## REPORT FOR

## SR-58 ORIGIN AND DESTINATION TRUCK STUDY



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Working Together
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## EXECUTIVE SUMMARY

San Bernardino Associated Governments (SANBAG), in association with Caltrans and the Kern Council of Governments (Kern COG) commissioned KOA Corporation in 2007 to conduct an origin and destination truck study along the State Route 58 (SR-58) Corridor. This report documents the results of that effort.

The objective of the origin and destination truck study is to gain statistical information on the origin and destination of trucks traveling on SR-58 between San Bernardino and Kern Counties and to better understand the types of cargo being transported by the trucks. The information gained from the study will be used to inform the SR-58 project development activities currently underway by Caltrans and to inform other future planning efforts in the region. Figure ES-I illustrates the limits of the SR-58 study corridor.

The SR-58 Origin and Destination Truck Study effort was comprised of three main data collection tasks. The following provides a brief description of each task and their key findings.

Vehicle classification counts - passenger vehicles and trucks were conducted at key interchanges and intersections along the study corridor. The turning movement counts included data for the morning, midday and afternoon peak periods during the spring and fall seasons of 2008. The turning movement counts were conducted at a total of 10 locations. In addition, 7-day machine counts were also conducted at I5 key freeway/highway segments.

- Truck traffic along the SR-58 Corridor is generally heaviest near the SR-99 Interchanges within Bakersfield. This is likely due to the presence of local trucks trips as well as regional trucks traversing the corridor and also the presence of truck-related land uses within Bakersfield. Figure ES-2 illustrates the counted truck volumes during a typical morning peak period (for both the spring and all seasons). Generally, traffic counts for midday and afternoon/evening peak periods exhibit similar pattern across the corridor.
- Between SR-99 and I-I5, truck traffic makes up a relatively large percentage of total traffic. Vehicle classification count results show truck percentages range between $30 \%$ and $40 \%$, depending on the segment. This is likely due to less passenger vehicles utilizing this segment of the corridor.
- While there are some fluctuations of counted truck volumes between the spring and fall seasons, the general patterns identified above remain consistent between the fall and spring seasons.



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Truck intercept surveys - surveys were conducted at the Boron eastbound and westbound rest-stops and the California Highway Patrol (CHP) weigh stations located at Keene and Cache Creek in Kern County. KOA conducted truck intercept surveys during the spring and fall seasons. The surveys were conducted for a continuous 48 -hour period at both the eastbound and westbound locations for a total of 96 hours each season.

- The truck intercept surveys were conducted during both the spring and fall seasons. A total of I I,337 completed surveys were collected.
- Generally, the survey results indicate that there is little variance in truck travel patterns between the spring and fall seasons.
- The study surveyed the different types of trucks along the SR-58 Corridor. The majority of trucks (86\%) are the 5-axle double unit type.
- The study surveyed the geographic location where the trucks are based. The results show that $44 \%$ are based within California with the remaining $56 \%$ based in other states. Of those trucks that are based in California, 57\% are based in the San Joaquin Valley Region and 32\% are based in the Southern California Region. After that, the percentages drop off significantly for the other California regions.
- The survey results indicate that $97 \%$ of trucks traveling on the Eastbound SR-58 started their trip from within California and $3 \%$ from other states. Of the total trips, $59 \%$ started their trip from within the San Joaquin Valley Region followed by the Central Coast Region at $16 \%$ and the Southern California Region at II\%. After that, the percentages for the other regions drop off significantly. Of the total eastbound trips, $68 \%$ are destined for areas outside of California and the remaining $32 \%$ are bound for regions within California with $20 \%$ bound for the Southern California Region. Figure ES-3 illustrates the eastbound trip pattern.
- The survey results indicate that $65 \%$ of trucks traveling on the westbound SR-58 started their trip from outside of California with the predominate states being: Arizona (II\%), Texas (I0\%), Nevada (7\%) and Utah (3\%). The 35\% trips that originated from within California of which $21 \%$ are from the Southern California Region and $10 \%$ are from the San Joaquin Valley Region. After that, the percentages for the other regions drop off significantly. Of the total westbound trips, $96 \%$ are destined for locations within California and the remaining $4 \%$ to other states. Of the total trips, $65 \%$ are bound for the San Joaquin Valley Region and $15 \%$ are bound for the Bay Area Region. Figure ES-4 illustrates the westbound trip pattern.
- The survey results indicate that of the total number of eastbound trucks, the majority (66\%) uses the southbound SR-99 to get onto SR-58. This is consistent with the survey results which indicate that most of the trip origins are from the San Joaquin Valley and Central Coast regions. As the eastbound truck trips leave the SR-58 Corridor, the majority uses eastbound I-I5 (26\%) and l-40 (36\%). This pattern is also consistent with survey results which indicate that $66 \%$ of eastbound trips are bound for locations outside of California. The survey respondents also indicated that their route choice is based primarily on the shortest/fastest route. Figure ES-5 summarizes the eastbound route choice pattern.




ROUTES:
Major: 85\%
Local/Other (Not Shown): 15\%

## ROUTES:

Major: 91\%
Local/Other (Not Shown): 9\%



- The survey results indicate that of the total number of westbound truck, the majority uses the westbound $\mathrm{I}-\mathrm{I} 5(26 \%)$ and $\mathrm{I}-40(4 \mathrm{I} \%)$ to get onto SR-58. This is consistent with the survey results which indicate that $63 \%$ of westbound truck trips originated from outside of California. As the westbound trips leave the SR-58 Corridor, the majority uses northbound SR-99 (73\%). This is also consistent with the survey results which indicate that the majority of truck trips are bound for regions located north of the SR-58 Corridor. The survey respondents also indicated that their route choice is based primarily on the shortest/fastest route. Figure ES-6 summarizes the westbound route choice pattern.
- The truck intercept survey asked drivers the type of place where they started their trip from. The types of place are categorized by:
o Shipper - the location where goods originate. Example includes: manufacturing plant, distribution center, processing plant and production point.
o Consignee/Receiver - the location where goods are delivered. Example includes: distribution center, manufacturing plant and retail store.
o Yard - the place where trucks are stored and dispatched from.
o Home - the residence of the truck driver. This can also be the point of dispatch for independent truck owners.
o Other
- Of the total number of respondents, $53 \%$ started their trip from a shipper and $26 \%$ from a yard. After that, the percentage of the other locations drops off significantly, and of the total number of respondents, $42 \%$ ended their trip at a consignee/receiver and $25 \%$ at a shipper followed by $18 \%$ at a yard.
- The survey results show that the top five commodity types by percentage are: farm products (25\%), food/kindred products (17\%), empty trucks (12\%), miscellaneous freight (7\%) and building materials (4\%). Table ES-I summarizes the top 5 commodities surveyed.

Table ES-I: Top 5 Commodities Surveyed



Commercial Fleet Operator Survey - the Tioga Group under contract with KOA conducted a commercial fleet operator survey of truck fleet operators within the study corridor to obtain a better understanding of commodities being transported in the corridor, including proximity to and rational for dispatching trucks onto this facility by the fleet operators. Over 260 fires were contacted for the survey. From the initial 260 firms were contacted, a significant portion of firms either did not operate their own trucks or did not use SR-58 regularly. Ultimately, 32 firms completed the fleet operator survey.

- Survey of commercial fleet operators revealed that haulers of sand, gravel, rock and asphalt reported the heaviest local use of SR-58 with multiple trips per day. These firms reported that their use of SR-58 is for primarily paving projects. The usage is typically highest during summer and virtually halted during winter.
- Survey of regional firms revealed that a significant number of trips are from the Los Angeles area. Here truckers use SR-58 for at least three different reasons:
o As a primary route for shipment, usually to the eastern areas such as San Bernardino and Riverside Counties
o An as alternative to l-5 over the Grapevine during storms
o As a preferred alternative to $\mathrm{I}-\mathrm{IO}$ and $\mathrm{I}-2 \mathrm{IO}$ for shipments to eastern Los Angeles county when traffic congestion slows the Los Angeles County eastbound routes
- Virtually all users to and from the Los Angeles and Inland Empire areas reported using US-395 through Adelanto to with SR-58, although a few reported using SR-I4 through Lancaster and Palmdale.
- A great number of respondents reported that SR-58 is less affected by adverse weather and congestion than I-5 and they re-route truck over SR-58 often during the winter months.


## I.O PROJECT OVERVIEW

San Bernardino Associated Governments (SANBAG), in association with Caltrans and the Kern Council of Governments (Kern COG) commissioned KOA Corporation in 2007 to conduct an origin and destination truck study along the State Route 58 (SR-58) Corridor. This chapter provides an overview of the SR-58 Origin and Destination Truck Study.

## I.I Study Purpose and Need

The objective of the origin and destination truck study is to gain statistical information on the origin and destination of heavy duty trucks traveling on SR-58 between San Bernardino and Kern Counties and to better understand the types of cargo being transported by the trucks. The information gained from the study will be used to inform the SR-58 project development activities currently underway by Caltrans and to inform other future planning efforts in the region.

## I. 2 State Route 58 Background

California State Route 58 (SR-58) is an east-west highway serving the southern San Joaquin Valley Region. It provides connection between US-Route IOI (near Santa Margarita) and I-I5 (near Barstow). This route did not exist until 1964, prior to 1964, this route was designated as U S Route 466 between Bakersfield and Barstow. Between US-Route IOI and east of State Route 33, SR-58 was designated as State Route I78. The original eastern terminus of SR-58 was at I-I5 near Barstow, this eastern terminus is known as "Old Highway 58".

SR-58 is a westerly extension of I-40 Freeway near Barstow. Major interchanges/intersections along SR58 include:

- US-IOI (near Santa Margarita)
- I-5 (near Bakersfield)
- SR-99 (near Bakersfield)
- SR-I84 (near Bakersfield)
- SR-I78 (near Bakersfield)
- SR-223 (near Tehachapi)
- SR-I4 (near Mojave)
- US-395 (Kramer Junction)
- I-I5 (near Barstow)

Within the study area, State Route 58 provides regional east-west mobility between Bakersfield and Barstow and also serves the cities/communities of Boron, Hinkley, Mojave, Tehachapi and the Edwards Air Force Base. SR-58 is a two to four-lane conventional highway between I-5 and SR-99. The section between east of SR-99 and SR-223 is classified as a four-lane freeway, within this section, part of SR-58 is also classified as a six-lane freeway. Section of SR-58 near SR-223 is classified as four-lane expressway. The section between east of SR-223 and SR-I4 is classified as a four-lane freeway and a partial section is classified as a four-lane expressway. The sections between SR-I4 and US-395 are classified as a four-lane freeway and a four-lane expressway. The section east and west of US-395 is classified as a two-lane conventional highway. The remaining portion of SR-58 is classified as a four-lane expressway. Figure I-I illustrates the SR-58 Corridor and its functional classification.


PLANNING \& ENGINEERING

## I. 3 Study Methodology

The SR-58 Origin and Destination Truck Study effort was comprised of four major data collection tasks which included:

- Literature Review and Prior Study Data Collection
- Vehicle Classification Counts
- Truck Intercept Survey
- Commercial Fleet Operator Survey

The study operationalization for each of the tasks listed above was developed in conjunction with the Project's Technical Advisory Committee (TAC). The TAC was comprised of representatives from SANBAG, Kern COG, Caltrans District 6, District 8, District 9, Caltrans Headquarters and the Southern California Association of Governments (SCAG).

The following provides a brief description of the methodology used for each of the four major tasks:

## Literature Review and Data Collection

Based on information/data provided by the TAC, KOA obtained and reviewed a total of 13 reports and studies that were relevant to the study. In addition to the 13 reports, KOA also collected accident data and traffic counts within the study corridor. Based on the review of available reports and data, KOA provided a synopsis of each document. Generally, the available data obtained are vehicle count data conducted at least several years ago and can be deemed outdated. The details of this task are provided in the "Literature Review and Data Collection" chapter of this report.

## Vehicle Classification Count

Vehicle classification counts (which included passenger vehicles and trucks) were conducted at key interchanges and intersections along the SR-58 corridor between I-5 and I-I5. The turning movement counts included data for the morning, midday and afternoon peak periods during spring and fall of 2008. The turning movement counts were conducted at a total of 10 locations. The 10 locations are shown on Figure I-2. In addition, 7-day machine counts were also conducted at 15 key freeway/highway segments. The details, results and findings from the count survey are provided in the "Interchange/Junction Classification Count" chapter of this report.

## Truck Intercept Survey

Truck intercept surveys were conducted at the Boron eastbound and westbound rest-stops and the California Highway Patrol (CHP) weigh stations located at Keene and Cache Creek in Kern County. Figure I-3 shows the locations of the truck intercept survey sites. KOA conducted truck intercept surveys during the spring and fall seasons. The surveys were conducted for a continuous 48 -hour period at both the eastbound and westbound locations for a total of 96 hours. The date and time of the surveys are as follows:

## Spring Survey

- Boron Rest-Stops - May 10th to May 13 ${ }^{\text {th }}, 2008$
- CHP Weigh Stations - May I3 ${ }^{\text {th }}$ to May I5th, 2008


## Fall Survey

- Boron Rest-Stops - September 27th to September 29th, 2008
- CHP Weigh Stations - September 30 th to October 2 ${ }^{\text {nd }}, 2008$



During the truck survey, KOA staff directed trucks to the designated survey sites where surveyors conducted an in-person origin and destination survey. Figure l-4 shows the survey form that was utilized for the truck intercept survey effort.

The survey effort yielded the following number of completed surveys by location:

## Spring Survey

- Boron Rest-Stops - 2,614 truck drivers
- CHP Weigh Stations - 3,428 truck drivers


## Fall Survey

- Boron Rest-Stops - 2, 182 truck drivers
- CHP Weigh Stations - 3, II3 truck drivers

Although the total number of trucks that passed through the survey site was not counted, based on field observations and follow-up discussions with the survey crew, the response rate was very high with only a few trucks declining to participate in the interview.

Details and results of the truck intercept surveys are provided in the "Truck Intercept Survey" chapter of this report.

## Commercial Fleet Operator Survey

The Tioga Group under contract with KOA conducted a commercial fleet operator survey. Using multiple sources, Tioga compiled a list of likely fleet truck operators for this survey. This list included both businesses in the study area that were likely to operate their own vehicles, and trucking companies likely to operate in the study area. That list contained over 300 names. All telephone numbers were called, multiple times if required. This process resulted in contact with 267 firms (other firms did not respond or return calls).

Most participants either did not operate their own trucks, or did not use the route enough to respond to the survey. Only 27 indicated that they operated their own trucks and used the route regularly.

Tioga completed interviews with 20 of those (others were not able to complete the interview or did not have sufficient information to do so).

Based on responses that gave other names or firms, Tioga augmented its original list and obtained responses from additional firms using the study route. From the Kern COG Tioga also received a list of distribution centers located in or near Kern County.

Tioga contacted each of these and, where appropriate, other firms that provided trucking services to or from the distribution centers. The survey results reflect information received from these contacts.

Tioga also contacted truck stops and truck tow and repair services along the route to inquire about other fleet operators that may have been overlooked. This resulted in a small number of additional names, all of which were contacted. Overall, 32 firms from all sources said they used the study route and completed interviews.

## SANBAG <br> SR-58 TRUCK ORIGIN \& DESTINATION SURVEY

| Date: | $\square$ | Direction: <br> Surveyor: | EB:__ WB: <br> Time: <br> Location:$\quad \square$ |  |
| :--- | :--- | :--- | :--- | :--- |

1. Type of Truck (surveyor - see classification chart): $\qquad$
2. Where is your truck based? City: $\qquad$ State: $\qquad$
3. Where did you begin this trip leg (origin)? City $\qquad$ State $\qquad$
4. What type of place did you start from? Shipper__Consignee__Yard__Home__Other__
5. Which route did you take before SR-58 to get here?
$\qquad$ SR-184 $\qquad$ $\overline{\text { SR- }} 99$ $\qquad$ I-5 $\qquad$ SR-33 $\qquad$
Other $\qquad$
6. Where is your destination? City $\qquad$ State $\qquad$
7. What type of place are you going to? Shipper__Consignee__Yard__Home__Other_ $\qquad$
8. Which route are you planning to take from SR-58 to your destination? I-15 I-40 SR-247

US-395 $\qquad$ SR-14 $\qquad$ SR-223 $\qquad$ SR-178 $\qquad$ SR-184 SR-99 $\qquad$ I-5 $\qquad$ SR-33 $\qquad$
Other $\qquad$
9. What are you carrying ? $\qquad$
Surveyor: If hazardous materials, note down placard number $\qquad$
10. Why did you or your dispatcher choose this route?

| Truck based on this route | Least congestion |
| :--- | :--- |
| Trip stop/start on this route | Easier grades or road conditions |
| Shortest/fastest route | Personal business on this route |
| Better weather | Other_- |

11. Any suggestions to improve transportation for truckers in the area?
$\square$

The respondents provide a good variety of operators and services. About two-thirds of the respondents were commercial carriers, and the remainder were private fleets. The respondents represent about equal numbers of national, regional and local carriers. About half of the respondents were based in Bakersfield, about forty percent were based elsewhere in the study area, and about ten percent were based outside the study area.

The commodities hauled varied from produce and food products to petroleum products, general merchandise and specialized equipment.

The details and results of this task are provided in the "Commercial Fleet Operator Survey" chapter of this report.

## I.4 Key Findings of SR-58 O/D Truck Study

The following summarizes the general findings of the SR-58 Origin and Destination Truck Study by the three data collection tasks.

## Vehicle Classification Counts - Key Findings

- Total traffic volumes along the SR-58 Corridor are generally heaviest near the SR-99 Interchanges within Bakersfield. This is due to the use of SR-58 by passenger vehicles in Bakersfield metro area.
- The percentage of truck traffic is generally highest toward the eastern half of the study corridor between SR-I4 and I-I5 Interchanges. This is mainly due to the fact that there are less passenger vehicles using this section of the study corridor.


## Truck Intercept Survey - Key Findings

- A total of $86.2 \%$ of trucks surveyed within the study corridor is comprised of the five-axle, double unit trucks. Table I-I summarizes the results.
- A comparison survey results between the spring and fall indicates that there are no significant variations in general truck patterns.
- A total of $43.8 \%$ of trucks surveyed are based in the State of California. Table I-2 summarizes the results.
- Of those trucks based in California, 56.6\% are based in the San Joaquin Valley Region and 31.8\% in the Southern California Region. After that, the percentages for other regions drop off significantly. Table I-2 also summarizes these results.
- The top five counties (within California) where trucks are based in include:
o Eastbound: Kern (25.8\%), Fresno (I3.5\%), San Bernardino (I3.6\%), San Joaquin (7.0\%), Los Angeles (8.6\%) and Tulare (6.4\%)
o West Eastbound: Kern (19.8\%), Fresno (I4.3\%), San Bernardino (21.4\%), San Joaquin (6.8\%), Los Angeles (9.2\%) and Tulare (4.4\%).


