWNE - SIGNS	\$500
CLASS 3 - GOLDEN HILLS - OLD TOWNE RD. JEFFERY TO MARIPOSA - SIGNS	\$500
CLASS 3 - GOLDEN HILLS - MARIPOSA OLD TOWNE TO WHITE PINE - SIGNS	\$1,000
CLASS 3 - GOLDEN HILLS - WHITE PINE/MARIPOST OT WOODFORD/TEH RD. - SIGNS	\$500
CLASS 3 - GOLDEN HILLS - WOODFORD- TEHACHAPI RD. FROM WHITE PINE TO WESTWOOD - WIDEN AND SIGNS	\$28,000
CLASS 3 - GOLDEN HILLS - WESTWOOD BLVD. FROM WOODFORD RD. TO GOLDEN HILLS BLVD. - SIGNS	\$1,000
CLASS 3 - GOLDEN HILLS - GOLDEN HILLS RD. FROM WOODFORD-TEHACHAPI RD. TO VALLEY BLVD. - SIGNS	\$1,000
CLASS 2 - METRO BKFD. - "P"/"Q" ST. FROM BELLE TERRACE TO COLUMBUS - STRIPE	\$39,000
CLASS 2 - METRO BKFD. - BAKERS ST. FROM TRUXTUN TO JACKSON	\$4,000

CLASS 2 - METRO BKFD. - HALEY ST. FROM COLUMBUS TO PANORAMA - STRIPE	\$15,000
CLASS 2 - METRO BKFD. - MT VERNON FROM BRUNDAGE TO CALIFORNIA - STRIPE	\$11,000
CLASS 2 - METRO BKFD. - MT. VERNON FROM NILES TO FLOWER ST. - STRIPE	\$3,000
CLASS 2 - METRO BKFD. - MT.VERNON FROM FLOWE TO BERNARD - STRIPE	\$8,000
CLASS 2 - METRO BKFD. - BERNARD TO PANORAMA - STRIPE	\$28,000
CLASS 2 - METRO BKFD. - GOSFORD RD. FROM WHITE LN. TO STOCKDALE - STRIPE	\$29,000
CLASS 2 - METRO BKFD. - ASHE RD. FROM WHITE LN. TO STOCKDALE - STRIPE	\$29,000
CLASS 2 - METRO BKFD. - STINE RD. FROM PLANZ TO WILSON - STRIPE	\$4,000
CLASS 2 - METRO BKFD. - NEW STINE RD. MING TO STOCKDALE - STRIPE	\$18,000
CLASS 2 - METRO BKFD. - WIBLE RD. FROM PANAMA LN. TO STOCKDALE HWY. - STRIPE	\$38,000
CLASS 2 - METRO BKFD. - HUGHES LN. FROM WHITE LN. TO WILSON AND FROM WILSON TO HOLDEN - STRIPE	\$15,000
CLASS 2 - METRO BKFD. - HUGHES LAND FROM MING TO LA FRANCE - STRIPE	\$2,000
CLASS 2 - METRO BKFD. - 14TH ST. FROM "F" TO "H" ST. - STRIPE	\$1,000
CLASS 2 - METRO BKFD. - "F" ST. FROM 14TH ST. TO FRONTAGE RD. - STRIPE	\$14,000
CLASS 2 - METRO BKFD. - SOUTH "H" ST. - STRIPE	\$28,000
CLASS 2 - METRO BKFD. - SOUTH "H" ST. FROM STOCKDALE TO 24TH ST. - STRIPE	\$28,000
CLASS 2 - METRO BKFD. - OSWELL ST. FROM ALLOWAY TO COLLEGE - STRIPE	\$21,000
CLASS 2 - METRO BKFD. - FAIRFAX FROM EDISON TO PIONEER - STRIPE	\$3,000
CLASS 2 - METRO BKFD. - FAIRFAX FROM CENTER TO COLLEGE - STRIPE	\$9,000
CLASS 2 - METRO BKFD. - PANAMA LN. FROM SUMMERFIELD TO AKERS - STRIPE	\$3,000
CLASS 2 - METRO BKFD. - PANAMA LN. FROM WIBLE TO "H" ST. - STRIPE	\$11,000
CLASS 2 - METRO BKFD. - WHITE LN. FROM STINE TO REAL RD. - STRIPE	\$6,000
CLASS 2 - METRO BKFD. - WHITE LN. FROM "H" ST. TO UNION - STRIPE	\$11,000
CLASS 2 - METRO BKFD. - PLANZ RD. FROM WILSON TO COTTONWOOD RD. - STRIPE	\$49,000
CLASS 2 - METRO BKFD. - WILSON RD. FROM REAL RD. TO "P" ST.	\$20,000
CLASS 2 - METRO BKFD. - BELLE TERRACE FROM NEW STINE TO FLORITO - STRIPE	\$3,000
CLASS 2 - METRO BKFD. - 4TH ST. FROM UNION TO KING - STRIPE	\$8,000
CLASS 2 - METRO BKFD. - CALIFORNIA AVE FROM STOCKDALE TO WILLIAMS - STRIPE	\$63,000
CLASS 2 - METRO BKFD. - EDISON HWY FROM CALIFORNIA TO OSWELL - STRIPE	\$4,000
CLASS 2 - METRO BKFD. - 21ST ST. FROM "F" ST. TO UNION - STRIPE	\$18,000
CLASS 2 - METRO BKFD. - KENTUCKY ST. FROM UNION TO MT VERNON - STRIPE	\$23,000
CLASS 2 - METRO BKFD. - 34TH ST. FROM CHESTER TO UNION - STRIPE	\$13,000
CLASS 2 - METRO BKFD. - BERNARD FROM UNION TO KERN - STRIPE	\$9,000
CLASS 2 - METRO BKFD. - HWY 184 FROM MORNING DRIVE TO HWY 178 - STRIPE	\$125,000
CLASS 2 - METRO BKFD. - HWY 178 FROM HWY 184 TO ALFRED HARRELL HWY - STRIPE	\$75,000
CLASS 3 - METRO BKFD. - ALFRED HARRELL HWY FROM PANORAMA TO HWY 178 - STRIPE	\$50,000

CLASS 2 - METRO BKFD. - CHINA GRADE FROM CHESTER TO ROUND MOUNTAIN RD. - STRIPE	\$60,000
CLASS 2 - METRO BKFD. - NORRIS FROM CHESTER TO MANOR - STRIPE	\$5,000
CLASS 2 - METRO BKFD. - OLIVE FROM FRUITVALE TO VICTOR - STRIPE	\$7,000
CLASS 2 - METRO BKFD. - MOHAWK FROM CALIFORNIA TO TRUXTUN - STRIPE	\$3,000
CLASS 2 - METRO BKFD. - MANOR ST. AT ROBERTS LN. ON-RAMP - STRIPE	\$1,000
CLASS 2 - METRO BKFD. - HUGHES LN. FROM HOLDEN TO MING AVE - STRIPE	\$2,000
CLASS 1 - RIDGECREST - INYO KERN RD.	\$200,000
CLASS 1 - RIDGECREST - COLLEGE HEIGHTS BLVD.	\$200,000
CLASS 2 - RIDGECREST - JOHN RICHMOND RD FROM E. RIDGECREST BLVD TO FAIRGROUNDS - STRIPE	\$20,000
CLASS 3 - RIDGECREST - S. WARNER ST. FROM RIDGECREST - BLVD TO FRENCH AVE. - SIGNS	\$3,000
CLASS 3 - RIDGECREST - NORTH NORMA ST. FROM RIDGECREST - TO DRUMMOND - SIGNS	\$10,000
CLASS 3 - RIDGECREST - DRUMMOND AVE, N. CHINA LAKE BLVD TO N. INYO ST. - SIGNS	\$13,000
CLASS 2 - METRO BKFD. RD. WIDENING FOR CLASS 2 BIKEWAY PROJECTS AT VARIOUS LOCATIONS.	\$137,000
LANDSCAPING & PEDESTRIAN PROJECTS	
LUMP SUM	\$600,000
SUB-TOTAL	\$1,761,000

Table 8-28
Non-motorized Constrained Capital Improvement Program

4ND QUINQUENNium- 2003/04 TO 2007/08	
DESCRIPTION	COST
CLASS 2 - ROSAMOND - BY ROSAMOND HIGH SCHOOL	\$13,000
CLASS 3 - TEHACHAPI - SOUTH MILL ST. "H" TO "D" - SIGNS	\$1,000
CLASS 2 - METRO BKFD. - KING ST. FROM WATTS TO 4TH ST. - PAVING AND STRIPE	\$93,000
CLASS 2 - METRO BKFD. - GOSFORD RD. FROM PANAMA LN. TO WHITE LN. - PAVING AND STRIPE	\$276,000
CLASS 2 - METRO BKFD. - COFFEE RD. FROM STOCKDALE HWY. TO ROSEDALE HWY. - PAVING AND STRIPE	\$15,000
CLASS 2 - METRO BKFD. - STINE RD. FROM PANAMA LN. TO PLANZ RD. - STRIPE	\$16,000
CLASS 2 - METRO BKFD. - HUGHES LN., FROM MING AVE TO LA FRANCE - SIGNS & STRIPE	\$4,000
CLASS 3 - METRO BKFD. - LA FRANCE FROM HUGHES TO BALDWIN - SIGNS	\$500
CLASS 1 - METRO BKFD. - RT. 204 FROM "F" ST. TO KERN RIVER BIKE PATH - BRIDGE & BIKE PATH	\$200,000
CLASS 3 - METRO BKFD. - STERLING RD. FROM EDISON HWY TO COLLEGE AVE. - PAVE & STRIPE	\$119,000

CLASS 2 - METRO BKFD. - FAIRFAX FROM PIONEER TO CENTER - STRIPE	\$21,000
CLASS 2 - METRO BKFD. - FAIRFAX FROM COLLEGE TO PANORAMA - STRIPE	\$23,000
CLASS 2 - METRO BKFD. - MORNING DR. FROM BRECKENRIDGE RD. TO COLLEGE - PAVING AND STRIPE	\$220,000
CLASS 2 - METRO BKFD. - PANAMA LN. FROM AKERS TO WIBLE - PAVE AND STRIPE	\$72,000
CLASS 2 - METRO BKFD. - WHITE LN. FROM UNION TO COTTONWOOD - PAVE AND STRIPE	\$143,000
CLASS 2 - METRO BKFD. - BELLE TERRACE FROM FLORITO TO MADISON ST. - STRIPE AND PAVING	\$116,000
CLASS 3 - METRO BKFD. - DEACON ST. FROM WILLIAMS TO STERLING - IMPROVEMENTS AND SIGNS	\$212,000
CLASS 2 - METRO BKFD. - COLLEGE FROM FLITRIDGE TO MORNING - STRIPE	\$94,000
CLASS 2 - METRO BKFD. - BERNARD FROM HALEY TO OSWELL - STRIPE	\$147,000
CLASS 3 - METRO BKFD. - OILDALE DRIVE FROM WILLOW TO BEARDSLY - PAVING AND SIGNS	\$26,000
CLASS 1 - CALIFORNIA CITY - 20 MULE TEAM - CLASS 1 BIKE PATH	\$700,000
CLASS 1 - RIDGECREST - NORTH AND SOUTH CHINA LAKE BLVD.	\$300,000
CLASS 2 - RIDGECREST - DOWNS ST. FROM W.CHURCH TO INYOKERN RD. - STRIPE	\$63,000
CLASS 3 - RIDGECREST - GOLD CANYON DR. FROM E. RIDGECREST BLVD. TO E. CHURCH St. - SIGNS	\$3,000
CLASS 3 - RIDGECREST - WEST FRENCH AVE FROM NORTH CHINA LAKE TO HELENA ST.	\$3,000
CLASS 3 - RIDGECREST - WEST FLORES FROM NORTH CHINA LAKE BLVD. TO MAHAN - SIGNS	\$13,000
CLASS 3 - RIDGECREST - CHURCH AVE FROM DESERT CANDLES TO NORMA - SIGNS	\$10,000
CLASS 2 - METRO BKFD. RD. WIDENING FOR CLASS 2 BIKEWAY PROJECTS AT VARIOUS LOCATIONS.	\$137,000
LANDSCAPING & PEDESTRIAN PROJECTS	
LUMP SUM	\$600,000
TOTAL	\$3,257,50
GRAND TOTAL	\$8,827,50

Non-motorized Funding Shortfall

The following table lists projects that have no identified funding sources.

Table 8-29
Non-motorized Capital Improvement Program

FUNDING NOT IDENTIFIED	
RIDGECREST- WEST BOWMAN RD. - PEDESTRIAN IMPROVEMENTS	\$116,000
RIDGECREST - DOWNS ST. - MEDIAN IMPROVEMENTS	\$109,000
RIDGECREST - DRUMMOND ST. - MEDIAN IMPROVEMENTS	\$61,000
CLASS 2 - LAKE ISABELLA - AROUND THE LAKE PATH	\$2,300,000

CLASS 1 - CALIFORNIA CITY - 20 MULE TEAM - BIKE PATH	\$700,000
CLASS 2 - METRO. BKFD. - PANAMA LN. FROM "H" ST. TO COTTONWOOD RD. - PAVE AND STRIPE	\$288,000
CLASS 3 - METRO. BKFD. - FAIRFAX RD. FROM BRUNDAGE LN. TO EDISON - PAVE AND STRIPE	\$86,000
TOTAL	\$3,660,000

8.10 AVIATION

Aviation has not been a significant component of the regional transportation planning process. In the past, airport representatives worked directly with state and federal governments to obtain funding assistance. There were no requirements for aviation projects to be included in the RTP, the RTIP or the FTIP, which are all completed at the regional level. In order for projects to be eligible for state funding they are required to be included in the Capital Improvement Program of the California Aviation System Plan.

In order for aviation projects to be eligible for federal funding they are required to be included in the National Plan for integrated Airport Systems (NPIAS). The aviation element of the Regional Transportation Plan has incorporated planning elements as set forth by the California Aviation System Plan, or CASP. Recent efforts to develop and maintain a capital improvement program for aviation projects is also part of this program. Kern COG has in the past published these lists of projects. However, sources of funding are discretionary and sporadic. Therefore, the lists served no useful purpose at the regional level. Kern COG will continue to cooperate with state and federal aviation agencies in maintaining and updating the aviation capital improvement lists as needed.

8.11 CAPITAL IMPROVEMENT PROGRAM FUNDING SUMMARY

The following tables summarize revenue projects and capital improvement programs. Summarizing all of the transportation CIP tables provides an overview of the transportation investments over the next twenty years. Funding shortfall data is also summarized to indicate the range of need in seeking other sources of funding to build transportation projects. Lastly, for reviewing purposes, operations and maintenance dollars are also summarized.

Table 8-30
Summary of Operations and Maintenance Revenues

QUINQUINNIUM	1998-2002	2003-2007	2008-2013	2014-2018
State Highways	\$189,500,000	\$189,500,000	\$189,500,000	\$189,500,000
Local Streets and Roads	\$135,000,000	\$135,000,000	\$135,000,000	\$135,000,000
Transit	\$77,342,000	\$91,088,000	\$109,206,000	\$128,498,000
Non-motorized	\$100,000	\$100,000	\$100,000	\$100,000
Sub-total	\$401,942,000	\$415,688,000	\$433,806,000	\$453,098,000
TOTAL	\$1,704,534,000			

Figure 8-1

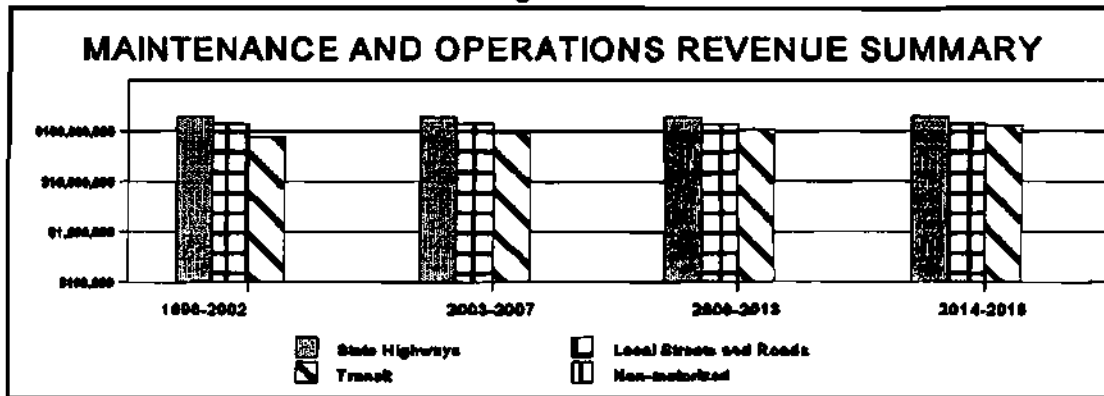


Table 8-31
Summary of Capital Improvement Revenues

QUINQUENNIAL	1998-2002	2003-2007	2008-2013	2014-
State Highways	\$461,000,000	\$304,000,000	\$306,000,000	\$307,000,000
Local Streets and Roads	\$21,210,000	\$25,930,000	\$28,670,000	\$31,780,000
Transit	\$25,920,000	\$24,120,000	\$24,320,000	\$24,620,000
Non-motorized	\$3,900,000	\$3,900,000	\$3,900,000	\$3,900,000
Sub-total	\$512,030,000	\$357,950,000	\$362,890,000	\$367,300,000
TOTAL	\$1,600,170,000			

FIGURE 8-2

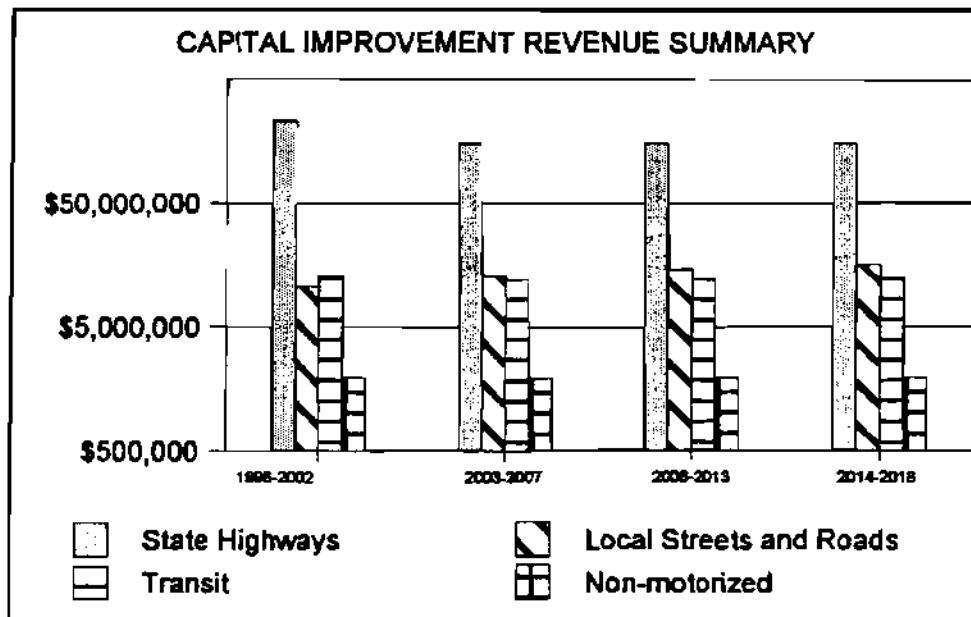
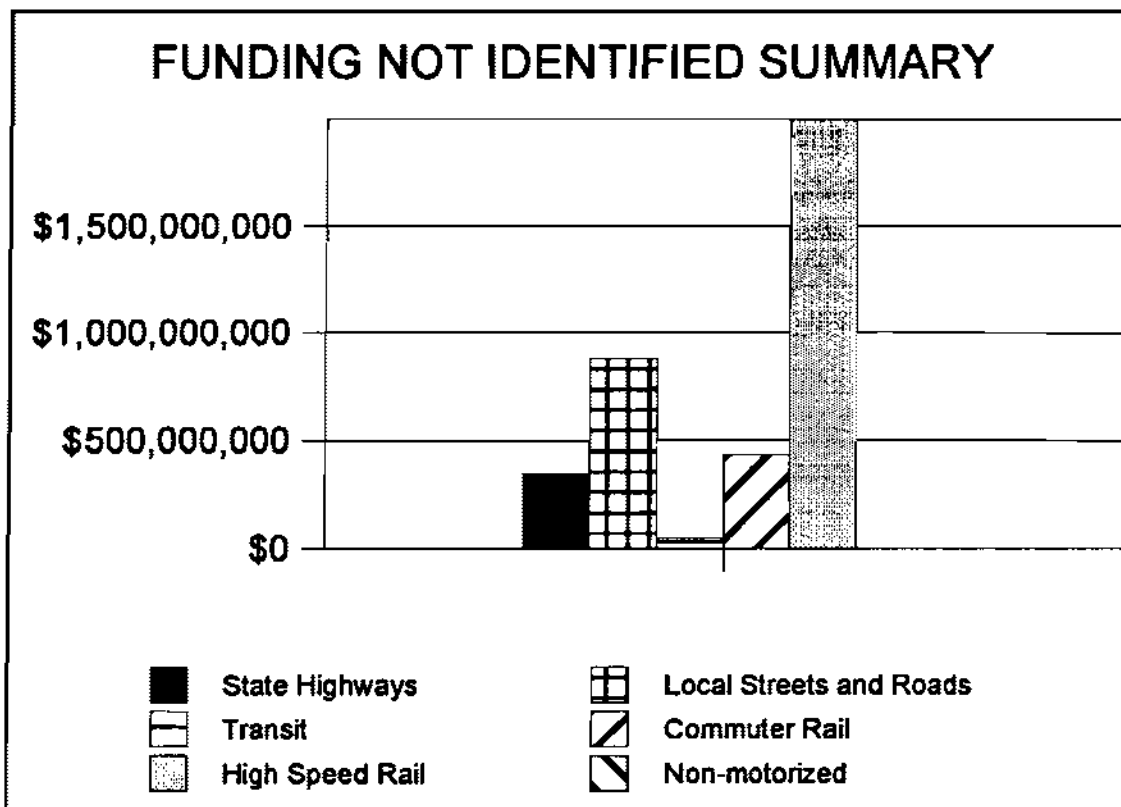


Table 8-32
Summary of Capital Improvement Funding Shortfall

GROUP	AMOUNT
State Highways	\$345,000,000
Local Streets and Roads	\$877,200,000
Transit	\$43,000,000
Commuter Rail	\$432,900,000
High Speed Rail	\$2,000,000,000
Non-motorized	\$3,660,000
TOTAL	\$3,701,760,000



8.12 FUTURE FUNDING SOURCES

The reasons for the overall shortfall in transportation funding in California are numerous. Among the reasons often cited are when California embarked upon a 10-year, \$18.5 billion transportation investment program with the state legislature adoption of the Transportation Blueprint for the Twenty-First Century in 1989, it funded less than half the \$40 billion shortfall in transportation funding needs recognized by state, regional and local transportation authorities at the time. The initial underfunding by the Blueprint was further compounded by the failure of \$2 billion in transit bond measures anticipated by the Blueprint; \$1 billion due to unanticipated earthquake repairs; \$500 million due to Congress' failure to appropriate funds consistent with the amounts authorized by the Intermodal Surface Transportation Efficiency Act of 1991; \$500 million due to reduced yields from fuel taxes and truck weight fees because of the economic recession; \$800 million shifted from the State Highway Account to pay debt service on state transit bonds which is an obligation of the General Fund; and most recently, an unfunded seismic repair bill for state toll bridges.

A congestion free transportation system in the metropolitan Bakersfield area will require local financial commitment to supplement state and federal funding. The proposed capital improvements listed in the Financial Element are constrained revenue projections based on past funding activity only within the Kern region. Both Kern County and the City of Bakersfield have utilized site impact fees for transportation infrastructure. Therefore, we have based some future construction utilizing this source of funding. However, Kern County has not been successful in implementing a one-half cent sales tax in the past, and therefore local sales taxes were not projected into the twenty-year revenue forecast. A recently completed study, "Kern County Transportation Funding Strategy" prepared for Kern COG evaluates potential options for developing local funding sources. Five alternative funding mechanisms were presented.

- **Regional / County-wide Metropolitan Sales Tax** - Kern County has the authority to place an initiative on the ballot for voters to authorize a sales tax specifically for transportation purposes. The Regional / County-wide Metropolitan Sales Tax program has become the preferred mechanism for local transportation funding in California; currently, 18 counties have passed sales tax measures for this purpose. All of the programs have fixed durations, ranging from 10 to 20 years.
- **County-wide Gas Tax** - The County-wide Gas Tax requires a two thirds vote to be implemented. California counties currently have the authority to place an initiative on the ballot for voters to authorize a local fuel tax for transportation purposes. This funding mechanism has not been successfully implemented in the State of California will approval for two thirds of the voters.
- **Property Tax** - California cities and counties currently have the authority to place an initiative on the ballot for voters to authorize a property, or parcel, tax increase for transportation purposes with approval from two thirds of the voters. The increase in property tax is then typically used by the jurisdiction as the security for issuing general obligation bonds.
- **Impact Fees** - Impact fees are currently levied on new development with the Bakersfield Metro area and in the unincorporated community of Rosamond in Kern County. The impact fee programs are estimated to generate approximately \$200 million over 20 years. The impact fee funding option would involve the development of an expanded impact fee program for regional transportation projects with a uniform rate applied throughout the county.
- **Congestion Pricing** - Congestion pricing encompasses a range of funding mechanisms including the implementation of vehicle registration fee surcharges, daily tolls, peak hour tolls, and / or commuter fee.

A summary of the annual revenue generated by each of the alternative funding mechanisms described above is provided in Table 8-33. The revenue projections range from \$1.2 to 26.3 million per year.

Table 8-33
Annual Revenue Projection for Alternative Funding Mechanisms

MECHANISM	DESCRIPTION	ANNUAL REVENUE
COUNTY SALES TAX	½ CENT INCREMENT	\$26,300,000
COUNTY GAS TAX	10 CENT TOTAL INCREASE: 5 CENTS IN YEAR 1, 1 CENT INCREASE PER YEAR THEREAFTER UNTIL YEAR 5.	\$24,500,000
METRO SALES TAX	½ CENT INCREMENT	\$15,000,000
PARCEL FEE	\$25 PER PARCEL	\$13,400,000
PARCEL FEE	\$20 PER PARCEL	\$7,600,000
METRO SALES TAX	1/4 CENT	\$7,500,000
VEHICLE REGISTRATION SURCHARGE	\$7.50 PER VEHICLE AVERAGE OVER 20 YEARS	\$5,500,000
VEHICLE REGISTRATION SURCHARGE	\$5.00 PER VEHICLE AVERAGE OVER 7 YEARS	\$3,400,000
IMPACT FEES	\$400 PER PARCEL COUNTY-WIDE	\$1,600,000
IMPACT FEES	\$400 PER PARCEL IN METRO AREA	\$1,200,000

The study evaluated six alternatives that combine funding mechanisms into either a long-term program or short-term program. The preferred choice, Alternative 1 is a short-term program combining a metro sales tax with the impact fee program. The seven year program would be limited to the metropolitan Bakersfield area and therefore only fund projects in the same area. The ½ cent sales tax is estimated to yield revenues of \$104 million over seven years, while the expanded impact fee (\$400 per unit on development in the Metropolitan Bakersfield area) would yield revenues of \$6 million, or a total revenue of approximately \$110 million over seven years.

The long term choice would be Alternatives 3 (county-wide ½ cent sales tax and 4 (Metropolitan Bakersfield ½ cent sales tax, impact fees, vehicle registration surcharge). The implementation of a sales tax, over a twenty year period, would require a vote of the Kern County Board of Supervisors and City Councils from all of the local jurisdictions as well as a public vote. The boundary of the sales tax area would be concurrent with the county limits. The implementation of an expanded impact fee, would also require a vote of the Kern County Board of Supervisor and City councils from all local jurisdictions. This program would be implemented over a twenty year period and yield a total revenue of approximately \$557 million. Alternative 4 would generate approximately \$440 million over 20 years.

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9.0 SPECIAL EMPHASIS AREAS

9.1 WELFARE REFORM AND TRANSPORTATION

Recognizing that providing transportation is an important component in the federal and state level welfare reform initiatives Kern COG established a *Transportation and Welfare-to-Work* Task Force in August 1997. The task force was intended as a forum to discuss the role of transportation, particularly public transit, in helping people transition from welfare to workfare. The task force brought together local agencies and individuals with varied interests in welfare reform: transportation providers, welfare agencies, employment training networks, employers, and elected officials.

Background

On August 11, 1997, Governor Wilson signed Assembly Bill 1542 into law. This bill, known as the Thompson-Maddy-Ducheny-Ashburn Welfare-to-Work Act of 1997, overhauls the California welfare system. The Welfare-to-Work Act brings California's welfare system into compliance with provisions of the federal Personal Responsibility and Work Opportunity Act, which was signed into law by President Clinton on August 22, 1996.