## TABLE 1-1

TRUCK TYPE SUMMARY


SU = Single Unit
DU =Double Unit (one unit is a truck)
MU = Multi Unit

TABLE 1-2
TRUCK BASED LOCATION BY STATE/REGION SUMMARY (TOP 5)


- In the eastbound direction, $97.1 \%$ of trucks originated their trip from within California. Figure I-5 illustrates the eastbound trip pattern.
- Of those eastbound trucks that are destined for locations within California, 20.1\% are bound for the Southern California Region. See Figure I-5.
- Of the trucks that originated their trip from within California, the $58.5 \%$ started from within the San Joaquin Valley Region and 16.4\% from the Central Coast Region. See Figure I-5
- In the westbound direction, $35.4 \%$ of trucks originated their trips from within California with the remaining $64.6 \%$ from other states. Figure I-6 illustrates the westbound trip pattern.
- $96.5 \%$ of westbound trucks are destined for locations within California.
- Of those westbound trucks that are destined for locations within California, 64.7 are bound for the San Joaquin Valley Region and I4.9\% for the Bay Area Region. See Figure I-6.
- Survey results show that the majority (66\%) of eastbound trucks used the Southbound SR-99 to access the SR-58 Corridor. This indicated the concentration of the agricultural industry located in the western San Joaquin Valley and Central Cost regions. Figure I-7 illustrates the eastbound route-choice pattern.
- Survey results show that the majority ( $62 \%$ ) of eastbound trucks would use either the I-I5 north or I-40 east Freeways from SR-58. This is reflective of the majority of truck trips destined for other states outside of California. See Figure I-7.
- Survey results show that the majority ( $67 \%$ ) of westbound trucks used either the I-I5 south or I-40 west Freeways to access the SR-58 Corridor. Figure I-8 illustrates the westbound routechoice pattern.
- Survey results show that the majority (73\%) of westbound truck trips would use the SR-99 north Freeway from SR-58. See Figure I-8.
- The survey asked drivers where they are delivering their goods to. The responses are grouped by the following categories:
o Shipper - the location where goods originate. Example includes: manufacturing plant, distribution center, processing plant and production point.
o Consignee/Receiver - the location where goods are delivered. Example includes: distribution center, manufacturing plant and retail store.
o Yard - the place where trucks are stored and dispatched from.
o Home - the residence of the truck driver. This can also be the point of dispatch for independent truck owners.
o Other - $42.0 \%$ of truck trips are destined for a consignee/receiver.
- Most trucks' place of origin is from a shipper (52.9\%) or a yard (26.2\%). Table I-3 summarizes the results.







## ROUTES:

Major: 86\%
Local/Other (Not Shown): 14\%

TABLE 1-3
PLACE OF ORIGIN SUMMARY


- Most truck's place of destination is to a consignee/receiver (42.5\%) followed by shipper (25.4\%). Table I-4 summarizes the results.
- Major commodities carried via the SR-58 Corridor include general items classified under: Farm Products, Food/Kindred Products, Clay/Concrete/Glass/Stone Products, miscellaneous Freight and empty trucks/containers. Table I-5 summarizes the results.
- The survey results indicate that $98 \%$ of farm products traveling on the Eastbound SR-58 started their trip from within California and $2 \%$ from other states. Of the total trips, $46 \%$ started their trip from within the San Joaquin Valley Region followed by the Central Coast Region at 37\% and the Southern California Region at $9 \%$. After that, the percentages for the other regions drop off significantly. Of the total eastbound trips, $88 \%$ are destined for areas outside of California and the remaining $12 \%$ are bound for regions within California. The survey results indicate produce as the most common farm products carried such as lettuce, grapes strawberries and tomatoes. Figure I-9 summarizes the trip pattern.
- The survey results indicate that $58 \%$ of farm products traveling on the westbound SR-58 started their trip from outside of California with the predominate states being: Arizona (11\%), Texas (9\%), Utah (5\%), and Nevada (4\%). The $42 \%$ trips that originated from within California of which 14\% are from the Southern California Region, I4\% from the Southern Border Region and 13\% are from the San Joaquin Valley Region. After that, the percentages for the other regions drop off significantly. Of the total westbound trips, $96 \%$ are destined for locations within California and the remaining $4 \%$ to other states. Of the total trips, $69 \%$ are bound for the San Joaquin Valley Region and I2\% are bound for the Bay Area Region. The survey results indicate chickens and hay as some of the common farm products carried. Figure I-IO summarizes the trip pattern.
- The survey results indicate that $97 \%$ of food products traveling on the Eastbound SR-58 started their trip from within California and 3\% from other states. Of the total trips, $71 \%$ started their trip from within the San Joaquin Valley Region followed by the Southern California Region at $10 \%$ and the Bay Area Region at $8 \%$. After that, the percentages for the other regions drop off significantly. Of the total eastbound trips, $72 \%$ are destined for areas outside of California and the remaining $28 \%$ are bound for regions within California. The survey results indicate the most common food products carried are cheese, milk and wine. Figure I-II summarizes the trip pattern.
- The survey results indicate that $76 \%$ of food products traveling on the westbound SR-58 started their trip from outside of California with the predominate states being: Arizona (13\%), Texas (13\%), Nevada (5\%) and Oklahoma (5\%). The 24\% trips that originated from within California of which $16 \%$ are from the Southern California Region, and $6 \%$ are from the San Joaquin Valley Region. After that, the percentages for the other regions drop off significantly. Of the total westbound trips, $96 \%$ are destined for locations within California and the remaining $4 \%$ to other states. Of the total trips, $65 \%$ are bound for the San Joaquin Valley Region and I7\% are bound for the Bay Area Region. The survey results indicate the most common food products carried are meat and frozen food. Figure I-I2 summarizes the trip pattern.

TABLE 1-4
PLACE OF DESTINATION


TABLE 1-5
TOP 5 COMMODITIES SURVEYED






- The survey results indicate that virtually $100 \%$ of empty trucks traveling on the Eastbound SR-58 started their trip from within California of which $72 \%$ started their trip from within the San Joaquin Valley Region followed by the Southern California Region at 18\%. After that, the percentages for the other regions drop off significantly. Of the total eastbound trips, $23 \%$ are destined for areas outside of California and the remaining $77 \%$ are bound for regions within California. The majority of those trips (45\%) are bound for the Southern California Region (likely to San Bernardino and Riverside Counties). Figure I-I3 summarizes the trip pattern.
- The survey results indicate that $47 \%$ of empty trucks traveling on the westbound SR- 58 started their trip from outside of California with the predominate states being. The remaining $53 \%$ trips that originated from within California of which $34 \%$ are from the Southern California Region, and $15 \%$ are from the San Joaquin Valley Region. After that, the percentages for the other regions drop off significantly. Of the total westbound trips, $96 \%$ are destined for locations within California and the remaining $4 \%$ to other states. Of the total trips, $78 \%$ are bound for the San Joaquin Valley Region and $6 \%$ are bound for the Central Coast Region. Figure I-I4 summarizes the trip pattern.
- Based on the origin and destination locations (counties and states), the following statistics were derived:
o $32.7 \%$ of trips had both origin and destination within California with an average travel distance of 148 miles (both legs of trip)
$0 \quad 61.2 \%$ of trips had either origin or destination within California with an average travel distance of 805 miles (both legs of trip)
$0 \quad 6.1 \%$ of trips had both origin and destination outside of California with an average travel distance of I,393 miles (both legs of trip)
- Over a third of all eastbound trips (35\%) originating in California stayed in California. The neighboring states of Arizona and Nevada were the next most common destinations followed by Texas.
- Similarly, about $35 \%$ of westbound trips originate from California. The next states are Arizona, Texas and Nevada. A different order than the eastbound pattern due most likely to the larger agricultural production in Arizona and Texas as compared to Nevada.




## Fleet Operator Survey - Key Findings

- Survey of commercial fleet operators revealed that haulers of sand, gravel, rock and asphalt reported the heaviest local use of SR-58 with multiple trips per day. These firms reported that their use of SR-58 are for primarily paving projects. The usage is typically highest during summer and virtually halted during winter.
- Survey of regional firms revealed that a significant number of trips are from the Los Angeles area. Here truckers use SR-58 for at least three different reasons:
o As a primary route for shipment, usually to the eastern areas such as San Bernardino and Riverside Counties
o An as alternative to l-5 over the Grapevine during storms
0 As a preferred alternative to $\mathrm{I}-\mathrm{IO}$ and $\mathrm{I}-2 \mathrm{IO}$ for shipments to eastern Los Angeles county when traffic congestion slows the Los Angeles County eastbound routes
- Virtually all users to and from the Los Angeles and Inland Empire areas reported using US-395 through Adelanto to with SR-58, although a few reported using SR-I4 through Lancaster and Palmdale.
- A great number of respondents reported that SR-58 is less affected by adverse weather and congestion than $\mathrm{I}-5$ and they re-route truck over SR-58 often during the winter months.


### 2.0 LITERATURE REVIEW AND DATA COLLECTION

This chapter summarizes the literature review and historical data collection effort conducted as part of the SR-58 Origin and Destination Truck Study.

In working with the TAC, KOA identified, collected and reviewed 13 documents/reports. In addition to the 13 documents, KOA also collected counts and accident data within the SR-58 corridor. Below lists the 13 documents/reports that were identified and summarized as part of the study:

Table 2-I: List of Reports and Studies

| No. | Reports / Studies |
| :---: | :--- |
| I | City of Barstow, General Plan Circulation Element, I996. |
| 2 | San Joaquin Valley Goods Movement Study, Council of Fresno County Governments, <br> September 2000. |
| 3 | California Heavy Duty Truck Travel Survey, December 200 I. |
| 4 | US-395 Corridor Study I-I5 to SR-I4, Caltrans District 6, 8 \& 9, FHWA, SCAG, SANBAG <br> \& Kern COG, January 2002. |
| 5 | Southern California Freight Management Case Study, Caltrans, MTA \& SCAG, January <br> 2002. |
| 6 | Regional Fee Nexus Study, Kern COG, September 2003. |
| 7 | Subregional Freight Movement Truck Access Study, SCAG \& SANBAG, July 2004. |
| 8 | Greater Tehachapi Area Circulation Study, Kern COG \& City of Tehachapi, August 2004. |
| 9 | Southern California Association of Governments Goods Movement Truck Count Study, <br> September 2005. |
| I0 | I-I5 Comprehensive Corridor Study, SCAG, SANBAG \& Caltrans, December 2005. |
| II | Goods Movement Study for US-395 Corridor, Caltrans District 9, June 2I, 2006. |
| I2 | Kern County 2007 Regional Transportation Plan, Kern COG, May 2007. |
| I3 | Victor Valley Area Transportation Study, SANBAG,March 2008. |

In addition, the following data were also collected from published sources:
Table 2-2: List of Data Sources

| 2006 AADT Counts along SR 58, Ramp ADT along SR 58, Truck \% - Source: Caltrans |
| :--- |
| website. |
| Accident Data along SR 58 and along major routes that intersects SR 58-Source: Caltrans |
| District 6 and 8. |
| Accident Data - City of Bakersfield, 200I. |
| 200I Weigh Station Inventory of needs |

KOA conducted a review of all documents and reports listed in Tables 2-I and 2-2. Included below is a synopsis of each document. Following the synopsis, in italics, is commentary on the relevance of the document to the SR-58 Origin and Destination Truck Study.

## I. City of Barstow, General Plan Circulation Element, 1996.

This study documents the existing transportation conditions, future land use data, future 2020 traffic volumes and levels of service within the City of Barstow. The study also documents the future planned improvements. The study findings include a recommendation for a Motorized Circulation Plan including changes to the current roadway classifications, truck routes, and public passenger rail. The study also proposes recommendations on the City's Non-motorized Circulation Plan and specific mitigation measures for roads within the City.

The study focuses on facilities within the City of Barstow which is located at the eastern terminus of the SR-58 O/D study area. Some data such as auto/truck volumes are included for the study corridor but are since outdated.

## 2. San Joaquin Valley Goods Movement Study, Council of Fresno County Governments, September 2000.

This study was done in two phases. Phase one focused on characterizing current freight movements in terms of commodities, modes, origin, destination and traffic volumes. The study also includes identification of major trends, issues and problems that can be addressed through public sector action, and made recommendations for future data collection efforts and the need to develop analytic tools to aid the planning process. Phase two of the study identified and evaluated solutions to the problems identified under Phase one. Also, Phase two developed analytical tools for the analysis of freight transportation problems and solutions.

The study area encompasses a very large region which includes Kern County. The data from this study is somewhat outdated but is useful for historical reference. From this study, volume data, level of service data and truck survey data and results along SR-58, SR-I4 and SR-99 provides some historical reference but data is somewhat outdated.
3. California Heavy Duty Truck Travel Survey, December 2001.

The purpose of the study was to collect truck travel data for selected sites in California. The types of data include: truck type, direction of travel, distance travel, etc.. The objective of the study was to develop procedures to acquire and conduct truck travel data. This study also focused on identifying relationships between economic activity and truck travel patterns and collection of data for analysis of commodity flow throughout California. The study recommended that further study and data collection is needed to develop a reliable/accurate truck model.

The data from this study is somewhat outdated and it focuses on a much more regional perspective (i.e. truck flow between SACOG, SCAG and SANDAG). However, much of the data collected is very relevant to the SR-58 Origin and Destination Study such as type of goods, truck type, origin/destination, type of cargo, hazardous materials.

## 4. US-395 Corridor Study I-15 to SR-14, Caltrans District 6, 8 \& 9, FHWA, SCAG, SANBAG \& Kern COG, January 2002.

The purposes of the study were to identify a viable strategy for converting US-395 from a conventional highway to an expressway/freeway, identify multi-modal options for improving transportation efficiency, improve goods movement, define right of way needs based on an ultimate transportation configuration and identify transportation issues and support from communities located along the route. The findings of the study indicate that US-395 should be upgraded to a freeway/expressway.

SR-58 is included within the US-395 study corridor. The volume and level of service data at SR-58 and US-395 are somewhat outdated but provides historical reference.

## 5. Southern California Freight Management Case Study, Caltrans, MTA \& SCAG, January 2002.

This study is one of five regional studies that were conducted across the country at the behest of Federal Highway Administration. The study contributes to Southern California's pursuit of a statewide goal. The case study draws some lessons from the Alameda Corridor project and other freight projects in the region. The study resulted in a series of recommendations including planning and funding strategies for stakeholders in the region.

The data/information contained in this study has little relevance to the SR-58 O/D Study.

## 6. Regional Fee Nexus Study, Kern COG, September 2003.

The purpose of the study was to establish a connection between new developments that will occur in the southeast portion of Kern County and the need to improve the roadway facilities. The study summarizes the existing average daily traffic volumes and the projected future traffic volumes. The study recommends some future improvements that include widening of SR-202 near Tehachapi and SR-I4 from four lanes to six lanes.

The focus area is southeast Kern County which includes areas served by SR-58. From this study, volume data and level of service data along SR-58 and SR-I 4 are somewhat outdated but provides historical reference.
7. Subregional Freight Movement Truck Access Study, SCAG \& SANBAG, July 2004.

The purpose of the study was to upgrade and refine the regional and subregional travel demand models. This study focused on evaluating truck routes and restrictions in the inland empire area, document truck trip generation rates, collect truck volume data and truck accident data, conduct trucker and carrier surveys and identify potential future truck related problem areas and facilities. The results from this study would provide input data for the development, improvement and validation of truck forecasting components in local and regional travel demand models.

The study focused on I-I5 between SR-60 and I-2IO. The study area is somewhat removed from SR-58 study area and most data may are not applicable to the SR-58 study corridor. Data such as truck volume, level of service and truck route has little relevance to the SR-58 Study as it is too far from the SR-58 study area.

## 8. Greater Tehachapi Area Circulation Study, Kern COG \& City of Tehachapi, August 2004.

The purpose of the study was to identify existing and future circulation and transportation issues within the Greater Tehachapi Area. This study summarizes the existing average daily traffic volumes and the projected future traffic volumes. The study recommends some future improvements that include signalization of some intersections and street improvements.

While regional traffic for the study area is primarily served by $S R-58$, the study focuses more on local roadway system rather than regional traffic. From this study, volume data and level of service data along SR-58 within the City of Tehachapi provides for little relevance to the SR-58 Origin and Destination Truck Study.

## 9. Southern California Association of Governments Goods Movement Truck Count Study, September 2005.

The purpose of the study was to develop a comprehensive truck count database, conduct and document counts that have data reliability, develop a program for an on-going truck monitoring program, supplement and expand the existing truck count data, refinement of the SCAG truck model, provide data on truck volumes by classification and land use, improve knowledge of truck travel patterns and truck trips serving intermodal and regional gateways, and furnish annual and weekday truck traffic for modeling purposes and provide a base of information that would be useful for regional freight movement studies.

The truck data collected as part of this study was conducted in 2001 which can be considered somewhat outdated. However, this data is useful for historical reference. Other data such as intercept survey traffic control plans at SR-58 Boron rest stops and some truck survey data for SR-58 Origin and Destination Truck Study.

## 10. I-I5 Comprehensive Corridor Study, SCAG, SANBAG \& Caltrans, December 2005.

This study was jointly initiated by SCAG, SANBAG \& Caltrans to address the current and future travel needs in the $\mathrm{I}-15$ corridor. The purpose of the study was to narrow the range of potential options to resolve a particular transportation problem ultimately leading to the selection of a specific strategy for implementation. The study focuses mainly on the I-I5 corridor. Nine improvement alternatives were developed based on the need and purpose of the study. This resulted in a reduced set of five strategies to be carried forward for detailed evaluation. The detailed evaluation assisted the technical advisory committee in identifying two locally preferred strategies. Implementation, financial and right-of-way delineation plans were also developed.

The study area is along I-I5 between SR-60 and SR-I8/Apple Valley. The study area does not include SR-58 but however, volume data along I-I5 may be useful for reference but limited.

## I I. Goods Movement Study for US-395 Corridor, Caltrans District 9, June 2I, 2006.

The Purpose of the study is to identify goods movement travel patterns along US-395 through the Eastern Nevada region. The study identified the type of goods and modes of transportation within the corridor and develops a better understanding of goods distribution between Southern California and Northern Nevada. The study is very similar to the SR-58 Study where truck-intercept surveys, fleet operator surveys and classification counts were conducted. The results of the study included truck volumes and travel patterns between SR-I4 and US-395.