The Welfare-to-Work Act renamed the previous Aid to Families with Dependent Children (AFDC) program as the California Work Opportunity and Responsibility to Kids (CalWORKs) program. Under CalWORKs, adults may receive assistance only for a limited time.

- ☐ Adult applicants are limited to 18 cumulative months, plus an additional six months if the County determines that the added time would lead to employment, or if local employment is not available.
- ☐ Current adult recipients are limited to 24 cumulative months of welfare-to-work services.
- ☐ After this 24-month time period, adults may continue to receive aid if the County determines that a job is not currently available and the individual participates in unpaid community service up through the five-year maximum.
- ☐ Adult recipients have a lifetime limit of 60 cumulative months of aid, although some hardship exemptions to the 60 month limit are permitted.

CalWORKs required Counties to submit their plans to the State Employment Development Department for approval before January 1, 1998; the County of Kern completed its plan in December 1997.

9.1.2 TRANSPORTATION IN WELFARE REFORM

U.S. Department of Transportation Secretary Rodney Slater has stated that transportation is the "to" in welfare-to-work. Transportation in welfare reform is not only about transporting recipients from home to work, and work to home; transportation will also be needed to access child care facilities, employment training, and other activities. Lack of affordable transportation may, in fact, be a difficult hurdle for recipients to overcome, even more difficult than lack of child care. Transportation is not only an essential ingredient in welfare reform, but an important part of helping people achieve independence.

The Transportation and Welfare-to-Work Task Force, therefore, developed a list of local issues that needed greater attention. The work plan has been identified as follows:

1. **Availability of Transit:** Define various transit services currently available and to explore early morning and late evening service, weekend service, and transit in under served areas.
2. **Accessibility:** Define the level of transit services are available to low income residential areas, and how training and employment sites are served by transit.

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3. **Individual's Responsibility:** Currently, transit systems in the county must recover at least 10 percent of their operating expenses (20 percent by Golden Empire Transit District) through passenger fares. Any proposed changes in transit should continue to require individual passengers to pay a fare, without dependence on a blanket subsidy.
4. **Regulatory Relief for Transit:** In providing public transportation, transit agencies must meet a number of legal requirements. In its attempt to extend services in order to ease the transition from welfare to workfare, could certain transit regulations be relaxed?
5. **Alternative Transportation:** Will training centers, like Employer's Training Resource (ETR), colleges, and private employers, be willing to sponsor and/or fund certain transportation control measures such as vanpools and rideshare, or subsidize the cost of providing transit?
6. **Education/Marketing:** Educate people about how to use transit, and market the existing transit services more effectively to welfare-to-work clients.
7. **Coordination:**
 1. Transit services - to reduce duplication of services
 2. Training Sites - new sites will be located close to existing transit routes; explore possibility of shared transportation services.
 3. Provide public transit information to other welfare reform committees.
8. **Private Sector:** Explore avenues for effective public-private partnerships in providing transportation.
9. **Evaluation:** Rate effectiveness of various transportation strategies.

The results of this task force will be integrated into the ongoing transportation planning activities of Kern COG.

9.2 GEOGRAPHIC INFORMATION SYSTEMS AND GLOBAL POSITIONING SYSTEMS

Implementation of Geographic Information Systems (GIS) and Global Positioning Systems (GPS) will benefit regional transportation planning activities and the implementation of Intelligent Transportation Systems (ITS) in Kern County. A framework is being laid to ensure that transportation planning and ITS enhancements will be implemented effectively and efficiently. Local jurisdictions have undertaken a multi-agency effort to create and maintain a highly accurate digital map of Kern County to be used in conjunction with GIS applications and some ITS applications.

9.2.1 Organizational Structure: Kern GEONET

The Kern Geographic Information Network (Kern GEONET) was established through a Memorandum of Understanding (MOU) between the City of Bakersfield, the County of Kern and the Kern Council of Governments to coordinate the development of GIS within Kern County. GIS can be defined as a computer-based mapping system that can link existing data base tables to spatial maps, creating enhanced decision support through the clear presentation of data. GIS is commonly used in emergency response, demographics, transportation planning, land use planning, facilities management, and Highway Pavement Management System (HPMS). Most government data bases would benefit greatly from unlocking their under-used spatial potential.

GIS is used in concert with GPS technology to produce accurate maps and provide a reference location for other GPS/ITS applications such as in-vehicle navigation, and automated vehicle location. Kern GEONET's efforts will accelerate the efficient and accurate implementation of ITS.

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The Kern GEONET MOU established executive and technical committees to generate regional standards for digital geographic data. The technical committee has prepared a work plan to establish a common digital base map, which will permit all Kern region agencies to coordinate use of geographic data. To date, the technical committee has:

- ☐ Performed and analyzed a needs survey;
- ☐ Developed standards for the base map and surveying quality GPS data;
- ☐ Catalogued and mapped the status of existing base map quality data;
- ☐ Identify links necessary for a Wide Area Network to facilitate the flow of data between agencies;
- ☐ Developed and diagrammed a maintenance procedure;
- ☐ Developed goals, policies, and tasks in a work plan for coordination of local government GIS efforts.

The technical committee developed a work plan, which recommends the following task:

- ☐ Fund a long range tier program for developing a high-accuracy base map.
- ☐ Coordinate existing high profile GIS projects for use by emergency dispatch and Valley-wide GIS.
- ☐ Expand the current MOU to include other agencies that require data exchange.
- ☐ Fund the expansion of the wide area network to ensure data flow between responsible agencies.
- ☐ Develop data sharing capabilities via Internet.
- ☐ Continue technical committee meetings.

The Executive Committee currently meets quarterly, while the Technical Committee meets monthly. Some Technical sub-committees meet on a weekly basis to develop recommendations implementation activities.

9.2.2 Global Positioning Systems (GPS)

Global Position Systems are being used in two areas. First, GPS is a tool for improving the absolute positional accuracy of the Kern GEONET base map. Kern Council of Governments contracted to use GPS to create a more accurate survey of street centerlines in the rural areas of the region. GPS has also been used to locate and inventory call boxes, bridges, culverts, county mile posts, address, street surface type (dirt, paved), shoulder type, lanes, medians, railroads, railroad crossings, and other transportation features. The second area GPS is being used in is in-vehicle navigation. Rental car companies are now available with this capability, however, old data is limiting its effective and accurate implementation. Kern Council of Governments is working closely with the data vendors to update the map data used in these navigation applications.

9.2.3 Applications

Two categories of transportation enhancement activities benefit from the collaborative efforts of Kern GEONET and the implementation of GPS. Regional transportation planning activities is one area, and Intelligent transportation systems (ITS) is the other. However, the benefits from the new capabilities provided by these new technologies will extend far beyond transportation activities to nearly all public and private sectors.

9.2.3.1 Regional Transportation Planning

Regional transportation planning activities will benefit through the creation of a standardized, linear-referenced digital road map for the entire county. This will allow the accurate, mapping and updating of Transportation Improvement Program projects, HPMS, Signalization, and other facilities management applications. Regional transportation modeling is being enhanced through the creation of a common, and more accurate basemap that can tie in with the land use and socio-economic data being produced by the local jurisdictions, creating more accurate socio-economic and transportation forecasts for regional transportation planning. In addition, Transportation Control Measures will be enhanced through the implementation of more accurate rideshare matching applications.

9.2.3.2 Intelligent Transportation Systems

The second category of enhancements expected to benefit from Kern GEONET is ITS. The creation of a standardized basemap will ease the integration of ITS applications within the region. The establishment of a regional traffic operations center will benefit from a standardized basemap for traffic monitoring applications. GPS applications such as in-vehicle navigation, intelligent vehicle routing, and automated vehicle location will be less expensive to implement accurately due to the availability of accurate, up-to-date road locations.

One of the greatest benefits of Kern GEONET has been the increased level of communication and cooperation on information technology projects. This cooperation will ultimately increase the efficient expenditure of transportation funds in the region.

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SECTION 10.0 OTHER CEQA REQUIRED ELEMENTS

10.1 IRREVERSIBLE COMMITMENTS

The 1998 RTP is not a growth inducing plan; therefore, significant irreversible environmental changes will be relatively limited. Development of the proposed Route 58 segment and general enhancements in the transportation system on undeveloped agricultural lands would generate an increasing amount of human activity, traffic, and noise. The irreversible environmental impacts of proposed transportation improvements on previously developed land will be negligible. In the long term, it can be expected that transportation improvements would have a positive environmental impact when compared to a situation where the improvements were not made. In general, irreversible impacts might have some type of an effect on the following environmental areas: air quality, agricultural land and operational activities, noise, biological and cultural resources, land use, and transportation/circulation. Further discussion of the possible irreversible impacts on these environmental resources is provided below.

Air Quality

A long-range reduction in mobile source pollutants will result from the implementation of the 1998 RTP as defined in previous sections of this document (reference Section 5.2.2.5). However, short-range localized air quality impacts may occur. These impacts should be addressed during subsequent environmental analysis for specific RTP improvement projects as they are programmed for implementation.

Agricultural Lands

To provide appropriate enhancements to the transportation system, it may be necessary to use existing agricultural lands. Some agricultural land is needed to expand existing facilities or to provide for the addition of new facilities. Development of agricultural land for transportation purposes is irreversible and will allow for increased human, motor vehicle, and other traffic.

Noise

Irreversible environmental changes from increased site-specific noise could occur as a result of implementing some of the RTP projects. Appropriate mitigation measures have been identified (reference Section 5.2.2.4); however, some localized noise impacts will still occur. A thorough environmental impact assessment should be developed as RTP projects are programmed for implementation.

Biological Resources

Irreversible environmental changes to the biological community would occur as a result of implementing projects referenced in the RTP. Appropriate mitigation measures have been identified (reference Section 5.2.2.3); however, some localized biological impacts will still occur. Thorough environmental impact assessments should be developed as RTP projects are programmed for implementation.

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Cultural Resources

Irreversible environmental changes to the cultural community would occur as a result of implementing some of the RTP projects. These changes would be caused by expansion of existing facilities or construction of new facilities in previously undeveloped areas where sensitive cultural resources have been located. Appropriate mitigation measures have been identified (reference Section 5.2.2.9); however, some localized cultural resource impacts will still occur. A thorough environmental assessment of such impacts should be developed as RTP projects are programmed for implementation.

Land Use

Irreversible environmental changes caused by the displacement of existing developments would occur as a result of implementing some of the RTP projects and appropriate mitigation measures have been identified (reference Section 5.2.2.5). In addition, a thorough environmental assessment of localized impacts should be developed as RTP projects are programmed for implementation.

Transportation/Circulation

Irreversible environmental changes to the transportation/circulation system would occur as a result of implementing some of the RTP projects. Overall, the planned transportation/circulation system is expected to operate at acceptable levels; however, some level of service (LOS) impacts cannot be mitigated considering programmed and planned improvement projects as identified in the Financial Element. Affected agencies shall coordinate efforts to identify appropriate funding mechanisms that would mitigate eventual LOS deficiencies. (Reference Section 5.2.2.6)

10.2 UNAVOIDABLE EFFECTS

Based on the environmental analysis of the RTP, adoption of RTP policies and objectives would result in both positive and negative unavoidable effects on the environment. These effects include: air quality, agricultural land and operations, transportation/circulation, noise, and biological and cultural resources. A description of how the RTP will affect these environmental concern areas is provided below.

Air Quality

The Air Quality Conformity Analysis (reference Section 7.0) indicates that the RTP will result in a long-range reduction in mobile source pollutants including volatile organic compounds (VOC), nitrogen oxides (NO_x), carbon monoxide (CO), and particulates less than 10 microns in diameter (PM₁₀). These reductions primarily will be brought on by auto fleet efficiency, technological improvements, further public education, more stringent emission standards, and the implementation of transportation control measures (TCMs) or other measures contained in an approved SIP, the San Joaquin Valley Unified Air Pollution Control District's (SJVUAPCD) and the Kern County Air Pollution Control District's (KCAPCD) Air Quality Attainment Plans (AQAPs), the SJVUAPCD's TCM Program, and/or the Districts' PM₁₀ Nonattainment Area Plans and Rate of Progress (ROP) Plans. These TCMs or other measures must be implemented in order to achieve a positive Air Quality Conformity Finding as required by the federal Clean Air Act Amendments (FCAA) and to comply with California Clean Air Act (CCAA) provisions.

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In addition to the regional air quality impacts, it is possible that potential "hot spot" emission concentrations could occur considering increased travel along the Regionally Significant Street and Highway System or along other transportation corridors. An assessment of emission concentrations should be conducted during subsequent environmental analysis required for the construction of programmed improvements in the Federal Transportation Improvement Program and/or State Transportation Improvement Program (FTIP/STIP).

Agricultural Lands

Implementation of some 1998 RTP projects will impact the production of agricultural crops and may result in the loss of unique or prime agricultural lands. To reduce congestion along the County's regional streets and highways and to provide for improvements to other forms of transportation (rail, bicycle, transit), new facilities or the expansion of existing facilities must be provided in order to achieve and maintain adequate levels of service consistent with RTP policies and objectives. When this occurs, agricultural land may be impacted or reduced. When new facilities or improvements to existing facilities are constructed, impacts on crop productivity adjacent to the transportation improvement are possible. A thorough assessment of the specific impacts should be developed as the projects are readied for implementation.

New or enhanced facilities will result in long-term benefits such as an increase in mobility alternatives (rail and air passenger services/systems, provision of bikeway improvements and amenities, pedestrian movement, and transit), increased traffic capacity along regionally significant streets and highways, improved integration of various transportation/circulation modes, and improved goods movement to and from the market place via freight rail, streets and highways network, or air freight. These improvements will enhance the regional transportation system, and as a result, improve air quality by reducing mobile source emissions (VOC, NO_x, CO, and PM₁₀) that could be detrimental to continued agricultural production.

Noise

According to the noise impact assessment, enhancement of existing transportation facilities (streets and highways, freight and passenger rail or air travel, public transit, bikeways, pedestrian improvements, etc.) or the provision of new facilities will result in some noise impacts. Such impacts will occur as a result of the provision of additional traffic along the Regionally Significant Street and Highway System, enhanced public transit use (an increase in the public transit bus fleet), additional passenger trains, increased/enhanced freight rail trains and facilities, additional bikeways and amenities, etc. Mitigation measures have been identified in Section 5.2.2.4 to lessen any significant impacts. Prior to design and construction of specific projects, subsequent environmental analysis will be made. It is not possible, given the scope of the RTP, to address all specific noise impacts that may occur during or following construction of RTP projects.

Biological Resources

Implementation of some of the proposed RTP projects would result in significant impacts to native plant and animal communities. Referencing Section 5.2.2.3, sensitive communities have been identified throughout Kern County and appropriate mitigation measures have been developed. While the mitigation measures lessen the magnitude of these impacts, they are still considered significant.

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Prior to design and construction of specific projects, subsequent environmental analysis will be made. It is not possible, given the scope of the RTP, to address all specific biotic resource impacts that may occur when RTP projects are implemented.

Cultural Resources

Implementation of some of the RTP projects would result in significant impacts to cultural resources. Referencing Section 5.2.2.9, significant cultural resources have been identified throughout Kern County and appropriate mitigation measures have been developed. While the mitigation measures lessen the magnitude of these impacts, they are still considered significant. Prior to design and construction of specific projects, subsequent environmental analysis will be made. It is not possible, given the scope of the RTP, to address all specific cultural resource impacts that may occur as a result of the construction of RTP projects.

Land Use

Implementation of some of the RTP projects may result in the relocation of existing developments (residential, industrial, commercial, and others). The specific numbers of structures and residences that will be impacted could change significantly over the time frame of the RTP. Other direct impacts of RTP projects on existing or planned land uses are not anticipated. The RTP has been developed considering the existing and planned land use impacts on the Regionally Significant System (streets and highways, rail, air, bikeway, pedestrian, and other forms of transportation). It is not anticipated that the RTP projects will cause significant impacts on land use primarily because of the long-range transportation plans and policies addressed by the RTP. Many of the projects have been planned to address the impacts of planned land uses. As a result, expected impacts have been identified and are known. Prior to design and construction of specific projects, subsequent environmental analysis will be made. It is not possible, given the scope of the RTP, to address all specific land use impacts that may occur as a result of the construction of RTP projects.

Transportation/Circulation

The RTP minimum LOS policy of "E" along the Regionally Significant Street and Highway System will be achieved as a result of the implementation of the planned projects with the exception of several street and highway segments as discussed in Section 5.2.2.6. These segments are expected to function at LOS "F" by the year 2014 even considering improvement projects contained in the Financial Element. The remaining facilities will operate at LOS "E" or better considering the implementation of all regional transportation improvements including freight and passenger rail and air service, public transit, bikeways, etc. In addition, the overall systemwide LOS's will be improved considering TCMs and other measures that must be implemented in order to achieve the reduction of air quality emissions below the 1990 Base Year, the applicable emissions budgets, and the associated No Build scenarios.

Further, a No Build alternative (no further street and highway improvements beyond the year 1999 or the FTIP/STIP) was developed as required by CEQA. The analysis results indicate that if the RTP projects are not implemented as scheduled and as defined in the Financial Element, then the overall system LOS would suffer; i.e., numerous regional street and highway segments would degrade to LOS "F". This condition would be contrary to RTP goals and policies. Finally, without implementation of the RTP projects, air quality is projected to worsen significantly (reference Section 7.5).

10.3 RELATIONSHIP BETWEEN SHORT-TERM USES AND LONG-TERM PRODUCTIVITY

A goal of the 1998 RTP is to promote an efficient transportation system for the movement of people and goods that enhances the physical, economic, and social environment. Within the twenty-year timeframe of the RTP, short-term uses of the environment will be a continuous process as individual projects are implemented and maintained through long-term use and activity. If the objectives and policies of the RTP are carried out within the range of reasonable and expected finances, long-term mobility, accessibility, safety, and comfort would be enhanced.

Many of the proposed transportation facility improvements will not have a long-term or adverse effect on the environment. The 1998 RTP identifies various enhancements of existing facilities and the addition of a new segment on Route 58. These improvements are designed to create a more efficient transportation system and improve air quality. New roadway development, if built on undeveloped land, may have an impact on resources, including biotic, agricultural, water, and visual. However, attempts will be made to achieve a balance of long-term productivity while maintaining the environment to the degree that is practicable and feasible. The new segment of Route 58, for example, will have minimal short-term effects on the environment, yet long-term productivity will be achieved with improvements to the transportation system, regional air quality, energy efficiency, and safety.

The intent of the RTP is to provide a framework for long-range planning decisions for the physical development or improvement of the Regionally Significant Transportation System to 2014. The intent is not to provide for the complete environmental evaluation of RTP projects that are scheduled to occur in the short-term or within specific timeframes over the twenty-year planning period. Detailed environmental analysis should occur prior to design and construction of a programmed transportation improvement project. At that time, the short-term uses and impacts can be evaluated completely. It is expected, however, that the short-term uses of the natural environment will be minimized through achievement of RTP goals, objectives, and policies.

The long-term productivity of Kern County would also be enhanced by an adequate transportation system to move services, people, and to facilitate services. In addition to serving local needs, intra-regional goods movement, tourist/recreational travel, and other intra-regional transportation movement would be improved.

The long-term environmental productivity would be both enhanced and adversely affected by the RTP. Some reductions would occur in aesthetics, localized noise quality, and agricultural productivity. Regional air quality, energy efficiency, and safety would be improved.

10.4 GROWTH INDUCING IMPACTS

Growth inducing projects directly and indirectly perpetuate various types of growth. This can include economic, housing, and population growth. Various factors play a role in growth inducement such as the existence of, or lack of, utilities, roadways and public services. For example, the development of utility, sewer, and water services allows for growth to occur. These services ensure the economic feasibility needed to proceed with the development of a project, thereby allowing additional housing construction and population growth. However, services provided to an area may not be considered growth inducing as long as those services will not offer opportunities for additional unplanned growth.

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Since the 1998 RTP is not a growth inducing plan (that is, it does not propose enhancements and/or additions that are contrary to existing land use plans and policies), growth inducing impacts are not anticipated. The 1998 RTP is only intended to identify the need for new or enhanced transportation facilities necessary to accommodate planned growth and development in Kern County as depicted in adopted General Plan Land Use and Housing Elements.

The enhancement of existing transportation facilities and the development of a new segment of Route 58 west of Route 99 are not considered to be growth inducing. Upon construction of the Route 58 freeway segments, impacts associated with enhancing existing transportation facilities would be lessened and would improve the overall function of the transportation system in the affected area. Improvements to Route 58 are intended to enhance east/west movement and would improve the LOS along other existing east/west facilities. The addition of this facility will not in itself cause areas currently not planned for future growth and development to be prematurely designated for urban uses. Such actions would be directly in conflict with adopted land use plans and policies adopted by local agencies in Kern County.

The Metropolitan Bakersfield Habitat Conservation Plan was recently developed to establish viable biological habitat conservation areas and plans for metropolitan Bakersfield. At the project level, new development must work with habitat conservation planning to preserve habitat values.

10.5 CUMULATIVE IMPACTS

Cumulative impacts associated with implementation of the RTP have been addressed by the various analyses (transportation/circulation, air quality, noise, etc.). These analyses are contained within this RTP. Results of the analyses indicate the following:

1. Systemwide transportation/circulation will be improved to acceptable levels considering results of the LOS analysis, which found that several segments would result in significant LOS deficiencies by 2014 (reference Section 5.2.2.6);
2. Results of the Air Quality Conformity Analysis indicate that air emissions associated with the 1998 RTP projects will improve air quality between 1998 and 2014. Improvements will also occur during interim periods (1995, 1996, 1999, 2001, and 2010); and
3. The noise impact assessment indicates that, from a systemwide perspective, noise impacts will be minimal; however, localized noise impacts will result from the implementation of enhanced transportation/circulation facilities or new facilities.

As a result of the above, cumulative impacts will be mitigated or will be minimized with implementation of the 1998 RTP projects.

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11.0 REFERENCES

11.1 GLOSSARY

ADA - Americans with Disabilities Act - A federal act that prohibits discrimination against all individuals with disabilities. With certain statutory exceptions, public and private entities providing fixed route or demand responsive transportation services must acquire accessible vehicles or provide equivalent service to individuals with disabilities.

Air Pollution Control District (APCD) - Responsible for emissions regulations and attainment of federal and state air quality standards in a predefined region. As an example, the APCD deals with issues such as the Indirect Source Rule.

Air Quality Attainment Plan - Plan for attainment of the state air quality standards, as required by the California Clean Air Act of 1988. It is adopted by APCDs and subject to approval by the State Air Resources Board.

Appropriation - Legislation that allocates budgeted funds from general revenue to programs that have been previously authorized by other legislation. The amount of money appropriated may be less than the amount authorized.

Apportionment - At the federal level, approval by the Office of Management and Budget for an agency to spend funds appropriated by Congress. Public reporting of the OMB approved apportionment, detailing the amount of transit funding available to each urbanized area or designated recipient, is done by FTA.

Authorization - Federal legislation that creates the policy and structure of a program including formulas and guidelines for awarding funds. Authorizing legislation may set an upper limit on program spending or may be open ended. General revenue funds to be spent under an authorization must be appropriated by separate legislation.

Bridge Replacement and Rehabilitation Program - ISTEA retains the bridge program from previous federal legislation, but makes eligible seismic retrofit and the application of calcium magnesium acetate.

California Air Resources Board (CARB) - Designated by EPA as having responsibility for the implementation of the federal Clean Air Act, State Implementation Plan, and approving air quality attainment plans as required by the State Clean Air Act of 1988. Under State law, CARB establishes state air quality standards and vehicle emissions requirements.

California Clean Air Act (AB 2595, Sher) - Enacted in 1988, the Act: (1) established a legal mandate to achieve California's ambient air quality standards by the earliest practicable date; (2) prescribes a number of emission reduction strategies and requires annual progress in cleaning up the air; and (3) grants authority to the state's local air pollution control districts to adopt and enforce transportation control measures (TCMs).

California Energy Commission (CEC) - Established by the State Legislature in 1974, the CEC is the State's principal energy planning and policy making organization. The CEC is charged with ensuring a reliable and affordable energy supply for the State. CEC policies are consistent with protecting the State's environment and its public health, safety, and general welfare.

California Environmental Quality Act (CEQA) - Enacted in 1970, CEQA provides the State's environmental guidelines by which land use development and management decisions are premised. CEQA specifies the

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State's environmental review process and applicable environmental policies.

California Highway Patrol (CHP) - Agency responsible for enforcing the state's traffic and safety laws on state highways and by contract, county roads. The CHP also jointly operates Traffic Operation Centers with Caltrans.

California Public Utilities Commission (CPUC) - Regulates utility and transportation companies in the state that are privately owned and operated. The CPUC sets rates, regulates service standards, and monitors utility operations for safety; it does not regulate municipal or district-owned utilities. The CPUC also develops policies promoting competition among utilities and acts as an intermediary between the public and private utilities.

California State Department of Transportation (Caltrans) - As owner/operator of the state highway system, responsible for its safe operation and maintenance. Proposes projects for Intercity Rail, Interregional Roads, and soundwalls in the PSTIP. Caltrans is also responsible for the HSOPP, Toll Bridge, and Aeronautics programs. The TSM and State/Local Partnership Programs are administered by Caltrans. Caltrans is the implementing agency for most state highway projects, regardless of program, and for the Intercity Rail program.

California Transportation Blueprint Legislation - Enacted by the voters in 1990, the California Blueprint increased the State sales tax on gasoline to provide approximately \$18 billion over the next 10 years. Other hallmarks of the Blueprint are funding programs that can be used by programming agencies (such as the Flexible Congestion Relief and Transportation System Management Programs) and requirements for coordination between local governments, regional transportation planning agencies, and the State.

California Transportation Commission (CTC) - Nine-member board appointed by the Governor and confirmed by the Legislature that reviews Regional Transportation Improvement Programs (RTIPs) and the PSTIP, and forwards some transportation projects from these programs into the State Transportation Improvement Program (STIP); this qualifies the projects for state funding. The CTC also has financial oversight of the major programs authorized by Propositions 111 and 108.

Capital Improvement Program (CIP) - An element of the Congestion Management Program (CMP), the CIP is a seven year program of projects to maintain or improve traffic level of service and transit performance standards developed by the CMP, as well as the regional transportation impacts identified by the CMP Land Use Analysis Program, which conforms to transportation-related vehicle emissions air quality mitigation measures.

Commuter Rail - Form of passenger transportation characterized by medium distance home-to-work passenger travel, multiple ride ticketing, recurring peak-hour travel and use of high-density seating. Commuter rail uses diesel electric or overhead electrically powered locomotives. Examples are Caltrans operated by Caltrans from San Jose to San Francisco, and GO Transit in Toronto.

Comprehensive Transportation Plan (CTP) - Long-range framework for the planning, development, operation, and maintenance of California's transportation system that proposes an intermodal system that is integrated, both in form and function, and that offers mobility while supporting economic and environmental goals. The plan is multimodal, addressing all transportation modes. It outlines a series of goals, policies, strategies and recommendations drawn from State and federal transportation law.

Conformity - The Federal Clean Air Act requires transportation plans, programs, and projects to conform to applicable state implementation plans. Metropolitan Planning Organizations (MPOs) and the U.S. Department of Transportation must make a determination of conformity for transportation plans and programs. The conformity determination must be based on recent estimates of emissions, and such estimates must be based on the most recent population, employment, travel and congestion estimates as determined by the MPO.

Congestion Management Program (CMP) - A multi-jurisdictional program with the goals of reducing traffic

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congestion, researching land use decision impacts, and improving air quality. By State law, this program is required of every county in California with an urbanized area of at least 50,000 population, as defined by the U.S. Census Bureau.

Congestion Management System (CMS) - One of five management systems identified under the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA), which requires certain levels of mobility to be maintained on all transportation systems.

Congestion Mitigation and Air Quality Improvement Program (CMAQ) - Funding program established by ISTEA specifically for projects and programs that will contribute to the attainment of a national ambient air quality standard. Funds are available to non-attainment areas for ozone and carbon monoxide based on population and pollution severity. Eligible projects are defined by the approved State Implementation Program (SIP).

Cooperation/Consultation - Two terms used in the 1991 ISTEA regarding the relationship between state, regional, and local officials in developing plans and programs. Commonly interpreted to mean "work together," this term could be the subject of much debate in the upcoming development of the federal Joint Planning regulations.

Corridor - Any major transportation route that includes parallel limited access highways, major arterials, or transit lines. With regard to traffic incident management, a corridor may include more distant transportation routes that can serve as viable alternatives to each other in the event of traffic incidents.

County Minimums - Instituted in 1983 by SB 215 (Foran), it represents the minimum share of programming each county should receive. Under this statute (Section 188.8, Streets and Highways Code), 70 percent of capital outlay funds must be expended in each county according to a formula based 75 percent on county population and 25 percent on centerline state highway miles in the county. The county minimum is accounted for over a fixed five-year period.

Demonstration Projects - ISTEA includes funding earmarked for specified projects. Demonstration projects are described in the following sections of ISTEA: (a) 1103, High Cost Bridge Projects; (b) 1104, Congestion Relief Projects; (c) 1105, High Priority Corridors; (d) 1106, Rural and Urban Access and Mobility Projects; (e) 1107, Innovative Projects; (f) 1108, Priority Intermodal Projects.

Department of Transportation (DOT) - Federal governmental agency that includes the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA). DOT is headed by the Secretary of Transportation, a cabinet-level post.

Environmental Protection Agency (EPA) - The federal agency charged with protecting the environment.

Federal Clean Air Act Amendments of 1990 (FCAAA) - Legislation that renewed the Federal Clean Air Act and made significant program changes. For the transportation sector, significant changes included a definition of conformity and requirement for the formulation by EPA and DOT of regulations regarding conformity, and requirements for the use and development of alternative fuels and vehicles.

Federal Highway Administration (FHWA) - Agency responsible for the approval of transportation projects that affect the federal highway system. Administratively, it is under DOT and is the sister agency of FTA.

Federal Transit Administration (FTA) - The federal Department of Mass Transportation (formerly UMTA), which is under DOT, and sister agency of FHWA.

Fixed Guideway System - A passenger rail system including but not limited to commuter rail and intracity rail

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(light rail and heavy rail), intercity rail, monorail, and maglev. Both the light rail and heavy rail technologies will accommodate goods movement.

Flexible Congestion Relief (FCR) - One of the State's funding programs for local or regional transportation projects to reduce congestion. State highway projects, local roads, and rail guideway projects are all eligible.

FTA Section 3 Funds - Discretionary capital funds provided by the federal government through FTA. New Rail Starts and Extensions are funded through this program, which operates through earmarking at the Congressional level. Other Section 3 categories are Rail Modernization (formula-based) and Bus and Bus Facilities (discretionary). Minimum local match is 20 percent. Projects meeting the mandates of the Americans with Disabilities Act or Federal Clean Air Act are funded on a 90 percent federal - 10 percent local basis.

FTA Section 8 Funds - Transit operating funds provided by the federal government through FTA. Originally made available through Section 8 of the Urban Mass Transportation Act, and continued under ISTEA, Section 8 funds are available for planning components of the operating budget, such as development of Short Range Transit Plans. Projects meeting the mandates of the Americans with Disabilities Act or Federal Clean Air Act are funded on a 90 percent federal - 10 percent local basis.

FTA Section 9 Program Funds - Funding provided by the federal government through FTA. Capital projects must be matched with local capital funds on an 80 percent federal/20 percent local basis. Projects meeting the mandates of the Americans With Disabilities Act or Federal Clean Air Act are funded on a 90 percent federal/10 percent local basis, subject to DOT's discretion. A portion of Section 9 funds can be used to support annual operating budgets on a 50 percent federal/50 percent local basis. The total amount of Section 9 used for operating funds is determined by Congress each year and divided among regions on a formula basis. Projects meeting mandates of the Americans With Disabilities Act or Federal Clean Air Act are funded on a 90 percent federal/10 percent local basis.

FTA Section 16(b)(2) Funds - Capital funds apportioned to states by the federal government through FTA to providers of transportation for the elderly and disabled. This program is administered by Caltrans, and is intended primarily for private non-profit providers. Projects meeting the mandates of the Americans with Disabilities Act or Federal Clean Air Act are funded on a 90 percent federal/10 percent local basis, subject to DOT's discretion.

FTA Section 18 Funds - Transit funds provided through FTA by formula to non-urbanized areas. Administered by the State transportation agency, these funds can be used for either capital or operating expenses. Capital projects require a 20 percent local match. Operating projects require a 50 percent local match. Projects meeting the mandates of the Americans With Disabilities Act or Federal Clean Air Act are funded on a 90 percent federal/10 percent local basis.

FTA Section 26(a)(2) Funds - Funds the State Planning and Research Program, which is a consolidated program apportioned to the State for purposes of Sections 6, 8 (formerly Caltrans/UMTA Section 8 Technical Studies Grant), 10, 11, and 20 of the ISTEA. Activities and funding for this program include: (1) Research, development and demonstration projects - 100 percent federal funding; (2) Rural area transit planning, technical studies, and assistance (formerly Caltrans/UMTA Section 8 Technical Studies Grant) - 80 percent federal funding; (3) Training in managerial, technical, and professional positions in the public transportation field - 75 percent federal funding; (4) Research and training in urban transportation problems - 50 percent federal funding; (5) Human Resource Programs - 100 percent federal funding.

Fund Estimate - The STIP cycle begins with the development of a State Fund Estimate by Caltrans, which compares existing commitments against total estimated revenue expected from state and federal sources. Caltrans estimates state and federal funds "reasonably expected" in annual increments for seven years (the STIP period). The calculation of existing capital program commitments is based on Caltrans' Project Delivery

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Report, while non-capital expenditures of operation and administration costs are estimated based on current spending and projected needs. This comparison of revenues to commitments results in an estimate of total uncommitted funds that are available for programming and prorated to each program category. The fund Estimate is required by law to be submitted by July 15 of odd-numbered years, and to be adopted by the CTC by August 15 of odd-numbered years. CTC adopts a "Fund Estimate Methodology" to guide Caltrans in formulating the Fund Estimate.

Heavy Rail - Heavy rail vehicles cannot operate on surface streets but must have exclusive grade protected guideways, such as subway, at surface or aerial configuration. Heavy rail vehicles can operate in pairs or as a multiple car set of up to ten cars and powered by third rail or overhead catenary. Heavy rail systems must have platforms for boarding passengers. A heavy rail system can carry up to 40,000 passengers per hour in each direction.

Highway System Operations and Protection Plan (HSOPP) - A program created by state legislation that includes state highway safety and rehabilitation projects, seismic retrofit projects, land and buildings projects, landscaping, some operational improvements, and bridge replacement. Unlike STIP projects, HSOPP projects may not increase roadway capacity. HSOPP is a four-year program of projects, adopted separately from the STIP cycle. The recent State gas tax increase partially funds the program, but it is primarily funded through the "old" nine-cent State gas tax and from federal funds. To be compatible with the Fund Estimate, a formula based on pavement condition and safety concerns is used to estimate an additional three years of the HSOPP program.

Intelligent Transportation System (ITS) - ISTEA establishes an ITS Program to enhance the capacity, efficiency, and safety of the federal-aid highway system and to serve as an alternative to additional physical capacity. Automated highways and vehicles are one component of this approach. ITS includes development of application of electronics, communications or information processing (including advanced traffic management systems, commercial vehicle operations, advanced traveler information systems, commercial and advanced vehicle control systems, advanced public transportation systems, satellite vehicle tracking systems, and advanced vehicle communications systems) used singly or in combination to improve the efficiency and safety of surface transportation systems.

Intercity Rail - Operated by common carriers and uses fixed guideways. The service is characterized by inter-regional passenger travel, provision for personal carry-on baggage, and possible use of specialized cars for food service, sleeping accommodations, checked baggage, and package express.

Intermodal Surface Transportation Efficiency Act of 1991 - Enacted in 1991, ISTEA provides authorization for highways, highway safety and mass transportation through 1997, with total funding of \$155 billion. The purpose of ISTEA is "to develop a National Intermodal Transportation System that is economically efficient, environmentally sound, provides the foundation for the Nation to compete in the global economy and will move people and goods in an energy efficient manner." Examples of provisions under the Act include: a National Highway System (NHS), new technologies, such as intelligent vehicle highway systems and prototype magnetic levitation systems, as well as the requirement of state uniformity in vehicle registration and fuel tax reporting.

Intermodal - A unifying, integrated national network of travel modes emphasizing connections between modes, choices among them, and coordination and cooperation among transportation interests.

Intermodalism - A closely coordinated multimodal network in which facilities, equipment and related transportation resources are interlinked to move people and goods smoothly and efficiently.

Interregional Road System (IRRS) - In February 1990, Caltrans submitted a plan to the State legislature that identified a set of projects to provide the most adequate interregional road system to all economic centers in the State. Statute defined eligible routes that were included, and specified that these be located outside the

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boundaries of urbanized areas with over 50,000 population, except as necessary to provide connection of the routes within urban areas. From this plan, Caltrans included projects, consistent with the Fund Estimate, in its PSTIP to the CTC for programming in the STIP.

Interstate Completion - ISTEA declares the 42,500-mile Federal Interstate Highway System launched in 1956 by the Eisenhower Administration to be completed with the final authorizations contained in the bill. Based on the Interstate Cost Estimate (ICE), specific segments of the Interstate System are still to be completed, and funds are included in ISTEA to do so.

Interstate Maintenance - ISTEA establishes a funding category for interstate system maintenance that specifically limits use of these funds for capacity increasing projects that are not high occupancy vehicle lanes or auxiliary (merging) lanes. Eligible activities include reconstruction of bridges, interchanges and overcrossings along existing interstate routes, including the acquisition of right-of-way where necessary and preventive maintenance.

Intracity Rail - Intracity rail is high capacity, high speed transit that consists of either light rail or heavy rail vehicles. These vehicles are electric-powered from overhead or third rail powered lines. The distinction between light rail and heavy rail is capacity and operating configuration.

Level of Service (LOS) - A measure of congestion that compares actual or projected traffic volume with the maximum capacity of the intersection or road in question.

Light Rail - Light rail vehicles can operate as single vehicles or as a multiple car set and frequently operate on surface streets as well as on exclusive rights-of-way, and draw electric power from an overhead catenary system. Light rail systems can have passenger boarding at surface as in San Diego and Sacramento or from elevated platforms as in Los Angeles. Maximum capacity of a light rail system is generally 10,000 passengers in each direction.

Long-Range Transit Plan - Represents a long-range evaluation of transit needs and proposes recommendations for implementing long-range objectives over a 20-year timeframe. The LRTP also provides direction for coordinating implementation of goals and policies identified in the Plan.

Management Systems in ISTEA - Section 303 of the Act requires each state to develop and implement the following management systems: (a) highway pavement of federal-aid highways; (b) bridges on and off federal-aid highways; (c) highway safety; (d) traffic congestion; (e) public transportation facilities and equipment; (f) intermodal transportation facilities and systems. In metropolitan areas, these systems are developed and implemented in cooperation with the MPO. Management system products are considered by the State and MPOs in their planning processes. The U.S. Department of Transportation has issued guidelines for these systems.

Metropolitan Planning Organizations (MPOs) - Federally designated organizations for urbanized areas of greater than 50,000 population mandated to carry out transportation planning as required by ISTEA.

Maglev - Magnetic levitation (maglev) trains carry passengers in a manner similar to that of intercity rail (Amtrak). Maglev prototypes in Germany and Japan have logged thousands of miles at speeds of up to 260 miles per hour. Maglev technology has several possible benefits, including: (a) environmentally acceptable; (b) fuel efficiency (electric power); (c) possibility of relieving highway and airport congestion; (d) ability to cover short distances in roughly the same amount of time as airplane travel; (e) considered safer than other kinds of trains because the train wraps around the rail and is difficult to derail; (f) non-contact levitation system (no friction and less wear); (g) offers high sustained maximum speeds, capable of speeds over 300 mph; and (h) elevated guideway uses less space.

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Major Metropolitan Transportation Investment (MMTI) Studies - Considered an important provision under the Metropolitan Planning regulations, MMTI is defined as "a high-type highway or transit improvement of substantial cost that is expected to have a significant effect on capacity, traffic flow, LOS, or mode share at the transportation corridor or subarea scale." The primary purpose of an MMTI study is to create a decision-making process for determining transportation investment strategies. Projects funded or approved by the Federal Highway Administration and/or Federal Transportation Administration are subject to the Metropolitan Planning regulations and requirements under MMTI.

MINUTP - Regional transportation model used by Kern COG to forecast traffic volumes for various purposes, including development of future year transportation/circulation needs.

Monorail - This technology differs from light rail in that it rides on rubber tires on a single horizontal beam of steel concrete. The vehicle may be either bottom-supported or suspended from beams. Horizontal stability also is provided by rubber tires. The capacity of a monorail system is somewhat greater than light rail system. The operation of a monorail system above ground creates relatively little disturbance to existing transportation modes. Much of a monorail's appeal has been because of the use of modern structural design techniques and lightweight rolling stock with rubber tire wheels, features that are not readily applicable to conventional rail systems.

National Environmental Protection Act (NEPA) - Passed by Congress in 1969, NEPA established the Council on Environmental Quality and required the preparation of environmental impact statements for federal projects. NEPA requires that an Environmental Assessment (EA) describe current conditions, identify alternative means of accomplishing the objective, enumerate the likely impacts of each alternative, identify the preferred alternative and the method used to select it, describe the impact of the selected alternative in detail, and list possible actions to minimize negative impacts of the selected alternative.

National Highway System (NHS) - ISTEA established a 155,000-mile NHS to provide an interconnected system of principal arterial routes to serve major travel destinations and population centers, international border crossings, as well as ports, airports, public transportation facilities, and other intermodal transportation facilities. The NHS must also meet national defense requirements and serve interstate and interregional travel. Eligible projects include new construction, reconstruction, and rehabilitation of highways, operational improvements, mass transit projects in an NHS corridor, safety improvements, transportation planning, traffic management and control, parking facilities, carpool projects, and bicycle and pedestrian projects. In areas not meeting federal clean air standards, up to 100 percent of NHS funding is transferable to the STP upon request of the State.

North/South Split - California law (Section 188, Streets and Highways Code) requires that transportation funding be balanced so that 60 percent of the capital outlay is spent in the 11 southern counties, and 40 percent is spent in the 45 northern counties. This rule has an impact on the type of projects programmed for all counties. Rehabilitation and safety funds tend to be spent roughly 60 percent in northern counties, and only 40 percent in southern counties, because of worse weather conditions and more mountainous roads in northern counties. In addition, engineering costs are relatively higher in northern than in southern counties, and Caltrans' project-support costs for locally funded projects, of which the North has a disproportionate share, is also included. Thus, funds for capacity-increasing projects need to be weighted toward southern counties, so that the overall balance remains 60/40. This results in fewer congestion relief projects being funded in the urban areas in northern California.

Operational Improvement - Capital improvement for installation of traffic surveillance and control equipment, computerized signal systems, motorist information systems, integrated traffic control systems, incident management programs, and transportation demand management facilities, strategies, and programs and other capital improvements to public roads. This does not include resurfacing, restoring, or rehabilitating improvements, construction of additional lanes, interchanges, grade separation, or the construction of a new

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facility at a new location.

Pavement Management System (PMS) - Required by Section 2108.1 of the Streets and Highways Code, any jurisdiction that wishes to qualify for funding under the STIP must have a PMS that is in conformance with the criteria adopted by the Joint City/County/State Cooperation Committee. At a minimum, the PMS must contain: (1) an inventory of the arterial and collector routes in the jurisdiction that is reviewed and updated at least biennially; (2) an assessment of pavement condition for all routes in the system, updated biennially; (3) an identification of all sections of pavement needing rehabilitation or replacement; and (4) a determination of budget needs for rehabilitation or replacement of deficient pavement sections for the current and upcoming biennial periods.

Principal Arterial - The functional classification system at the federal level defines principal arterials for rural areas, urbanized areas, and small urban areas. In urbanized areas, the principal arterial system can be identified as unusually significant to the area in which it lies in terms of the nature and composition of travel. Principal arterials derive their importance from service to rural oriented traffic, but equally from service for major movements within the urbanized area. The principal arterial system should carry the major portion of trips entering and leaving the urban area, as well as the majority of through movements desiring to bypass the central city. In addition, significant intra-area travel, such as between major business districts and outlying residential areas, between major inner city communities, or between major suburban centers should be served by this system. Frequently, the principal arterial system will carry important intra-urban as well as intercity bus routes. Finally, this system in small urban and urbanized area should provide continuity for all rural arterials which intercept the urban boundary. Because of the nature of the travel served by the principal arterial system, almost all fully and partially controlled access facilities will be part of this functional system. However, this system is not restricted to controlled access routes. The spacing of urban principal arterials will be closely related to the trip-end density characteristics of particular portions of the urban areas. The US Department of Transportation provides guidance that 40 to 65 percent of VMT should be accounted for on the principal arterial system.

Project Study Report (PSR) - Chapter 878 of 1987 Statutes requires that any capacity-increasing project on the state highway system have a completed PSR prior to programming the STIP. The PSR must include a detailed description of the project scope and estimated costs. This legislation's intent is to improve the accuracy of the schedule and costs shown in the STIP, and thus improve the overall accuracy of the STIP delivery and cost estimates.

Proposed State Transportation Improvement Program (PSTIP) - This seven-year program is based on the current adopted STIP and the most recent Project Delivery Report. It may include additional schedule changes and/or cost changes, plus new projects that Caltrans proposed for the interregional road system, retrofit soundwalls, and toll bridge and aeronautics programs, as well as the intercity rail program. Caltrans may also propose alternative FCR projects to those proposed in the RTIPs; this is the only overlap with the RTIPs. The PSTIP is due to the CTC on December 1 of odd numbered years.

Proposition 108 - Passed by voters in June 1990, this measure provided \$1 billion in rail bonds that were programmed in the 1990 STIP. Fifteen percent of the funds were spent on intercity rail projects advanced by Caltrans, with the remaining 85 percent programmed for commuter and urban rail projects.

Proposition 111 - Passed by State voters in June 1990, this proposition raised the State gas tax by nine cents, with a schedule for phase-in of collection, and also raised truck weight fees. Proposition 111 caused sweeping changes to the STIP process, creating new programs (HSOPP, FCR, TSM, etc.) and established the Congestion Management Program requirement for cities and counties.

Proposition 116 - Passed by State voters in June 1990, this initiative sponsored by the Planning and Conservation League provided \$1.9 billion in rail bonds, to projects specified in the legislation. Guidelines for

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program implementation were adopted by the CTC in fall of 1990.

Rate Of Progress Plan (ROP) - Identifies progress toward attainment of state and local air quality standards, and is incorporated in the State Implementation Plan (SIP). The Plans have been prepared by the Air Districts and reflect expected improvements and emissions reductions.

Quinquennium - Fixed five-year period over which County Minimums are calculated. In each quinquennium, a county should receive at least its county minimum share of the total program. The first and second quinquenniums encompassed 1983/84 through 1992/93. The third quinquennium started in 1993/94 and ends in 1997/98, with four of these years programmed in the 1990 STIP. The fourth quinquennium (which was programmed in the 1992 STIP) will go from 1998/99 through 2003/4.

Regional Transportation Improvement Program (RTIP) - List of proposed transportation projects submitted to the CTC by the regional transportation planning agency as a request for state funding. Individual projects are first proposed by local jurisdictions, then evaluated and prioritized by the regional agency for submission to the CTC. The RTIP has a seven-year planning horizon, and is updated every two years.

Regional Transportation Plan (RTP) - A comprehensive 20-year plan for the region, updated every two years by the regional transportation planning agency. The RTP includes goals, objectives, and policies, and recommends specific transportation improvements.

Regional Transportation Planning Agency (RTPA) - The agency responsible for the preparation of RTPs and RTIPs and designated by the State Business, Transportation and Housing Agency to allocate transit funds. RTPAs can be local transportation commissions, COGs, MPOs, or statutorily created agencies.

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Safety Programs - ISTEA sets aside 10 percent of the Surface Transportation Funds and 5 percent of the reimbursement funds for programs related to railway-highway crossings and hazard elimination as defined by Sections 130 and 152 of the Act.

Short-Range Transit Plans (SRTP) - A nine-year comprehensive plan required of all transit operators by federal and regional transportation funding agencies. The plans must define the operator's mission, analyze past and current performance, and plan specific operational and capital improvements to realize short-term objectives.

State Highway Terminal Access Routes (SHTAR) - Any route meeting minimum guidelines as set forth in Section 3401.5 of the California Vehicle Code for specific truck combinations requiring access to facilities for fuel, food, lodging and repairs. These truck sites must be within one road mile to and from specified highways at identified points of ingress and egress. Roads and ramps from highways to terminals or services must be evaluated for safety by Caltrans and incorporated into the existing Terminal Access Route system.

State Implementation Plan (SIP) - Required by the Federal Clean Air Act to attain and maintain national ambient air quality standards. It is adopted by local air quality districts and the State Air Resources Board.

State/Local Partnership - Originally created by SB 140, and subsequently funded by the passage of Proposition 111 in June 1990, the State/Local Partnership program provides state matching funds for locally funded and constructed highway and exclusive public mass transit guideway projects. Over \$2 billion has been designated for this program for 10 years. Eligible projects are defined by the legislation and clarified by guidelines published by the Caltrans Division of Local Streets and Roads. Applications are submitted annually to Caltrans by June 30 for the following fiscal year. The amount of State match available in a given year is dependent on the number of eligible applicants and the size of the appropriation to the program by the legislature during the budget process. The state match cannot exceed 50 percent.

TEA-21 (Transportation Enhancement Act for the 21st Century) - Superseded ISTEA and authorized highway, highway safety, transit and other surface transportation programs through 2004. TEA-21 builds on the initiatives established under ISTEA, combining the continuation and improvement of current programs with new initiatives. These programs are designed to improve safety as traffic congestion continues to increase; protect and enhance communities and natural environment as transportation systems are provided; and advance America's economic growth and competitiveness domestically and internationally through efficient and flexible transportation.

State Transit Assistance (STA) - Provides funding for mass transit and transportation planning, with half of the revenues transferred to the TP&D Account and appropriated to STA. STA apportionments to regional transportation planning agencies are determined by two formulas: 50 percent by populations and 50 percent by the amount of operator revenues (fares, sales tax, etc.) for the prior year. STA funds may be used for transit capital or operating expenditures. Passage of Proposition 116 disallows use of STA funds for streets and roads in non-urban counties.

State Transportation Improvement Program (STIP) - A list of transportation projects, proposed in RTIPs and the PSTIP, which are approved for funding by the CTC.

Surface Transportation Program (STP) - Flexible funding program established by ISTEA. Many types of mass transit and highway projects are eligible for funding under this program. Ten percent of the projects funded under this program must be transportation enhancement activities and 10 percent safety projects.

Traffic Systems Management Program (TSM Program) - State program that funds those projects which increase the number of person trips on the highway system in a peak period, without significantly increasing the design capacity of the system, measured by vehicle trips, and without increasing the number of through

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traffic lanes" (TSM Guidelines adopted by the CTC in October 1989). This program is funded outside the STIP process through direct application to Caltrans. CTC allocates funds to the projects from a prioritized list submitted by Caltrans. Statute requires that priority be given to projects from counties with adopted CMPs.

Transit Capital Improvement Program (TCI) - Annual State program, funded primarily from the TP&D account for transit capital projects. All State funds must be matched by 50 percent local funds.

Transportation Control Measures (TCMs) - Measures intended to reduce pollutant emissions from motor vehicles. Examples of TCMs include programs to encourage ridesharing or public transit usage.

Transportation Demand Management (TDM) - "Demand-based" techniques for reducing traffic congestion, such as ridesharing programs and flexible work schedules, that enable employees to commute to and from work outside of peak hours.

Transportation Enhancement Activities - ISTEA defines transportation enhancement activities for the purpose of funding under the STP as "the provision of facilities for pedestrians and bicycles, acquisition of scenic easements and scenic or historic sites, scenic or historic highway programs, landscaping and other scenic beautification, historic preservation, rehabilitation and operation of historic transportation buildings, structures, facilities and canals, preservation of abandoned railway corridors including the conversion and use thereof for pedestrian or bicycle trails, control and removal of outdoor advertising, archaeological planning and research, and mitigation of water pollution due to highway runoff."

Transportation Improvement Program (TIP) - A federally required document produced by the regional transportation planning agency that states the investment priorities for transit and transit-related improvements, mass transit guideways, general aviation and highways. The State is also required to produce a federal TIP which includes all projects proposed for federal funding.

Transportation Management Area (TMA) - As defined by ISTEA, a TMA is designated by the Secretary of Transportation for all urbanized area over 200,000. TMAs must include a congestion management system in their planning process. In TMAs, MPOs are responsible for project selection with the exception of NHS, bridge and interstate maintenance projects.

Transportation Planning and Development Account (TP&D) - A state account funded by sales tax on the nine cent gas tax and diesel sales tax that is the primary funding source for the TCI program.

Transportation Systems Management (TSM) - Relatively low-cost techniques to relieve congestion without adding vehicle capacity to the transportation system. Some are "demand-based" techniques such as ridesharing programs and flexible work schedules enabling employees to commute to and from work outside of peak hours. (Demand-based strategies are sometimes referred to as TDMs.) Other TSM measures are engineering-oriented, such as timing traffic signals to smooth the flow of traffic, and ramp metering, which regulate the entrance of vehicles onto a freeway, increasing its efficiency.

Urban and Commuter Rail (U/C Rail) - A new state funding program financed by the sales of bonds authorized by Proposition 108. All projects must be matched by 50 percent local funds. Projects are proposed to regional agencies through the CMP process; agencies may then include them in their RTIPs.

Urbanized Area - An area with a population of 50,000 or more as designated by the U.S. Census Bureau, within boundaries to be fixed in a cooperative effort by responsible state and local officials.

Vehicle Miles Traveled (VMT) - Travel demand forecasting (modeling) is used to generate the average trip lengths for a region. The average trip length measure can then be used in estimating vehicle miles of travel, which in turn is used in estimating gasoline usage or mobile source emissions of air pollutants.

11.2 ACRONYMS

AB - Assembly Bill
ADA - Americans with Disabilities Act
AIP - Airport Improvement Program (federal)
APCD - Air Pollution Control District
AQAP - Air Quality Attainment Plan
ARB - Air Resources Board
ASR - Airport Surveillance Radar
AVR - Average Vehicle Ridership
BARCT - Best Available Retrofit Control Technology
BSC - Bakersfield Senior Center
CALTRANS - California Department of Transportation
CARB - California Air Resources Board
CCAA - California Clean Air Act
CEQA - California Environmental Quality Act
CFR - Code of Federal Regulations
CIP - Capital Improvement Program
CMAQ - Congestion Management Air Quality (funding program)
CMP - Congestion Management Program (state)
CMS - Congestion Management System (federal)
COG - Council of Governments
CRP - Combined Road Program
CTA - California Trucking Association
CTC - California Transportation Commission
CTO - Caltrans Traffic Operations
CTSA - Consolidated Transportation Service Agency
DOE - Department of Energy (federal)
DOT - Department of Transportation (federal)
DTIM - Demand Travel Impact Model
EAFB - Edward Air Force Base
EMM - Environmental Enhancement and Mitigation Program

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EPA - Environmental Protection Agency (federal)
ER - Emergency Relief Program
FAA - Federal Aviation Administration
FBO - Fixed-Base Operator
FCAA - Federal Clean Air Act
FCR - Flexible Congestion Relief Program
FHWA - Federal Highway Administration
FIP - Federal Implementation Plan
FRA - Federal Railroad Administration
FSTIP - Federal Statewide Transportation Improvement Program
FTA - Federal Transit Administration
FTIP - Federal Transportation Improvement Program
FTZ - Foreign Trade Zone
FY - Fiscal Year
GET - Golden Empire Transit
GPA - General Plan Amendment
GPS - Global Positioning System
HES - Hazard Elimination Safety Program
HIRL - High Intensity Runway Lights
HPMS - Highway Performance Monitoring Systems
HS GT - High Speed Ground Transportation
HOV - High Occupancy Vehicle
ILS - Instrument Landing System
I/M - Inspection and Maintenance
IMS - Intermodal Management Systems
ISR - Indirect Source Review
ISTEA - Intermodal Surface Transportation Efficiency Act
ITS - Intelligent Vehicle Highway Systems
Kern COG - Kern Council of Governments
LIRL - Low Intensity Runway Lighting
LOS - Level of Service
LRT - Light Rail Transit
LTF - Local Transportation Fund
MDAB - Mojave Desert Air Basin

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MIRLS - Medium Intensity Runway Lighting System
MMTI - Major Metropolitan Transportation Investments
MPO - Metropolitan Planning Organization
NAAQS - National Ambient Air Quality Standards
NAFTA - North American Free Trade Agreement
NAHC - Native American Heritage Commission
NAWS - (China Lake) Naval Air Weapons Station
NEPA - National Environmental Policy Act
NHS - National Highway System
NO - nitric oxide
NO₂ - nitrogen dioxide
Nox - Nitrogen oxides
NOP - Notice of Preparation
NPIAS - National Plan of Integrated Airport Systems
O₃ - ozone
PAC - Project Advisory Committee
PAPI - Precision Approach Path Indicator
PM₁₀ - Particulate Matter (less than 10 microns in size)
pphm - parts per hundred million
PSTIP - Proposed State Transportation Improvement Program
PUC - Public Utilities Commission
PVEA - Petroleum Violation Escrow Account (PVEA)
RFP - Request for Proposal
ROC - Reactive Organic Compounds
ROP - Rate of Progress Plan
RSTP - Regional Surface Transportation Program
RTIP - Regional Transportation Improvement Program
RTP - Regional Transportation Plan
RTPA - Regional Transportation Planning Agency
SB - Senate Bill
SHA - State Highway Account
SHL - State Historic Landmark
SHPO - State Historic Preservation Office
SHRP - Strategic Highway Research Program
SHTAR - State Highway Terminal Access Routes

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SIC - Standard Industrial Classification
SIP - State Implementation Plan
SLTPP - State and Local Transportation Partnership Program
SJVAB - San Joaquin Valley Air Basin
SJVUAPCD - San Joaquin Valley Unified Air Pollution Control District
STAA - Surface Transportation Assistance Act
STAF - State Transit Assistance Fund
STIP - State Transportation Improvement Program
STP - Surface Transportation Program
TAC - Technical Advisory Committee
TAZ - Traffic Analysis Zone
TCM - Transportation Control Measures
TDA - Transportation Development Act
TDM - Transportation Demand Management
TEA - Transportation Enhancement Activity
TEA-21 - Transportation Equity Act for the 21st Century
TMA - Transportation Management Area and/or Association
TOG - Total Organic Gases
TPPC - Transportation Planning Policy Committee
TSM - Transportation System Management
TTAC - Transportation Technical Advisory Committee
UMTA - Urban Mass Transportation Administration
US DOT - Department of Transportation (federal)
USTIP - Updated State Transportation Improvement Program
VAPI - Visual Approach Path Indicators
VASI - Visual Approach Slope Indicators
VMT - Vehicle Miles Traveled
VOC - Volatile Organic Compounds
VT - Vehicle Trips

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APPENDIX A

SAN JOAQUIN VALLEY LONG RANGE TRANSPORTATION OVERVIEW

SAN JOAQUIN VALLEY REGIONAL TRANSPORTATION OVERVIEW

EXECUTIVE SUMMARY

This chapter provides an inter-regional perspective to transportation planning within the San Joaquin Valley of California, consisting of the counties of San Joaquin, Stanislaus, Merced, Madera, Fresno, Tulare, Kings and the San Joaquin Valley portion of Kern. It addresses several issues of regional importance including air quality, highways, streets and roads, aviation, rail, goods movement and transportation demand efforts. The purpose of this chapter is to provide a broad overview of issues that cross jurisdictional boundaries.