The study area is contiguous as both SR-I4 and US-395 intersect with SR-58. The results of the study are directly usable and supplement the SR-58 study.

## 12. Kern County 2007 Regional Transportation Plan, Kern COG, May 2007.

The purpose of this study was to prepare a planning guide for the next 24 years to address the mobility issues related to Kern County's transportation and air quality. The Regional Transportation Plan (RTP) provides a comprehensive and multimodal regional transportation plan that is responsive to public input, as well as local, regional, state and federal governmental input. The Plan meets the state and federal requirements and reflects a vision for the Kern region that balances land use with transportation investments in a way that is complementary to existing investments. In addition, the RTP addresses the goals and policies established by Kern COG that are assessed based on a number of key performance measures. The RTP also recognized funding issues within the region and to able to implement improvements, innovative funding concepts would need to be explored.

The focus area is on a county wide basis. However, from this study traffic volumes and level of service data along SR-58 within City of Bakersfield, Tehachapi and Mojave some historical reference to the SR-58 Origin and Destination Truck Study.

## 13. Victor Valley Area Transportation Study, SANBAG, March 2008.

The purpose of the study was to prepare a roadway plan to accommodate Victor Valley Area (Cities of Adelanto, Hesperia, Victorville and the Town of Apple Valley and County of San Bernardino) Transportation needs for the year 2035. This study focuses on several state routes within the study area. This study examined ten alternatives for improvement to the regional circulation system. One of the key routes studied is US-395, according to the study, if the new corridor is not built for US-395, the roadway segments would exceed capacity. However, the study suggests that the new corridor is not needed by 2035 if the existing US-395 is widened to six lanes.

The study area does not include the SR-58 Corridor and most of the data is not relevant.
Table 2-3 provides a summary of the relevant data/information collected. Figure 2-I provides a graphical summary of the data/information collected.

Of the 13 documents that were reviewed, the ones that appear most relevant/useful are the studies pertaining to the movement of goods and general truck studies. They are:

- \#2 - San Joaquin Valley Goods Movement Study
- \#3 - California Heavy Duty Truck Travel Survey
- \#II - US-395 Goods Movement Study

These studies provide relevant data which the SR-58 Study results which is useful to compare and validate goods movement trends, particularly from a historical perspective. Other studies provide some useful data which are mainly traffic counts, accident data, level of service but their usefulness was limited. There are some studies that are not relevant to the SR-58 Study due the location of their study area and the nature and regional context of the study.

Table 2-3: Literature Review Summary

|  | List of Documents | Volume <br> Data | LOS | Truck Routes | Truck Trip Generation | Truck Survey Data \& Results | Landuse <br> data | Truck Accident Data | Intercept Survey Traffic Control Plans | Other Statistical Data | Planned Improvements |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | City of Barstow, General Plan Circulation Element, 1996. | x | x | x | - | - | x | - | - | - | SR-58, from Dixie Rd to West Main St: construction of 2 lane highway Dixie Rd to Mojave River, traffic signal at Lenwood Rd, construction of 4 lane freeway from Mojave River to West Main St, diamond interchange at West Main St. SR-58, from West Main Rd to I15 freeway: construction of 6 lane (3 each direction) freeway, freeway to freeway interchange with $1-1-15$ freeway. |
| 2 | San Joaquin Valley Goods Movement Study, Council of Fresno County Governments, September 2000. | $\begin{gathered} \text { SR-14, SR-58 } \\ \& \text { SR- } 99 \end{gathered}$ | x | x | - | x | - | - | - | x | Recommends for more studies for the affected corridors. |
| 3 | California Heavy Duty Truck Travel Survey, December 2001. | - | - | - | - | x | - | - | - | x | - |
| 4 | US-395 Corridor Study I-15 to SR-I4, Caltrans District 6, 8 \& 9, FHWA, SCAG, SANBAG \& Kern COG, January 2002. | $\begin{array}{\|c\|} \hline \text { SR-58 \& US- } \\ 395 \end{array}$ | x | - | - | - | - | - | - | - | SR-58 planned for a four-lane expressway and Grade Separation at SR-58 \& 395. |
| 5 | Southern California Freight Management Case Study, Caltrans, MTA \& SCAG, January 2002. | - | - | - | - | - | - | - | - | x | - |
| 6 | Regional Fee Nexus Study, Kern COG, September 2003. | $\begin{gathered} \text { SR-58 \& SR- } \\ 14 \end{gathered}$ | x | - | - | - | - | - | - | - | SR-14 and SR-202 are recommended to be widened from four to six lanes. |
| 7 | Subregional Freight Movement Truck Access Study, SCAG \& SANBAG, July 2004. | $\left\|\begin{array}{c} \text { I-15 north of } \\ \text { I-210 } \end{array}\right\|$ | x | x | x | x | - | x | - | - | - |
| 8 | Greater Tehachapi Area Circulation Study, Kern COG \& City of Tehachapi, August 2004. | SR-58 | x | - | - | - | - | - | - | - | Signalization and other street improvements within the City of Tehachapi. |
| 9 | Southern California Association of Governments Goods Movement Truck Count Study, September 2005. | None within the study area | - | x | x | x | - | - | At SR-58 Boron rest stops. | x | - |
| 10 | 1-15 Comprehensive Corridor Study, SCAG, SANBAG \& Caltrans, December 2005. | -15 | - | - | - | - | - | - | - | x | 9 alternatives along 1-15 from SR-60 to SR-18 |
| 11 | Goods Movement Study for US-395 <br> Corridor, Caltrans District 9, June 21, 2006. | - | - | - | - | x | - | - | - | - | - |
| 12 | Kern County 2007 Regional Transportation <br> Plan, Kern COG, May 2007. | - | x | - | - | - | - | - | - | - | Individual agencies will consider impacts and plan for grade separation along major thoroughfares. |
| 13 | Victor Valley Area Transportation Study, SANBAG, August 2007. | US 395 | x | - | - | - | - | - | - | x | 10 Alternatives to choose from, along US-395, option was to widen the road to 6 lanes. |



### 3.0 VEHICLE CLASSIFICATION COUNTS

KOA conducted vehicle classification counts at key locations along and near the SR-58 Corridor. As shown in Figure I-2, a total of 10 key locations were identified for the count surveys. The 10 locations include:
I. SR-58 and I-5 Interchange
2. SR-58 (north) and SR-99
3. SR-58 (south) and SR-99
4. US-395 and SR-I4
5. SR-58 and SR-I4 (north)
6. SR-58 and US-395
7. SR-58 and I-I5
8. I-I5 and I-40
9. SR-58 and SR-I4 (south)

IO. US-395 and I-I5
The turning movement counts were conducted for the AM, midday and PM peak periods which are as follows:

- AM Period = 6AM to 9AM
- Midday Period = IIAM to 2PM
- $\quad \mathrm{PM}$ Period $=4 \mathrm{PM}$ to 7PM

The count surveys were conducted for the following dates:

- Spring Period - May 10th to May 15th, 2008
- Fall Period - September 27th to October 2nd, 2008

The raw count data, which shows vehicle types by passenger vehicles and trucks (by number of axles) are provided in Appendix A. The raw count data are also summarized in graphical format by time periods and count locations and are provided in Appendix B.

Figures 3-I, 3-2 and 3-3 provide a summary of total traffic (passenger vehicles and heavy duty trucks) along the SR-58 study corridor for AM, midday and PM peak periods, respectively. The figures summarize traffic flow in both the eastbound and westbound direction along SR-58 for both the spring and fall seasons. The figures provides the approach and departure volumes along SR-58 at major interchanges/junctions and graphically illustrate the fluctuation of total vehicular volumes by direction and time of year.

The results of the count data shows that traffic volumes are consistently higher near the SR-99 junctions which are located near Bakersfield. This is reflective of the concentration of population and activity centers within Bakersfield and the predominant travel routes within the region.


KOA CORPORATION SR-58 Origin and Destination Truck Study


KOA CORPORATION SR-58 Origin and Destination Truck Study
Figure 3-2
Comparison of Total MD Peak Period Traffic Along SR-58


KOA CORPORATION SR-58 Origin and Destination Truck Study

Figures 3-4, 3-5 and 3-6 provide a summary of truck only traffic along the study corridor for the AM, midday and PM peak periods, respectively. The figures summarize traffic flow in both the eastbound and westbound direction along SR-58 for both the spring and fall seasons. The figures provides the approach and departure volumes along SR-58 at major interchanges/junctions and graphically illustrates the fluctuation of total truck volumes.

The results of the count data shows that truck traffic volumes are consistently higher near the SR-99 junctions which are located near Bakersfield. Figures 3-4, 3-5 and 3-6 also show the percentage of truck traffic of the total traffic. Count results shown on Figure 6 indicate that during the AM peak period (for both spring and fall) percentage of trucks is relatively higher on SR-58 near the I-I5, US-395 andSR-I4 sections with percentages ranging between $29 \%$ to $52 \%$ during the spring season and from $24 \%$ to $46 \%$ during the fall season.

Figure 3-5 indicates that during the midday peak period (for both spring and fall) the percentage of trucks is relatively high on SR-58 near the I-I5, US-395 andSR-I4 sections with percentages ranging between $31 \%$ to $42 \%$ of total traffic during the spring season and from $30 \%$ to $41 \%$ during the fall season.

Figure 3-6 indicate that during the PM peak period (for both spring and fall) the percentage of trucks is also relatively high on SR-58 near the I-I5, US-395 and SR-I 4 sections with percentages ranging between $24 \%$ to $46 \%$ of total traffic during the spring season and from $25 \%$ to $48 \%$ during the fall season.

Figures 3-7, 3-8, 3-9 summarizes the turning movement counts that were done during the spring season for the AM, Midday and PM peak periods. Figures $3-10,3-1 I, 3-12$ summarizes the turning movement counts that were done during the fall season for the AM, Midday and PM peak periods. The detailed counts are provided in Appendix C.

KOA also conducted 24-hour vehicle classification counts along the SR-58 Corridor during the Fall season. Due to technical difficulties, counts are not available for the spring season. The counts conducted during the fall season were conducted between September 27th and October 3rd, 2008. Figure 3-13 summarizes the seven day vehicle classification counts. Detailed results of the counts are provided in Appendix C.




KOA CORPORATION SR-58 Origin and Destination Truck Study








### 4.0 TRUCK INTERCEPT SURVEY

Truck intercept surveys were conducted at the Boron eastbound and westbound rest-stops and also at the California Highway Patrol (CHP) weigh stations located at Keene and Cache Creek. Figure 4-I shows the location of the four survey sites. KOA conducted truck driver surveys during the spring and fall seasons. The surveys were conducted for continuous 48 -hour periods at each location for a total of 96 hours per season. The date and time of the surveys are as follows:

## Spring Survey

- Boron Rest-Stops - May 10th to May 13 ${ }^{\text {th, }}, 2008$
- CHP Weigh Stations - May I3 ${ }^{\text {th }}$ to May I5th, 2008


## Fall Survey

- Boron Rest-Stops - September 27th to September 29th, 2008
- CHP Weigh Stations - September 30th to October 2nd 2008

During the truck survey, KOA staff directed heavy duty trucks to the designated survey sites where surveyors conducted the in-person origin and destination survey. Prior to the start of the surveys, KOA coordinated with Caltrans District 9 staff to develop traffic safety/handling plans as part of the encroachment permit and safety process. Figure 4-2 provides an example of the traffic handling plan used for the Boron Westbound Rest Stop.

As part of the traffic management, KOA employed changeable message signs, way-finding signs and all necessary safety requirements as part of the in-person truck intercept surveys. Included below are pictures of the survey operations at the facilities.


CHP Weigh Station - Keene


Boron Westbound Rest-Stop




The survey effort yielded the following number of completed surveys by location:
Spring Survey

- Boron Rest-Stops - 2,6I4
- CHP Weigh Stations - 3,428


## Fall Survey

- Boron Rest-Stops - 2,182
- CHP Weigh Stations - 3,113

The survey questionnaire was developed based on input from the TAC. Table 4-I shows the survey form which was administered during the surveys. A total of II questions were developed to gather critical information such as:

- Truck type
- Location where truck is based (city and state)
- Location of trip origin
- Location of trip destination
- Type of place for both origin and destination
- Route choice
- Commodities

The following summarizes the results of the truck intercept survey effort.

## 4.I Truck Type

Truck types were surveyed to gain a better understanding of the different type of truck traveling through the SR-58 Corridor. The categories of trucks are separated based on Caltrans' vehicle classification scheme which is shown in Table 4-2. As shown in Table 4-2, there are a total of 13 vehicle classifications which includes motor cycles, passenger vehicles, buses and nine classes of trucks. The truck survey focused on the nine truck types.

Table 4-I: Truck Survey Questionnaire

## SANBAG <br> SR-58 TRUCK ORIGIN \& DESTINATION SURVEY

| Date: | $\square$ | Direction: | EB:_ WB:___ |  |
| :--- | :--- | :--- | :--- | :--- |
| Time: |  |  |  |  |
| Surveyor: |  |  |  |  |

1. Type of Truck (surveyor - see classification chart): $\qquad$
2. Where is your truck based? City: $\qquad$ State: $\qquad$
3. Where did you begin this trip leg (origin)? City $\qquad$ State $\qquad$
4. What type of place did you start from? Shipper__Consignee__Yard__Home__Other__
5. Which route did you take before SR-58 to get here?

| I-15 $\qquad$ I-40 $\qquad$ SR-247 $\qquad$ US-395 $\qquad$ SR-14 $\qquad$ SR-223 $\qquad$ SR-178 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | SR-184_ SR-99_I-5_SR-33_

Other $\qquad$
6. Where is your destination? City $\qquad$ State $\qquad$
7. What type of place are you going to? Shipper__Consignee__Yard__Home__Other__
8. Which route are you planning to take from SR-58 to your destination?

| I-1 |
| :---: |
|  |  |

Other $\qquad$
9. What are you carrying? $\qquad$
Surveyor: If hazardous materials, note down placard number $\qquad$
10. Why did you or your dispatcher choose this route?

| Truck based on this route | Least congestion |
| :--- | :--- |
| Trip stop/start on this route | Easier grades or road conditions |
| Shortest/fastest route | Personal business on this route |
| Better weather | Other_ |

11. Any suggestions to improve transportation for truckers in the area?

Table 4-2: Vehicle Classification

| 1. C 팡 | Motorcycles |
| :---: | :---: |
| 2. | Passenger Cars, Light Vans, Light Pick-Ups including those hauling those recreational and other trailers. |
| 3. | 2 Axle 4 Tire - Full Size Pick-Ups, Full Size Vans, Limos, Motor Homes including those hauling recreational and other trailers. |
| 4. | Buses |
| 5. $\qquad$ | 2 Axle, 6 Tire Single Unit |
| 6. | 3 Axle Single Unit |
| 7. | 4 Axle Single Unit |
| 8. | 4 Axle or Less Double Unit, One Unit is a Truck |
| 9. | 5 Axle Double Unit, One Unit is a Truck |
| 10. | 6 or More Axle Double, One Unit is a Truck |
| 11. | 5 Axle or Less Multi Unit |
| 12. | 6 Axle Multi Unit |
| 13. | 7 or More Axle Multi Unit |

Of the 6,042 surveys conducted during the Spring season, 5,986 valid responses pertaining to truck types were recorded, a question yield rate of $99.07 \%$. The following provides a statistical summary by location and direction:

Table 4-3: Statistical Summary of Question I Responses (Spring)

| Location | Surveys | Responses |  |  |
| :--- | :--- | ---: | ---: | ---: |
|  |  | Total | Total | $\%$ |
| Boron Rest Stop | EB | $\mathrm{I}, 035$ | $\mathrm{I}, 027$ | $99.23 \%$ |
|  | WB | $\mathrm{I}, 579$ | $\mathrm{I}, 568$ | $99.30 \%$ |
| CHP Weigh Station | EB | $\mathrm{I}, 629$ | $\mathrm{I}, 596$ | $97.97 \%$ |
|  | WB | $\mathrm{I}, 799$ | $\mathrm{I}, 795$ | $99.78 \%$ |
| Total |  | 6,042 | 5,986 | $99.07 \%$ |

Of the 5,295 surveys conducted during the Fall season, 4,984 valid responses pertaining to truck types were recorded, a question yield rate of $94.13 \%$. The following provides a statistical summary by location and direction:

Table 4-4: Statistical Summary of Question I Responses (Fall)

| Location |  | Surveys | Responses |  |
| :--- | :--- | ---: | ---: | ---: |
|  |  | Direction | Total | Total |
| Boron Rest Stop |  | 963 | 882 | $9 \mathrm{I} .59 \%$ |
|  | WB | $\mathrm{I}, 2 \mathrm{I} 9$ | $\mathrm{I}, \mathrm{I} 22$ | $92.04 \%$ |
| CHP Weigh Station | EB | $\mathrm{I}, 572$ | $\mathrm{I}, 494$ | $95.04 \%$ |
|  | WB | $\mathrm{I}, 54 \mathrm{I}$ | $\mathrm{I}, 486$ | $96.43 \%$ |
| Total |  | 5,295 | 4,984 | $94.13 \%$ |

Based on the survey data collected, Tables 4-5, 4-6, 4-7 and 4-8 summarize the results of the truck type for each survey respondent at the Boron eastbound rest-stop, Boron westbound rest-stop, and CHP eastbound station and CHP westbound station, respectively.

Tables 4-5, 4-6, 4-7 and 4-8 provide a comparison of the survey results between the spring and fall at each of the four survey locations. The results show that the majority of truck types surveyed at all four locations are the 5 -axle double-unit variety. This is consistent across all locations and seasons.

Comprehensive survey data for "Truck Type" is provided in Appendix D.

Table 4-5 Truck Type Results
BORON EASTBOUND

SPRING 2008


Percentage

FALL 2008


## Table 4-6 Truck Type Results

BORON WESTBOUND


SU = Single Unit
DU = Double Unit (one unit is a truck)
MU = Multi Unit

Table 4-7 Truck Type Results CHP EASTBOUND


DU = Double Unit (one unit is a truck)
MU = Multi Unit

Table 4-8 Truck Type Results CHP WESTBOUND


SU = Single Unit
DU = Double Unit (one unit is a truck)
MU = Multi Unit

### 4.2 Truck Based Location

Question 2 of the truck intercept survey asks the drivers where his/her truck is based. The survey records the city and the state based on driver's response.