VALLEY WIDE PLANNING

Under federal legislation described in the Inter-modal Surface Transportation Efficiency Act of 1991 (ISTEA) and its extending legislation, the Transportation Equity Act for the 21st Century (TEA-21), transportation planning efforts are directed to be coordinated in geographically defined air basins. The eight counties mentioned above do share an air basin and have many attributes in common. There are also differences that are significant in the context of transportation planning. The eight San Joaquin Valley counties have already implemented an aggressive program of coordinated Valley wide planning. In September of 1992 the eight Transportation Planning Agencies entered into a Memorandum of Understanding (MOU) to assure a coordinated regional approach to transportation and air quality planning efforts. The MOU goes well beyond the requirements of state and federal transportation planning acts by establishing a system of coordination of plans, programs, traffic and emissions modeling, transportation planning, air quality planning, and consistency in data analysis/forecasting. Development of the MOU and the ongoing process of coordinated planning has improved upon an already close working relationship between the eight Valley Transportation Planning Agencies and the representatives of the California Department of Transportation (Caltrans), California Air Resources Board, State Office of Planning and Research, San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD), and the Federal Highway Administration.

Each of the areas addressed in the Valley wide MOU have been assigned to a specific transportation planning agency to serve as a lead in the coordination of planning activities. Representatives of each of the eight agencies have been meeting regularly to coordinate the preparation of Regional Transportation Plans (RTPs), Regional Transportation Improvement Programs, and an aviation systems plan that involves not only the eight Valley counties but the Sacramento region as well. These cooperative efforts include both staff and financial assistance from Caltrans, California Air Resources Board, the Environmental Protection Agency, and the SJVUAPCD. These efforts have taken place as a voluntary response to the new issues, challenges and requirements facing the transportation planning community. The *San Joaquin Valley Regional Transportation Overview* represents the cooperative effort between the eight counties and their coordination in the Regional Transportation Plans.

THE EIGHT COUNTY SETTING

One issue that the eight counties have in common is a rapidly expanding population. In fact, all of the San Joaquin Valley counties exceeded the growth rate for California during the past five years (1993 to 1998) and six counties are in the top fifteen with the highest growth percentage of all fifty-eight California counties. Population growth is anticipated to continue.

The San Joaquin Valley is long and relatively narrow. Stretching about 300 miles from north to south and about 100 miles from east to west, it occupies an area between the two largest metropolitan areas in California, San Francisco and Los Angeles. Trending with the Valley, the major transportation facilities are Interstate 5, State Route 99, Union Pacific Railroad, Burlington Northern Santa Fe Railroad, numerous oil and natural gas pipelines, myriad telecommunication facilities, and air travel corridors. East to west transportation facilities are less numerous, but critical to the inter-regional transportation network of the West Coast and the western United States. Numerous highways and rail lines cross the Valley, including State Routes 58, 46, 152, 198, and 120 among others.

Air quality is a major issue. Many sections of the Valley are in non-attainment areas for a number of pollutants. Geographical situation, economic activity and population pressures tend to exacerbate air pollution within the region.

Both ends of the Valley are under growth pressures from huge metropolitan areas. Kern County population growth is being influenced by Los Angeles, while growth in Stanislaus, San Joaquin, and Merced counties is partially due to overflow growth from the San Francisco Bay area. Much of the residential growth observed has been caused by people searching for affordable owner-occupied housing within automobile commuting range of the large metropolitan areas.

A great deal of land in the San Joaquin Valley is used for agricultural production. Urban areas tend to be widely separated from each other and are developed at low densities. A majority of the locally developed road and rail network serves farm-to-market activity. Major transportation facilities serve as conduits between major metropolitan areas, and national recreation areas.

Economically, the region is tied to primary production. Agriculture production will always be a major industry because of the physical characteristics of the Valley. These characteristics include a nearly frost-free growing climate, long summers, reservoirs, and water distribution projects such as the Central Valley Project and the California State Water Project. However, direct employment in agriculture and other primary production (such as oil production) will continue to drop as production becomes more automated.

The San Joaquin Valley of California will continue to develop and become more populated. Many of the issues that are faced by individual county jurisdictions are of a regional nature and could benefit from regional coordination. Transportation is one of these issues and a continuing effort to plan, fund and construct transportation facilities on a regional basis will benefit both the residents of the San Joaquin Valley and the State of California.

SAN JOAQUIN VALLEY PROFILE

The San Joaquin Valley is the southern portion of the Great Central Valley of California. The San Joaquin Valley stretches from the Tehachapi Mountains in the south to the San Joaquin Delta in the north, a distance of nearly 300 miles. The eastern boundary is the Sierra Nevada Mountains, which reach elevations of over 14,000 feet, while the western boundaries are the lower coastal ranges. Total land area is approximately 23,720 square miles. The topography is generally flat to rolling, and the climate is characterized by long, very warm summers, and short, cool winters. Precipitation is related to latitude and elevation, with the northern portions of the valley receiving approximately 12-14 inches of rain a year, while the southern portion has an annual average of less than six inches. Snow rarely falls on the Valley floor, but heavy winter accumulations are common in the Sierra Nevada Mountains.



For the purposes of this report, the San Joaquin Valley is considered to include the counties of San Joaquin, Stanislaus, Merced, Madera, Fresno, Kings, Tulare and Kern. Kern County straddles the Sierra Nevada Mountains and occupies a portion of the Mojave Desert. The desert portion of Kern County is within the Southeastern Desert Air Basin. This report addresses only that portion of Kern County that falls within the San Joaquin Valley Air Basin. See Exhibit 1-1.

Population growth has been sustained and significant. In 1960, the eight San Joaquin Valley counties had a population of just over 1.4 million. By 1991, their population had doubled to over 2.8 million (excluding the eastern portion of Kern County). The region experienced a 33.9 percent increase in population over the 1980s and grew at 16.7 percent in the 1990-1998 period. The San Joaquin Valley has grown faster than the state of California in each calculation period since 1960 and accounted for about 9.6 percent of the population of California in 1998. See Exhibit 1-2.

Future population growth is also expected to be sustained and significant. Population in the eight Valley counties is projected to exceed 5.8 million by the year 2020, using recently released growth projections from the California State Department of Finance. See Exhibit 1-3 and Exhibit 1-4.

The San Joaquin Valley is famous for agricultural production. Nearly ideal growing conditions, reservoirs, and water distribution projects, such as the federal Central Valley Project and the State Water Project have resulted in the top three agricultural counties in the Nation being in the San Joaquin Valley (Fresno, Tulare and San Joaquin Valley portion of Kern). Kern County oil fields produce two-thirds of the on-shore oil recovered in California. According to the 1990 US Census, the work force is structured as displayed in Exhibit 1-5. Agricultural activities and retail trade occupations account for over one-third of the employment in the San Joaquin Valley.

Educational attainment for San Joaquin Valley residents is outlined in Exhibit 1-6. San Joaquin Valley household income distribution is described in Exhibit 1-7 and Exhibit 1-8. San Joaquin Valley age structure is outlined in Exhibit 1-9 and Exhibit 1-10.

TRENDS AND ASSUMPTIONS

Changes in population, housing and employment alter travel demand and patterns that affect transportation facilities and services. By anticipating the magnitude and distribution of growth and change within the San Joaquin Valley, present day decisions can be made to capitalize on the positive aspects of the anticipated growth while minimizing the adverse consequences.

Population

Population growth within the San Joaquin Valley will continue into the foreseeable future. The driving force for the increasing population is the availability of land, the availability of water, the proximity of the urban centers of Stockton, Modesto, Fresno and Bakersfield to the large urban areas of Los Angeles and San Francisco, and the relatively low cost of land in the San Joaquin Valley.

Housing

Housing growth is generally a function of population growth. Housing is anticipated to grow at a rate similar to population growth.

Employment

Employment opportunities within the Valley will change over the time span of this plan. Agricultural employment will drop as a percentage of total employment as agricultural activities become more and more automated, requiring less human labor to accomplish more production. Services, wholesale trade and retail trade activities are anticipated to increase in importance in the future employment pattern of the Valley.

Other Trends and Assumptions

Cost of Travel

Travel costs will increase as the price of fuel, equipment, labor and service continue to rise.

Automobile Use

The private automobile will continue to be the dominant and preferred method of travel within the region. Travel demand management programs may lessen the percent of trips made by private automobile.

Transit Use

Public transit use, including passenger rail, will keep pace with the rise in population and additional incentives, such as voluntary employer trip reduction programs, will be initiated to encourage additional transit use.

Aviation Activity

General and commercial aviation activity will increase as the regional population and economy expand.

Air Quality

Increases in hydrocarbons, oxides of nitrogen, carbon monoxide, and particulate matter may result as population increases. Efforts will be made to reduce the number of vehicle miles traveled (VMT). VMT reduction efforts will take several forms, including compensatory and possible compulsory ridesharing, flex-time work scheduling, and non-motorized commuting. Jobs to housing balance in local land use decision-making will become more important. Introduction of newer, cleaner fuels and more efficient internal combustion engines are also anticipated.

Railroad Activity

The California Intercity High Speed Rail Authority is working toward the development and implementation of an intercity high speed rail service. Current activity focuses on scoping and financing the Central Valley high speed rail service connecting the Los Angeles Basin and the San Francisco Bay Area. Amtrak will continue its successful San Joaquin runs between Bakersfield and Oakland, with bus feeder lines to southern California and other areas. Initial Amtrak rail service between Stockton and Sacramento is scheduled for late February 1999.

Land Use

It is anticipated that agricultural land will continue to be converted to residential and commercial uses.

Exhibit 1-2
San Joaquin Valley Counties Population Growth

COUNTY	COUNTY SEAT	1970 POPULATION	1980 POPULATION	1990 POPULATION	JAN. 1, 1998 POPULATION
FRESNO	FRESNO	413,053	514,621	667,490	786,779
KERN	BAKERSFIELD	329,162	402,089	543,477	639,798
KINGS	HANFORD	64,610	73,738	101,469	122,848
MADERA	MADERA	41,519	63,116	88,090	114,349
MERCED	MERCED	104,629	134,560	178,403	204,422
SAN JOAQUIN	STOCKTON	290,208	347,560	480,628	545,249
STANISLAUS	MODESTO	194,506	265,900	370,522	427,642
TULARE	VISALIA	188,322	245,738	311,921	360,352

SAN JOAQUIN VALLEY COUNTIES TOTAL 1,626,009 2,047,322 2,742,000 3,201,439

CALIFORNIA TOTAL 19,053,134 23,667,902 29,760,021 33,251,809

S.J. VALLEY COUNTIES % OF CALIFORNI 8.53% 8.65% 9.21% 9.63%

COUNTY	% GROWTH 1970-1998	ANNUAL % GROWTH 1970-1998	% GROWTH 1980-1998	ANNUAL % GROWTH 1980-1998
FRESNO	90.48%	2.35%	52.89%	2.42%
KERN	94.37%	2.42%	59.12%	2.65%
KINGS	90.14%	2.34%	66.60%	2.92%
MADERA	175.41%	3.72%	81.17%	3.40%
MERCED	95.38%	2.44%	51.92%	2.38%
SAN JOAQUIN	87.88%	2.30%	56.88%	2.57%
STANISLAUS	119.86%	2.88%	60.83%	2.71%
TULARE	91.35%	2.37%	46.64%	2.18%

SAN JOAQUIN VALLEY COUNTIES TOTAL 96.89% 2.47% 56.37% 2.55%

CALIFORNIA TOTAL 74.52% 2.03% 40.49% 1.93%

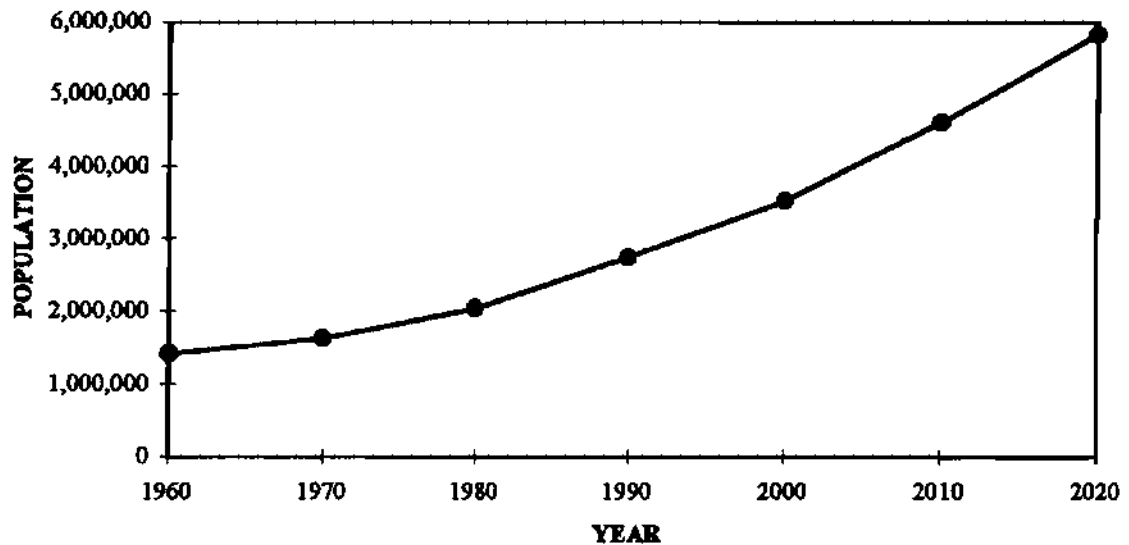
COUNTY	1990 LAND USE (Sq.Miles)	1990 TOTAL HOUSING UNITS	1998 POPULATION DENSITY (Pop./Sq.Mile)
FRESNO	5,963	235,563	131.95
KERN	8,141	198,636	78.59
KINGS	1,389	30,843	88.41
MADERA	2,138	30,831	53.46
MERCED	1,928	58,410	106.02
SAN JOAQUIN	1,399	166,274	389.71
STANISLAUS	1,494	132,027	286.21
TULARE	4,824	105,013	74.71

SAN JOAQUIN VALLEY COUNTIES TOTAL 27,276 957,597 117.37

CALIFORNIA TOTAL 155,973 11,182,513 213.19

Sources: U.S. Bureau of the Census, 1970, 1980, and 1990. State of California Department of Finance, 1998

**Exhibit 1-3
San Joaquin Valley Counties Population Growth Projection**



SOURCES: US Bureau of the Census and State of California Department of Finance.
NOTE: The figures include the total population of each of the eight counties in the San Joaquin Valley

**Exhibit 1-4
San Joaquin Valley Counties Population Growth Projection**

COUNTY	Population April 1, 1960	Population April 1, 1970	Population April 1, 1980	Population April 1, 1990	Population July 1, 200	Population July 1, 2010	Population July 1, 2020
Fresno County	365,945	413,329	514,621	667,490	874,100	1,163,100	1,505,500
Kern County	291,984	330,234	403,089	544,981	726,800	938,300	1,220,300
Kings County	49,954	66,717	73,738	101,469	129,800	164,300	202,800
Madera County	40,468	41,519	63,116	88,090	124,300	162,000	203,200
Merced County	90,446	104,629	134,560	178,403	220,500	294,300	380,100
San Joaquin County	249,989	291,073	347,342	480,628	585,600	745,500	920,900
Stanislaus County	157,294	194,506	265,900	370,522	477,300	628,400	793,600
Tulare County	168,403	188,322	245,738	311,921	387,900	491,900	612,000
San Joaquin Valley Counties	1,414,483	1,630,329	2,048,104	2,743,504	3,526,300	4,607,800	5,838,400

Sources: U.S. Bureau of the Census, and State of California Dept. of Finance, released April 1997

**Exhibit 1-5
San Joaquin Valley Counties Employment By Industry**

Employment	SJV Counties Total	SJV Counties Percentage	California Percentage
EMPLOYED PERSONS OVER AGE 16	1,082,466	100.00%	100.00%
Agriculture, forestry and fisheries	123,142	11.38%	3.10%
Mining	12,558	1.16%	0.28%
Construction	75,073	6.94%	6.85%
Manufacturing, non-durable goods	85,627	6.06%	5.37%
Transportation	81,135	5.65%	11.49%
Communications and other public utilities	44,942	4.15%	4.18%
Wholesale trade	49,800	4.60%	4.57%
Retail trade	176,891	16.34%	16.31%
Finance, insurance and real estate	58,630	5.42%	7.59%
Business and repair services	49,921	4.61%	5.83%
Personal services	28,808	2.66%	3.53%
Entertainment and recreational services	11,823	1.09%	2.05%
Health services	81,774	7.55%	7.30%
Educational services	93,905	8.68%	7.37%
Other professional and related services	61,099	5.64%	7.24%
Public administration	62,342	5.76%	4.44%

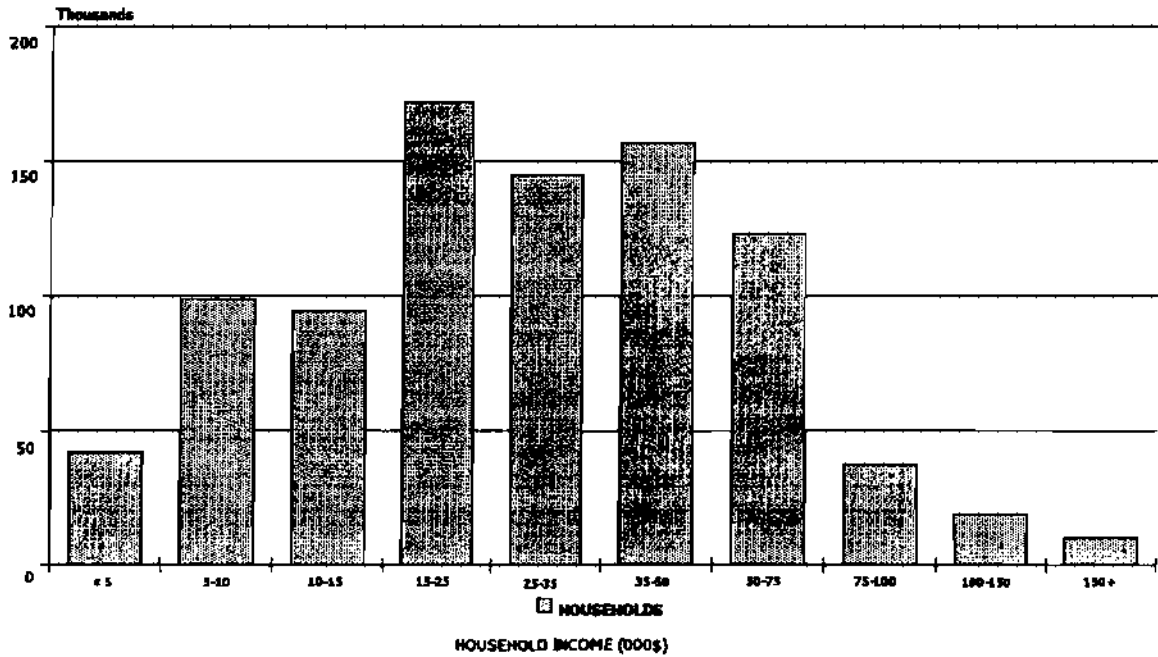
Source: 1990 Census, Summary Tape File 3A

**Exhibit 1-6
San Joaquin Valley Counties Educational Attainment**

	SJ V Counties Total	SJV Counties Percentage	California Percentage
PERSONS 25 YEARS AND OVER	1,604,073	100.00%	100.00%
Less than 9th grade	277,814	17.32%	11.16%
9th to 12th grade, no diploma	263,225	16.41%	12.65%
High school graduate	389,338	24.27%	22.29%
Some college, no degree	337,229	21.02%	22.60%
Associates degree	117,643	7.33%	7.94%
Bachelor's degree	152,040	9.48%	15.29%
Graduate or professional degree	66,784	4.16%	8.07%

Source: 1990 Census, Summary Tape File 3A

**Exhibit 1-7
San Joaquin Valley Counties
Household Income Distribution**

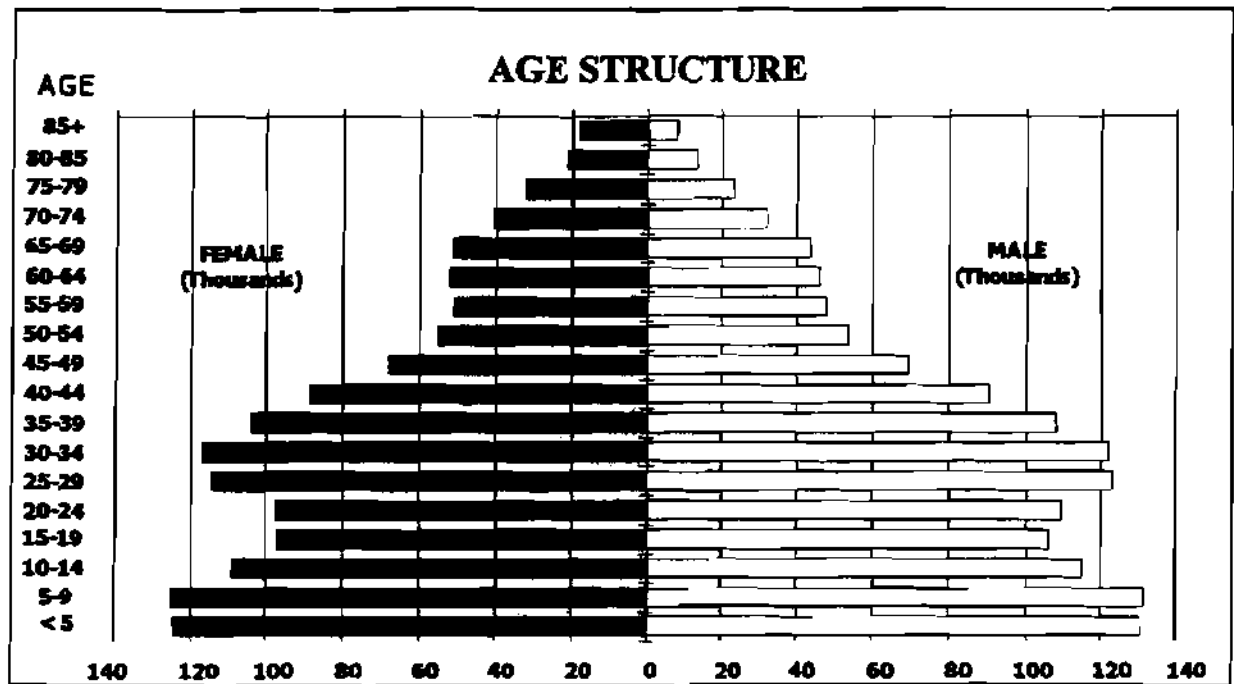


**Exhibit 1-8
San Joaquin Valley Counties
Household Income Distribution**

INCOME IN 1989	SJ V Counties Households	SJV Counties Percentage	California Percentage
HOUSEHOLDS	898,334	100.00%	100.00%
Less than \$5,000	41,977	4.67%	3.88%
\$5,000 - \$9,999	98,926	11.01%	7.63%
\$10,000 - \$14,999	94,374	10.51%	7.37%
\$15,000 - \$24,999	171,829	19.13%	15.16%
\$25,000 - \$34,999	144,691	16.11%	14.72%
\$35,000 - \$49,999	156,763	17.45%	18.16%
\$50,000 - \$74,999	123,158	13.71%	18.36%
\$75,000 - \$99,999	37,400	4.16%	7.65%
\$100,000 - \$149,999	19,028	2.12%	4.58%
\$150,000 or more	10,188	1.13%	2.48%

Source: 1990 Census, Summary Tape File 3A

**Exhibit 1-9
San Joaquin Valley Counties Age Structure**



**Exhibit 1-10
San Joaquin Valley Counties Age Structure**

AGE	Female	Male
Under 5 years	124,325	130,520
5 to 9 years	125,000	131,525
10 to 14 years	109,114	115,236
15 to 19 years	96,948	106,313
20 to 24 years	97,361	109,584
25 to 29 years	114,343	123,095
30 to 34 years	117,140	122,336
35 to 39 years	104,198	107,960
40 to 44 years	88,376	90,330
45 to 49 years	68,033	69,286
50 to 54 years	55,212	53,923
55 to 59 years	51,092	47,934
60 to 64 years	52,372	46,000
65 to 69 years	51,514	43,713
70 to 74 years	40,411	32,326
75 to 79 years	32,319	23,328
80 to 84 years	21,228	13,455
<u>85 years and over</u>	<u>18,065</u>	<u>8,085</u>
TOTAL	1,367,051	1,374,949

Source: 1990 Census

SAN JOAQUIN VALLEY POLICY ELEMENT

This Policy Element has been developed to set forth the common transportation goals, objectives, and policies as expressed in the existing eight Regional Transportation Plans of the San Joaquin Valley counties. To move toward effective cooperation, it is first advantageous to define the areas of commonality, which when accepted by the eight agencies will enable the next step of defining more specific objectives and policies to be pursued. This version of the Policy Element is only designed to achieve the first objective, noting the areas of commonality. Staff members of the eight agencies will then work progressively toward developing a 2000 update to deal more effectively with areas of common concern. Also included in the 2000 update will be a full discussion of financial resources to meet the Valley needs; this subject is not well enough defined as yet to be undertaken as a separate element within this overview.

The Regional Transportation Plans of the following eight counties were used as input into this overview: Fresno, Kern, Kings, Madera, Merced, San Joaquin, Stanislaus and Tulare.

This cooperative effort as mandated by two separate Memorandums of Understanding between the eight agencies demonstrates that the eight counties are coordinating their programs and plans in a two-fold effort:

1. To meet the requirements of federal legislation, specifically ISTEA and its extending legislation, TEA-21, as well as the Federal Clean Air Act Amendments; and more importantly,
2. To address those issues that have a Valley wide impact and, therefore, a direct impact on each of the eight counties.

Before listing the goals, objectives, and policies, it is important to have a broad understanding of the intent behind each of the terms. These terms are defined in the adopted California Regional Transportation Plan Guidelines.

A "goal" is the end toward which effort is directed; it is general in application and timeless.

An "objective" provides clear, concise guidance to attaining the goal. Objectives are successive levels of achievement in movement toward a goal. They are results to be achieved by a stated point in time. Individual objectives are capable of being quantified and realistically attained.

A "policy" is a direction statement that guides present and future decisions on specific actions. Policies should support the attainment of objectives.

TRANSPORTATION GOALS, OBJECTIVES, AND POLICIES

GOAL: Design, develop and maintain a multi-modal transportation system which efficiently and safely moves people and goods, and also serves the social, economic and physical needs of Valley residents while enhancing their quality of life.

- Objectives:**
- A multi-modal circulation network which is convenient, safe and efficient.
 - A multi-modal circulation network which is both cost effective and environmentally sound.
 - A transportation system that meets the travel demands of both citizens and businesses.