Of the 6,042 surveys conducted during the Spring_season, 5,946 valid responses pertaining to the location where the truck is based were recorded, a question response rate of $98.41 \%$. The following provides a statistical summary by location and direction:

Table 4-9: Statistical Summary of Question 2 Responses (Spring)

| Location |  | Surveys | Responses |  |
| :--- | :--- | ---: | ---: | ---: |
|  | Direction | Total | Total | $\%$ |
|  |  | $\mathrm{I}, 035$ | 993 | $95.94 \%$ |
|  | WB | $\mathrm{I}, 579$ | $\mathrm{I}, 557$ | $98.61 \%$ |
| CHP Weigh Station | EB | $\mathrm{I}, 629$ | $\mathrm{I}, 606$ | $98.59 \%$ |
|  | WB | 1,799 | $\mathrm{I}, 790$ | $99.50 \%$ |
| Total |  | 6,042 | 5,946 | $98.41 \%$ |

Of the 5,295 surveys conducted during the Fall season, $5,2 / 2$ valid responses pertaining to the location where the truck is based were recorded, a question response rate of $94.13 \%$. The following provides a statistical summary by location and direction:

Table 4-10: Statistical Summary of Question 2 Responses (Fall)

| Location | Surveys | Responses |  |  |
| :--- | :--- | ---: | ---: | ---: |
|  | Direction | Total | Total | $\%$ |
|  | EB | 963 | 948 | $98.44 \%$ |
|  | WB | $\mathrm{I}, 2 \mathrm{I} 9$ | $\mathrm{I}, \mathrm{I} 98$ | $98.28 \%$ |
| CHP Weigh Station | EB | $\mathrm{I}, 572$ | $\mathrm{I}, 533$ | $97.52 \%$ |
|  | WB | $\mathrm{I}, 54 \mathrm{I}$ | $\mathrm{I}, 533$ | $99.48 \%$ |
| Total |  | 5,295 | $5,2 \mathrm{I} 2$ | $98.43 \%$ |

Based on the survey data collected, Tables 4-II, 4-I2, 4-I3 and 4-I4 summarize the results of the truck based location (by state) for each survey respondent at the Boron eastbound rest-stop, Boron westbound rest-stop, CHP eastbound station and CHP westbound station, respectively. The summary by State shows that a large percentage of trucks surveyed are based in California. Other states that frequently occurred as a response during the survey include: Texas, Arizona, Missouri and Utah. Comparing survey results between the spring and fall sites of surveys shows a consistent pattern with no noticeable variations.

Comprehensive survey responses are provided in Appendix E.

Table 4-11 Truck Based Location By State BORON EASTBOUND

STATE
SPRING 2008
(TOP 5 IN ORDER)
FALL 2008


Table 4-12 Truck Based Location By State BORON WESTBOUND


Table 4-13 Truck Based Location By State CHP EASTBOUND


Table 4-14 Truck Based Location By State CHP WESTBOUND


Figure 4-3 provides a boundary map of the nine regions within California for reference. Based on the survey data collected, Tables $4-15,4-16,4-17$ and $4-18$ summarize the results of the truck based location by regions within California surveyed at the Boron eastbound rest-stop, Boron westbound reststop, CHP eastbound weigh station and CHP westbound weigh station, respectively.

The summary by regions shows that the within California, the majority of trucks surveyed are based in the San Joaquin Valley region followed by the Southern California region. This pattern is consistently observed between the four survey sites and between both the Spring and Fall seasons with no noticeable variance.

Based on the survey data collected, Tables 4-19, 4-20, 4-2I and 4-22 summarizes the results of the truck based locations (by counties within California) surveyed at the Boron eastbound rest-stop, Boron westbound rest-stop, CHP eastbound station and CHP westbound station, respectively. Figure 4-3 also provides a boundary map of the various counties within each region of California for reference.

The summary by counties lists the top five counties based on percentage of response. Based on the location of the survey taken and by seasons, the top five counties varies by order but the results show that most trucks are based in one of the following counties:

- Kern County
- Fresno County
- San Bernardino County
- San Joaquin County
- Los Angeles County
- Tulare County
- Riverside County

The results of the summary by County and comparison of results between the Spring and Fall seasons shown in Tables 4-I9, 4-20, 4-2I and 4-22 demonstrate variation to be minimal on locations where trucks are based suggesting that the trucks that use this corridor operate consistently regardless of seasonality.


Table 4-15 Truck Based Location By Region Within California BORON EASTBOUND


Table 4-16 Truck Based Location By Region Within California BORON WESTBOUND


Table 4-17 Truck Based Location By Region Within California CHP EASTBOUND


Table 4-18 Truck Based Location By Region Within California CHP WESTBOUND


Table 4-19 Truck Based Location By County BORON EASTBOUND

SPRING 2008
(TOP 5 IN ORDER)
FALL 2008


Table 4-20 Truck Based Location By County
BORON WESTBOUND


Table 4-21 Truck Based Location By County CHP EASTBOUND


Table 4-22 Truck Based Location By County CHP WESTBOUND


### 4.3 Truck Origin Location

Question 3 of the truck intercept survey asks the drivers where they started this leg of their trip. The survey records the city and the state based on driver's response.

Of the 6,042 surveys conducted during the Spring_period, 5,963 valid responses were recorded yielding a question response rate of $98.69 \%$. The following provides a statistical summary by location and direction:

Table 4-23: Statistical Summary of Question 3 Responses (Spring)

| Location | Direction | Surveys | Responses |  |
| :---: | :---: | :---: | :---: | :---: |
|  |  | Total | Total | \% |
| Boron Rest Stop | EB | 1,035 | I,02I | 98.65\% |
|  | WB | 1,579 | 1,553 | 98.35\% |
| CHP Weigh Station | EB | 1,629 | 1,605 | 98.53\% |
|  | WB | 1,799 | 1,784 | 99.17\% |
| Total | - | 6,042 | 5,963 | 98.69\% |

Of the 5,295 surveys conducted during the Fall period, 5,092 valid responses were recorded yielding a question response rate $96.17 \%$ rate. The following provides a statistical summary by location and direction:

Table 4-24: Statistical Summary of Question 3 Responses (Fall)

| Location |  | Surveys | Responses |  |
| :--- | :--- | ---: | ---: | ---: |
|  | Direction | Total | Total | $\%$ |
| Boron Rest Stop |  | 963 | 94 I | $97.72 \%$ |
|  | WB | $\mathrm{I}, 2 \mathrm{I} 9$ | $\mathrm{I}, \mathrm{I} 57$ | $94.9 \mathrm{I} \%$ |
| CHP Weigh Station | EB | $\mathrm{I}, 572$ | $\mathrm{I}, 529$ | $97.26 \%$ |
|  | WB | $\mathrm{I}, 54 \mathrm{I}$ | $\mathrm{I}, 465$ | $95.07 \%$ |
| Total |  | 5,295 | 5,092 | $96.17 \%$ |

Based on the data collected for question 3 Tables 4-25, 4-26, 4-27 and 4-28 summarize the results of the truck origin (by state) surveyed at the Boron eastbound rest-stop, Boron westbound rest-stop, CHP eastbound weigh station and CHP westbound weigh station, respectively. The summary by state shows that in the eastbound direction (both Boron and CHP sites) shows an overwhelming percentage of trucks started its trip within California. In contrast, the results of the survey in the westbound direction (Boron and CHP) shows a much lower percentage of trips originating within California with trips also originating from Arizona, Texas, Nevada and Utah.

Table 4-25 Truck Trip Origin By State BORON EASTBOUND

STATE/COUNTRY
SPRING 2008
(TOP 5 IN ORDER)
FALL 2008


Table 4-26 Truck Trip Origin By State BORON WESTBOUND

STATE
SPRING 2008
(TOP 5 IN ORDER)
FALL 2008


Table 4-27 Truck Trip Origin By State CHP EASTBOUND

SPRING 2008
STATE/COUNTRY
(TOP 5 IN ORDER)
FALL 2008


Table 4-28 Truck Trip Origin By State CHP WESTBOUND


Based on additional data collected for question 3, Tables 4-29, 4-30, 4-31 and 4-32 summarize the results of the truck trip origin by regions within California for surveys completed at the Boron eastbound rest-stop, Boron westbound rest-stop, CHP eastbound weigh station and CHP westbound weigh station, respectively.

The summary by region shows that the within California, the majority of trucks surveyed in the eastbound direction (Boron and CHP) started their trip in the San Joaquin Valley region followed by the Central Coast Region and Southern California region. This pattern is consistently observed between both the Spring and Fall seasons with no significant variance.

In the westbound direction (Boron and CHP), the majority of trucks surveyed started their trip in the Southern California Region (includes the counties of Los Angeles, Ventura, San Bernardino, Riverside and Orange) followed by the San Joaquin Valley Region. This pattern is consistently observed between the Spring and Fall Seasons with no significant variance.

Based on additional data collected for question 3, Tables 4-33, 4-34, 4-35 and 4-36 summarize the results of the truck trip origin (by counties within California) surveyed at the Boron eastbound reststop, Boron westbound rest-stop, CHP eastbound station and CHP westbound station, respectively.

The summary by county depicted in Tables 4-33, 4-34, 4-35 and 4-36 lists the top five counties based on percentage of response. The top five survey responses vary but the results show that most trucks are based in one of the following counties:

- Kern County
- Fresno County
- San Bernardino County
- San Joaquin County
- Los Angeles County
- Tulare County
- Riverside County
- Monterey County
- Imperial County

The results of the summary and comparison shown in Tables 4-33, 4-34, 4-35 and 4-36 shows seasonal variation have a minimal impact on the location of where trucks begin the trip.

Comprehensive results of survey responses are provided in Appendix F.

Table 4-29 Truck Trip Origin By Region BORON EASTBOUND


Table 4-30 Truck Trip Origin By Region
BORON WESTBOUND


## Table 4-31 Truck Trip Origin By Region CHP EASTBOUND



Table 4-32 Truck Trip Origin By Region CHP WESTBOUND


## Table 4-33 Truck Trip Origin By County BORON EASTBOUND

SPRING 2008


Table 4-34 Truck Trip Origin By County BORON WESTBOUND

COUNTY (TOP 5 IN ORDER) FALL 2008


Table 4-35 Truck Trip Origin By County CHP EASTBOUND

COUNTY
SPRING 2008
(TOP 5 IN ORDER)
FALL 2008


Table 4-36 Truck Trip Origin By County CHP WESTBOUND


### 4.4 Place of Origin

Question 4 of the truck intercept survey asks the drivers the type of place where they started this leg of their trip. The survey records the following:

- Shipper - the location where goods originate. Example includes: manufacturing plant, distribution center, processing plant and production point.
- Consignee/Receiver - the location where goods are delivered. Example includes: distribution center, manufacturing plant and retail store.
- Yard - the place where trucks are stored and dispatched from.
- Home - the residence of the truck driver. This can also be the point of dispatch for independent truck owners.
- Other

Of the 6,042 surveys conducted during the Spring_period, 5,924 valid responses were recorded yielding a question response rate of $98.05 \%$. The following provides a statistical summary by location and direction:

Table 4-37: Statistical Summary of Question 4 Responses (Spring)

| Location |  | Surveys | Responses |  |
| :--- | :--- | ---: | ---: | ---: |
|  |  | Total | Total | $\%$ |
| Boron Rest Stop | EB | $\mathrm{I}, 035$ | 993 | $95.94 \%$ |
|  | WB | $\mathrm{I}, 579$ | $\mathrm{I}, 540$ | $97.53 \%$ |
| CHP Weigh Station | EB | $\mathrm{I}, 629$ | $\mathrm{I}, 603$ | $98.40 \%$ |
|  | WB | $\mathrm{I}, 799$ | $\mathrm{I}, 788$ | $99.39 \%$ |
| Total |  | 6,042 | 5,924 | $98.05 \%$ |

Of the 5,295 surveys conducted during the Fall period, 5,235 valid responses were recorded yielding a question response rate of $98.87 \%$. The following provides a statistical summary by location and direction:

Table 4-38: Statistical Summary of Question 4 Responses (Spring)

| Location |  | Surveys | Responses |  |
| :--- | :--- | ---: | ---: | ---: |
|  | Direction | Total | Total | $\%$ |
| Boron Rest Stop |  | 963 | 957 | $99.38 \%$ |
|  | WB | $\mathrm{I}, 2 \mathrm{I} 9$ | $\mathrm{I}, 200$ | $98.44 \%$ |
| CHP Weigh Station | EB | $\mathrm{I}, 572$ | $\mathrm{I}, 554$ | $98.85 \%$ |
|  | WB | $\mathrm{I}, 54 \mathrm{I}$ | $\mathrm{I}, 524$ | $98.90 \%$ |
| Total |  | 5,295 | 5,235 | $98.87 \%$ |

Based on the data collected for question 4, Tables 4-39, 4-40, 4-4I and 4-42 summarize the results at the Boron eastbound rest-stop, Boron westbound rest-stop, CHP eastbound weigh station and CHP westbound weigh station, respectively. The summary shows that $85 \%$ of place-of-origin is from a shipper, yard or home with the following breakdown:

- Shipper - 53\%
- Yard - $26 \%$ (this suggests that a fair percentage of yards are actually a building materials manufacturers who has their own fleet of trucks, i.e. ready made concrete)
- Home - $6 \%$ (this suggests independent truck drivers who has a loaded-truck parked at home for a next-day delivery)

The results of the detailed survey responses are provided in Appendix G.

## Table 4-39 Place of Origin BORON EASTBOUND

SPRING 2008 TYPE OF PLACE
FALL 2008


Table 4-40 Place of Origin BORON WESTBOUND


Table 4-41 Place of Origin
CHP EASTBOUND


Table 4-42 Place of Origin CHP WESTBOUND


### 4.5 Truck Destination Location

Question 6 of the truck intercept survey asks the drivers where they will end this leg of the trip. Although the final destination of the goods being transported would be useful to know, the truck drivers' knowledge of this information is very limited, especially as the logistics includes multiple transfer points. Typically, the drivers' are provided with origin and destination of his particular leg of the trip and information of ultimate goods destination is not shared with the drivers. The survey records the city and the state based on driver's response.

Of the 6,042 surveys conducted during the Spring_season, 5,913 valid responses were recorded yielding a question response rate of $97.86 \%$. The following provides a statistical summary by location and direction:

Table 4-43: Statistical Summary of Question 6 Responses (Spring)

| Location |  | Surveys | Responses |  |
| :--- | :--- | ---: | ---: | ---: |
|  | Direction | Total | Total | $\%$ |
|  |  | 1,035 | 1,016 | $98.16 \%$ |
|  | WB | 1,579 | 1,549 | $98.10 \%$ |
| CHP Weigh Station | EB | 1,629 | 1,578 | $96.87 \%$ |
|  | WB | 1,799 | 1,770 | $98.39 \%$ |
| Total |  | 6,042 | 5,913 | $97.86 \%$ |

Of the 5,295 surveys conducted during the Fall period, 5, 183 valid responses were recorded yielding a question response rate of $97.8 \%$. The following provides a statistical summary by location and direction:

Table 4-44: Statistical Summary of Question 6 Responses (Fall)

| Location |  | Surveys | Responses |  |
| :--- | :--- | ---: | ---: | ---: |
|  | Direction | Total | Total | $\%$ |
|  |  | 963 | 926 | $96.16 \%$ |
|  | WB | $\mathrm{I}, 2 \mathrm{I} 9$ | $\mathrm{I}, 206$ | $98.93 \%$ |
| CHP Weigh Station | EB | $\mathrm{I}, 572$ | $\mathrm{I}, 522$ | $96.82 \%$ |
|  | WB | $\mathrm{I}, 54 \mathrm{I}$ | $\mathrm{I}, 529$ | $99.22 \%$ |
| Total |  | 5,295 | $5, \mathrm{I} 83$ | $97.88 \%$ |

Based on the survey data collected, Tables 4-45, 4-46, 4-47 and 4-48 summarize the results of the truck destination (by state) for each survey respondent at the Boron eastbound rest-stop, Boron westbound rest-stop, CHP eastbound weigh station and CHP westbound weigh station, respectively. The summary by state shows that in the westbound direction (both Boron and CHP sites) an overwhelming percent of trucks end their trips within California. In contrast, the survey results for the eastbound direction (Boron and CHP) shows a much lower percentage of trips ending within California. The following list of states represent the most frequent responses for truck destinations outside of California.

- Arizona
- Texas
- Nevada
- Georgia
- Colorado
- Florida

Table 4-45 Truck Trip Destination By State BORON EASTBOUND

STATE
SPRING 2008
(TOP 5 IN ORDER)
FALL 2008


Table 4-46 Truck Trip Destination By State
BORON WESTBOUND
STATE
SPRING 2008
(TOP 5 IN ORDER)
FALL 2008


Table 4-47 Truck Trip Destination By State
CHP EASTBOUND

STATE
(TOP 5 IN ORDER)


Table 4-48 Truck Trip Destination By State
CHP WESTBOUND


Based on the survey data collected, Tables 4-49, 4-50, 4-5I and 4-52 summarize the results surveyed at the Boron eastbound rest-stop, Boron westbound rest-stop, CHP eastbound weigh station and CHP westbound weigh station, respectively, by regions of California.

The summary by region shows that the within California, the final destination of majority (63.4\%) of trucks surveyed in the eastbound direction (Boron and CHP) is the Southern California region, followed by the San Joaquin Valley Region. This pattern is consistently observed between both the spring and fall seasons with no noticeable variance.

In the westbound direction (Boron and CHP), the final destination of majority (67.I\%) of trucks surveyed is the San Joaquin Valley Region followed by the Bay Area. This pattern is consistently observed between the spring and fall seasons with no noticeable variance.

Based on the survey data collected, Tables 4-53, 4-54, 4-55 and 4-56 summarize the response by county for each survey respondent at the Boron eastbound rest-stop, Boron westbound rest-stop, CHP eastbound weigh station and CHP westbound weigh station, respectively.

The summary by county provides a list of the top five counties based on percentage of response. The location of the survey and seasonality influences the ordering of the top five, but the results show that most trucks are based in one of the following counties:

- Kern County
- Fresno County
- San Bernardino County
- San Joaquin County
- Los Angeles County
- Tulare County
- Riverside County
- Monterey County
- Imperial County

The detailed survey responses are provided in Appendix H.