- Policies:**
- > Facilitate a cooperative effort between the public and private sectors to integrate transportation modes through a coordinated transportation planning process, carried out by the eight regional transportation planning agencies.
 - > Work with public transit and social service agencies to assist in implementing "welfare-to-work" programs.
 - > Involve citizens and businesses in planning transportation facilities and services. Special efforts will be made to include those individuals and groups

who may not have been included in the past. These groups may include the elderly, infirm, and racial/ethnic minorities, including Native Americans. Working with these and other groups, strategies that address transportation issues of importance to under-served groups will be developed. Direct involvement by under-represented groups will be promoted in transportation planning, project selection, and other transportation issues that affect them.

- > Support transportation planning and programming efforts.
- > Minimize conflicts between modes.
- > Assure that the existing transportation facilities are maintained and repaired as necessary to continue serviceability.
- > Emphasize improvement of existing facilities, thereby increasing capacity and flow.
- > Cooperatively work toward a transportation system that will widen the mode choice available to travelers and shippers.
- > Support the implementation of Transportation System Management, Transportation Demand Management, and Transportation Control Measures that reduce emissions from the circulation system. This support shall include consultation with the San Joaquin Valley Unified Air Pollution Control District.
- > Support transportation systems that have the lowest feasible levels of energy consumption while meeting reasonable mobility needs.
- > Promote the development of State Route 99 for the high speed rail corridor connecting Los Angeles and the San Francisco Bay Area.

GOAL: Develop and finance multi-modal transportation facilities and services that are consistent with regional and local growth policies and are consistent with state and federal air quality plans.

- Objectives:**
- Prepare Regional Transportation Improvement Programs that list multi-modal transportation facility improvements/operations in a financially constrained manner and are in conformance with adopted California State Implementation Plans for air quality purposes.
 - Work to attain and maintain National Air Quality Standards in the San Joaquin Valley.

- Policies:**
- > Use the Public Utilities Commission notification of any rail line abandonment proposals to facilitate the evaluation of possible impacts on the transportation system and encourage the development of alternative uses for the facilities.
 - > Analyze the impact of all transportation proposals to ensure they are cost effective.
 - > Make maximum use of state and federal funds available for transportation.
 - > Make new system enhancements when warranted and brought about by growth/development when it is economically feasible and environmentally sound.
 - > Maximize the use of Inter-regional Improvement Program (IIP) funds through partnerships within the San Joaquin Valley counties and with Caltrans.
 - > Work directly with the San Joaquin Valley Unified Air Pollution Control District in the development phases of both air quality plans and transportation plan and programs.
 - > Improve air quality through a cooperative effort of stationary, mobile, and transportation source controls.

GOAL: Define, preserve and enhance Valley transportation corridors.

Objectives: • Ensure that Valley wide multi-modal circulation is maintained and improved, thereby serving the social, economic, and physical needs of Valley residents.

Policies:

- > Coordinate planning efforts to define a system of corridors of Valleywide importance.
- > Cooperatively determine appropriate measures to pursue preservation and improvement of the defined corridor system.
- > Promote the recognition of strategic and significant Valley routes as Focus Routes and Gateways defined in the *Inter-regional Transportation Strategic Plan*.

GOAL: Maintenance of the existing transportation system.

Objective: • Preserve existing transportation facilities and where practical, develop ways to meet transportation needs by using existing transportation facilities more efficiently.

Policies:

- > Allocate sufficient resources to maintain current system at the current level of repair.
- > Pursue additional funding to increase level of maintenance to correct deficiency.
- > Encourage creative transportation demand management policies to utilize existing facilities more efficiently.

GOAL: Encourage land use design which is more efficient and conducive to multi-modal choice and the use of transit, non-motorized and rail alternatives.

Objective: • Support land uses that are in the interest of the general community by encouraging population densities and patterns that are conducive to transit and non-motorized transportation options.

Policies:

- > Advise decision-makers on land use issues to favor compact development.
- > Discourage non-contiguous development that is widely separated from existing urban services.
- > Promote the concept of "jobs-housing" balance in new and existing development.
- > Encourage infill development to raise population density in existing settings.

AIR QUALITY

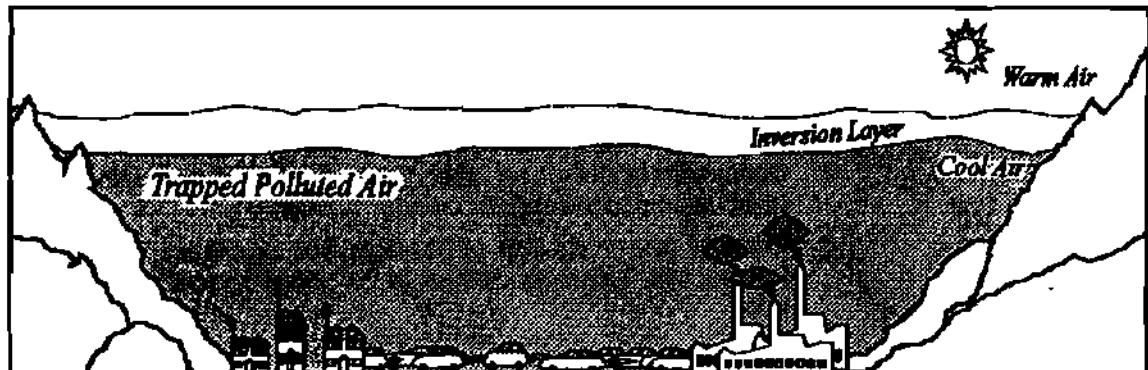
Introduction

The San Joaquin Valley faces a serious environmental problem—air quality. Both the state and federal government set standards and monitor air quality based on the need to protect public health. Despite 20 years of legislation and regulation, the San Joaquin Valley still does not meet all air quality standards. The three major pollutants of concern are:

- Ozone
- Carbon Monoxide (CO)
- Suspended Particulate Matter (PM10 & PM2.5)

The severity of the problem directly relates to Valley topography and climate. The Valley has a warm, sunny climate, a relatively flat valley floor, and is surrounded by mountain ranges. Air pollutants

generated from other air basins as well as activity in the Valley floor become trapped by an inversion layer caused by cool air masses, held captive by the Coastal and Sierra Nevada Mountain Ranges, and held down by the sun-warmed air expanding above the Valley.



Pursuant to Federal law, the United States Environmental Protection Agency has designated the entire Valley a non-attainment area for ozone and particulate matter. The metropolitan areas of Fresno, Modesto, Stockton and Bakersfield were recently upgraded to maintenance areas for carbon monoxide. The Valley is unique within the nation and is not typical of most air basins. The ozone attainment area encompasses eight counties and contains six separate and distinct metropolitan areas amidst millions of acres of farmland. The travel patterns also vary between each metropolitan area.

Problem Causes

The traditionally recognized sources of air pollution are broken into two categories as follows:

Stationary/Area Sources - examples are:

- Fuel Combustion (oil and gas production, other manufacturing/industrial/agricultural)
- Solvent Use (dry cleaning, printing, de-greasing, asphalt paving)
- Industrial Processes (food and agriculture, mineral processes)
- Waste Burning (agricultural debris, range management)
- Petroleum Processes (oil and gas extraction, petroleum refining and marketing)
- Miscellaneous Processes (landfills, unplanned fires, pesticide application)

Mobile Sources - examples are:

- On-Road Vehicles (automobiles, trucks, motorcycles)
- Other Mobile (off-road vehicles, trains, aircraft, utility equipment)

In addition to the sources listed above, the California Clean Air Act requires that emissions from "indirect" sources be examined and, where feasible, control measures be proposed to reduce or mitigate their impacts. The Federal Clean Air Act defines an "indirect" source as a facility, building, structure, installation, real property, road, or highway that attracts mobile sources of pollution.

Transportation Control Measures

Both the California Clean Air Act and the Federal Clean Air Act require the implementation of all feasible Transportation Control Measures, that is, measures designed to reduce trip-making activity. This is a major challenge, as these measures are intended to affect public behavior—specifically driving habits. Both state and federal laws recognize that traditional control programs on stationary and mobile sources are reaching their limits of effectiveness, and that further progress in achieving reductions will increasingly rely on control of personal activity. Transportation plans adopted within the Valley must

provide for timely implementation of these measures and must provide further assurance to federal funding agencies that the transportation plans "conform" to the adopted State Implementation Plan (SIP) for air quality.

Existing Efforts

The United States Environmental Protection Agency and the United States Department of Transportation, through the mechanism of transportation conformity, require a cooperative effort between themselves, Caltrans, the eight transportation planning agencies and the San Joaquin Valley Unified Air Pollution Control District. Currently, the eight Valley transportation planning agencies and the San Joaquin Valley Unified Air Pollution Control District have entered into a Memorandum of Understanding to ensure a coordinated transportation/air quality planning approach. The MOU defines a cooperative process aimed at maximum effectiveness and compatibility of both air quality and transportation plans. The MOU establishes a strong working relationship between the eight TPAs and satisfies ISTEA and TEA-21 requirements by having a cooperative agreement between agencies located in the same non-attainment boundary.

A more specific MOU provision is the participation by the transportation planning agencies in the development of transportation control measures required pursuant to state and federal law. The eight agencies committed staff and analytical support necessary to develop motor vehicle emission inventories, emission budgets, draft ozone SIP revisions, a work plan and transportation control measures. These were submitted for consideration by the SJVUAPCD and for inclusion in its air quality attainment plans, which are ultimately incorporated into the SIP for the San Joaquin Valley. As a part of this effort, a consultant was retained to develop a "San Joaquin Valley Transportation Control Measure Coordination, Implementation/Monitoring and Enforcement Program." This contract resulted in the publication of the "San Joaquin Valley Transportation Control Measure Program." The publication presents current levels of commitment to existing transportation control measures that can be implemented by 1999, and a method of evaluating costs and benefits of suggested measures. All eight transportation planning agencies participated in providing technical and policy input on the work done by the consultant.

Transportation modeling for air-quality conformity purposes is yet another area of cooperative effort between the eight agencies. Discretionary grants, to a maximum of \$200,000, were obtained for development of a Valleywide modeling strategy. The funds were used to hire a consultant to help determine the most appropriate direction of model development, data collection and required analytical capabilities that should be undertaken either jointly or individually by the Valley transportation planning agencies. The objective was to satisfy air-quality conformity requirements with product(s) that will withstand review by the US Department of Transportation and the US Environmental Protection Agency.

Dowling and Associates was hired to develop a Valleywide modeling strategy in response to the conformity requirements of the State Implementation Plan (SIP). The strategy included recommendations on the appropriate model development, data collection and required analytic capability. To complete the task, Systems Application International was hired to assist the transportation planning agencies develop interagency consultation procedures and delineate the roles and responsibilities of those agencies. The products of those consultant contacts were ultimately incorporated into the transportation conformity SIP that was submitted to the Environmental Protection Agency.

Given the wide diversity of planning issues facing the individual TPA staff and the logistics of Valleywide coordination, the Valley TPAs have hired an "Air Quality Coordinator". This position is funded by the eight TPAs. The goals of the position are to:

- Monitor Valley TPAs compliance with federal and State clean air act requirements;
- Coordinate and provide on-going communications between Valley TPAs and the SJVUAPCD, as well as other involved agencies: Caltrans, EPA, FHWA, CARB, FTA, etc.
- Document the TPA air quality transportation planning process and the TPA's role in regulatory compliance;

- Facilitate development of improved modeling data;
- Provide technical air quality transportation planning assistance to individual TPAs;
- Provide unified TPA representation at meetings, workshops and public hearings; and
- Achieve consistent TPA communication.

Assumptions/Future Needs and Issues

Many of the most effective tools for reducing the impact of motor vehicle emissions are not within the control of local government, such as Regional Transportation Planning Agencies. Local agencies do not have the authority to set vehicle exhaust standards, to determine the number of vehicles registered for use, and have limited ability to influence the national or state production standards that would make alternative fuels a marketplace reality. That type of authority rests at the state and federal levels. In addition, effective economic tools such as tax incentives for low emissions vehicles, registration surcharges for high pollution vehicles, and general gasoline tax rates lie with the state and federal regulatory and legislative arenas. Local agencies, therefore, cannot be expected to bear the sole responsibility for attaining air quality standards. Improving air quality will take a cooperative effort on the part of federal, state and local agencies, with continued emphasis on aggressive on-board emission control measures at the state and national levels. Local agencies can be expected to complement those measures through adoption of transportation control programs.

Local land use decisions do affect air quality, and decision-makers need to consider the transportation/air quality link. Where local agencies can be effective in their land use decisions is by giving consideration to development impact with respect to mode availability, i.e., pedestrian, bicycle, auto and transit. Examples of local regulatory authority that can affect individual mode choice include subdivision design/amenities, parking requirements, and trip reduction ordinances.

The relationship of individual activities to pollution has long been understood, but the control of individual actions has not been viewed as the most effective approach to air pollution control. The implementation of transportation control measures, however, does address the issue of what is generally referred to as "basic life style" changes. Public reaction to these measures will be closely monitored, and careful consideration must be given to how new programs will affect individuals in their choice of transportation modes.

- The demand for transportation services is affected by a variety of factors:
- Per capita vehicle ownership and use (both increasing at higher rates than population);
- Regional center and facility siting decisions;
- Residential proximity to employment and commercial centers;
- Convenience and efficiency of local transportation systems, in particular those related to automobile traffic; and
- Comparative cost of each transportation alternative.

The challenge is to establish a reasonable balance between the legitimate demand for a safe and convenient transportation system with individual access to a broad range of services and equally legitimate environmental and conservation concerns. Implied is a heightened awareness of the impacts of growth and development on local conditions. The relationship of land use patterns to regional scale traffic flow must be emphasized and considered as an integral part of the process to improve air quality.

A safe and convenient transportation system must be maintained. It is important that reasonable alternatives to daily use of single-occupant vehicles be developed and made available to the public. The combination of public acceptance of the need for change, and the availability of reasonable alternatives to encourage that change, should lead to long-term changes in individual travel behavior.

Short-Range Strategy

- Support maintenance of aggressive state programs to control hydrocarbon, nitrogen oxide, and carbon monoxide emissions through on-board controls.

- Support District activities to ensure compliance with Environmental Protection Agency regulations for motor vehicle inspection and maintenance programs.
- Support state and federal programs to promote development of alternative fuel sources.
- Continue the cooperative effort between the eight transportation planning agencies and the District in providing coordinated transportation/air quality planning.
- Continue to cooperate/consult with the District in its activities aimed at achieving air quality standards.
- Achieve maximum air quality benefits from funding sources that target motor vehicle emission reductions.

Air Quality Conformity

The November 15, 1990 Amendments to the Federal Clean Air Act (FCAAA), placed tough new requirements on the sources and causes of air pollution in areas that fail to meet federal standards, including the San Joaquin Valley. The FCAAA require substantial reductions from all pollution sources, including the transportation sector, and establishes a conformity requirement to ensure that those reductions are achieved.

The term "air quality conformity" refers to the process whereby transportation plans, programs and projects are shown to conform to the requirements of the FCAAA and the applicable State Implementation Plan (SIP). Specific regulations and requirements are contained in the Environmental Protection Agency's (EPA) latest Transportation Conformity Rule, dated August 15, 1997. These requirements vary by specific pollutant, but can include build/no build tests, improvement over the 1990 base, and adherence to a specific "emissions budget" for volatile organic compounds (VOC), carbon monoxide, nitrogen oxides, and particulate matter.

SPECIFIC TRANSPORTATION STRATEGIES & MODAL ACTION PLANS

Introduction

The specific transportation strategies used throughout the eight counties are classified under three programs: Transportation Demand Management, Transportation Control Measures, and Transportation Systems Management. Each of the eight counties is currently using a combination of the three programs to manage the vehicular flow on their streets, roads and highways.

Transportation Demand Management

Transportation Demand Management (TDM) consists of efforts to influence behavior regarding how, when, and where people travel. TDM strategies are designed to reduce vehicular trips during peak hours by shifting trips to other modes of transportation. TDM may also reduce trips by providing jobs and housing balance. TDM is specifically targeted at the work force that generates the majority of peak hour traffic. In each of the eight counties, a ridesharing outreach program is designed to educate employers and employees about the benefits of reducing trips. Some of the TDM strategies include the following techniques:

- Rideshare programs
- Transit usage
- Flex hours
- Vanpools
- Bicycling & walking
- Telecommuting
- Mixed land uses

By educating people, TDM strategies can be implemented and utilized within the circulation system. However, in order to change travel habits, employers must identify transportation alternatives and encourage employees to reduce single occupant vehicle trips.

Transportation Control Measures

Transportation Control Measures (TCM) are designed to reduce vehicle miles traveled, vehicle idling, and/or traffic congestion in order to reduce motor vehicle emissions. The San Joaquin Valley is designated as a non-attainment air basin under both the California Clean Air Act (CCAA) and the Federal Clean Air Act (FCAA). Both Acts require implementation of TCMs. The CCAA requires that TCMs be implemented to achieve an average vehicle ridership of 1.5 persons per vehicle by 1999 during commute periods. Additionally, the CCAA requires regions to develop a TCM plan and to show that there is no net increase in vehicle emissions after 1997. The CCAA states the TCM plan shall:

- Establish the quality of emission reductions.
- Include a schedule for implementation.
- Identify potential implementing agencies.
- Identify any agreements necessary for implementation.
- Identify procedures for monitoring effectiveness.
- Identify procedures for monitoring compliance.

The FCAA requires that regions implement all reasonably available control measures. Section 108(f) of the FCAA provides a list of TCMs that regions should consider implementing. The SJVUAPCD has committed to implementing TCMs in the Revised 1993 Ozone Rate of Progress Plan, the Revised Post 1996 Ozone Rate of Progress Plan, the Ozone Attainment Demonstration Plan (1994), and the PM10 Attainment Demonstration Plan (1997).

TCM's will continue to play a role in the Valley's air quality efforts. The following TCMs encompass a diverse range of programs that are recommended by the SJVUAPCD:

- Rideshare programs
- Park-and-ride lots
- Telecommunications
- Alternate work schedules
- Trip Reduction Ordinance
- High Occupancy Vehicle Lanes
- Bicycle Facilities
- Pedestrian Facilities
- Public Transit
- Maintenance of vehicle emission control systems
- Use of low emission fuel

Congestion Management System

With the passage of the Intermodal Surface Transportation Efficiency Act of 1991, all urban areas in the nation are required to have a Congestion Management System (CMS). The federal CMS requirements are similar to the optional California requirements; in fact, the CMS was largely modeled after the California program. Both programs are structured around the identification and monitoring of a system, the establishment of performance standards, and the identification and correction of congestion problems.

The Final Rule for the Federal Management and Monitoring Systems defines an effective CMS as a systematic process for managing congestion that provides information on: 1) transportation system

performance, and 2) alternative strategies for alleviating congestion and enhancing the mobility of persons and good to levels that meet state and local needs. This process includes the following six elements:

1. Methods to monitor and evaluate the performance of the multi-modal transportation system, identify the causes of congestion, identify and evaluate alternative actions, provide information supporting the implementation of actions, and evaluate the efficiency and effectiveness of implemented actions;
2. A definition of parameters for measuring the extent of congestion and for supporting the evaluation of the effectiveness of congestion reduction and mobility enhancement strategies;
3. The establishment of a program for data collection and system performance monitoring to define the extent and duration of congestion, to help determine the causes of congestion, and to evaluate the efficiency and effectiveness of implemented actions;
4. Identification and evaluation of the anticipated performance and expected benefits of appropriate congestion management strategies, such as: transportation demand management measures, traffic operational improvements, Intelligent Transportation Systems (ITS) technologies, and system capacity;
5. Identification of an implementation schedule, implementation responsibilities, and possible funding sources for each strategy proposed for implementation; and,
6. Implementation of a process for periodic assessment of the efficiency and effectiveness of implemented strategies, in terms of the area's established performance measures.

Transportation Systems Management

Transportation Systems Management (TSM) is designed to identify short term, low cost capital improvements that improve the operational efficiency of the existing transportation infrastructure. An effective TSM program using the appropriate techniques can improve circulation and reduce automobile emissions throughout a region. TSMs are an important tool endorsed by the SJVUAPCD and State to obtain air quality standards and congestion management levels-of-service. Furthermore, TSM strategies are used in coordination with TDMs and TCMs to improve our local and regional environment. Some of the TSM strategies include the following Traffic Flow Improvements:

- Traffic signal synchronization
- Traffic engineering improvements (geometric)
- Channelization
- One way streets
- Turning and bus pocket bays
- Bus Terminals
- Removal of on street parking
- Limit arterial street access
- Street & Highway widening
- Bicycle facilities
- Pedestrian Malls

Applicable Regions

In the Central Valley, TSM strategies are currently in practice in all eight counties. The cities that experience severe traffic congestion during peak hours will benefit most from implementing TSMs.

Strategies

TSMs are most effective in densely populated communities rather than on a regional Valley-wide scale. However, implementing some of the applicable TSMs on a regional basis will require a cooperative effort among the eight counties. There are TSM alternatives available for reducing traffic congestion regionally in the Central Valley (i.e. coordinate traffic signals). TSMs have several advantages that influence the environment and circulation system. By using TSM improvements, the circulation system becomes efficient and environmentally sensitive toward air quality. According to the Air Resource Board, vehicles that travel at a constant speed below 55 mph have fewer toxic emissions than vehicles that must stop, idle, and then accelerate at each traffic signal. The optimal speed for oxides of nitrogen (NO_x) is between 20-35 mph and for reactive organic gases (ROG) is between 30-50 mph. TSMs are an effective and inexpensive option compared to building new facilities. Many TSM techniques are available for cities to study and implement into their circulation system. The Central Valley will continue to support and communicate inter-regionally on programs that help improve air quality and congestion to satisfy the SJVUAPCD and State standards.

ACTION ELEMENTS

HIGHWAYS, STREETS AND ROADS

Introduction

The eight counties that comprise the San Joaquin Valley have extensively planned systems of streets and roads. Each of these single county systems is designed to meet the demands for three types of travel: local, regional, and inter-regional. This section of the San Joaquin Valley Regional Transportation Plan focuses on the inter-regional components of each system. However, it is important to note that an effective inter-regional road system depends on sufficient regional and local facilities to provide access to inter-regional facilities and to provide capacity for local trips.

Existing Inter-regional Facilities

For several years, neighboring transportation planning agencies, Caltrans, and the Federal Highway Administration have coordinated single county, local and regional components of the street and road system in the Valley to ensure that the needs of inter-regional travelers have been met. In some cases, neighboring agencies have entered into more formal agreements to address multi-county problems.

Intended to serve as a long range planning tool for the state transportation system, the Inter-regional Road System (IRRS) was adopted by Caltrans in the early 1980s. The IRRS was developed to provide a highway system that was sufficient to meet the demand for travel between urban areas. Exhibit 1-11 identifies the IRRS road system within the eight-county San Joaquin Valley. This could be thought of as the San Joaquin Valley Inter-regional Road System (SJVIRRS). The facilities that are on SJVIRRS, including the portions through urbanized areas, are those that are most important to Valley wide travel. By including the urbanized portions of IRRS routes in the conceptual SJVIRRS, the system meets the need for connectivity of roads between metropolitan areas and rural areas.

The San Joaquin Valley component of the IRRS provides access to ports, airports, intermodal transportation facilities, major freight distribution routes, national parks, recreation areas, monuments and historic sites, and military installations. Moreover, extensions of Interstate 5, north and south of the Valley, provide access to border crossings into Canada and Mexico.

With respect to the movement of people and goods in the eight-county region, Interstate 5 and State Route 99 provide the most-significant capacity. Many state routes provide major connections between Interstate 5 and State Route 99 as shown in Exhibit 1-11.

Inter-regional Issues

Each of the eight, single county RTPs addresses significant issues (either explicitly or implicitly) in transportation planning today. While several of these issues are local or regional in focus, three issues are significant on a Valley wide basis.

1. Aging highway network

The average design life of a State Highway facility is 20 years. However, most of the facilities on the San Joaquin Valley Inter-regional Road System were originally constructed prior to 1970. Many do not meet today's design standards, particularly within urban areas. Others, such as Interstate 5, are declining in condition.

Pursuant to Senate Bill 45 (SB 45), Caltrans has maintenance and operational responsibility for the State Highway System via the SHOPP Program. Regardless of how the improvements are funded, it is clear that preservation of inter-regionally significant roads is vital to the economic interests of the Valley.

2. Population growth and the implications for transportation

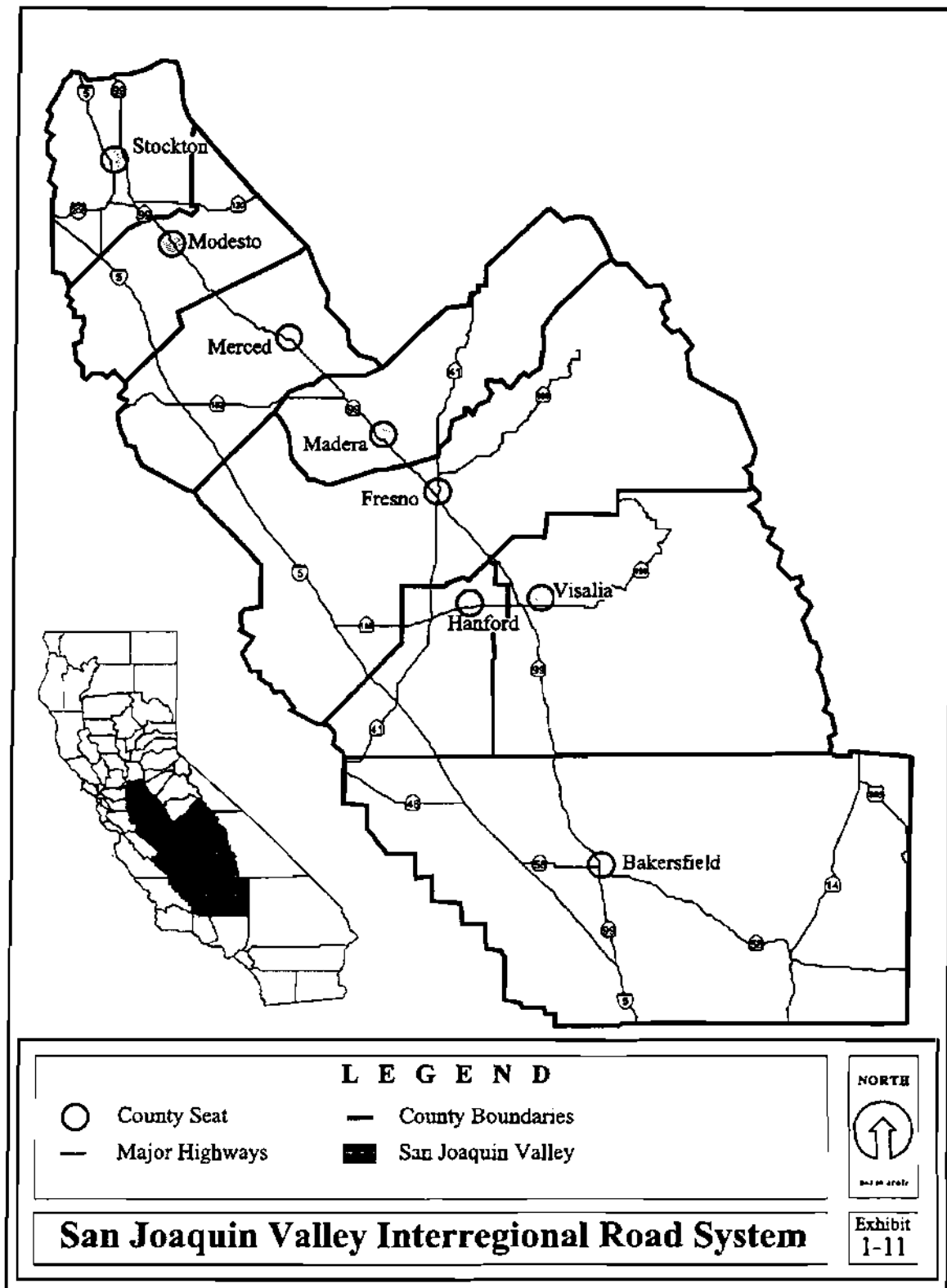
Each of the eight Valley counties has experienced higher-than-average rates of population growth during the 1990s. Despite the recent economic recession in the state, projections by the Department of Finance and local transportation planning agencies anticipate above-average population increases in the Valley for many years to come.

This growth (past and projected) has a significant implication for inter-regional transportation facilities. While travel demand has risen in proportion to the increase in population, the state's investment in the highway system has not kept pace.

3. Increased levels of truck traffic

The California economy is largely based upon the efficient movement of goods, including the movement of raw materials to manufacturing and processing plants, as well as the movement of finished products to market. While goods are moved through a variety of modes (including rail, air, and pipeline), most are moved by trucks over roadways. The large-scale abandonment of railroads since 1980 and the expansion of the highway system since World War II have combined to cause a major shift in freight movement from rail to trucks.

The increase in freight movement over State highways is now growing faster than increases in capacity. Moreover, the fastest growing segment of the truck traffic are trucks with five or more axes; the State of California is under pressure to allow "triples" (trucks with three trailers) on selected state highways.



Truck traffic has three significant effects on highway transportation. First, high truck volumes affect pavement life and in effect the cost of rehabilitating highway facilities. Second, high truck volumes affect capacity by constricting flow, thereby leading to a reduced level of service. Third, high volumes of truck traffic affect the safety of State highways; the conflict between passenger vehicles and large trucks is more pronounced when trucks are present in large numbers.

4. Lack of adequate and stable state highway financing.

It is imperative that the state pursue a stable and consistent source of funding for the transportation infrastructure needs. The California Transportation Plan, underscores that need by stating that "methods of financing the transportation system will be evaluated and recommended to achieve adequate funding levels and equity in the distribution of transportation costs and benefits."

Current state highway financing is a mix of state and federal dollars, augmented by a wide variety of local funds such as transportation sales taxes and development impact fees. As the state begins to rely more heavily on local financing, it has become apparent that the use and scope of such local funding programs have no consistency throughout the state. In developing a program to provide adequate state transportation revenues, the state must consider sources that are administered equitably and consistently on a state-wide basis.

5. State Route 99

State Route 99 is a major component of the California State Highway system, stretching nearly 500 miles from Red Bluff to past Bakersfield, generally parallel to Interstate 5. However, unlike Interstate 5, State Route 99 connects each of the major urbanized areas in the San Joaquin Valley, including Bakersfield, Visalia, Fresno, Modesto, Merced, and Stockton. State Route 99 attracts high volumes of inter-city commercial truck traffic which serves the Valley's economic activities. Truck traffic on State Route 99 ranges from 18% to 37% of total volume.

Much of State Route 99 is a six-lane facility (mostly in Kern County), but a majority of the route is a four-lane facility. Numerous segments of State Route 99 are classified as an expressway-class facility with at-grade intersections at rural arterials. Safety and deterioration of the facility are issues of common concern to the Valley Regional Transportation Planning Agencies (RTPAs).

Highway Improvements

Each single county RTP includes a funding-constrained action plan. These action plans have been prepared through extensive local and regional planning processes to best address regional needs with projected resources. This section intentionally does not address specific projects or inter-regional priorities. To the extent necessary, future transportation plans for the San Joaquin Valley will address project-specific actions and inter-regional priorities.

In the interim, single county transportation planning agencies in the Valley are encouraged to consider the objectives, goals, and policies identified in the Policy Element of this chapter, and the significant issues identified in this section when establishing regional priorities.

Relationship to Caltrans Systems Planning Process

Caltrans has been actively involved in the development of this section. Each District's System Management Plan has been reviewed and considered in the development of this section.

Action Plan

Short Range Plan/Long Range Plan

Federal Highway Administration

- Continue to provide funding for projects that will maintain and expand inter-regional routes, regional routes, and local routes.

State of California - Department of Transportation and California Transportation Commission

- Continue to program projects that will enhance inter-regional routes and access to inter-regional routes.
- Maintain and preserve inter-regional routes and routes that provide access to inter-regional routes.
- Identify and implement operational improvements on inter-regional routes and routes that provide access to inter-regional routes.

Metropolitan Planning Organizations/Regional Transportation Planning Agencies

- Continue to coordinate planning of inter-regional transportation facilities to the extent necessary and feasible.
- Continue to support efforts by state and federal agencies to program priority projects that enhance inter-regional transportation.
- Support and participate with Caltrans in corridor studies on State Route 99.

Local Agencies - Cities and Counties

- Continue to maintain and improve local facilities.
- Participate in the planning of regional and inter-regional facilities.

RAIL

Introduction

In general, rail facilities are privately owned. Passenger service is provided by the National Rail Passenger Corporation, referred to as Amtrak. Freight service is provided by private rail corporations, primarily the Union Pacific Railroad and the Burlington Northern Santa Fe Railroad. In recent years, regional transportation planning agencies in the eight Valley counties have had an enhanced role in the planning of inter-regional passenger rail service and rail freight movement.

Existing Inter-regional Rail Facilities

Rail facilities are located throughout the San Joaquin Valley. Many of these facilities provide for long distance movement of goods. In particular, several facilities owned by the Union Pacific Railroad and the Burlington Northern Burlington Northern Santa Fe Railroad stretch for significant lengths north-south through the Valley. These are connected at locations up and down the Valley by several shorter, east-west lines, owned by a number of different companies, such as the San Joaquin Valley Railroad.

Valley passenger rail service is provided by Amtrak *San Joaquins* service routed between Oakland/Sacramento, Fresno, Bakersfield and Los Angeles. The *San Joaquins* provide four round trips daily through the Valley. Connecting bus service is provided north and west of Stockton to Sacramento and destinations surrounding Sacramento, as well as the South Bay Area. Connecting Amtrak bus service is also provided south of Bakersfield to the Los Angeles area and other destinations in Southern

California. The *San Joaquins* also provide connecting service to long-distance nationwide trains. The *San Joaquins* service includes stops in the Valley cities of Stockton, Riverbank, Denair, Merced, Madera, Fresno, Hanford, Corcoran, Wasco, and Bakersfield.

Inter-regional Issues

Passenger Rail

In 1987, members of the California State Department of Transportation (Caltrans) San Joaquin Task Force formed a committee to take a more active role in developing suggestions for improving the Amtrak *San Joaquins* service. This committee, known as the San Joaquin Valley Rail Committee is comprised of representatives from each of the counties served by the trains, and representatives of interested counties served by the connecting bus network. The committee serves as an advisory body to Caltrans and Amtrak on issues pertaining to the *San Joaquin* service.

Recent efforts of the San Joaquin Valley Rail Committee include the adoption of a Strategic Growth Plan for the San Joaquin Corridor. This report became a significant resource to the Caltrans Rail Program in their work efforts to prepare a business plan for the *San Joaquins* intercity rail corridor.

In recent years Committee work has focused on:

1. Increasing service frequencies and improving on time performance.
2. Improving the utilization of equipment so as to get the maximum number of car miles from this expensive equipment.
3. Extending service to fill the gaps in the current route. Sacramento-Stockton through train service is the first priority. The second priority is to extend through service with an existing train on an overnight schedule from Bakersfield to Los Angeles with connections to San Diego.
4. Continuing efforts to make incremental track and signal system upgrades to improve speed, efficiency and capacity.
5. Creating a fare structure to maximize revenue per passenger mile.
6. Restructuring on board services in order to satisfy the travel needs of passenger train travelers.
7. Increasing the level of public awareness of the *San Joaquins* so that citizens of the communities along the route think of the *San Joaquins* as their trains and communities along the route develop a pride of ownership.

In March, 1998, the State of California Department of Transportation Rail Program issued its *San Joaquin* Corridor FY 1998-99 Business Plan. The Business Plan identifies short term actions aimed at making the service more attractive to potential riders. Some highlights of the Plan include:

- Implementing a fifth round trip, operating between Bakersfield and Sacramento.
- Opening new stations in Fresno, Merced, Modesto, and Martinez.
- Complete final engineering for the next phase of track and signal improvements with an emphasis on projects that will reduce train running times.

High Speed Rail

In addition to state and regional planning efforts and interest in conventional inter-city passenger rail service, the State of California has made progress in establishing High Speed Rail service.

To investigate whether high speed rail might be appropriate for California, the Governor and Legislature authorized Senate Concurrent Resolution 6 (SCR 6) in 1993. SCR 6 establish a nine-member Intercity High speed Rail Commission to assess the feasibility of a high speed rail system in California. The Commission determined that high speed rail is technically, environmentally, and economically feasible once constructed, and would be operationally self sufficient. The Commission recommended a

statewide high speed rail network 676 miles long. The network will link all of California's major population centers: Sacramento, the San Francisco Bay Area, the Central Valley, Los Angeles, and San Diego. The Commission recommended that the service be routed through the Central Valley roughly parallel and adjacent to State Route 99. The construction of a high speed rail system in California will be a public works program on the scale of the State Water Project or the creation of the state's freeway system.

Implementing the high speed rail project is the responsibility of the Intercity High Speed Rail Authority, created by Senate Bill 1420 in 1996 and signed by the Governor in September 1996. The Authority is required to direct the development and implementation of intercity high speed rail service that is fully coordinated with other public transportation services. The Authority is required to prepare a plan for the construction and operation of a high speed train network for the state capable of achieving speeds of at least 200 mph, that is consistent with and continues the work of the Intercity High Speed Rail Commission. The Authority has all the powers necessary to oversee the construction of a statewide high speed rail network, but will sunset should it fail to gain approval of a high speed rail funding measure by November 2000.

The Authority held its first meeting on November 13, 1997. During this first meeting the Authority determined that their timeline will focus on the year 2000 for securing financing for the high speed rail system.

Freight Rail

Central California is a major corridor for freight/goods movement. The highway system, and in particular State Route 99, is at times overwhelmed with truck traffic. In an effort to relieve congestion on highways, streets, and roads, several planning efforts are underway to enhance the efficient movement of freight and more efficiently use existing transportation facilities.

In 1992, Caltrans District 6 prepared a report titled *Freight Movement in the San Joaquin Valley*. The report identifies key issues relating to goods movement and concludes with several recommendations, including "...modifying truck traffic demand over state highways by encouraging alternatives to highway freight movement. A logical alternative especially to long haul freight through the San Joaquin Valley would be to take advantage of available capacity on rail mainlines."

Another collaborated effort in rail planning has been made by the City of Fresno, the Union Pacific Railroad, the Burlington Northern Santa Fe Railroad, Caltrans, the Council of Fresno County Governments, Madera County Transportation Commission, and Fresno County. This effort was directed at estimating the cost of consolidating the Burlington Northern Santa Fe tracks into the Union Pacific corridor to eliminate freight train travel through the center of the City of Fresno.

Action Plan

Short-Range Plan

Federal Government

- Continue to fund Amtrak service.

State of California

- Continue financial support of Amtrak service.
- Implement the *San Joaquin Corridor* FY 1998-99 Business Plan, specifically:
 - ◆ Implement the fifth round trip with direct service linking Bakersfield to Sacramento;
 - ◆ Open new stations in Fresno, Merced, Modesto, Martinez;
 - ◆ Complete final engineering for the next phase of track and signal improvements;

- ♦ Develop a marketing/public relations program campaign for the fifth train and new stations;
- ♦ Monitor the feeder bus network and make appropriate adjustments;
- ♦ More clearly define the checked baggage procedures and promote use of the service;
- ♦ Explore the feasibility of providing a premium service on all trains;
- ♦ Explore the potential for contracting out food service;
- ♦ Work with the San Joaquin Valley Rail Committee to coordinate with local on-line cities to increase community involvement;
- ♦ Coordinate schedules with other Amtrak services where feasible.
- Continue cooperative planning and coordination with recommendations of the San Joaquin Valley Rail Committee.

Regional Transportation Planning Agencies

- Participate in the San Joaquin Valley Rail Committee and support the committee recommendations.
- Monitor the planning and analysis work of the California High Speed Rail Authority and participate in the planning effort to ensure that Valley interests are appropriately reflected.
- Support state and federal actions that would increase accessibility to passenger rail service. The Central Valley passenger rail system should be designed to fully integrate the larger intermodal passenger transportation network including multi-modal stations that provide convenient and direct access to all appropriate state, regional, and local modes, including, where applicable, urban commuter, inter-city and high speed rail service, regional and local bus service, airport shuttle services, and other feeder services that provide intermodal linkage.

Long-Range Plan

Federal Government

- Continue to fund Amtrak service.

State of California

- Continue financial support of Amtrak service.
- Implement the recommendations of the San Joaquin Valley Rail Committee.

Regional Transportation Planning Agencies

- Participate in the San Joaquin Valley Rail Committee and support the committee recommendations.
- Support state and federal actions that would increase accessibility to Amtrak service.

AVIATION

Introduction

Aviation facilities within the eight county San Joaquin Valley are used for the inter -regional movement of persons and goods. Each of the eight San Joaquin Valley counties has a system of aviation facilities designed to meet the local and regional needs of its municipalities. The eight RTPAs representing the counties participated with Caltrans in the development of the region's first Central California Aviation System Plan (CCASP). The CCASP was completed in January 1998 to include the Valley's fifty public use airports that serve the aviation needs in the Valley. Each county was responsible for preparing their CCASP document for Caltrans to use in the California Aviation System Plan (CASP). The CCASP analyzes each county's aviation system. The contents of the CCASP include an inventory of services and operations, forecasting of future needs, financial sources and needs, and systems requirements to meet the needs of aviation over the next twenty years.

Existing Facilities

A variety of aviation facilities are available in the San Joaquin Valley. A few of these facilities serve inter-regional aviation needs. Local public use airports serve the county's general aviation needs. Kings County's Lemoore Naval Air Station is the only remaining military airport in the San Joaquin Valley. Castle Air Force Base in Merced and Crows Landing Naval Air Station in Stanislaus were converted to civilian use airports in 1995. There are four facilities in the Valley that provide inter-regional commercial aviation service: Modesto Airport, Fresno Yosemite International Airport, Meadows Field (Kern County), and Visalia Municipal Airport. Stockton Metropolitan Airport currently does not carry commercial services, however, Farmington Fresh, a local produce packaging business, has located at the airport to transport fresh produce around the world. The remaining Valley airports offer services that include chartering, agricultural spraying, fire fighting, recreational activities, and medical emergency facilities.

Inter-regional Issues

Inter-regional air service for commercial service is an important issue in the Valley. High fares and inconvenient service have made commercial aviation difficult to access for the public, and commercial air service out of the Valley is perceived as inadequate. Existing services are essential for the Valley to maintain connections with the major hub airports of San Francisco and Los Angeles. Fresno Yosemite International Airport has traditionally served as the major hub airport in the Valley, but has had difficulty keeping major air carriers and jet service established there. In addition, airline deregulation had an adverse effect on aviation in the San Joaquin Valley in the late 1970s resulting in decreased service and higher fares. Despite these setbacks, aviation use is expected to grow over the next twenty years as the Valley's population and economy continue to expand.

Aviation Systems

State law PUC 21701 requires Caltrans to update the CASP every five years. Caltrans contracted with the ten RTPAs in the Valley and the Sacramento area to develop the CCASP using a grant from the Federal Aviation Administration (FAA). These federal funds allowed Caltrans and the Valley agencies to prepare individual aviation plans to assist Caltrans in updating the CASP for the Valley region. The CCASP was completed with each RTPA developing and adopting their Aviation Plan, which includes the following elements:

- The Inventory Element contains the existing conditions and services at each airport.
- The Forecasts Element contains projections of future demand through the year 2020, in five year increments.
- The System Requirements Element includes projected aviation needs through the year 2020 in five year increments.
- The Action Element identifies strategies and projects to implement the plan.
- The Financial element identifies local, state, and federal funding sources, and methods of allocating future funds.

Airport Land Use Commissions

Included in the Valley RTPs is a status evaluation of airport land use commissions and their progress in implementing comprehensive land use plans.

Coordination

Valley wide coordination efforts have been achieved through the CCASP process with Caltrans. Components of this section are drawn from the aviation sections of each of the eight Valley RTPs, and as such are consistent with the eight RTPs. Each of the RTPs is coordinated with the appropriate airport master plans, comprehensive land use plans, regional aviation systems plans, and the California Aviation System Plan.

Action Plan

Short-Range Plan

Federal Aviation Administration

- Continue to fund airport projects, including projects that enhance inter-regional aviation facilities.

State of California

- Complete the California Aviation System Plan.
- Continue to fund airport projects, including projects to enhance inter-regional aviation facilities.
- Continue to provide matching funds for federally funded airport projects.

Regional Transportation Planning Agencies

- Maintain the regional aviation system plans.
- Update Regional Transportation Plans to be consistent with the California Aviation System Plan, and regional aviation system plans, as necessary.

Local Agencies

- Continue to expand aviation facilities, as needed.
- Promote increased commercial air service to major Valley airports.

Long-Range Plan

Federal Aviation Administration

- Continue to fund airport projects, including projects to enhance inter-regional aviation facilities.

State of California

- Continue to fund airport projects, including projects to enhance inter-regional aviation facilities.
- Continue to provide matching funds for federally funded airport projects.

Regional Transportation Planning Agencies

- Update Regional Transportation Plans to be consistent with the California Aviation System Plan, and regional aviation system plans, as necessary.

Local Agencies

- Continue to expand aviation facilities, as needed.
- Promote increased commercial air service to major Valley airports.
- Support a Valley international airport with immigration services.

GOODS MOVEMENT

Introduction

The movement of goods plays an important role in the overall economy of the San Joaquin Valley. As one of the prime agricultural regions in the nation, the intra-county road linkage of goods to processing plants, and the inter-county linkage of goods to other regions, manufacturers, and shipping ports is essential. Not only is the San Joaquin Valley a leading agricultural producer, it is also a prominent producer of oil and other minerals. These industries rely heavily on bulk movement by truck, rail, pipeline, and other transportation modes.

The regional highway system is a particularly vital aspect in the movement of people and goods. The Valley serves as a distribution center for the state, and major highways, rail lines, pipelines, and air corridors traverse the Valley in all directions. The Valley's transportation system serves as an east-west and north-south linkage to major markets. These facilities, teamed with the internal movement of goods, particularly agricultural products, make commodity movement an important economic factor to Valley prosperity. Also of great significance to the transport of goods is the Port of Stockton, located in San Joaquin County at the northern end of the San Joaquin Valley. The Port is an integral part of the state transportation system and is the second largest inland seaport on the west coast.

Transportation planning has traditionally emphasized the movement of people; often the importance of large trucks, rail, ship and air cargo is overlooked in the technical transportation planning process. Consideration must be given to material movement needs and its coexistence with other modes of transportation.

Existing Facilities

Trucks

Trucking is the most commonly used mode for transporting freight. Goods movement by truck is popular because of its flexibility, timely delivery, and efficiency for haul distances of up to 500 to 600 miles. Trucking, however, can be more expensive than other modes for longer hauls because of its

higher energy costs. Commodity movement by this mode is a major cause of street and highway surface failures necessitating a high level of street and highway network maintenance.

Heavy trucks contribute to the damage of roads much faster than do automobiles; however, deferred maintenance and water intrusion into the roadbed continue to be the primary causes of road damage. As a result, Valley streets and highways are subject to rapid deterioration and failure. According to the American Association of Highway Officials a fully loaded truck (80,000 pounds) has a significant impact on a roadway, equal to the passage of approximately 9,600 cars.

Major inter-regional highway corridors experience relatively high volumes of heavy (3 to 5 axle) truck traffic, usually between 16-24 percent of the annual average daily traffic (AADT). By their very size and slower speeds, trucks lead to congestion and reduced Levels-of-Service on rural highways and local streets. In addition, emissions from trucks, like automobiles and railroad power units, have an adverse affect on air quality. While current legislation focuses on implementing Traffic Control Measures for passenger vehicles, TCMs do not specifically address truck usage.

Travel along the major corridors in the San Joaquin Valley is mostly in a north-south direction. State Route 99 and Interstate 5 are the primary north/south inter-regional routes used by trucks. Route 99 is a significant inter-regional route of statewide importance and carries most of the truck-transported agricultural goods. Many other state highways and county roads play major roles in distribution as well. As the Valley develops to support a more mobile and service-oriented population, the need for east-west travel corridors will become crucial. Special attention must be given to the regional routes to keep them in a serviceable condition and to avoid major reconstruction costs.

Cooperative efforts are needed between the trucking industry, the driving public, and local officials to assess the impacts that trucks have on local streets, and to create regulatory guidelines for trucks in urban areas. Alternative transportation modes for the long haul movement of goods should be explored and supported. These include improved intermodal freight transfer facilities and access at major airports and rail terminals.

The San Joaquin Valley has both agricultural and light industrial demands for trucking. The needs of individual growers and manufacturers to get their goods to major terminals, market places, and processing centers are met by trucks. In addition, trucks are used as feeder lines to distribute goods from major rail, water, and air centers as well as supermarkets, shopping centers, etc. Because many Valley agricultural products are destined for world markets, efficient freight access at California export points must be ensured.

Rail

Trains provide an economical means of transporting bulk goods. Although each engine requires large amounts of fuel, its ability to haul large amounts of cargo makes for an overall low energy requirement per unit of weight when compared to highway or air transport.

The San Joaquin Valley is served by two major rail companies, the Union Pacific and Burlington Northern Santa Fe Railroads. The San Joaquin Valley Railroad (State Railways Inc.) operates a regional rail freight service between Tulare, Fresno and Kings Counties on 125 miles of leased Union Pacific branch lines connecting outlying areas to mainline carriers. The Modesto and Empire Traction Company tracks run between Modesto and Empire between the Union Pacific and Burlington Northern Santa Fe lines serving the Beard Industrial District. These rail systems and a number of local spur lines, move freight through the Valley daily.

Most cargo shipped by rail are bulk items such as grains, food products, vehicles, and fuels. Rail transport provides the option of specialized rail cars such as flatbeds, refrigerated box cars, fuel tankers, and piggy back cars. These specialized rail cars allow rail transport to move a large variety of goods giving rail an advantage over other modes of transportation for distances over 500 miles or more. Transport by rail is generally less expensive for long hauls than air or truck transport; however, rail is limited by speed and by the limitation of fixed rail track. An especially acute example of rail limitation is the rail route over the Tehachapi Summit in Kern County. Some of the route is single track, and

although recent work on tunnels now allows for double-stacked containers to pass over the line, opposite traffic is often diverted to sidings, creating a freight bottleneck over, into, and out of the San Joaquin Valley.

Greater coordination and the integration of the various modes of freight transportation have become increasingly important in recent years. Limited resources and the intense pressure on existing transportation systems have caused rethinking and broad-based support for intermodal transportation systems. In order to allow goods movement to be more efficient and maintain a reasonable highway level of service, a public/private cooperation between these modes should be encouraged.

Rail/Truck Transfer Facilities

Rail/Truck transfer facilities for bulk and semi-bulk commodities are often not considered in narrow definitions of goods movement, but are a growing means of combining the efficiencies of the two modes for movement other than trailers and containers. Transfer facilities are basically of two types:

- Simple facilities for direct transfer between freight cars and trucks by means of conveyors, hoses, etc. without immediate storage or handling.
- More extensive facilities with the capability to store, sort, package, or otherwise process the commodity.

Rail Intermodal Facilities

Intermodal terminals are critical to the success of intermodal services. Terminals are the starting and ending points for trains, and the sites of crucial hands-off between modes. Terminals also function as equipment storage, maintenance, and dispatching centers, and as focal points for the flow of information. Terminals vary widely in configuration, capacity, and operations, and only a few have been built from the ground up as intermodal facilities.

In the 1980s railroads consolidated their intermodal service networks into fewer, larger hub terminals. Railroads saw an opportunity to consolidate facilities in mergers, and a need to consolidate enough volume in one location to justify lift machines. The recent rapid growth of intermodal traffic, the enormous influx of double-stack trains of containers, and the even more recent entry and rapid growth of rail-truck trailer initiatives all raise questions about the adequacy of intermodal terminals to handle traffic increases, and to do so efficiently.

The Union Pacific Railroad has intermodal facilities in Fresno and Lathrop. Intermodal facilities for Burlington Northern Santa Fe Railroad are located in Stockton, Modesto, Fresno, and Bakersfield.

Buses

Passenger bus companies such as Greyhound and Orange Belt Stage Lines, provide carrier service in addition to their passenger service. Because of the small amounts handled, buses are a very minor contributor to goods movement in the region.

Air Service

Air service is characterized by the fast shipment of small bulk items of high value over long distances for high cost. Goods movement by air is an emerging element of freight movement in the San Joaquin Valley. State-wide, 23 out of the 43 commercial air carrier airports account for almost 3 million tons of freight transported by air. While air freight is a specialized mode of transportation, it accounts for an estimated 60 percent of the export values in California. Air carriers depend heavily on truck transportation to deliver goods for transport. It is, therefore, important to have adequate infrastructure in place for this significant element of the state economy.

A significant feature of air movement is its dependability and very short in-transit time. Businesses seeking to open new markets and in businesses dealing in high value items, air shipment is an important means of providing rapid access to distant manufacturing facilities and thereby eliminating large

inventory requirements. In such cases, air shipment makes it possible to establish supply lines quickly and significantly lowers the cost of carrying inventory. This offsets the higher cost of the air mode.

Ports

The Stockton Deepwater Channel, with a 37-foot depth at average low tide and a 40-foot depth at average high tide, could accommodate 70 percent of the World's Bulk Fleet. Located 75 nautical miles due east of the Golden Gate Bridge, the Port of Stockton owns and operates a diversified and major transportation center that encompasses 600 acres. The Port officials estimate that, on average, 150 to 200 vessels use the Port each year. Included among the commodities that the Port handles are: dry bulk commodities, neo-bulk cargo (steel coils, steel products), general cargo, and liquid bulk cargoes (fertilizers, molasses, petroleum products, etc.). The Port's Beltline Railroad accesses all Port warehouses, transit sheds, and other facilities.

The Port of Stockton is an integral part of the state transportation system. The Port is immediately accessible to the interstate highway system. Convenient access by surface transportation to the entire United States is provided by Interstate 5, and all interconnecting major highway systems. Rail service is provided by three transcontinental railroads: Union Pacific and the Burlington Northern Santa Fe. The Port handles millions of tons of cargo that otherwise would be using the railroads or the roadways; however, they continue to rely on both trucks and rail to deliver inbound cargo and distribute outbound cargo.

Pipelines

Various pipelines carry natural gas, crude oil, and other petroleum products through the San Joaquin Valley. Storage, pumping and branch line facilities are utilized to distribute those products.

Pacific Gas and Electric (PG&E) is responsible for the maintenance and operation of the natural gas line, while major petroleum corporations are responsible for the crude oil pipelines throughout the region.

Hazardous Materials Movement

Because more than 50 percent of all goods transported throughout the world are to some degree hazardous, there is potential danger to human life and property. Each year, more than 4 billion tons of hazardous products and waste are transported throughout the United States. Hazardous material can be transported by rail, small or large trucks, and possibly by air and pipelines.

At present, and for the foreseeable future, the largest volume of hazardous material is transported by large trucks. Truck transport accounts for about half of all hazardous material shipments. The types of vehicles carrying hazardous materials on the nation's highways range from tank trucks, bulk cargo carriers, and other specially designed mobile containers, to conventional tractor trailers and flat beds that carry packages, cylinders, drums and other small containers. Rail shipments are commonly bulk commodities, such as liquid or gaseous chemicals and fuels carried in tank cars.

The potentially adverse affects associated with the transportation of hazardous material can be partially mitigated by restricting roads available for hazardous material trucking. Under California law, transportation of hazardous waste is required to be carried out via the most direct route over interstate highways whenever possible. There are exceptions to this general rule, such as occasions when it is necessary to avoid highly congested areas and areas of high population density. Interstate 5 and most of State Route 99 are built to full freeway standards. Interstate 5 provides the service for north-south transporters and serves the inter-regional transport needs of local and long distance hazardous waste haulers. Interstate 5 has been proposed as a route for the transportation of radioactive materials. Route 99 is the major north-south artery connecting the north and south central San Joaquin Valley areas. Route 99 passes through the more populated areas of the San Joaquin Valley including Stockton, Modesto, Merced, Fresno, and Bakersfield.

Kings County, located in the southern region of the San Joaquin Valley, is the site of a Class I hazardous waste facility. This facility, located in the Kettleman Hills area of Kings County draws trucks carrying hazardous materials from all western states. The presence of these trucks on these regional routes increases the probability of dangerous spills.

Forecasts

California's seaports, airports, railroads, and highways together move about one billion tons annually overseas, across the Canadian and Mexican borders, to and from other states, and within the state. This volume of freight places a high demand on the state's transportation system. Much of this freight originates from, passes through, or comes to the San Joaquin Valley by various modes.

Economic development is one of the vital interests of the San Joaquin Valley. Hundreds of small and mid-sized companies are making decisions based upon their own best judgments about the extent of future goods movement. Much of this judgment is proprietary. It is expected that rail transport will continue to increase due to its ability to haul large amounts of long distance cargo at lower cost. Trucking is expected to increase because of its flexibility and timeliness. Potential increases in fuel costs will affect all modes of transportation.

Goods movement by bus will continue to be an alternative source for moving small goods. As the population in the Valley increases, airlines serving the regional airports are expected to introduce larger aircraft thereby expanding the air service area and making goods movement by air more a more viable option.

Pipelines will continue to be the most effective way of moving oil and gas through the region. There is likely to be an increase of fuel and natural gas use in the future because they are primary sources of energy.

Assumptions/Future Needs and Issues

The movement of goods by trucks is essential to the economy of the San Joaquin Valley. Trucking will continue to be the most inexpensive form of goods movement, and will continue to add to highway congestion. In addition, trucks, like cars, produce an adverse affect on air quality, and the presence of trucks carrying hazardous materials increases the probability of dangerous spills. Air and rail services are under utilized for the movement of goods; however, most goods will continue to be moved by trucks.