Table 4-49 Truck Trip Destination By Region
BORON EASTBOUND


## Table 4-50 Truck Trip Destination By Region BORON WESTBOUND



Table 4-51 Truck Trip Destination By Region
CHP EASTBOUND


Table 4-52 Truck Trip Destination By Region
CHP WESTBOUND


Table 4-53 Truck Trip Destination By County
BORON EASTBOUND
COUNTY
TOP 5 IN ORDER)
FALL 2008


Table 4-54 Truck Trip Destination By County
BORON WESTBOUND
COUNTY (TOP 5 IN ORDER)

FALL 2008



Table 4-55 Truck Trip Destination By County CHP EASTBOUND

COUNTY
SPRING 2008
(TOP 5 IN ORDER)
FALL 2008


Table 4-56 Truck Trip Destination By County CHP WESTBOUND


### 4.6 Place of Destination

Question 7 of the truck intercept survey asked the drivers to identify the type of place where they would end the current leg of their trip. The survey records the following:

- Shipper - the location where goods originate. Example includes: manufacturing plant, distribution center, processing plant and production point.
- Consignee/Receiver - the location where goods are delivered. Example includes: distribution center, manufacturing plant and retail store.
- Yard - the place where trucks are stored and dispatched from.
- Home - the residence of the truck driver. This can also be the point of dispatch for independent truck owners.
- Other

Of the 6,042 surveys conducted during the Spring_season, 5,591 valid responses were recorded yielding a question response rate of $92.54 \%$. The following provides a statistical summary by location and direction:

Table 4-57: Statistical Summary of Question 7 Responses (Spring)

| Location | Direction | Surveys | Responses |  |
| :---: | :---: | :---: | :---: | :---: |
|  |  | Total | Total | \% |
| Boron Rest Stop | EB | 1,035 | 944 | 91.21\% |
|  | WB | 1,579 | 1,399 | 88.60\% |
| CHP Weigh Station | EB | 1,629 | 1,551 | 95.21\% |
|  | WB | 1,799 | 1,697 | 94.33\% |
| Total | , | 6,042 | 5,591 | 92.54\% |

Of the 5,295 surveys conducted during the Fall season, 5,178 valid responses were recorded yielding a question response rate of $97.79 \%$. The following provides a statistical summary by location and direction:

Table 4-58: Statistical Summary of Question 7 Responses (Fall)

| Location | Direction | Surveys | Responses |  |
| :---: | :---: | :---: | :---: | :---: |
|  |  | Total | Total | \% |
| Boron Rest Stop | EB | 963 | 945 | 98.13\% |
|  | WB | 1,219 | 1,194 | 97.95\% |
| CHP Weigh Station | EB | 1,572 | 1,535 | 97.65\% |
|  | WB | 1,54I | 1,504 | 97.60\% |
| Total | - | 5,295 | 5,178 | 97.79\% |

Based on the data collected, Tables $4-59,4-60,4-61$ and $4-62$ summarizes the results at the Boron eastbound rest-stop, Boron westbound rest-stop, CHP eastbound weigh station and CHP westbound weigh station, respectively. The summary shows the following breakdown:

- Consignee/Receiver - 39.4\%
- Yard - 19\% (this suggests deliveries of raw materials to a plant/processing center)
- Home - 3.5\% (this suggests an independent truck driver headed home with a loaded truck)
- Shipper - $26.7 \%$ (based on cross-tabulation of commodity replies, a fair number are actually empty-trucks going to a shipper for a pickup)
- Other - $11.4 \%$

The detailed survey responses are provided in Appendix I.

Table 4-59 Place of Destination BORON EASTBOUND

SPRING 2008
TYPE OF PLACE
FALL 2008


Table 4-60 Place of Destination BORON WESTBOUND

SPRING 2008
TYPE OF PLACE
FALL 2008


Table 4-61 Place of Destination CHP EASTBOUND

SPRING 2008 TYPE OF PLACE
FALL 2008


Table 4-62 Place of Destination CHP WESTBOUND


### 4.7 Truck Flow Patterns

Data from the Spring and Fall surveys were combined to analyze the overall patterns of truck flows eastbound and westbound over SR-58.

Table 4-63 shows the major destination states for eastbound flows. Over a third of all eastbound trips (35\%) originating in California stayed in the state. The neighboring states of Arizona and Nevada were the next most common destinations, followed by Texas. The volumes to other states drop off dramatically, with none accounting for more than $3 \%$ and most less than $2 \%$.

Table 4-63: Eastbound Destination States

| Origin | Trips | $\%$ | Cumulative Share |
| :---: | :---: | :---: | :---: |
| CA | 1734 | $35 \%$ | $35 \%$ |
| AZ | 450 | $9 \%$ | $44 \%$ |
| NV | 399 | $8 \%$ | $51 \%$ |
| TX | 396 | $8 \%$ | $59 \%$ |
| GA | 138 | $3 \%$ | $62 \%$ |
| FL | 121 | $2 \%$ | $65 \%$ |
| UT | 121 | $2 \%$ | $67 \%$ |
| CO | 117 | $2 \%$ | $69 \%$ |
| OH | 107 | $2 \%$ | $71 \%$ |
| All Others | 1433 | $29 \%$ | $100 \%$ |
| Total | $\mathbf{5 0 1 6}$ | $\mathbf{1 0 0 \%}$ | $\mathbf{1 0 0 \%}$ |

Figure 4-4 displays the pattern geographically, with darker green shading indicating larger trip volumes. The pattern suggests that Utah and New Mexico might account for larger volumes if they had larger markets (greater population).

Figure 4-4 : Eastbound Destination Map


Table 4-64 provides data on origin states of westbound flows. Here too, California itself is the most important origin at $35 \%$. The next states are Arizona, Texas, and Nevada - a different order than in due most likely to the larger agricultural production in Arizona and Texas compared to Nevada. There is a slightly wider spread of origin states compared to Table 4-63 and a $25 \%$ larger total. California as a state is a net consumer, and that tendency is reflected in

Table 4-64: Westbound Origin States

| Origin | Trips | $\%$ | Cumulative Share |
| :---: | :---: | :---: | :---: |
| CA | 2242 | $37 \%$ | $37 \%$ |
| AZ | 643 | $11 \%$ | $48 \%$ |
| TX | 569 | $9 \%$ | $57 \%$ |
| NV | 407 | $7 \%$ | $64 \%$ |
| UT | 183 | $3 \%$ | $67 \%$ |
| OK | 156 | $3 \%$ | $70 \%$ |
| GA | 154 | $3 \%$ | $72 \%$ |
| TN | 142 | $2 \%$ | $75 \%$ |
| AR | 127 | $2 \%$ | $77 \%$ |
| MO | 124 | $2 \%$ | $79 \%$ |
| NM | 121 | $2 \%$ | $81 \%$ |
| NC | 98 | $2 \%$ | $82 \%$ |
| All Others | 1057 | $18 \%$ | $100 \%$ |
| Total | $\mathbf{6 0 2 3}$ | $\mathbf{1 0 0 \%}$ | $\mathbf{1 0 0 \%}$ |

Figure 4-5 provides the same data in geographic format and shows a close correspondence with Figure 4-4.

Figure 4-5: Westbound Origin Map


Figure 4-6 and 4-7 summarizes the Spring season eastbound and westbound trip patterns within California (region to region), respectively. Figures 4-8 and 4-9 summarize the Fall season eastbound and westbound trip patterns within California (region to region), respectively.

Generally, the trip distribution patterns between the spring and fall seasons are similar with only slight seasonal variations. In the eastbound direction, the majority of trips originate from within California with a large percentage from the San Joaquin Valley Region. Of the total trips, the majority are destined for other states outside of California. Of those trips that are destined for regions within California, the majority are bound for the Southern California Region.

In the westbound direction, the majority of trips originate from other states outside of California. Of those trips that originate from within California, the majority are from the Southern California Region. The results show that the majority of westbound trips are destined for areas within California with a large percentage to the San Joaquin Valley Region.





### 4.8 Travel Routes

Questions 5 and 8 of the truck intercept survey asked drivers what route they took to get to SR-58 and the route they are planning to take from $\mathrm{SR}-58$, respectively. The survey provided a list of major route options for the driver along with an option for the driver to fill in an option not provided on the list.

## Origin Route

Of the 6,042 surveys conducted during the Spring_period, 5,591 valid responses were recorded yielding a question response rate of $92.54 \%$. The following provides a statistical summary by location and direction:

Table 4-65: Statistical Summary of Question 7 Responses (Spring)

| Location | Direction | Surveys | Responses |  |
| :---: | :---: | :---: | :---: | :---: |
|  |  | Total | Total | \% |
| Boron Rest Stop | EB | 1,035 | 944 | 91.21\% |
|  | WB | 1,579 | 1,399 | 88.60\% |
| CHP Weigh Station | EB | 1,629 | 1,551 | 95.21\% |
|  | WB | 1,799 | 1,697 | 94.33\% |
| Total | , | 6,042 | 5,591 | 92.54\% |

Of the 5,295 surveys conducted during the Fall period, 5,166 valid responses were recorded yielding a question response rate of $97.56 \%$. The following provides a statistical summary by location and direction:

## Table 4-66: Statistical Summary of Question 7 Responses (Fall)

| Location |  | Surveys | Responses |  |
| :--- | :--- | ---: | ---: | ---: |
|  | Direction | Total | Total | $\%$ |
| Boron Rest Stop |  | 963 | 934 | $96.99 \%$ |
|  | WB | $\mathrm{I}, 2 \mathrm{I} 9$ | $\mathrm{I}, 206$ | $98.93 \%$ |
| CHP Weigh Station | EB | $\mathrm{I}, 572$ | $\mathrm{I}, 543$ | $98.16 \%$ |
|  | WB | $\mathrm{I}, 54 \mathrm{I}$ | $\mathrm{I}, 483$ | $96.24 \%$ |
| Total |  | 5,295 | $5, \mathrm{I} 66$ | $97.56 \%$ |

Based on the survey data collected, Tables 4-67, 4-68, 4-69 and 4-70 summarize the results of the truck origin route surveyed at the Boron eastbound rest-stop, Boron westbound rest-stop, CHP eastbound weigh station and CHP westbound weigh station, respectively. The results indicate that in the eastbound direction (both Boron and CHP), SR-99 north is the predominate route of choice for truck drivers accessing SR-58. The results also indicate that in the westbound direction, I-I5 north and I-40 east are the predominate route taken by truck drivers to access SR-58. This pattern suggests that most eastbound truck originate from the Central Valley Region which reflects the concentration of the agricultural industry. The westbound pattern suggests the large percentage of trucks coming into the region from other states.

Table 4-67 Origin Route
BORON EASTBOUND


Table 4-68 Origin Route BORON WESTBOUND

SPRING 2008


ROUTE


Table 4-69 Origin Route
CHP EASTBOUND

SPRING 2008


ROUTE


Table 4-70 Origin Route CHP WESTBOUND

SPRING 2008


ROUTE


## Destination Route

Of the 6,042 surveys conducted during the Spring_period, 5,867 valid responses were recorded yielding a question response rate of $97.1 \%$. The following provides a statistical summary by location and direction:

Table 4-7 I: Statistical Summary of Question 7 Responses (Spring)

| Location |  | Surveys | Responses |  |
| :--- | :--- | ---: | ---: | ---: |
|  | Direction | Total | Total | $\%$ |
| Boron Rest Stop |  | $\mathrm{I}, 035$ | $\mathrm{I}, 003$ | $96.91 \%$ |
|  | WB | $\mathrm{I}, 579$ | $\mathrm{I}, 546$ | $97.91 \%$ |
| CHP Weigh Station | EB | $\mathrm{I}, 629$ | $\mathrm{I}, 550$ | $95.15 \%$ |
|  | WB | 1,799 | $\mathrm{I}, 768$ | $98.28 \%$ |
| Total |  | 6,042 | 5,867 | $97.10 \%$ |

Of the 5,295 surveys conducted during the Fall period, 5,026 valid responses were recorded yielding a question response rate of $94.92 \%$. The following provides a statistical summary by location and direction:

Table 4-72: Statistical Summary of Question 7 Responses (Fall)

| Location |  | Surveys | Responses |  |
| :--- | :--- | ---: | ---: | ---: |
|  | Direction | Total | Total | $\%$ |
|  |  | 963 | 923 | $95.85 \%$ |
|  | WB | $\mathrm{I}, 2 \mathrm{I} 9$ | $\mathrm{I}, \mathrm{I} 64$ | $95.49 \%$ |
| CHP Weigh Station | EB | $\mathrm{I}, 572$ | $\mathrm{I}, 520$ | $96.69 \%$ |
|  | WB | $\mathrm{I}, 54 \mathrm{I}$ | $\mathrm{I}, 4 \mathrm{II}$ | $92.08 \%$ |
| Total |  | 5,295 | 5,026 | $94.92 \%$ |

Tables 4-73, 4-74, 4-75 and 4-76 summarize the results of the truck destination route surveyed at the Boron eastbound rest-stop, Boron westbound rest-stop, CHP eastbound weigh station and CHP westbound weigh station, respectively. The results indicate that in the eastbound direction, the predominate routes used to reach the final destination are I-I5, I-40 and US-395. The results also indicate that in the westbound direction, SR-99 is the predominate route of choice by truck drivers.

Table 4-73 Destination Route
BORON EASTBOUND

SPRING 2008


## Table 4-74 Destination Route <br> BORON WESTBOUND



Table 4-75 Destination Route
CHP EASTBOUND

SPRING 2008


ROUTE


Table 4-76 Destination Route
CHP WESTBOUND


Based on the origin and destination route survey data and also based on the origin and destination of states, region and city, KOA compiled the survey results in graphical format illustrating directional travel patterns at each of the four survey sites for both the Spring and Fall seasons.

## Boron Rest-Stop

Figures $4-10$ and $4-11$ illustrate the travel patterns at the Boron Eastbound Rest-Stop based on the Spring and Fall O/D surveys. The results of the survey show that in the eastbound direction, the predominate route of origin is from the Southbound SR-99 into the SR-58 corridor and the predominate destination routes are I-I5 North and I-40 East. This pattern is consistent for both the spring and fall seasons.

Figures 4-12 and 4-I3 illustrate the travel patterns at the Boron Westbound Rest-Stop based on the Spring and Fall O/D surveys. The results show that in the westbound direction, the predominate routes of origin are the I-I5 South and I-40 West freeways and the predominate destination route is SR-99 North. This pattern is consistent for both the spring and fall seasons.

## CHP Weigh Stations

Figures 4-I4 and 4-I5 illustrate the travel patterns at the CHP Eastbound Weigh Station based on the Spring and Fall O/D surveys. Similar to the results from the Boron site, the results show that in the eastbound direction, the predominate route of origin is southbound SR-99 into the SR-58 corridor and the predominate destination routes are I-I5 North and I-40 East. This pattern is consistent for both the spring and fall seasons.

Figures 4-16 and 4-17 illustrate the travel patterns at the CHP Westbound Weigh Station based on the Spring and Fall O/D surveys. Similar to the results from the Boron site, the results show that in the westbound direction, the predominate routes of origin are the I-I5 South and I-40 West freeways and the predominate destination route is SR-99 North. This pattern is consistent between both the spring and fall seasons.

The detailed survey responses are provided in Appendix J.
The overall pattern suggests that trucks traveling within the SR-58 Corridor are primarily between the Central Valley Region (SR-99 north), which is reflective of the agriculture industry in that region, and other states outside of California. While California makes up over a third of these trips (35\%) as the primary destination, the remaining trips are destined for other states and thus reflected in the predominate route choice of I-40 east and I-I5 north.


ROUTES:
Major: 85\%
Local/Other (Not Shown): 15\%

## ROUTES:

Major: 96\%
Local/Other (Not Shown): 4\%


KOA CORPORATION






SR-58 Origin and Destination Truck Study
Figure 4-15


SR-58 Origin and Destination Truck Study


### 4.9 Commodities

Question 9 of the truck intercept survey asks the drivers what they are carrying. Of the 6,042 surveys conducted during the Spring_period, 5,788 valid responses were recorded yielding a question response rate of $95.8 \%$. The following provides a statistical summary by location and direction:

Table 4-77: Statistical Summary of Question 9 Responses (Spring)

| Location | Direction | Surveys | Responses |  |
| :---: | :---: | :---: | :---: | :---: |
|  |  | Total | Total | \% |
| Boron Rest Stop | EB | 1,035 | 1,003 | 96.91\% |
|  | WB | 1,579 | 1,471 | 93.16\% |
| CHP Weigh Station | EB | 1,629 | 1,562 | 95.89\% |
|  | WB | 1,799 | 1,752 | 97.39\% |
| Total | , | 6,042 | 5,788 | 95.80\% |

Of the 5,295 surveys conducted during the Fall period, 5,082 valid responses were recorded yielding a question response rate of $95.98 \%$. The following provides a statistical summary by location and direction:

Table 4-78: Statistical Summary of Question 9 Responses (Fall)

| Location |  | Surveys | Responses |  |
| :--- | :--- | ---: | ---: | ---: |
|  |  | Total | $\%$ |
| Boron Rest Stop | EB |  | 963 | 940 | $97.6 \mathrm{I} \%$ |
|  | WB | $\mathrm{I}, 2 \mathrm{I} 9$ | $\mathrm{I}, \mathrm{I} 56$ | $94.83 \%$ |
| CHP Weigh Station | EB | $\mathrm{I}, 572$ | $\mathrm{I}, 5 \mathrm{II}$ | $96 . \mathrm{I} 2 \%$ |
|  | WB | $\mathrm{I}, 54 \mathrm{I}$ | $\mathrm{I}, 475$ | $95.72 \%$ |
| Total |  | 5,295 | 5,082 | $95.98 \%$ |

The commodities provided during the response to question 9 have been further categorized into the Standard Transportation Commodity Codes (STCC) system. The STCC system was developed in the 1960's as a comprehensive commodity classification system. The hierarchical STCC structure allows data aggregation. This feature enables the summation of meaningful commodity information at various levels. For this study, the STCC system was adopted and the survey data was coded up to the second level. Table 4-79 summarizes the STCC first level of commodities description.

Based on the results of the survey responses, Tables 4-80, 4-8I, 4-82 and 4-83 provide the top six commodities (by STCC category) for the Boron eastbound rest-stop, Boron westbound rest-stop, CHP eastbound station and CHP westbound station, respectively. Additionally, for each of the op STCC codes, where appropriate, the top 3 commodities are provided. Any other commodities for the STCC code are grouped as part of the other category.

Table 4-80 (Boron Eastbound Rest-Stop) shows the top five categories are as follows:

- Farm Products (Spring $=35.5 \%$ and Fall $=42.6 \%$ )
- Food or Kindred Products (Spring = $13.4 \%$ and Fall $=12.8 \%$ )
- Clay/Concrete/Glass/Stone Products (Spring $=2.3 \%$ and Fall $=4.0 \%$ )
- Miscellaneous Freight (Spring = 5.8\% and Fall = 7.1\%)
- Empty (Spring $=15.2 \%$ and Fall $=8.2 \%$ )
- Other (Spring $=27.8 \%$ and Fall $=25.4 \%$ )

Table 4-80 also provides the top 3 sub-categories for each of the major commodities listed above (STCC - second level).

Table 4-8I (Boron Westbound Rest-Stop) shows the top five categories are as follows:

- Farm Products (Spring $=13.2$ \% and Fall $=8.1 \%$ )
- Food or Kindred Products (Spring $=23.2 \%$ and Fall $=22.9 \%$ )
- Clay/Concrete/Glass/Stone Products (Spring $=4.7 \%$ and Fall $=6.2 \%$ )
- Miscellaneous Freight (Spring $=7.2 \%$ and Fall $=8.8 \%$ )
- Empty (Spring $=6.5 \%$ and Fall $=12.2 \%$ )
- Other (Spring $=45.1 \%$ and Fall $=41.8 \%)$

Table 4-8I also provides the top 3 sub-categories for each of the major commodities listed above (STCC - second level).

Table 4-82 (CHP Eastbound Station) shows the top five categories are as follows:

- Farm Products (Spring $=37.1$ \% and Fall $=44.0 \%$ )
- Food or Kindred Products (Spring $=14.9 \%$ and Fall $=13.0 \%$ )
- Clay/Concrete/Glass/Stone Products (Spring $=2.9 \%$ and Fall $=3.4 \%$ )
- Miscellaneous Freight (Spring $=5.7 \%$ and Fall $=4.5 \%$ )
- Empty (Spring $=12.0 \%$ and Fall $=10.4 \%$ )
- Other (Spring $=27.5 \%$ and Fall $=24.8 \%$ )

Table 4-82 also provides the top 3 sub-categories for each of the major commodities listed above (STCC - second level).

Table 4-83 (CHP Westbound Station) shows the top five categories are as follows:

- Farm Products (Spring $=17.5 \%$ and Fall $=10.4 \%$ )
- Food or Kindred Products (Spring = $15.7 \%$ and Fall $=15.4 \%$ )
- Clay/Concrete/Glass/Stone Products (Spring = 6.0\% and Fall $=4.7 \%$ )
- Miscellaneous Freight (Spring = 6.9\% and Fall = 8.7\%)
- Empty (Spring $=10.1 \%$ and Fall $=18.5 \%$ )
- Other (Spring $=43.9 \%$ and Fall $=42.3 \%$ )

Table 4-83 also provides the top 3 sub-categories for each of the major commodities listed above (STCC - second level). Appendix K provides detailed summaries of commodities surveyed by season and location.

Table 4-79: STCC Classification System

| STCC | Commodity Description |
| :---: | :---: |
| 01 | Farm Products |
| 08 | Forest Products |
| 09 | Fresh Fish or Other Marine Products |
| 10 | Metallic Ores |
| 11 | Coal |
| 13 | Crude Petroleum, Natural Gas, or Gasoline |
| 14 | Non-metallic Minerals |
| 19 | Ordinance or Accessories |
| 20 | Food or Kindred Products |
| 21 | Tobacco Products, excluding Insecticides |
| 22 | Textile Mill Products |
| 23 | Apparel or Other Finished Textile Products |
| 24 | Lumber or Wood Products, excluding Furniture |
| 25 | Furniture or Fixtures |
| 26 | Pulp, Paper, or Allied Products |
| 27 | Printed Matter |
| 28 | Chemicals or Allied Products |
| 29 | Petroleum or Coal Products |
| 30 | Rubber or Miscellaneous Plastic Products |
| 31 | Leather or Leather Products |
| 32 | Clay, Concrete, Glass, or Stone Products |
| 33 | Primary Metal Products |
| 34 | Fabricated Metal Products |
| 35 | Machinery, excluding Electrical |
| 36 | Electrical Machinery, Equipment, or Supplies |
| 37 | Transportation Equipment |
| 38 | Instruments, Photographic Goods, Optical Goods, Watches, 0 |
| 39 | Miscellaneous Products of Manufacturing |
| 40 | Waste or Scrap Materials |
| 41 | Miscellaneous Freight Shipments |
| 42 | Containers, Carriers or Devices, Shipping, Returned Empty |
| 43 | Mail |
| 44 | Freight Forwarder Traffic |
| 45 | Shipper Assocation or Similar Traffic |
| 46 | Freights All Kinds |
| 47 | Small Packages, LTC or LTL |
| 48 | Waste Hazardous Materials or Waste Hazardous Substances |
| 49 | Hazardous Materials |
| 50 | Bulk Movement in Boxcars |

Table 4-80 Commodities
BORON EASTBOUND

|  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | 367 (35.46\%) | 01 - Farm Products | 24 (5.85\%) <br> 23 (5.61\%) <br> 99 (24.15 |  |  |  |
|  |  | 139 (13.43\%) 12 (8.63\%) $11(7.91 \%)$ $10(7.19 \%)$ $106(76.26 \%)$ | 20 - Food or Kindred Products <br> Food Food <br> Milk $\quad$ Cheese <br> Wine Wine <br> Others Others | $24(19.51 \%)$ <br> $12(12.77 \%)$ <br> $14.38 \%)$ <br> $10(8.13 \%)$ <br> $75(60.98 \%)$ |  |  |  |
|  |  | $\begin{gathered} 24(2.32 \%) \\ 8(33.33 \%) \\ 7(29.17 \%) \\ 5(20.83 \%) \\ 4(16.67 \%) \end{gathered}$ | 32 - Clay/Concrete Products <br> Cement Cement <br> Insulation <br> Glass <br> Glass Insulation <br> Others Others |  |  |  |  |
|  |  | $60(5.80 \%)$ <br> $46(76.67 \%)$ <br> $8(13.33 \%)$ <br> $1(1.67 \%)$ <br> $5(8.33 \%)$ | 41- Miscellaneous Freight  <br> General General <br> Household Household <br> Trade Show Trade Show <br> Others Others | $\quad 68(7.06 \%)$ <br> $40(58.82 \%)$ <br> $11(16.18 \%)$ <br> $5(7.35 \%)$ <br> $12(17.65 \%)$ |  |  |  |
|  |  | 157 (15.17\%) | Empty | - 79 (8.20\%) |  |  |  |
|  |  | $288 \text { (27.85\%) }$ | Other |  | $245 \text { (25.44\%) }$ |  |  |
| 800 | 600 | 4002000 |  | 0200 | 00400 | 600 | 800 |
|  | Number of Trucks(Total = 1,035) |  |  | Number of Trucks(Total = 963) |  |  |  |

Table 4-81 Commodities

## BORON WESTBOUND



Table 4-82 Commodities
CHP EASTBOUND

SPRING 2008

01 - Farm Products
General Produce General Produce
Lettuce ${ }^{\text {Grapes }}$
Strawberries

20 - Food or Kindred Products
Food Food
Wine $\mid$ Wine
Cheese
Others
32 - Clay/Concrete Products

Cement Cement
Glass | Glas
Limestone Limestone
Others
Others
41 - Miscellaneous Freight
General General
Household Household

| Sears | Walmart |
| :---: | :--- |
| Others | Others |

FALL 2008


Table 4-83 Commodities

## CHP WESTBOUND

SPRING 2008


To further illustrate movement of commodities, KOA has developed region-to-region graphics illustrating the regional trip patterns of the top thee commodity types (farm products, food products and empty trucks). Below summarizes the results:

- The survey results indicate that $98 \%$ of farm products traveling on the Eastbound SR-58 started their trip from within California and $2 \%$ from other states. Of the total trips, $46 \%$ started their trip from within the San Joaquin Valley Region followed by the Central Coast Region at 37\% and the Southern California Region at 9\%. After that, the percentages for the other regions drop off significantly. Of the total eastbound trips, $88 \%$ are destined for areas outside of California and the remaining $12 \%$ are bound for regions within California. Figure 4-I8 illustrates the eastbound trip pattern. The survey results indicate produce as the most common farm products carried such as lettuce, grapes strawberries and tomatoes.
- The survey results indicate that $58 \%$ of farm products traveling on the westbound SR-58 started their trip from outside of California with the predominate states being: Arizona (II\%), Texas (9\%), Utah (5\%), and Nevada (4\%). The $42 \%$ trips that originated from within California of which $14 \%$ are from the Southern California Region, $14 \%$ from the Southern Border Region and $13 \%$ are from the San Joaquin Valley Region. After that, the percentages for the other regions drop off significantly. Of the total westbound trips, $96 \%$ are destined for locations within California and the remaining $4 \%$ to other states. Of the total trips, $69 \%$ are bound for the San Joaquin Valley Region and 12\% are bound for the Bay Area Region. Figure 4-I9 illustrates the westbound trip pattern. The survey results indicate chickens and hay as some of the common farm products carried.
- The survey results indicate that $97 \%$ of food products traveling on the Eastbound SR-58 started their trip from within California and 3\% from other states. Of the total trips, $71 \%$ started their trip from within the San Joaquin Valley Region followed by the Southern California Region at 10\% and the Bay Area Region at 8\%. After that, the percentages for the other regions drop off significantly. Of the total eastbound trips, $72 \%$ are destined for areas outside of California and the remaining $28 \%$ are bound for regions within California. Figure 4-20 illustrates the eastbound trip pattern. The survey results indicate the most common food products carried are cheese, milk and wine.
- The survey results indicate that $76 \%$ of food products traveling on the westbound SR-58 started their trip from outside of California with the predominate states being: Arizona (13\%), Texas (13\%), Nevada (5\%) and Oklahoma (5\%). The 24\% trips that originated from within California of which $16 \%$ are from the Southern California Region, and $6 \%$ are from the San Joaquin Valley Region. After that, the percentages for the other regions drop off significantly. Of the total westbound trips, $96 \%$ are destined for locations within California and the remaining $4 \%$ to other states. Of the total trips, $65 \%$ are bound for the San Joaquin Valley Region and $\mathbf{I} \%$ are bound for the Bay Area Region. Figure 4-2I illustrates the westbound trip pattern. The survey results indicate the most common food products carried are meat and frozen food.




- The survey results indicate that virtually $100 \%$ of empty trucks traveling on the Eastbound SR-58 started their trip from within California of which $72 \%$ started their trip from within the San Joaquin Valley Region followed by the Southern California Region at 18\%. After that, the percentages for the other regions drop off significantly. Of the total eastbound trips, $23 \%$ are destined for areas outside of California and the remaining $77 \%$ are bound for regions within California. The majority of those trips (45\%) are bound for the Southern California Region (likely to San Bernardino and Riverside Counties). Figure 4-22 illustrates the eastbound trip pattern.
- The survey results indicate that $47 \%$ of empty trucks traveling on the westbound SR-58 started their trip from outside of California with the predominate states being. The remaining $53 \%$ trips that originated from within California of which $34 \%$ are from the Southern California Region, and $15 \%$ are from the San Joaquin Valley Region. After that, the percentages for the other regions drop off significantly. Of the total westbound trips, $96 \%$ are destined for locations within California and the remaining $4 \%$ to other states. Of the total trips, $78 \%$ are bound for the San Joaquin Valley Region and 6\% are bound for the Central Coast Region. Figure 4-23 illustrates the westbound trip pattern.

Due to the vast amount of available data and potential cross-tabulation methods of commodities movements, KOA has compiled a series of matrices to provide a detailed breakdown of movement of goods by states, regions and counties. Appendix L provides the following:

- Matrices of State to State movements of all commodities by seasons and by survey locations
- Matrices of region to region (within California) movements of all commodities by seasons and by survey locations
- Matrices of county to county (within California) movements of all commodities by survey locations

Appendix $M$ provides similar matrices of state-to-state, region-to-region and county-to-county movements for the top three types of commodities.



## 4. 10 Commodity Movements

To facilitate analysis of commodity patterns records with blank or unknown commodity fields were removed from the data.

Table 4-84 summarizes the major commodity flows from the Spring and Fall surveys. The first four commodities - Farm Products, Food or Kindred Products, Empties, and Miscellaneous Freight Shipments - ranked the same in both seasons with comparable shares. The two seasons show generally singular commodity shares except for Empties and Waste or Scrap Materials being somewhat more prominent in the Spring, and Farm Products more prominent in the Fall. The total of Farm Products, Empties, and Waste or Scrap Materials is roughly the same in Spring (54\%) and Fall (53\%). This observation suggests that in the Fall harvest season eastbound trucks were more likely to have Farm Product loads rather than carry Waste or Scrap Materials (e.g. recyclables) or return eastbound empty.

Table 4-84: Eastbound Commodity Summary

| Product description | Spring Count | Spring <br> Share | Spring Cumulative | Fall Count | Fall Share | Fall Cumulative |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Farm Products | 972 | 37\% | 37\% | 402 | 43\% | 43\% |
| Food or Kindred Products | 381 | 14\% | 51\% | 131 | 14\% | 57\% |
| Empty | 352 | 13\% | 64\% | 79 | 8\% | 65\% |
| Miscellaneous Freight Shipments | 157 | 6\% | 70\% | 68 | 7\% | 72\% |
| Clay, Concrete, Glass, or Stone Products | 71 | 3\% | 73\% | 38 | 4\% | 76\% |
| Transportation Equipment | 66 | 2\% | 75\% | 24 | 3\% | 79\% |
| Lumber or Wood Products, excluding Furniture | 65 | 2\% | 78\% | 20 | 2\% | 81\% |
| Fabricated Metal Products | 55 | 2\% | 80\% | 19 | 2\% | 83\% |
| Machinery, excluding Electrical | 33 | 1\% | 81\% | 19 | 2\% | 85\% |
| Waste or Scrap Materials | 107 | 4\% | 85\% | 2 | 2\% | 87\% |
| Petroleum or Coal Products | 59 | 2\% | 87\% | 7 | 2\% | 89\% |
| Chemicals or Allied Products | 50 | 2\% | 89\% | 15 | 1\% | 90\% |
| Non-metallic Minerals | 39 | 1\% | 90\% | 13 | 1\% | 91\% |
| All Others | 256 | 10\% | 100\% | 103 | 9\% | 100\% |
| Total | 2663 | 100\% | 100\% | 940 | 100\% | 100\% |

Table 4-85 shows the same four leading commodities for westbound trips, but with different proportions. Fall again shows a greater concentration of Farm Products moving in harvest season, but also a larger number of westbound empties. Some of these empty movements may be international containers returning empty to the San Pedro Bay ports in the peak holiday shipping season.

Table 4-85: Westbound Commodity Summary

| Product description | Spring <br> Count | Spring <br> Share | Spring <br> Cumulative | Fall <br> Count | Fall <br> Share | Fall <br> Cumulative |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: |
| Food or Kindred Products | 650 | $19 \%$ | $19 \%$ | 790 | $21 \%$ | $21 \%$ |
| Farm Products | 523 | $15 \%$ | $35 \%$ | 881 | $23 \%$ | $44 \%$ |
| Empty | 284 | $8 \%$ | $43 \%$ | 597 | $16 \%$ | $60 \%$ |
| Miscellaneous Freight Shipments | 249 | $7 \%$ | $51 \%$ | 310 | $8 \%$ | $68 \%$ |
| Rubber or Miscellaneous Plastic Products | 131 | $4 \%$ | $54 \%$ | 130 | $3 \%$ | $72 \%$ |
| Transportation Equipment | 121 | $4 \%$ | $58 \%$ | 114 | $3 \%$ | $75 \%$ |
| Pulp, Paper, or Allied Products | 96 | $3 \%$ | $61 \%$ | 111 | $3 \%$ | $78 \%$ |
| Electrical Machinery, Equipment, or Supplies | 75 | $2 \%$ | $63 \%$ | 108 | $3 \%$ | $80 \%$ |
| Fabricated Metal Products | 124 | $4 \%$ | $67 \%$ | 96 | $3 \%$ | $83 \%$ |
| Non-metallic Minerals | 102 | $3 \%$ | $70 \%$ | 87 | $2 \%$ | $85 \%$ |
| Machinery, excluding Electrical | 68 | $2 \%$ | $72 \%$ | 70 | $2 \%$ | $87 \%$ |
| Clay, Concrete, Glass, or Stone Products | 181 | $5 \%$ | $77 \%$ | 77 | $2 \%$ | $89 \%$ |
| Waste or Scrap Materials | 158 | $5 \%$ | $82 \%$ | 67 | $2 \%$ | $91 \%$ |
| Chemicals or Allied Products | 151 | $4 \%$ | $86 \%$ | 66 | $2 \%$ | $93 \%$ |
| Primary Metal Products | 61 | $2 \%$ | $88 \%$ | 64 | $2 \%$ | $94 \%$ |
| Furniture or Fixtures | 60 | $2 \%$ | $90 \%$ | 43 | $1 \%$ | $95 \%$ |
| All Other | 343 | $10 \%$ | $100 \%$ | 171 | $5 \%$ | $100 \%$ |
| Total | 3377 | $100 \%$ | $100 \%$ | 3782 | $100 \%$ | $100 \%$ |

Table 4-86 through Table 4-88 display the major eastbound commodities originating in California and moving over SR-58. For this analysis records with blank or unknown states were removed from the data as well as those with missing commodity information.

As Table 4-86 shows, the trucks staying in California were empty almost one third of the time (31\%). This higher proportion of in-state empties is due to several factors, including:

- one-way loads of cement, propane, building materials, chemicals, gasoline, etc. for which trucks invariably return empty;
- trucks in private fleets delivering from regional distribution centers to local retailers and returning empty (or with empty shipping containers); and
- empty trucks being repositioned short distances between loading points.

Lower-valued commodities such as lumber, non-metallic minerals, and chemicals are more prominent in shorter regional movements, and those commodities show up in Table 4-86 as well.

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Table 4-86: Major Eastbound California Commodities to California Destinations

| Commodity Eastbound CA to CA | Count | Share | Cumulative <br> Share |
| :--- | ---: | ---: | ---: |
| Empty | 311 | $31 \%$ | $31 \%$ |
| Farm Products | 142 | $14 \%$ | $45 \%$ |
| Food or Kindred Products | 119 | $12 \%$ | $56 \%$ |
| Miscellaneous Freight Shipments | 73 | $7 \%$ | $64 \%$ |
| Clay, Concrete, Glass, or Stone Products | 58 | $6 \%$ | $69 \%$ |
| Lumber or Wood Products, excluding Furniture | 40 | $4 \%$ | $73 \%$ |
| Non-metallic Minerals | 33 | $3 \%$ | $77 \%$ |
| Chemicals or Allied Products | 32 | $3 \%$ | $80 \%$ |
| All Others | 206 | $20 \%$ | $100 \%$ |
| Total | 1014 | $\mathbf{I 0 0 \%}$ | $\mathbf{1 0 0 \%}$ |

Table 4-87 shows the commodity mix carried in longer trips to Arizona and Nevada over SR-58. Only $8 \%$ of these trips are empty compared to $31 \%$ within California. Higher-value commodities such as fabricated materials and transportation equipment (chiefly autos) are more prominent. Lower-value commodities such as non-metallic minerals and agricultural chemical are less likely to justify longer truck trips.