Action Plan

Short-Range Plan

State of California

- Pursue additional funding for street, road, highway, air, and rail projects by working with the League of California Cities and the County Supervisors Association of California to ensure the efficient movement of goods.
- Oppose higher axle load limits for the trucking industry.
- Encourage and support strict enforcement of transportation regulations concerning the transportation of hazardous material.
- Support and work with districts, local jurisdictions, regional agencies and the private sector to provide improved intermodal freight transfer facilities and access at major airports and rail terminals.
- Assess and incorporate, where appropriate, innovative intermodal linkage.
- Explore all viable options to facilitate freight movement while reducing conflicts between freight and passenger traffic.

Metropolitan Planning Agencies and Regional Transportation Planning Agencies

- Oppose higher axle load limits for the trucking industry.
- Provide technical and planning assistance to local jurisdictions for industrial and wholesale land use and transportation planning.
- Coordinate planning efforts to ensure efficient, economical and environmentally sound movement of goods.
- Support a higher safety level requirement for hazardous material transportation programs.
- Encourage the use of rail and air for the transportation of goods to reduce impacts to state and inter-county routes, and reduce air quality impacts.
- Encourage coordination and consultation between the public and private sectors to explore innovative strategies for the efficient movement of goods.
- Support the intermodal linkage of all freight transportation.

Counties and Cities

- Continue to evaluate and designate truck routes.
- Coordinate and consult with private sector providers in order to identify obstacles to the efficient movement of goods and develop alternative strategies.
- Seek strict enforcement of transportation regulations concerning the transport of hazardous substances.
- Consider locating industrial development near rail, airports, and major highways in the land-use elements of local General Plans.

Industry

- Increase the use of rail and air service for the movement of goods.
- Develop hazardous material transportation plans.

Long-Range Plan

- Continue to follow the objectives of the short-range plan.

FINANCIAL ELEMENT

The San Joaquin Valley contains urban and rural counties, self-help and non self-help counties, passenger rail and non-passenger rail counties and two Caltrans districts. Funding for transportation projects is subject to the north-south split requirements, county share requirements and availability of mitigation fees, local sales taxes, state and federal gas taxes, gasoline sales tax and bond revenues. No two counties are exactly alike. One aspect of transportation financing, however, which is common to all eight counties is that funding is not available to eliminate all long range deficiencies. Each county, in consultation with adjacent counties, cities, Caltrans, and the SJVUAPCD, must prioritize the use of available funds. The results of that process are shown in the financial elements of each of the eight regional transportation plans along with a detailed description of funds available.

Exhibit 1-12
San Joaquin Valley Long Range Transportation Plan Coordinating Committee

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APPENDIX B

PUBLIC INVOLVEMENT DOCUMENTATION



U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
REGION NINE
CALIFORNIA DIVISION
980 Ninth Street, Suite 400
Sacramento, California 95814-2724

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Mr. James W. van Loben Sels, Director
CALTRANS, 1120 N Street
Sacramento, California 95814

Attention: Federal Resources Branch, Room 3500
for Mr. Kurt Scherzinger

Dear Mr. van Loben Sels:

SUBJECT: KCOG 1998 FEDERAL TRANSPORTATION IMPROVEMENT PROGRAM
AND REGIONAL TRANSPORTATION PLAN

We have completed our review of the Kern Council of Governments (KCOG) conformity determination of the 1998 Federal Transportation Improvement Program (FTIP) and the Regional Transportation Plan (RTP) submitted with KCOG's letter dated September 17, 1998. This U.S. DOT determination of conformity for KCOG's 1998 FTIP and RTP was made in accordance with the control strategy period requirements of the conformity procedures of the 1990 Clean Air Act Amendments (CAAAAs) as provided within the Environmental Protection Agency (EPA) final rule on transportation conformity (40 CFR Parts 51 and 93), as amended. The KCOG Governing Board demonstrated meeting the criteria and procedures of the transportation conformity rule on September 17, 1998, when they adopted the 1998 FTIP and 1998 RTP (Resolution No. 98-26).

We find this KCOG FTIP and RTP were developed based on a continuing, cooperative, and comprehensive transportation planning process in accordance with 23 USC 134 and 23 CFR 450. This finding has been coordinated with the Federal Transit Administration (FTA), and the Environmental Protection Agency (EPA). This letter also constitutes approval, and inclusion of KCOG's FTIP into California's 1998/99-1999/2001 Federal Statewide Transportation Improvement Program (FSTIP). Furthermore, this approval is made with the understanding that FTA funding approval on individual projects is subject to the grantees meeting all necessary FTA administrative requirements.

Sincerely,


Leslie Rogers

Regional Administrator
Federal Transit Administration


Jeffrey A. Lindley

Division Administrator
Federal Highway Administration

SIGN-IN SHEET

Transportation Planning Policy Committee Meeting September 17, 1998

**Public Hearing regarding the 1998 RTP and
1998 Federal Transportation Improvement Program**

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9-6-98

Ads published in Bakersfield Californian Sunday, September 6, 1998
1998 RTP; 1998 FTIP; Tier II EIS/EIR Route 58

Sunday, September 6, 1998

REQUEST FOR PROPOSALS TIER II ENVIRONMENTAL RE PORT FOR ROUTE 58 FREEWAY PROJECT

The Kern Council of Governments (Kern COG) requests proposals from qualified consultants to develop technical support documents needed to complete a Tier II Environmental Impact Statement/Report (EIS/EIR) for the construction of a Route 58 highway project on a new alignment in the Bakersfield urban area from approximately Mohawk Rd. to Heath Rd. For a detailed RFP or additional information, please contact Roger Taylor at (805) 861-2191. Sept. 6, 1998 (40191)

Send in with a BESTSELLER ad.
3 print lines, 7 days, \$13.95

Notice of Public Hearing 1998 Regional Transportation Plan

Before the Kern Council of
Governments (Kern COG) in the
matter of the 1998
Regional Transportation Plan
(1998 RTP).

Legal Notices 520

1. WHEREAS, the Kern Council of Governments, in its capacity as the Regional Transportation Planning Agency, has held a public review period from August 1, 1998 to August 31, 1998 to allow for public review and comment on the 1998 RTP; and
2. WHEREAS, a public meeting was held in Bakersfield on August 21, 1998 to discuss the 1998 RTP during the public review period; and
3. WHEREAS, the 1998 RTP is a 20-Year Transportation Program for the Kern Region; and
4. WHEREAS, the 1998 RTP must meet the conformity requirements of the Federal Clean Air Act Amendments of 1990 and State Implementation Plan;

NOTICE IS HEREBY GIVEN THAT 5. A PUBLIC HEARING WILL BE HELD IN THE Kern COG Conference Room, 1401 19th Street, Third Floor, Bakersfield, California, at 7:00 p.m. on Thursday, September 17, 1998. This hearing will be part of a regularly scheduled meeting of the Kern Council of Governments.
6. After the public hearing, Kern Council of Governments will consider adoption and certification of the 1998 RTP as part of a regularly scheduled meeting to be held in the Kern COG conference room, 1401 19th Street, Third Floor, Bakersfield, CA at 7:00 p.m. on Thursday, September 17, 1998.

7. Kern Council of Governments will consider the following actions:
a) Find that the 1998 Regional Transportation Plan meets conformity requirements of the Federal Clean Air Act Amendments of 1990;
b) Adopt by Resolution the above finding and the 1998 Regional Transportation Plan; and
c) Recertify the Environmental Impact Report for the 1998 Regional Transportation Plan.
Ronald E. Brunnett,
Executive Director
Kern Council of Governments
(805) 861-2191
TTY (805) 832-7433
September 6, 1998 (40095)

Notice of Public Hearing 1998 Federal Transportation Improvement Program

Before the Kern Council of Governments (Kern COG) in the matter of the 1998 Federal Transportation Improvement Program (1998 FTIP).

1. WHEREAS, the Kern Council of Governments, in its capacity as the Regional Transportation Planning Agency, has held a public review period from August 1, 1998 to August 31, 1998 to allow for public review and comment on the 1998 FTIP; and
2. WHEREAS, a public meeting was held in Bakersfield on August 24, 1998 to discuss the 1998 FTIP during the public review period; and
3. WHEREAS, the 1998 FTIP is a Six-Year Transportation Program for the Kern Region; and
4. WHEREAS, the 1998 FTIP is a federally mandated list of transportation capital improvement projects; and
5. WHEREAS, the 1998 Federal Transportation Improvement Program must meet the conformity requirements of the Federal Clean Air Act Amendments of 1990 and the State Implementation Plan;

6. WHEREAS, the 1998 Federal Transportation Improvement Program must be found to be consistent with the 1998 Regional Transportation Plan; and
NOTICE IS HEREBY GIVEN THAT 7. A PUBLIC HEARING will be held in the Kern COG Conference Room, 1401 19th Street, Third Floor, Bakersfield, California at 7:00 p.m. on Thursday, September 17, 1998. This hearing will be part of a regularly scheduled meeting of the Kern Council of Governments.
8. After the public hearing, the Kern Council of Governments will consider the adoption of the 1998 Federal Transportation Improvement Program.
9. Kern Council of Governments will consider the following actions:
a) Find that the 1998 Federal Transportation Improvement Program meets conformity requirements of the Federal Clean Air Act Amendments of 1990, and is consistent with the State Implementation Plan and the 1998 Regional Transportation Plan;
b) Adopt by Resolution the above finding and the 1998 Federal Transportation Improvement Program.

Ronald E. Brunnett,
Executive Director
Kern Council of Governments
(805) 861-2191
TTY (805) 832-7433
September 6, 1998 (39996)

NOTICE OF COMPLETION

TO: Office of Planning and Research
1400 Tenth Street, Rm 121
Sacramento, CA 95814

Project Title: 1998 Regional Transportation Plan (including 1998 Congestion Management Program) and 1998 Regional Transportation Improvement Program

Project Location: All of Kern County, California

Description of Nature, Purpose and Beneficiaries of Project: The 1998 Regional Transportation Plan (RTP) is a long-range comprehensive planning document that serves as a blueprint to guide public policy decisions regarding transportation expenditures and financing. The 1998 Draft Plan takes a fresh look at the 1996 Regional Transportation plan and incorporates minor modifications and additions. In addition, recent planning and programming activities at the local, state and federal level are incorporated.

The 1998 RTP assesses the future travel demand of persons and goods in the region as well as various intelligent transportation, major investment, and congestion management strategies that may be used to meet those demands. The strategies in this Plan are multimodal. They include highway and street enhancements as well as transit, pedestrian and bicycle enhancements. The RTP calls for the use of various Transportation System Management and Transportation Demand Management tools to meet mobility needs. Actions for maintenance and preservation of the existing infrastructure are also proposed.

The Regional Transportation Improvement Program (RTIP) is a multimodal list of capital improvement projects to be implemented over a six-year period. Biennially, the RTIP is updated to include projects that local agencies wish to implement over the next six years. Projects not listed in the RTIP cannot be funded.

Federal regulations require that this RTP and RTIP be financially constrained. When evaluating needs and resources, it becomes clear that needs surpass resources. The RTP deals with this shortfall by creating a list of projects that are needed but cannot be implemented given the limited resources that are expected to be available during the 20-year planning period.

It is the intent of Kern Council of Governments that its Board of Directors will re-certify the EIR originally adopted for the 1994 Regional Transportation Plan, Congestion Management Program, and Regional Transportation Improvement Program. No additional impacts from projects proposed in the 1998 RTP and RTIP are anticipated, and no additional mitigation measures are required.

Public Comment: The planning process requires that the public be provided adequate opportunity during development of the Regional Transportation Plan and Regional Transportation Improvement Program. These transportation planning and programming documents are available for 30-day review between July 31 and August 30, 1998. Adoption of the long-range plan and short-range program are anticipated on September 17, 1998 at the regularly scheduled COG Board meeting.

Lead Agency and EIR Availability: Kern Council of Governments offices, 1401 19th Street, Suite 300, Bakersfield, California.

Review Period: July 31, 1998 to August 30, 1998. Public meeting to be held August 24, 1998, at 7 p.m. at the Kern Council of Governments offices. Public hearing will be conducted September 17, 1998, at 7 p.m., at the Kern Council of Governments offices.

Contact Persons:

RTP - Senior Planner Marilyn J. Beardslee (805) 861-2191; e-mail: plans@kerncog.org

RTIP - Principal Planner Roger W. Taylor (805) 861-2191; e-mail: modeling@kerncog.org



**Kern Council
of Governments**

July 29, 1998

TO: Interested Persons

FROM: Ronald E. Brummett
Executive Director 

SUBJECT: DRAFT REVIEW PERIOD FOR THE 1998 REGIONAL TRANSPORTATION PLAN
AND THE 1998 FEDERAL TRANSPORTATION IMPROVEMENT PROGRAM

The attached documents are forwarded for review and comment. Kern Council of Governments, as the Metropolitan Planning Organization and the Regional Transportation Planning Agency for the Kern County region, is required to publish a Regional Transportation Plan (RTP) and a Federal Transportation Improvement Program (FTIP). The RTP is a twenty-year plan for multi-modal transportation projects in the region and includes the Capital Improvement Program (CIP) list in the Kern Congestion Management Agency's (KCMA) Congestion Management Program (CMP). The FTIP for the Kern region is a six year schedule of multi-modal transportation improvements. Projects listed in the FTIP are designed to be consistent with, and implement, the RTP. The RTP and FTIP are subject to continual review and modification to assure timely delivery of transportation programs and projects.

The public review period for the Draft 1998 Regional Transportation Plan Update (Draft 1998 RTP Update) and Draft 1998 Federal Transportation Improvement Program (Draft 1998 FTIP) begins August 1, 1998 and ends August 31, 1998. During this time, a public meeting and a public hearing will be held at the following time and location:

Public Meeting: **Monday, August 24, 1998, 7:00 p.m.,** Kern Council of Governments' Board Room, 1401 19th Street #300, Bakersfield California.

Formal Public Hearing: **Thursday, September 17, 1998, 7:00 p.m.,** Kern Council of Governments' Board Room, 1401 19th Street #300, Bakersfield California.

These documents will be considered for adoption, by resolution, by Kern Council of Governments at a regularly-scheduled meeting to be held on September 17, 1998. The documents will then be submitted to state and federal agencies for their review and final approval.

All written comments should be submitted to Kern Council of Governments, 1401 19th Street, Suite 300, Bakersfield California 93301 no later than **5:00 p.m., August 31, 1998.**

Please contact Marilyn Beardslee (805.861-2191) with questions regarding the Draft 1998 RTP and Roger W. Taylor (805.861-2191) regarding the Draft 1998 FTIP.

APPENDIX C

RESPONSE TO COMMENTS TO DRAFT RTP ISSUED JULY 1998



**Kern Council
of Governments**

**RESPONSES TO COMMENTS ON
1998 REGIONAL TRANSPORTATION PLAN**

Comments were received from:

1. Southern California Association of Governments
2. U.S. DOT, Federal Highway Administration
3. Department of Airports, County of Kern
4. Department of the Air Force, Edwards Air Force Base, Headquarters Air Force Flight Center.
5. California Department of Transportation, District 6
6. Roads Department, County of Kern
7. Automobile Club of Southern California
8. Planning Department, County of Kern

RECEIVED

AUG 17 1998

KERN COUNCIL
OF GOVERNMENTS

August 14, 1998

Ronald E. Brummett, Executive Director
Kern Council of Governments
1401 19th Street, Suite 300
Bakersfield, CA 93301

LETTER #1

Dear Mr. ^{Ron}Brummett:

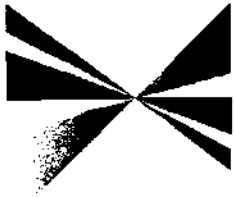
Thank you for the opportunity to review the Kern Council of Governments Draft 1998 Regional Transportation Plan (RTP). As you may be aware, SCAG's Regional Council recently adopted its 1998 RTP in April, thus completing a 3-year effort of consensus building so critical to the planning process.

Focusing on the inter-regional issues, the draft covers some of the same major concerns as the SCAG 98RTP. In particular, your attention to the High Speed Rail concept, in relation to the state's efforts, is noteworthy. SCAG has developed a intra-regional MAGLEV system that feeds into the preliminary route conceptualization of the state's plan. While the system outlined in the SCAG 98RTP is regional, it is anticipated that its connectivity to the state system will truly link our neighboring regions together. Of course, implementation of such a system will impact intra-state aviation and will facilitate business and spatial relationships between our regions. In short, it is encouraging that your draft plan highlights this forward-thinking transportation technology.

Another similarity between our respective planning efforts is an attention to Goods Movement issues. As recognized by your document, economic activity is estimated to thrive in Southern California. Ensuring that there is inter-regional transportation corridors that can facilitate goods movement is essential. In the SCAG 98RTP, the Southwest Passage, along the I-10 corridor, is identified to connect the major ports in the SCAG region to major economic centers outside California. Future SCAG RTPs and planning efforts are exploring other inter-regional goods movement corridors. SCAG looks forward to working with Kern COG on these issues.

Also connected to the goods movement issue is your identification that trucks significantly cause roadway deterioration. The SCAG 98RTP has highlighted that our region needs specific truck lanes and additional operations and maintenance funding to cope with this issue. Your attention to the "Aging Highway Network" echoes SCAG's O&M funding concerns. This consensus

SOUTHERN CALIFORNIA



ASSOCIATION OF
GOVERNMENTS

Main Office

818 West Seventh Street
12th Floor
Los Angeles, California
90017-3435

t (213) 236-1800

f (213) 236-1825

www.scag.ca.gov

Officers: • President: Mayor Bob Bartlett, City of Monterey
• First Vice President: Supervisor Yvonne Brathwaite Burke, Los Angeles
• Second Vice President: Councilmember Ron Bates, City of Los Angeles
• Immediate Past President: Supervisor Judy Mikels, Ventura County

County of Imperial: Tom Vessey, Imperial County
• David Drillon, El Centro

County of Los Angeles: Tammie Brathwaite Burke, Los Angeles County
• Richard Alatorre, Los Angeles
• Richard Alatorre, Los Angeles
• Eileen Anzari, Diamond Bar
• Bob Bartlett, Monterey
• Bruce Barmes, Corralito
• George Bass, Bell
• Sue Bauer, Glendora
• Hal Benson, Los Angeles
• Robert Boesch, Rosemead
• Laura Chalk, Los Angeles
• Gene Danek, Paramount
• Doug Drummond, Long Beach
• John Ferraro, Los Angeles
• Michael Feuer, Los Angeles
• Jane Friedman, El Segundo
• Ruth Galanter, Los Angeles
• Edith Givens, Glendale
• Jackie Goldberg, Los Angeles
• Garland Hardeman, Inglewood
• Mike Hernandez, Los Angeles
• Nate Holden, Los Angeles
• Keith McCarthy, Downey
• Barbara Messina, Alhambra
• Cindy Miskowski, Los Angeles
• David Myers, Palmdale
• George Nakano, Torrance
• Pam O'Connor, Santa Monica
• Jenni Orozco, Long Beach
• Beatrice Proo, Rico Rivera, Mark Rodley, Thomas, Los Angeles
• Diann Rugg, Claremont
• Richard Riordan, Los Angeles
• Marlene Shaw, Compton
• Ruth Sverdrick, Los Angeles
• Joel Wach, Los Angeles
• Rita Walters, Los Angeles
• Dennis Washburn, Calabasas
• Paul Zee, South Pasadena

County of Orange: William Serner, Orange County
• Steve Apodaca, San Clemente
• Ron Bates, Los Alamitos
• Art Brown, Buena Park
• Jan DeBay, Newport Beach
• Richard Dixon, Lake Forest
• Charlene Hatakeyama, La Palma
• Ben Perry, Brea

County of Riverside: James Venable, Riverside
• Jan Leja, Beaumont
• Dick Kedy, Palm
• Ron Lowenridge, Riverside
• Andrea Puga, La
• Ron Roberts, Temecula

County of San Bernardino: Larry Walker, San Bernardino County
• Bill Alexander, Rancho Cucamonga
• Jim Bagley, Twentynine Palms
• David Eschenman, Fontana
• Lee Ann Garcia, Grand Terrace
• Gwenn Norton-Perry, Chino Hills
• John Starbuck, Highland

County of Ventura: Judy Mikels, Ventura County
• Andrew Fox, Thousand Oaks
• John Mellon, Santa Paula
• Tom Young, Port Hueneme

raises the question, "How can RTPAs and MPOs position themselves to the state and federal government on this issue?"

Unfortunately, there is a lack of substantive information on inter-regional issues in both the draft and the SCAG 98RTP. For instance, there does not seem to be any planned improvements near the Los Angeles County boundary for I-5 and SR-14, or near the San Bernardino County line for SR-58 and US-395. In future updates of our respective plans, dialogue on these essential goods movement and recreation movement routes should take place.

Overall, the draft Kern COG RTP is an extremely comprehensive and well prepared document. As the California economy continues to grow, it is important that its regional transportation agencies' planning efforts complement one another. If you have any questions, please contact me at (213) 236-1887 or Hasan Ikhata, Manager of Transportation Planning & Analysis at (213) 236-1944.

Sincerely,

A handwritten signature in black ink, appearing to read "J. Gosnell", written over a horizontal line.

James R. Gosnell, Director, Planning and Policy

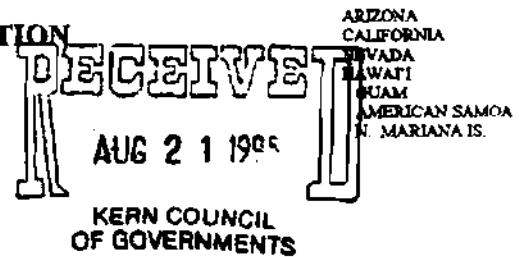
Letter #1 - Southern California Association of Governments

1. Thank you for your comments. We are very much interested in meeting with your organization to discuss how we can expand our inter-regional activities and programs.



U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
REGION NINE
CALIFORNIA DIVISION
980 Ninth Street, Suite 400
Sacramento, CA 95814-2724

August 19, 1998



IN REPLY REFER TO

HPR-CA

File #: 1040.2

Document #: 21050

LETTER #2

Mr. Ronald E. Brummett, Executive Director
Kern Council of Governments
1401 19th Street, Suite 300
Bakersfield, CA 93301

Dear Mr. Brummett:

**SUBJECT: DRAFT 1998 REGIONAL TRANSPORTATION PLAN REVIEW
COMMENTS**

The Federal Highway Administration (FHWA) has reviewed the Kern Council of Governments' (Kern COG) draft 1998 Regional Transportation Plan (RTP), and we offer the following comments:

1. The document does not appear to cover a full twenty year planning horizon. There is multiple references in the document of 2014 being the last year of the plan. A letter sent this May by FTA Region 9 stated that the planning horizon should extend 23-25 years to ensure that a 20-year window has been examined throughout the life of the plan.
2. Section 3.2 talks about the regulatory influence of the Intermodal Surface Transportation Efficiency Act of 1991. This probably should be update to reflect the Transportation Equity Act of the 21st Century (TEA-21) which was signed into law in June.
3. On page 3-5, policy number 37 may need to be revised to take into consideration the latest design criteria for bicycle facilities. AASHTO lasted updated their guidance in 1991. We assume that Caltrans would have a subsequent update as well.
4. On page 4-2, the Bakersfield metropolitan area is now in attainment for carbon monoxide. This should be updated in your discussion on CO.
5. On page 4-139, there is some discussion about the appropriateness of light-rail in the study area. The MTIS seemed to conclude that light-rail was not feasible in the planning horizon.
6. On page 4-146, the MTIS is referenced as an on-going activity. While there is some monitoring activity that is currently underway, the main study has been concluded.

- 7 7. On page 5-29, Table 5-1 only shows noise impacts to the year 2014. Will the plan extend this period to 2021?
- 8 8. Section 5.2.2.6 which starts on page 5-33, this section continually references the planning horizon as 2014.
- 9 9. On page 8-2, table 7-10 lists years 1999, 2003, 2010, and 2018 as build years. The test that should be performed here is against the emission budgets that have been established.
- 10 10. The financial plan should have some discussion of the STIP process and the funds that will be captured by KCOG thru this process.
- 11 11. On page 8-9, the name of FTA funding sources are mislabeled. The use of Section 9, 16, and 18 have been replaced with 5307, 5310, and 5311.
- 12 12. There seems to be duplicate pages 9-1 through 9-4 in the copy of the RTP we received. Are there any pages after 9-5? If so, please forward a copy of the remaining pages of this section.

If you have any questions regarding these comments, please feel free to call Erik Steavens at (916) 498-5861.

Sincerely,



For

Jeffrey A. Lindley

Division Administrator

Letter #2 - U.S. DOT, Federal Highways Administration

1. References throughout the RTP have been revised to show a planning horizon of 2020.
2. References to ISTEA have been updated to reflect the adoption of TEA-21 throughout the document.
3. Policy 37 has been revised to read: Require the design of new bicycle facilities to be in compliance with Caltrans' Chapter 1000, Bikeway Planning and Design Criteria, Topic 1003, Design Criteria.
4. See Item 4 of staff-initiated changes to the Draft 1998 RTP. FHWA's recommended change has been implemented.
5. Light-rail discussion has been deleted from the section.
6. The MTIS Action Plan calls for annual updates. This update is being prepared by staff currently, and will be brought to the Kern Council of Governments as an amendment to the 1998 RTP.
7. Table 5-1 and supporting data have been updated to address 2020.
8. Section 5.2.2.6 has been updated to address planning horizon of 2020.
9. The word "build" has been removed from Table 7-10. We note Table 7-10 is on page 7-19, rather than 8-2.
10. The following statement is added to Section 8.1, Overview: Senate Bill 45, approved in October 1997 (Chapter 622 of the *Government Code*) precipitated changes in the State's transportation programming process for regional planning agencies throughout California. The bill changed the seven-year state transportation improvement program to a four-year program, with a six-year interim cycle for 1998. It eliminated many state transportation programs, replacing them with a streamlined funding distribution formula for state and federal transportation dollars. SB 45 transferred the burden of project prioritization and selection from the state to regional agencies. This legislation has impacted transportation project planning and development by placing emphasis on accountability, flexibility and simplicity. Transportation Improvement Program submittals must be accepted by the State in their entirety or rejected altogether. New STIP procedures also provide a stable funding source for future planning and programming.
11. Referring to page 8-9 and 8-23, Section 9 funding designation will be revised to reference "5307 funding." Section 16 funding will be revised to reference "5310 funding." Section 18 funding will be revised to reference "5311 funding."
12. Duplicate pages of 9-1 through 9-4 were inadvertently provided by our printer. There is no page 9-5 or further.

DEPARTMENT OF AIRPORTS COUNTY OF KERN

Raymond C. Bishop
Director of Airports

Meadows Field
1401 Skyway Drive, Suite
200
Bakersfield, CA 93306-1387
Phone: (805) 383-7990



System Airports
Elk Hills-Buttonwillow
Kern Valley
Lost Hills
Meadows Field
Paco
Taft
Wasco

LETTER #3

FACSIMILE TRANSMITTAL

TELEPHONE NO. (805) 383-7990

FAX NO. (805) 861-3322

TO: John Mooneyham
COMPANY: Kern COG
FAX NO.: (805) 324-8215
FROM: Frank K. Day, Manager Operations
DATE: August 25, 1998
PAGES (including this one): 2

- MESSAGE:** Attached language re: the new terminal at
- 1 Meadows Field. It should be incorporated in the RTP around page 42 in or after the two paragraphs on "Existing Facilities"; and in the FTP on page 4-21 in the remarks about Meadows Field.
 - 2 Please also note that on page 4-121 the based aircraft at Meadows Field for 1995 should be corrected from 303 to 256.

THIS MESSAGE IS INTENDED FOR THE USE OF THE INDIVIDUAL OR ENTITY TO WHICH IT IS ADDRESSED AND MAY CONTAIN INFORMATION THAT IS PRIVILEGED, CONFIDENTIAL AND EXEMPT FROM DISCLOSURE UNDER APPLICABLE LAW. IF THE READER OF THIS MESSAGE IS NOT THE INTENDED RECIPIENT, OR THE EMPLOYEE OR AGENT RESPONSIBLE FOR DELIVERING THE MESSAGE TO THE INTENDED RECIPIENT, YOU ARE HEREBY NOTIFIED THAT ANY DISSEMINATION, DISTRIBUTION, OR COPYING OF THIS COMMUNICATION IS STRICTLY PROHIBITED. IF YOU HAVE RECEIVED THIS COMMUNICATION IN ERROR, PLEASE NOTIFY US IMMEDIATELY BY TELEPHONE AND RETURN THE ORIGINAL MESSAGE TO US AT THE ABOVE ADDRESS VIA THE U.S. POSTAL SERVICE. THANK YOU.

The hard copy of this transmittal is not being sent by mail.

"FLY MEADOWS FIELD"

AUG-25-1998 15:43

805 861 3322

P.01

The Kern County Department of Airports is embarking on a plan to replace the existing (1950's era) air terminal. The new site will contain approximately 40,000 square feet and incorporate a high degree of expandability to meet current and anticipated future needs. The design will include facilities for regional jet operations, while maintaining flexibility and world class comfort for passengers on commuter aircraft. The site will consist of approximately 9 acres of aircraft ramp, 3 acres of terminal area and grounds, and 5 acres of auto parking and other support facilities. 23 acres will remain for growth and expansion.