Table 4-87: Major Eastbound California Commodities to Arizona and Nevada

| Commodity Eastbound CA to AZ/NV | Count | Share | Cumulative <br> Share |
| :--- | ---: | ---: | ---: |
| Food or Kindred Products | 117 | $23 \%$ | $23 \%$ |
| Farm Products | 86 | $17 \%$ | $39 \%$ |
| Miscellaneous Freight Shipments | 50 | $10 \%$ | $49 \%$ |
| Empty | 39 | $8 \%$ | $56 \%$ |
| Clay, Concrete, Glass, or Stone Products | 32 | $6 \%$ | $62 \%$ |
| Fabricated Metal Products | 24 | $5 \%$ | $67 \%$ |
| Transportation Equipment | 24 | $5 \%$ | $72 \%$ |
| Petroleum or Coal Products | 20 | $4 \%$ | $76 \%$ |
| Lumber or Wood Products, excluding Furniture | 16 | $3 \%$ | $79 \%$ |
| Rubber or Miscellaneous Plastic Products | 11 | $2 \%$ | $81 \%$ |
| All Others | 100 | $19 \%$ | $100 \%$ |
| Total | $\mathbf{5 1 9}$ | $100 \%$ | $100 \%$ |

The longer interstate trips shown in Table 4-88 are even less likely to be empty - only $2 \%$. The dramatic reduction in empty movements from $31 \%$ within California to $2 \%$ on genuine long-haul movements reflects the underlying economics of trucking. For-hire truckload carriers typically have less than $5 \%$ empty miles, and would rarely have a driver make a long trip empty. Instead, the driver will wait or reposition the truck a short distance to pick up a revenue-producing load.

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Table 4-88: Major Eastbound California Commodities to Other Destinations

| Commodity Eastbound CA to Other Destinations | Count | Share | Cumulative <br> Share |
| :--- | ---: | ---: | ---: |
| Farm Products | 884 | $64 \%$ | $64 \%$ |
| Food or Kindred Products | 205 | $15 \%$ | $78 \%$ |
| Miscellaneous Freight Shipments | 65 | $5 \%$ | $83 \%$ |
| Empty | 29 | $2 \%$ | $85 \%$ |
| Electrical Machinery, Equipment, or Supplies | 19 | $1 \%$ | $86 \%$ |
| Transportation Equipment | 16 | $1 \%$ | $88 \%$ |
| Fabricated Metal Products | 14 | $1 \%$ | $89 \%$ |
| Rubber or Miscellaneous Plastic Products | 14 | $1 \%$ | $90 \%$ |
| All Others | 144 | $10 \%$ | $100 \%$ |
| Total | $\mathbf{1 3 9 0}$ | $\mathbf{1 0 0 \%}$ | $\mathbf{1 0 0 \%}$ |

Table 4-88 also displays a higher-valued commodity mix than Table 4-86 or Table 4-87. Commodities such as cement, stone, lumber, and gasoline are relatively uncommon in true long-haul trucking. Bulk and lower-value commodities are more likely to move long distances by rail than by truck. Farm products moving longer distances by truck are more likely to be higher-valued perishable produce than lower-valued grain or animal feed.

Table 4-89 shows similar patterns for westbound commodity flows. Movements within the state on SR58 (Table 4-89) are more likely to be empty or involve lower-value commodities. A comparison between Table 4-86 and Table 4-89 shows that trucks moving within California are more likely to be loaded westbound ( $7 \%$ empty) than eastbound ( $31 \%$ empty). Westbound is generally in the direction of the population centers, so this imbalance is logical.

Table 4-89: Major Westbound California Commodities to California

| Commodity Westbound from CA to CA | Count | Share | Cumulative <br> Share |
| :--- | ---: | ---: | ---: |
| Empty | 293 | $17 \%$ | $17 \%$ |
| Farm Products | 287 | $17 \%$ | $33 \%$ |
| Food or Kindred Products | 230 | $13 \%$ | $47 \%$ |
| Miscellaneous Freight Shipments | 159 | $9 \%$ | $56 \%$ |
| Clay, Concrete, Glass, or Stone Products | 130 | $7 \%$ | $63 \%$ |
| Chemicals or Allied Products | 91 | $5 \%$ | $68 \%$ |
| Non-metallic Minerals | 89 | $5 \%$ | $74 \%$ |
| Fabricated Metal Products | 57 | $3 \%$ | $77 \%$ |
| Petroleum or Coal Products | 50 | $3 \%$ | $80 \%$ |
| All Others | 352 | $20 \%$ | $\mathbf{1 0 0 \%}$ |
| Total | $\mathbf{1 7 3 8}$ | $\mathbf{1 0 0 \%}$ | $\mathbf{1 0 0 \%}$ |

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Table 4-90, for westbound AZ/NV origins, shows a reduction in the share of empties, as expected, although not as dramatic as in Table 4-87. Miscellaneous freight shipments are not as prominent westbound (5\% in Table 4-90) as eastbound (I0\% in Table 4-87).

Table 4-90 : Major Westbound AZ/NV Commodities to California

| Commodity Westbound from AZ/NV to CA | Count | Share | Cumulative <br> Share |
| :--- | ---: | ---: | ---: |
| Food or Kindred Products | 146 | $18 \%$ | $18 \%$ |
| Empty | 100 | $13 \%$ | $31 \%$ |
| Farm Products | 98 | $12 \%$ | $43 \%$ |
| Clay, Concrete, Glass, or Stone Products | 62 | $8 \%$ | $51 \%$ |
| Rubber or Miscellaneous Plastic Products | 48 | $6 \%$ | $57 \%$ |
| Miscellaneous Freight Shipments | 40 | $5 \%$ | $62 \%$ |
| Fabricated Metal Products | 38 | $5 \%$ | $67 \%$ |
| Pulp, Paper, or Allied Products | 36 | $5 \%$ | $71 \%$ |
| Chemicals or Allied Products | 34 | $4 \%$ | $75 \%$ |
| Transportation Equipment | 28 | $4 \%$ | $79 \%$ |
| All Others | 168 | $21 \%$ | $100 \%$ |
| Total | $\mathbf{7 9 8}$ | $100 \%$ | $100 \%$ |

Empties decline again in Table 4-9I, which covers westbound trips from other origins. As in Table 4-85, the westbound trips show a broader commodity mix than their eastbound counterparts. As in Table 488 , lower-valued commodities such as lumber and minerals are less prominent on the longer hauls.

Table 4-91: Major Westbound Other Origin Commodities to California

| Commodity Westbound from Other Origins to CA | Count | Share | Cumulative <br> Share |
| :--- | :---: | :---: | :---: |
| Food or Kindred Products | 473 | $26 \%$ | $26 \%$ |
| Farm Products | 222 | $12 \%$ | $38 \%$ |
| Miscellaneous Freight Shipments | 159 | $9 \%$ | $46 \%$ |
| Empty | 129 | $7 \%$ | $53 \%$ |
| Rubber or Miscellaneous Plastic Products | 85 | $5 \%$ | $58 \%$ |
| Transportation Equipment | 82 | $4 \%$ | $62 \%$ |
| Chemicals or Allied Products | 70 | $4 \%$ | $66 \%$ |
| Electrical Machinery, Equipment, or Supplies | 70 | $4 \%$ | $70 \%$ |
| Fabricated Metal Products | 67 | $4 \%$ | $73 \%$ |
| Pulp, Paper, or Allied Products | 63 | $3 \%$ | $77 \%$ |
| Clay, Concrete, Glass, or Stone Products | 53 | $3 \%$ | $80 \%$ |
| Machinery, excluding Electrical | 47 | $3 \%$ | $82 \%$ |
| All Others | 327 | $18 \%$ | $100 \%$ |
| Total | 1847 | $100 \%$ | $100 \%$ |

## 4. I I Truck Types and Commodities

The survey data show a very uneven mix of truck types, with semi-tractor trailers (semis) predominating.

- "Straight trucks" include all single-unit trucks (types 5, 6, and 7 in the survey data) and account for $4 \%$ of those surveyed;
- "Semis" include all tractor/single trailer combinations (types 8 , 9 , and 10 in the survey data) and account for $89 \%$; and
- "Doubles" include all two-trailer combinations (types II, I2, and I3 in the survey data) and account for 7\%.

Semis predominate in over-the-road trucking, especially outsider urban areas. Within urban areas surveys would typically find a higher percentage of single-unit straight trucks being used for local pickup and delivery and service operations.

Table 4-92 shows the proportion of commodities carried in semis on SR-58. The mix closely parallels the overall study area proportions shown in previous tables. Since semis account for almost $90 \%$ of the trucks surveyed, this parallel commodity mix is expected.

As mentioned earlier, long-haul truckload carriers avoid empty moves, so the semis in Table 4-92 display fewer empty moves than the doubles or straight trucks.

Table 4-92: Commodities Carried in Semi-Tractor Trailers

| Commodities in Semis | Share |
| :--- | ---: |
| Farm Products | $26 \%$ |
| Food or Kindred Products | $20 \%$ |
| Empty | $11 \%$ |
| Miscellaneous Freight Shipments | $7 \%$ |
| Clay, Concrete, Glass, or Stone Products | $4 \%$ |
| Rubber or Miscellaneous Plastic Products | $3 \%$ |
| Transportation Equipment | $3 \%$ |
| Fabricated Metal Products | $3 \%$ |
| Chemicals or Allied Products | $3 \%$ |
| Pulp, Paper, or Allied Products | $2 \%$ |
| Electrical Machinery, Equipment, or Supplies | $2 \%$ |
| Non-metallic Minerals | $2 \%$ |
| Petroleum or Coal Products | $\mathbf{2 \%}$ |
| Lumber or Wood Products, excluding Furniture | $\mathbf{2 \%}$ |
| Machinery, excluding Electrical | $\mathbf{2 \%}$ |
| All Others | $9 \%$ |
| Total | $\mathbf{1 0 0 \%}$ |

Table 4-93 however, shows a noticeably different commodity mix for doubles.

## Table 4-93: Commodities Carried in Double Tractor-Trailers

| Commodities in Doubles | Share |
| :--- | ---: |
| Farm Products | $21 \%$ |
| Empty | $21 \%$ |
| Miscellaneous Freight Shipments | $17 \%$ |
| Clay, Concrete, Glass, or Stone Products | $12 \%$ |
| Non-metallic Minerals | $4 \%$ |
| Chemicals or Allied Products | $4 \%$ |
| Small Packages, LTC or LTL | $4 \%$ |
| Transportation Equipment | $3 \%$ |
| Food or Kindred Products | $3 \%$ |
| Petroleum or Coal Products | $2 \%$ |
| All Other | $9 \%$ |

In California, doubles are regularly used for:

- agricultural movements in harvest season, notably fruits and vegetables (Farm Products);
- LTL shipments (Miscellaneous Freight, Small Packages);
- bulk cement and sand (Clay, Concrete, etc.); and
- minerals such as gypsum or borax that must be kept dry (Non-metallic Minerals).

This usage pattern accounts for many of the differences between Table 4-92 and Table 4-93. The agricultural, cement, and mineral shipments are one-way, accounting for the higher percentage of empties.

The commodity mix for straight trucks is shown in Table 4-94, and is dominated by empty movements. This greater frequency of empty movements is likely attributable to the heavier use of straight trucks for local and regional pickup and deliver moves with empty returns.

Table 4-94: Commodities Carried in Straight Trucks

| Commodities in Straight Trucks | Share |
| :--- | ---: |
| Empty | $24 \%$ |
| Farm Products | $17 \%$ |
| Miscellaneous Freight Shipments | $9 \%$ |
| Food or Kindred Products | $7 \%$ |
| Clay, Concrete, Glass, or Stone Products | $5 \%$ |
| Transportation Equipment | $5 \%$ |
| Machinery, excluding Electrical | $4 \%$ |
| Fabricated Metal Products | $3 \%$ |
| Electrical Machinery, Equipment, or Supplies | $3 \%$ |
| Chemicals or Allied Products | $2 \%$ |
| Mail | $2 \%$ |
| Non-metallic Minerals | $2 \%$ |
| Primary Metal Products | $2 \%$ |
| Petroleum or Coal Products | $2 \%$ |
| Furniture or Fixtures | $2 \%$ |
| Miscellaneous Products of Manufacturing | $2 \%$ |
| All Others | $\mathbf{8 \%}$ |
| Total | $\mathbf{1 0 0 \%}$ |

The four most prominent commodity classifications in the SR-58 survey data.

- Farm Product movements are dominated by semis with $92 \%$ of the total and the rest in a mix of straight trucks and doubles.
- Food and Kindred Products which are typically packaged foods that have undergone some degree of processing, are moved almost exclusively in semis. This category includes packed produce, canned goods, frozen foods, juices, and wines that are likely to move long distances by truck instead of rail.
- Miscellaneous Freight is more likely to move in straight trucks and doubles than are farm or food products. The difference reflects the use of straight trucks and doubles by private delivery fleets and LTL carriers.
- Empties consist of about $81 \%$ semis, less than the overall percentage of semis. This finding is consistent with earlier observations regarding efforts by truckload carriers to avoid empty trips.


## 4. 12 Route Choice

Question 10 of the truck intercept survey asks the drivers why they chose the travel routes used. Of the 6,042 surveys conducted during the Spring_period, 5,879 valid responses were recorded yielding a question response rate of $97.3 \%$. The following provides a statistical summary by location and direction:

Table 4-95: Statistical Summary of Question 10 Responses (Spring)

| Location |  | Surveys | Responses |  |
| :--- | :--- | ---: | ---: | ---: |
|  | Direction | Total | Total | $\%$ |
|  |  | $\mathrm{I}, 035$ | $\mathrm{I}, 0 \mathrm{I} 2$ | $97.78 \%$ |
|  | WB | $\mathrm{I}, 579$ | $\mathrm{I}, 56 \mathrm{I}$ | $98.86 \%$ |
| CHP Weigh Station | EB | $\mathrm{I}, 629$ | $\mathrm{I}, 523$ | $93.49 \%$ |
|  | WB | $\mathrm{I}, 799$ | $\mathrm{I}, 783$ | $99 . \mathrm{II} \%$ |
| Total |  | 6,042 | 5,879 | $97.30 \%$ |

Of the 5,295 surveys conducted during the Fall period, 5,218 valid responses were recorded yielding a question response rate of $98.55 \%$. The following provides a statistical summary by location and direction:

Table 4-96: Statistical Summary of Question IO Responses (Fall)

| Location | Direction | Surveys | Responses |  |
| :---: | :---: | :---: | :---: | :---: |
|  |  | Total | Total | \% |
| Boron Rest Stop | EB | 963 | 940 | 97.61\% |
|  | WB | 1,219 | 1,209 | 99.18\% |
| CHP Weigh Station | EB | 1,572 | I,556 | 98.98\% |
|  | WB | 1,541 | 1,513 | 98.18\% |
| Total | , | 5,295 | 5,218 | 98.55\% |

The answers to the question from the Spring and Fall surveys are summarized for all locations. Tables 4-97 and 4-98 provide the summary of the responses.

The most common survey responses include the following:

- Truck Based On This Route
- Trip Stop/Start On This Route
- Shortest/Fastest Route
- Better Weather
- Least Congestion
- Easier Grades or Road Conditions
- Personal Business On This Route
- Other

Table 4-97: Summary of Route Choice - Spring Season
Location: Boron Rest Stop
Eastbound

| Reason Route Chosen | Total | $\%$ |
| :--- | ---: | ---: |
| Truck based on this route | 196 | $19.37 \%$ |
| Trip stop/start on this <br> route | 40 | $3.95 \%$ |
| Shortest/fastest route | 589 | $58.20 \%$ |
| Better weather | 5 | $0.49 \%$ |
| Least congestion | 79 | $7.81 \%$ |
| Easier grades or road <br> conditions | 24 | $2.37 \%$ |
| Personal business on this <br> route | 10 | $0.99 \%$ |
| Other | 69 | $6.82 \%$ |
| Total | $\mathrm{I}, 012$ | $100.00 \%$ |

Westbound

| Reason Route Chosen | Total | $\%$ |
| :--- | ---: | ---: |
| Truck based on this route | 106 | $6.79 \%$ |
| Trip stop/start on this <br> route | 53 | $3.40 \%$ |
| Shortest/fastest route | 1,259 | $80.65 \%$ |
| Better weather | 5 | $0.32 \%$ |
| Least congestion | 44 | $2.82 \%$ |
| Easier grades or road <br> conditions | 18 | $1.15 \%$ |
| Personal business on this <br> route | 4 | $0.26 \%$ |
| Other | 72 | $4.61 \%$ |
| Total | 1,561 | $100.00 \%$ |

## Location: CHP Weigh Station

Eastbound

| Reason Route Chosen | Total | $\%$ |
| :--- | ---: | ---: |
| Truck based on this route | 236 | $15.50 \%$ |
| Trip stop/start on this <br> route | 44 | $2.89 \%$ |
| Shortest/fastest route | $\mathrm{I}, 05 \mathrm{I}$ | $69.01 \%$ |
| Better weather | 32 | $2.10 \%$ |
| Least congestion | 64 | $4.20 \%$ |
| Easier grades or road <br> conditions | 48 | $3.15 \%$ |
| Personal business on this <br> route | 7 | $0.46 \%$ |
| Other | 4 I | $2.69 \%$ |
| Total | 1,523 | $100.00 \%$ |

## Westbound

| Reason Route Chosen | Total | $\%$ |
| :--- | ---: | ---: |
| Truck based on this route | I 44 | $8.08 \%$ |
| Trip stop/start on this <br> route | 16 | $0.90 \%$ |
| Shortest/fastest route | $\mathrm{I}, 496$ | $83.90 \%$ |
| Better weather | 8 | $0.45 \%$ |
| Least congestion | 55 | $3.08 \%$ |
| Easier grades or road <br> conditions | 13 | $0.73 \%$ |
| Personal business on this <br> route | 5 | $0.28 \%$ |
| Other | 46 | $2.58 \%$ |
| Total | 1,783 | $100.00 \%$ |