Approximate cost of the facility is \$15.4 million. This total will include \$5.0 million from the Federal Aviation Administration, \$2.4 from the Airport (especially through the use of "Passenger Facility Charges") and \$8.0 million of other local funds.

Three sites are being considered: one being the site of the existing airport terminal, with the other two being along the eastern airport boundary south and north of Seventh Standard Road.

Timeline for the project includes an architectural rendering completed not later than December of 1999. Final drawings are to be completed not later than December of 2000. The project would be bid early in 2001 with the airline ramp construction starting later this same year. The terminal building construction would begin in 2002 and be complete by the end of 2003.

Letter #3 - Department of Airports, County of Kern

1. Information regarding the proposed new air terminal at Meadows Field has been added on page 4-52.
2. Based aircraft for 1995 has been changed from 303 to 256.



DEPARTMENT OF THE AIR FORCE
HEADQUARTERS AIR FORCE FLIGHT TEST CENTER (AFFTC)
EDWARDS AIR FORCE BASE, CALIFORNIA

RECEIVED

AUG 31 1998

KERN COUNCIL
OF GOVERNMENTS

31 August 1998

AFFTC/XPX

One South Rosamond Blvd
Edwards AFB CA 93524-1036

LETTER #4

Kern Council of Governments
1401 19th Street, Suite 300
Bakersfield CA 93301

Dear Mr Brummett:

Thank you for the opportunity to review the Draft 1998 Regional Transportation Plan and Federal Transportation Improvement Program. The Air Force Flight Test Center (AFFTC) at Edwards Air Force Base has the following comments:

1 a) Page 43, paragraph 2, sentence 2: Request correction to read ". . . for advanced technology and development, test and evaluation." Neither China Lake or Edwards conduct training. I have enclosed a copy of our new brochure for your information to better explain our mission.

2 b) Page 4-131, Military Aviation Facilities, paragraph 1, sentence 2: Request correct square miles to approximately 20,000.

The AFFTC appreciates the continued efforts of your organization in recognizing the importance of this installation in county planning efforts. If you have any questions regarding the above, I can be reached at 805-277-3837.

Sincerely

WENDY L. WAIWOOD
Chief, Plans and Policies Division

Attachment
AFFTC Brochure

Letter #4 - Department of the Air Force, Edwards Air Force Base, Headquarters Air Force Flight Test Center

1. Page 43, paragraph 2, sentence 2 has been revised as requested.
2. Page 4-131, Military Aviation Facilities, paragraph 1, sentence 2, has been revised as requested.

STATE OF CALIFORNIA - BUSINESS, TRANSPORTATION AND HOUSING AGENCY

PETE WILSON, Governor

DEPARTMENT OF TRANSPORTATION

1352 WEST OLIVE AVENUE
P.O. BOX 12616
FRESNO, CA 93778-2616

TDD (209) 488-4088

(209) 445-5763

RECEIVED

AUG 31 1998

KERN COUNCIL
OF GOVERNMENTS

August 31, 1998

2161.2 Kern COG
RTP 1998
FTIP 1998Mr. Ron Brummett
Executive Director
Kern Council of Governments
1401 19th Street, Suite 300
Bakersfield, CA 93301

LETTER #5

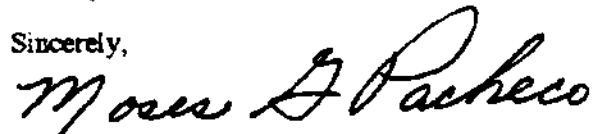
Dear Mr. Brummett:

We have reviewed the Kern Council of Governments (Kern COG) draft 1998 Regional Transportation Plan (including the 1998 Congestion Management Plan) and the draft 1998 Federal Transportation Improvement Program. Overall, the document appears to be financially constrained, consistent with State/Federal format and content guidelines. Any additional comments we receive will be forwarded to you as they arrive. We do offer the following comments:

- 1 • In the Introduction, Transportation Equity Act (TEA 21) is noted on Page 2-5 in regard to Air Quality Conformity and Page 5-62 under Regulatory Consistency. The mention of TEA 21 in the introduction is without preliminary information in regard to "TEA 21". We suggest a short explanation of TEA 21 in the Introduction.
- 2 • The Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA) requires a minimum 20-year horizon for Metropolitan Plans. FHWA/FTA recommends the RTP cover a 23-25 year horizon to ensure they do not fall below a 20-year threshold.
- 3 • The San Joaquin Valley Regional Transportation Plan Coordinating Committee needs committee member names updated to include exclusion or inclusions.

If you have any questions, please call Carol McDonald of my staff at (209) 442-5876.

Sincerely,

MOSES G. PACHECO, Chief
Office of Transportation Planning &
Public Transportation

Attachment

CEM

Letter #5 - California Department of Transportation, District 6, Fresno

1. An explanation of TEA-21 has been added to Section 2.0
2. Planning horizon for the entire 1998 RTP has been expanded to 2020.
3. The S J Valleywide RTP Coordinating Committee list has been updated.

**COUNTY OF KERN
RESOURCE MANAGEMENT AGENCY
ROADS DEPARTMENT
Office Memorandum**

LETTER #6

To: Mark Dawson

Marylin, Kern COG

Date: August 25, 1998

From: Barry Menke

Mark Dawson

8/31/98

Note: Additional FTIP
Comments for the coming
9/1/98 AM. (Computer
Crash).

Subject: 7-2.4k Regional Transportation Plan

I have completed my review of the draft 1998 Regional Transportation Plan (RTP) and 1998 Federal Transportation Improvement Program (FTIP) that have been prepared by the Kern Council of Governments (KernCOG). Please include the following comments with any comments you may have when you respond to this draft. I reviewed the complete FTIP but only the Transportation/Circulation sections and the portion of Appendix C which dealt with Level of Service of the RTP.

FTIP

1. Several projects that have been completed are included on the list of Congestion Mitigation and Air Quality (CMAQ) program projects. These projects include the signalization project on North Chester from the Kern River to Universe, channelization on Seventh Standard at State Route 65, and the traffic signal at South H Street and Taft Highway. I am unsure why these projects are still on this list.

RTP

1

2

3

4

1. The present day Levels of Service (LOS) used in the tables in Appendix C are from 1994. They do not include projects that have been completed since then (the widening of State Route 99 from State Route 204 to south of Ming Avenue). Therefore, the dialog about Route 99 operating at LOS F (page 4-52) is incorrect. This seems to have been lifted from the 1994 RTP and has not been changed. This occurs throughout the report.
2. Viewing the volumes and roadway segments shown in the tables in Appendix C, I wonder what model was used for these volumes. It does not appear to be the latest model runs that Kern COG has developed.
3. In the tables in Appendix C, the listing for Interstate Route 5 has been duplicated onto each page as part of the title. This is confusing as to which route is really being discussed.
4. In the 1994 LOS table, State Route 184 is shown as 2 lanes from Panama Road to DiGiorgio Road and operating at LOS E. This segment of road (Main Street in Lamont) has been 4 lanes for quite some time and should be operating

at a higher LOS.

5. In the Tables for 2014, there is both a "Build" and "No Build" table. However,
5 in the 2001 table there is only a "Build" table. It would seem that they should do one or the other.
6. Some of the volumes vary considerably in the 2014 "Build" to "No Build" scenarios. Route 58 from Route 223 west to Woodford Tehachapi operates at LOS F in the "No Build" and LOS D in the "Build". Route 43 between Route 46 and Filburn operates at LOS A in the "No Build" and LOS F in the "Build".
7. In the 2001 table, the Kern River Freeway appears to have been modeled with a connection to State Route 99. However, this is not going to be the case. Therefore, Rosedale from 99 to Mohawk and Mohawk from 99 to the Kern River Freeway should be shown. It should not be modeled as a freeway as was done in the 2001 table. Also, Rosedale Highway is not shown from 99 to Enos Lane on the 2001 table. Since it is shown on the 1994 table, perhaps it should be shown in the future so the improvement with the Kern River Freeway can be shown.
8. On page 5-34, it is stated that Route 58 between Fruitvale and North Jct. Route 99 will fall below LOS E between 1994 and 2001, however, this roadway segment is not shown on the table for 2001.
9. On page 5-34, it is stated that Route 58 between South H and South Union will fall below LOS E between 1994 and 2001, however, it is shown as LOS E on both page 5-34 and in the 2001 table. This segment should not be included in segments falling below LOS E.

Letter #6 - Roads Department, County of Kern

1. Items #1-7: Appendix C was prepared as technical background for the Environmental Impact Report, and does not affect the proposed, identified programs of the 1998 RTP. Staff is correcting and updating this documentation and will include the material in the final 1998 RTP.
2. Item #8 - This segment will be added to the 2001 listing.
3. Item #9 - The sentence will be revised to read "...will fall to LOS E or lower."



Automobile Club of Southern California

POST OFFICE BOX 25001 • SANTA ANA, CALIFORNIA 92799-5001

August 27, 1998

LETTER #7

RECEIVED

SEP 02 1998

KERN COUNCIL
OF GOVERNMENTS

Marilyn Beardslee
Project Manager
Kern Council of Governments
1401 19th Street, Suite 300
Bakersfield, CA 93301

Dear Ms. Beardslee:

Thank you for answering my questions a few weeks ago on your agency's draft "Regional Transportation Plan (RTP)", dated July 1998. We have completed our review of this draft report and our comments are listed below.

Intelligent Transportation Systems

- 1 Your section on Intelligent Transportation Systems (ITS) presents a strong commitment of the Kern Council of Governments (KCOG) to this new transportation concept. As ITS projects move forward, please keep us informed.

Highway Issues

- 2 From our review we are in agreement with you that additional highway system capacity is required. We note that several of your State Routes (58, 99, and 204) have segments which are projected to operate at Level of Service (LOS) "F". We are in general support of the projects listed in your action plan and look forward to commenting in more detail as they move through the environmental process.

Transit Enhancements

- 3 A proposed Light Rail Transit (LRT) system is still included in this plan as a future option. From our review of the study cited we agree with KCOG that the development costs are too high to support the low number of projected riders, and question whether it will be viable even in the year 2014.

- 4 We noticed very little information about an Express Bus Service on page 5-55. Are there plans to do a study to develop cost, system routes, and projected riders? Express Bus Service could provide LRT- type capacity at a fraction of the cost, and may meet Bakersfield's needs better than an urban rail system.

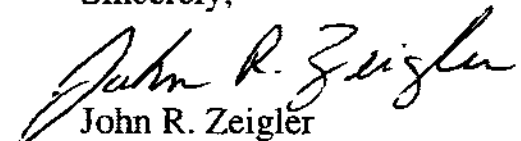
Other Items

- 5 There is a lot of good information in this report about Goods Movement but it is not located in just one section. Can a section for Goods Movement be created similar to ITS?

- 6 In addition the data on the California High Speed Rail (HSR) Commission should be updated with information about the new HSR Authority. Also at the present time many of the state's seismic retrofit program efforts have been completed. As a result this section should be updated to represent the current status of the program.

We appreciate the opportunity to provide comments on your draft RTP. If you have any questions, please give me a call at (714) 885-2308

Sincerely,



John R. Zeigler

Senior Transportation Engineer

The following letter was received after closing of the comment period; responses, however, have been provided.

Letter #7 - Automobile Club of Southern California

1. Thank you for your comments and support for Kern COG's ITS program. We will keep the Automobile Club apprised as the ITS efforts are expanded and implemented.
2. Thank you for your interest and support of Kern COG's action plan. The Automobile Club will be included throughout the environmental process for all projects.
3. See Letter #2, Comment #5 , regarding Light Rail. The discussion has been removed from the final 1998 RTP.
4. Express Bus information will be updated to indicate that the function has been in place since January 1998. Running diagonally between the southwest and northeast parts of Bakersfield, the service connects two major trip generators/attractors: Valley Plaza and Bakersfield College. The only stop at the downtown transfer station facilitates transfers to other buses. No additional fee is required to use the express service.

The Metropolitan Transportation Investment Strategy (as described in Section 5.5 of the RTP) does not include light rail transit as a viable option within the 2015 horizon. However, the MTIS does suggest that right-rail transit should be included as a transportation element for further study beyond 2014.

5. Kern COG is undertaking a full study of Goods Movement issues. The 2000 RTP will include a section devoted to our findings.
6. High Speed Rail information is being updated for the final 1998 RTP. In addition, the comments regarding seismic retrofit have been updated.

PLANNING DEPARTMENT

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RESOURCE MANAGEMENT AGENCY

DAVID PRICE III, RMA DIRECTOR

Community Development Program Department

Engineering & Survey Services Department

Environmental Health Services Department

Planning Department

Roads Department

August 27, 1998

LETTER #8

FILE: 500-00 4 240

RECEIVED

SEP 02 1998

**KERN COUNCIL
OF GOVERNMENTS**

KernCOG

1401 - 19th Street, Suite 300

Bakersfield, CA 93301

Re: 1998 Regional Transportation Plan

Ladies and Gentlemen:

This department has reviewed the 1998 Regional Transportation Plan (including 1998 Congestion Management Program) and Regional Transportation Improvement Plan - hence 1998 RTP/CMP/RTIP, and offers the following comments:

- (1) **Figure 2-1:** This, and many other graphics, appear to have incorrect scales in their legends.
- (2) **Section 2.2:** It should be made clear where references to "Board" means the KernCOG Board of Directors instead of the Kern County Board of Supervisors.
- (3) **Section 3.2:** Many of the stated objectives do not specify who is to perform the required act. Since these appear within the 1998 RTP/CMP/RTIP, the inference is that the KernCOG will perform these various tasks. Some of these may be beyond the jurisdiction of the KernCOG.
- (4) **Section 4.1:** The Kern County Surveyor notes that Kern County is 8,073 square miles in size.

How are the three county regions determined? The County General Plan also recognizes three planning regions, however, these differ from the descriptions in the 1998 RTP/CMP/RTIP.

A "Historic Chronology of Kern County" by Richard C. Bailey indicates the Isabella dam was completed in 1953.

- (5) **Figure 4-1:** Appears to show the regions described on page 4-1, yet the apparent region boundaries are designated as "census boundaries."

The Mountain Region takes in more than the "Southern Sierra Nevada Mountains."

What is the purpose of showing Census Designated Places (CDP) as CDPs are not discussed in this portion of the document.

- (6) **Page 4-4:** Bakersfield is the County's most populous city and is named after Colonel Thomas Baker.
- (7) **Page 4-5:** The McAllister Ranch and Keene Ranch projects are still moving forward.

- (8) **Page 4-12, first paragraph, last sentence:** What has this to do with the Garlock Fault?
- (9) **Page 4-14, Figure 4-5:** The figure shows 16 mining districts rather than the 22 noted.
- (10) **Page 4-18:** Flood Hazard Boundary Maps are on file with the Kern County Engineering and Survey Services Department/Floodplain Management Section.
- (11) **Figure 4-8:** What is the area east of the San Diego Air Basin and south of the Southeast Desert Air Basin.
- (12) **Figure 4-10:** The symbol used to characterize the range of the San Joaquin kit fox appears to extend into the Indian Wells Valley and Mojave Desert.
- (13) **Page 4-42, Residential:** How do larger parcel sizes become "... more dependent on livestock and agriculture"?

Commercial: At one time residential uses were permitted "by right" in commercial zones, however, residential uses as a main use of commercial property now require a conditional use permit.
- (14) **Page 4-43, City of Bakersfield:** Bakersfield is the most populous city, California City is the largest in area extent.

What physical constraints to the north, south, and west of Bakersfield have caused growth in the Interstate 5 and Route 99 corridors which are north, south, and west of Bakersfield?
- (15) **Page 4-44, Airport Land Use Commission:** It should be noted that Kern County and several of the incorporated cities have adopted the Airport Land Use Compatibility Plan.

Metropolitan Bakersfield 2010 General Plan: The plan encompasses 408 square miles.
- (16) **Page 4-45, Mojave Project:** What is the significance of these projects and the other projects listed in Section 4.4.5? Why are these listed and not others such as the Rosamond-Willow Springs Specific Plan, Jamason Ranch Specific Plan, and the general plans of the incorporated cities?

Western Rosedale Specific Plan: Change "... would require the modification of ..." to "modified" and change "... would supersede ..." to "supersede." The Western Rosedale Specific Plan was adopted in September 1994.
- (17) **Page 4-52, Aviation:** As of this writing Inyokern Airport has no scheduled commuter air services.
- (18) **Figure 4-14:** What is the different between the symbols for Los D and E? What is the LOS of Route 119 west of Interstate 5?

- (19) **Page 4-66, Section 4.5.1.1:** The County Surveyor indicates the County contains 8,073 square miles.
- (20) **Page 4-93:** The descriptions of the South and West Beltways appear to be reversed.
- (21) **Figure 4-38:** What is the significance of "2 miles East of Fairfax Road to 0.3 miles East of China Grade Loop" on this graphic?
- (22) **Figure 4-58:** Page 4-129 notes there are three privately owned/operated public use airports in the County, yet Figure 4-58 shows only Rosamond and Mountain Valley.

Does Maricopa still have an airport? It is not included in the discussion on pages 4-121 to 4-131.

- (23) **Page 4-131, Military Aviation Facilities:** Reference is made to the R-2508 complex and the R-2058 complex. Is one of these a typo?
- (24) **Page 4-153, City of Bakersfield:** It is noted that five miles of the Kern River Bikepath will be added in spring of 1995. It is also noted that in 1997, the City constructed bike lanes along 24.4 miles of City streets. Why is this 1997 information known and not the 1995?
- (25) **Page 4-158, Kern County:** Who completed the Trails Study? Has it been adopted by the Board of Supervisors?

Has the Fairfax Road to Hart Park Bikepath been completed?

Has the Manor Street to Fairfax Road been completed?

This information seems to have been taken from an earlier report and not updated.

- (26) **Figure 4-71:** This shows only a portion of the County.
- (27) **Figure 4-72:** These should probably be enlarged.
- (28) **Page 4-167, Foreign Trade Zone:** It should be noted that the Foreign Trade Zone property has been annexed into the City of Shafter in October 1996, and the City is processing a master plan and development agreement.

Goods Movement Accomplishments: What is the location of the trailer loading dock mentioned in the second paragraph?

In what locality is the Fairfax Road grade separation?

What was the purpose of the 1994 Sunset Rail Line Study?

When was the study completed?

- (29) **Page 5-3, Route 202 Corridor Study:** The sixth sentence is awkward.

- (30) **Page 5-6, Sunset Rail Line Study:** Is this the same study referred to on page 4-167?
- (31) **Page 5-30: Rail Noise:** The addition of four additional train trips per day, while perhaps not numerically significant, lengthens exposure over time. Instead of 1.16 trains per 24 hours, it becomes 1.3 trains per 24 hours. Has a determination been made regarding the significance of this?
- Mitigation Measures - Traffic:**
- #1 This should probably require additional specific studies to determine exact mitigation.
- #2 Who, when, where, how will this be implemented?
- #3 This is a statement, not mitigation.
- (32) **Page 5-31, Airports:** These two items are statements of fact and are not expressed as mitigation.
- (33) **Page 5-32, Mitigation Measures:** This states the RTP would not produce any significant impacts on land use. What about growth inducing impacts? Some of the facilities proposed would undoubtedly lead to requests for changes in land use to allow intensification.
- (34) **Page 5-34, first paragraph:** Four road segments are noted as falling below LOS "E" between 1994 and 2001, yet Route 58 (South H - South Union) is cited as LOS "E."
- (35) **Page 5-39, Streets and Highways:** How is Mitigation Measure 1 implemented and enforced? Who, where, when, and how is Mitigation Measure 3 implemented?
- (36) **Page 5-40:** Mitigation 7 is not written as mitigation.
- Aviation #1 is not written as mitigation.
- Aviation #5 is not written as mitigation.
- (37) **Page 5-41, Mass Transportation:** Items 3 and 4 are statements and do not contain steps to provide mitigation.
- (38) **Page 5-42:** Item 7 is a statement of policy, not mitigation, as are items 8 and 9.
- (39) **Page 5-43:** Items 3 through 6 (inclusive) lack information regarding implementation so that they are, in effect, policy statements rather than effective mitigation.
- A general note here:** Much of the mitigation contained in this document does not contain information regarding who is to perform the mitigation, when it is to be performed, where it is to be performed, and how it is to be performed.
- (40) **Page 5-49, Mitigation 3:** What is the Native American Heritage Preservation Project?
- (41) **Page 5-52, top of page:** This seems to be a reference to the Kern River (Westside) Freeway. It should be noted that from approximately Renfro Road, east to Highway 99, the alignment

is proposed to be north of Stockdale Highway. This alignment, going through developed and undeveloped areas, might well have aesthetic impacts which do not seem to be discussed here.

- (42) **Page 5-61, Centers/Resources Concepts:** Why does this discussion, which is contained in Section 5.3.2 Land Use Implications, focus on the Metro Bakersfield Plan. Where is the discussion of other incorporated cities' General Plans and discussion of the County General Plan.
- (43) **Page 6-4, Section 6.1.4:** With recent reorganizations at CalTrans, is this discussion still valid? Does District 9 still exist?
- (44) **Page 6-7, Road Closure Enforcement:** Has consideration been given to the possibilities of camera vandalism/theft?
- (45) **Page 6-18, Section 6.2.4.2:** The discussion in this section makes continued reference to the 1993-94 fiscal year. Is more recent information available?
- (46) **Page 8-38, County-wide Gas Tax:** The last sentence is awkward.
- (47) **Page 8-39, last paragraph:** The opening sentence is awkward.
- (48) **Page 10-1:** This section begins by stating "The 1994 RTP/CMP is not a growth inducing plan." Is "1994" a typo? If so, is it also a typo in the "Air Quality" paragraph following? The year "1994" is also indicated in "Agricultural Lands" on page 10-3 and again on page 10-5.
- (49) **Page 11-8, North/South Split:** This indicates that there are 56 counties in the State (11 southern, 45 northern), instead of 58.

We appreciate the opportunity to comment on this document. **If you have any questions, please contact David B. Rickels, AICP, Senior Planner ((805) 862-8611).**

Very truly yours,

TED JAMES, AICP, Director
Planning Department



By David B. Rickels, AICP
Senior Planner

jc

cc: Kern County Roads Department/Barry Nienke

The following letter was received after closing of the comment period, responses, however, have been provided.

Letter #8 - Planning Department, County of Kern

1. The scale and graphics have been proportionately reduced and the scales are accurate as depicted.
2. Comment noted.
3. As the Regional Transportation Planning Agency, Kern COG is responsible for developing a long-range planning document; the policies described therein are adopted by the Board and/or defined in statute. A statement has been added indicating that Kern COG and its member agencies have responsibility for oversight, implementation, and maintenance of projects stemming from the identified objectives.

Please note that the document under review is the 1998 Regional Transportation Plan, which includes the Congestion Management Program as Section 6.2. The federal (rather than regional) Transportation Improvement Program (FTIP) is a stand-alone document, under separate review.

4. Information for the "Environmental Setting" was attained from several County Environmental Impact Reports, including San Emidio and McAllister Ranch. The square miles of Kern County is changed to reflect the Surveyor's data.

The three planning regions are defined by census boundaries.

The date of dam completion is changed to reflect Planning Department's comments.

5. See comment #4. CDPs are included for illustration purposes.
6. Sentence is revised to reflect planning Department's comment.
7. Comment noted. Information provided in the RTP is consistent with correspondence from County Planning Director and Roads Department dated June 15, 1998.
8. Comment noted.
9. Number of mining districts is modified to reflect Planning Department's comment.
10. Location of repository for flood hazard boundary maps is changed to reflect Planning Department's comment.
11. Area is Salton Sea Air Basin
12. Graphic has been revised to clarify intent.
13. Sentence is rewritten to say: "Moving out from urban centers, acreage of parcels tends to become greater to allow for livestock and agricultural uses."

Sentence is rewritten to note that residential uses are allowed in commercial zones with a conditional use permit.
14. Sentence is revised to indicate that Bakersfield is the most populous city, rather than the largest. Constraints to growth are discussed in the paragraph.

15. Sentence has been added to indicate that "Kern County has adopted an Airport Land Use Compatibility Plan."

Square mileage of Metropolitan General Plan is changed from 405 to 408 to reflect Planning Department's comment.

16. Mojave Project et al. are used as illustration of land use development taking place within the County. Changes made to wording to reflect Planning Department's comment.
17. Comment noted. As of this writing, Inyokern Airport is actively seeking to regain scheduled air service
18. Graphic is revised to clarify intent.
19. See Comment #4.
20. Descriptions of the West and South Beltways are being revised.
21. Defines limits of corridor study on Route 178.
22. As noted in the text, Rio Bravo is a privately owned and operated airport that is no longer considered for system planning purposes. Therefore, it is not illustrated on Figure 4-58. We have no record of Maricopa ever having a public use airport.
23. Yes.
24. Sentence is revised to state that five miles of the Kern River Bikepath was added in Spring 1995.
25. Dames & Moore completed the Trails Study, which was adopted by the Board of Supervisors in 1991.

Page 4-158, Kern County, second paragraph is revised to read: Recent activity includes completion of a bikeway in the Lake Isabella area and completion of a portion of the Kern River Bikepath between Hart Park and the California Living Museum in metropolitan Bakersfield. A funded TEA project to construct bikelanes from Fairfax Road to Hart Park was transferred to the City of Bakersfield because of right-of-way conflicts.

26. Software inadvertently dropped part of graphic. Graphic will be redone.
27. Comment noted.
28. Foreign Trade Zone: Information will be revised to reflect Planning Department's comment.
- Goods Movement Accomplishments, 2nd paragraph is deleted. Fairfax Road grade separation is at Fairfax Road and the Union Pacific Railroad tracks. The purpose of the 1994 Sunset Rail Line study was to assess the value and possible uses for the Sunset Rail line. The study was completed in October 1994.
29. Comment noted.
30. Yes.
31. a. Comment is unclear. Rail Noise section notes that four additional train trips would not increase noise level to a significant extent.

31. b. The Regional Transportation Plan was prepared to incorporate a Program EIR. A program EIR (*CEQA Guidelines*, Section 15168) may be prepared on a series of actions that can be characterized as one large project and are related either: (1) geographically; (2) in connection with issuance of rules, regulations, plans, or other general criteria to govern the conduct of a continuing program; or (3) as individual activities carried out under the same authorizing statutory or regulatory authority and having generally similar environmental effects which can be mitigated in similar ways. Section 15168 states in part: "The program EIR enables the agency to examine the overall effects of the proposed course of action and to take steps to avoid unnecessary adverse environmental effects." In addition, it notes that "this approach offers many possibilities for agencies to reduce their costs of CEQA compliance and still achieve high levels of environmental protection."

Ronald E. Bass and Albert I. Herson, in *Successful CEQA Compliance: A Step-by-Step Approach*, 1994 edition, suggest that a program EIR is also appropriate when the proposed activities are logical parts of a chain of contemplated events (Chapter 3, page 44). Bass and Herson note (*ibid* p.45: "Although the contents required for a Program EIR are the same as for a Project EIR, in practice there are considerable differences. Due to the general nature of the program being evaluated, the process is typically more conceptual and speculative. Courts have indicated that a Program EIR may contain a more general discussion of impacts, alternatives, and mitigation measures.

In 1993, *Christward Ministry v. County of San Diego* (13 Cal App.3d 31,49) found the lead agency's mitigation monitoring and reporting program does not have to be circulated for public review and comment with the DEIR.

Kern COG chose to identify mitigation measures that local agencies could use as they develop projects, for which subsequent or supplemental project EIRs should be prepared. This intent is stated in Section 5.4.4, "The RTP identifies facilities and programs that have not been designed and therefore, have not received detailed environmental study. The RTP does not seek to analyze environmental impacts for projects that have not been implemented. Major projects will require further environmental evaluation to address specific environmental impacts before design and construction. The RTP provides program level evaluation for new roadway facilities. The RTP should be viewed as a program level document as referenced in CEQA. As a result, any adverse effects the RTP may generate have been analyzed and are referenced in the EIR with appropriate mitigation measures to lessen or resolve negative environmental impacts."

32. See Comment #31b.
33. See Comment #31b.
34. Comment noted.
35. See Comment #31b.
36. See Comment #31b.
37. See Comment #31b.
38. See Comment #31b.
39. See Comment #31b.
40. Sentence is revised to read: "Contact shall be made with the agency responsible for Native American heritage preservation."

41. Tier 2 EIR for the Kern River Freeway will address all impacts, including those of visual and aesthetic concern. It is not within the purview of this document to address specific impacts of proposed transportation projects.
42. The centers/resources concept is a focal point of the City of Bakersfield General Plan. Staff is unaware of any other General Plan that discusses this concept.
43. The cited discussion is current. Caltrans District 9 continues to exist.
44. Yes.
45. Yes.
46. Comment noted.
47. Comment noted.
48. Typographical errors have been revised.
49. Typographical error has been revised.