Overall Totals:
Spring \& Fall

| Reason Route Chosen | Total | $\%$ |
| :--- | ---: | ---: |
| Truck based on this route | $\mathrm{I}, \mathrm{I} 22$ | $10.25 \%$ |
| route | 270 | $2.47 \%$ |
| Shortest/fastest route | 8,699 | $79.46 \%$ |
| Better weather | 67 | $0.61 \%$ |
| Least congestion | 352 | $3.22 \%$ |
| conditions | 163 | $1.49 \%$ |
| route | 47 | $0.43 \%$ |
| Other | 228 | $2.08 \%$ |
| Total | 10,948 | $100.00 \%$ |

Table 4-98: Summary of Route Choice - Fall Season
Location: Boron Rest Stop

Eastbound

| Reason Route Chosen | Total | $\%$ |
| :--- | ---: | ---: |
| Truck based on this route | 18 I | $20.02 \%$ |
| Trip stop/start on this route | 28 | $3.10 \%$ |
| Shortest/fastest route | 648 | $71.68 \%$ |
| Better weather | 3 | $0.33 \%$ |
| Least congestion | 31 | $3.43 \%$ |
| Easier grades or road <br> conditions | 13 | $1.44 \%$ |
| Personal business on this <br> route | 0 | $0.00 \%$ |
| Other | 0 | $0.00 \%$ |
| Total | 904 | $100.00 \%$ |

Westbound

| Reason Route Chosen | Total | \% |
| :--- | ---: | ---: |
| Truck based on this route | 40 | $3.50 \%$ |
| Trip stop/start on this <br> route | 18 | $1.58 \%$ |
| Shortest/fastest route | $\mathrm{I}, 058$ | $92.64 \%$ |
| Better weather | 2 | $0.18 \%$ |
| Least congestion 20 $1.75 \%$ <br> Easier grades or road <br> conditions 3 $0.26 \%$ <br> Personal business on this <br> route I $0.09 \%$ <br> Other $\mathrm{I}, \mathrm{I} 42$ I | $0.00 .00 \%$ |  |
| Total |  |  |

Location: CHP Weigh Station

Eastbound

| Reason Route Chosen | Total | $\%$ |
| :--- | ---: | ---: |
| Truck based on this route | 172 | $\mathrm{II} .18 \%$ |
| Trip stop/start on this route | 28 | $1.82 \%$ |
| Shortest/fastest route | 1,234 | $80.18 \%$ |
| Better weather | 10 | $0.65 \%$ |
| Least congestion | 38 | $2.47 \%$ |
| Easier grades or road <br> conditions | 40 | $2.60 \%$ |
| Personal business on this <br> route | 17 | $1.10 \%$ |
| Other | 0 | $0.00 \%$ |
| Total | 1,539 | $100.00 \%$ |

Westbound

| Reason Route Chosen | Total | \% |
| :--- | ---: | ---: |
| Truck based on this route | 47 | $3.17 \%$ |
| Trip stop/start on this <br> route | 43 | $2.90 \%$ |
| Shortest/fastest route | 1,364 | $91.91 \%$ |
| Better weather | 2 | $0.13 \%$ |
| Least congestion | 21 | $1.42 \%$ |
| Easier grades or road <br> conditions | 4 | $0.27 \%$ |
| Personal business on this <br> route | 3 | $0.20 \%$ |
| Other | 0 | $0.00 \%$ |
| Total | 1,484 | $100.00 \%$ |

Overall Totals:

| Reason Route Chosen | Total | $\%$ |
| :--- | ---: | ---: |
| Truck based on this route | 440 | $8.68 \%$ |
| Trip stop/start on this route | 117 | $2.31 \%$ |
| Shortest/fastest route | 4,304 | $84.91 \%$ |
| Better weather | 17 | $0.34 \%$ |
| Least congestion | 110 | $2.17 \%$ |
| Easier grades or road <br> conditions | 60 | $1.18 \%$ |
| Personal business on this <br> route | 21 | $0.41 \%$ |
| Other | 0 | $0.00 \%$ |
| Total | 5,069 | $100.00 \%$ |

## 4. 13 Truck Driver Suggestions

Question II of the truck intercept survey asks the drivers if they have any suggestion to improve transportation for truckers in the area. Of the 6,042 surveys conducted during the Spring_period, 3,723 valid responses were recorded yielding a question response rate of $61.6 \%$. The following provides a statistical summary by location and direction:

Table 4-99: Statistical Summary of Question I I Responses (Spring)

| Location |  | Surveys | Responses |  |
| :--- | :--- | ---: | ---: | ---: |
|  |  | Total | $\%$ |
| Boron Rest Stop | EB |  | 1,035 | 697 | $67.34 \%$ |
|  | WB | 1,579 | 1,294 | $81.95 \%$ |
| CHP Weigh Station | EB | 1,629 | 779 | $47.82 \%$ |
|  | WB | 1,799 | 953 | $52.97 \%$ |
| Total |  | 6,042 | 3,723 | $61.62 \%$ |

Of the 5,295 surveys conducted during the Fall period, 3,102 valid responses were recorded yielding a question response rate of $58.58 \%$. The following provides a statistical summary by location and direction:

Table 4-100: Statistical Summary of Question II Responses (Fall)

| Location |  | Surveys | Responses |  |
| :--- | :--- | ---: | ---: | ---: |
|  | Direction | Total | Total | $\%$ |
| Boron Rest Stop |  | 963 | 499 | $5 \mathrm{I} .82 \%$ |
|  | WB | $\mathrm{I}, 2 \mathrm{I} 9$ | 953 | $78.18 \%$ |
| CHP Weigh Station | EB | $\mathrm{I}, 572$ | 752 | $47.84 \%$ |
|  | WB | $\mathrm{I}, 54 \mathrm{I}$ | 898 | $58.27 \%$ |
| Total |  | 5,295 | $3, \mathrm{I} 02$ | $58.58 \%$ |

The answers to the question from the Spring and Fall surveys are summarized for all locations. Tables 4IOI and 4-102 provide the summary of responses.

Table 4-10I: Summary of Transportation Improvements - Spring Season

Location: Boron Eastbound Rest Stop

| Response |  | Approximate \% |
| :---: | :--- | :---: |
| I | Increase the speed limit | $25 \%$ |
| 2 | Add/widen lanes | $20 \%$ |
| 3 | Repair/maintain the road | $15 \%$ |
| 4 | More rest stops | $5 \%$ |
| 5 | Everything is good | $5 \%$ |
| 6 | No split in speed limit | $5 \%$ |
| 7 | Cheaper gas | $5 \%$ |
| 8 | Cleaner rest areas | Less Than 5\% |
| 9 | No more surveys | Less Than 5\% |
| 10 | Reduce CHP presence | Less Than 5\% |

Location: CHP Eastbound Weigh Station

| Response |  | Approximate \% |
| :---: | :--- | :---: |
| 1 | Increase the speed limit | $40 \%$ |
| 2 | Repair/maintain the road | $20 \%$ |
| 3 | Add/widen lanes | $15 \%$ |
| 4 | Everything is good | $15 \%$ |
| 5 | More rest stops | $10 \%$ |
| 6 | Cheaper gas | $5 \%$ |
| 7 | No split in speed limit | Less Than 5\% |
| 8 | More lighting on roads | Less Than 5\% |
| 9 | Less scales | Less Than 5\% |
| 10 | Too many hills | Less Than 5\% |

Location: Boron Westbound Rest Stop

| Response |  | Approximate \% |
| :---: | :--- | :---: |
| I | Add/widen lanes | $30 \%$ |
| 2 | Increase the speed limit | $25 \%$ |
| 3 | Repair/maintain the road | $5 \%$ |
| 4 | More rest stops | $5 \%$ |
| 5 | Cheaper gas | $5 \%$ |
| 6 | Everything is good | Less Than 5\% |
| 7 | No split in speed limit | Less Than 5\% |
| 8 | Wind warnings | Less Than 5\% |
| 9 | Allow trucks to idle | Less Than 5\% |
| 10 | Remove railroad tracks | Less Than 5\% |

Location: CHP Westbound Weigh Station

| Response |  | Approximate \% |
| :---: | :--- | :---: |
| I | Increase the speed limit | $35 \%$ |
| 2 | Add/widen lanes | $20 \%$ |
| 3 | Repair/maintain the road | $10 \%$ |
| 4 | More rest stops | $5 \%$ |
| 5 | Cheaper gas | $5 \%$ |
| 6 | No split in speed limit | $5 \%$ |
| 7 | Everything is good | Less Than 5\% |
| 8 | More lighting on roads | Less Than 5\% |
| 9 | More signage | Less Than 5\% |
| 10 | Less scales | Less Than 5\% |

Table 4-102: Summary of Transportation Improvements - Fall Season

## Location: Boron Eastbound Rest Stop

| Response |  | Approximate \% |
| :---: | :--- | :---: |
| I | Increase the speed limit | $40 \%$ |
| 2 | Repair/maintain the road | $20 \%$ |
| 3 | Add/widen lanes | $15 \%$ |
| 4 | More rest stops | $5 \%$ |
| 5 | Everything is good | $5 \%$ |
| 6 | No split in speed limit | $5 \%$ |
| 7 | More parking | Less Than 5\% |
| 8 | More lighting | Less Than 5\% |
| 9 | Losen idle regulations | Less Than 5\% |
| 10 | Driver education | Less Than 5\% |

Location: CHP Eastbound Weigh Station

| Response | Approximate \% |  |
| :---: | :--- | :---: |
| I | Increase the speed limit | $20 \%$ |
| 2 | Repair/maintain the road | $20 \%$ |
| 3 | Add/widen lanes | $15 \%$ |
| 4 | More rest stops | $15 \%$ |
| 5 | No split in speed limit | $10 \%$ |
| 6 | Everything is good | $5 \%$ |
| 7 | More parking | Less Than 5\% |
| 8 | Better signage | Less Than 5\% |
| 9 | Move weigh station because of blind <br> curve | Less Than 5\% |
| 10 | Keep speed limit the same | Less Than 5\% |

Location: Boron Westbound Rest Stop

| Response |  | Approximate \% |
| :---: | :--- | :---: |
| I | Increase the speed limit | $30 \%$ |
| 2 | Repair/maintain the road | $25 \%$ |
| 3 | More rest stops | $15 \%$ |
| 4 | Add/widen lanes | $10 \%$ |
| 5 | More parking | $5 \%$ |
| 6 | Everything is good | Less Than 5\% |
| 7 | No split in speed limit | Less Than 5\% |
| 8 | Fix the railroad tracks | Less Than 5\% |
| 9 | More CHP | Less Than 5\% |
| 10 | Driver education | Less Than 5\% |

Location: CHP Westbound Weigh Station

| Response |  | Approximate \% |
| :---: | :--- | :---: |
| 1 | Add/widen lanes | $35 \%$ |
| 2 | Increase the speed limit | $20 \%$ |
| 3 | Repair/maintain the road | $15 \%$ |
| 4 | More rest stops | $5 \%$ |
| 5 | Everything is good | $5 \%$ |
| 6 | No split in speed limit | $5 \%$ |
| 7 | More parking | Less Than 5\% |
| 8 | More lighting | Less Than 5\% |
| 9 | More trees in rest areas | Less Than 5\% |
| 10 | Driver education | Less Than 5\% |

### 5.0 COMMERCIAL FLEET OPERATOR SURVEY

## 5.I Approach

This chapter summarizes results from telephone interviews with firms that use SR-58 between Bakersfield and Barstow. Using multiple sources, Tioga compiled a list of likely fleet truck operators for this survey. This list included both businesses in the study area that were likely to operate their own vehicles, and trucking companies likely to operate in the study area. That list contained over 300 names, Table 5-I shows the list of businesses. All telephone numbers were called, multiple times if required. This process resulted in contact with 267 firms (other firms did not respond or return calls).

Most participants either did not operate their own trucks, or did not use the route enough to respond to the survey. Only 27 indicated that they operated their own trucks and used the route regularly. Tioga completed interviews with 20 of those (others were not able to complete the interview or did not have sufficient information to do so).

Figure 5-I shows the locations of these candidate firms in the study area. As the map suggests, trucking fleets are typically located near population centers - e.g. Bakersfield, Tehachapi, Mojave, and Barstow. Some are also located at production points such as quarries and growing areas.

Based on responses that gave other names or firms, Tioga augmented its original list and obtained responses from additional firms using the study route. From the Kern COG Tioga also received a list of distribution centers located in or near Kern County. Table 5-2 summarizes the list of distribution centers.

Tioga contacted each of these and, where appropriate, other firms that provided trucking services to or from the distribution centers. The survey results reflect information received from these contacts.

Tioga also contacted truck stops and truck tow and repair services along the route to inquire about other fleet operators that may have been overlooked. This resulted in a small number of additional names, all of which were contacted. Overall, 32 firms from all sources said they used the study route and completed interviews.

Table 5-3 gives the final list of firms that responded to the survey and used SR-58.

## (COA CORPORATION <br> PLANNING \& ENGINEERING

Table 5-I: Initial Survey Candidate List

| Name | City | Name | City | Name | City | Name | City |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Agricare | Arvin | Quality Fabrics \& Supply Co. | Bakersfield | HPS Mechanical Inc. | Bakersfield | ARC Towing | Barstow |
| Key Cold Storage | Arvin | Calcot Ltd | Bakersfield | Kim Marrs Excavation | Bakersfield | Barstow Repair Center | Barstow |
| ALG Enterprises | Arvin | Progressive Farms | Bakersfield | Pacific Pipeline System | Bakersfield | Fast Trac Towing | Barstow |
| Caliente Farms | Arvin | Johnston Farms | Bakersfield | Ruben's Pipeline | Bakersfield | Paso Auto Towing | Barstow |
| El Rancho Farms | Arvin | Cummins West Inc | Bakersfield | Sandoval Construction | Bakersfield | Y2k Auto Wrecking | Barstow |
| Grimmway Farms | Arvin | Banner Farms Inc | Bakersfield | Ventura Directional Drilling | Bakersfield | Extreme Marine | Barstow |
| Grimmway Farms | Arvin | Cattani \& Sons | Bakersfield | West Valley Construction Co | Bakersfield | California Cylinder Corp | Barstow |
| Bugni Hardware \& Feed | Arvin | Corotto Co. | Bakersfield | Mojave Pipeline Operating Co | Bakersfield | Arrowhead Rockdrill Inc | Barstow |
| Hydratec | Arvin | Grimmway Farms | Bakersfield | GE Aeroderivative \& Package | Bakersfield | De Loss Crane \& Rigging Inc | Barstow |
| Arvin Glass | Arvin | Johnston Farms | Bakersfield | Landstar Inway inc | Bakersfield | De Loss Crane \& Rigging Inc | Barstow |
| Garcia Family Farms | Arvin | Kundert Brothers Farms | Bakersfield | Valley Propane Service | Bakersfield | H \& B Mechanical Inc | Barstow |
| Gold Ribbon Potato Co. | Arvin | Lehr Brothers, Inc. | Bakersfield | ATB Material Handling | Bakersfield | H \& E Do It Yourself Center | Barstow |
| Green Valley Packers LLC | Arvin | Toy's Turf | Bakersfield | Newby Rubber Co. | Bakersfield | T E Deloss Equipment Rentals | Barstow |
| John J Kovacevich \& Sons | Arvin | William Bolthouse Farms Inc | Bakersfield | Bulk Yard | Bakersfield | Apple Valley Dairy | Barstow |
| Kern Ridge Growers LLC | Arvin | San Joaquin Valley Dairy Equipment | Bakersfield | Triple E Trucking | Bakersfield | Consolidated Electrical Distributor | Barstow |
| Kerschman Enterprises | Arvin | Sunrise Sprayers | Bakersfield | Armstrong Distributing Co | Bakersfield | Smith's Feed \& Farm Supply | Barstow |
| Scale House | Arvin | Bakersfield Irrigation Co. | Bakersfield | Frazier Industrial Co. | Bakersfield | McCoy's Country Feed \& Supply | Barstow |
| Sunview Vineyards | Arvin | C \& W Irrigation Inc. | Bakersfield | Agro Chemical | Bakersfield | Barstow Fuel | Barstow |
| Trino Packing \& Cold Storage | Arvin | J H Biotech Inc. | Bakersfield | Best Weigh Scale Co inc. | Bakersfield | Appliance \& Furniture Outlet | Barstow |
| White Wolf Potato Co. | Arvin | M\&M Boys Irrigation | Bakersfield | Delta Scale | Bakersfield | Armando's Furniture Warehouse | Barstow |
| Green Earth Resources Inc | Arvin | Mazzei injector Corp | Bakersfield | Fleet Parts \& Instruments Co | Bakersfield | Barstow Flooring \& Home | Barstow |
| Blackburn Oil Co. LLC | Arvin | Pacific Irrigation Inc. | Bakersfield | FMP Vineyards | Bakersfield | Hometown Furniture | Barstow |
| De Le Garza Trucking Co. | Arvin | Sierra Valley Ag Supply | Bakersfield | General Scales Inc | Bakersfield | All Star Glass | Barstow |
| Ojeda Trucking | Arvin | Simplot Soilbuilders | Bakersfield | Kern River Scale | Bakersfield | Barstow Glass \& Mirror | Barstow |
| Bakersfield Auto Auction | Bakersfield | Western Nutrients Corp/Western Mixers | Bakersfield | D-J Manufacturing Inc | Bakersfield | Haver Glass Co | Barstow |
| Best Value Furniture Warehouse | Bakersfield | World Seed | Bakersfield | Brock's Trailers | Bakersfield | Home Depot | Barstow |
| Copart Salvage Auto Auctions | Bakersfield | Alvarez Feed \& Pet | Bakersfield | Bartley Trucking | Bakersfield | Valley Ace Lumber \& Hardware | Barstow |
| Dunlap Auto Sales | Bakersfield | East Hill Feed \& Supply | Bakersfield | Cox Petroleum Transport | Bakersfield | Barstow Industrial Supply | Barstow |
| Benchmark Apiaries | Bakersfield | Re Screen \& Glass | Bakersfield | Cox Petroleum Transport Co. | Bakersfield | High Desert Appliances | Barstow |
| Happie Bee Co. | Bakersfield | Bolt house Farms -- Shipping Dept. | Bakersfield | ISD Transportation | Bakersfield | Metal Shop | Barstow |
| Arvin Building Materials | Bakersfield | David L Moore Farms | Bakersfield | Pacific Transport Refrigeration | Bakersfield | Allstate Express Moving | Barstow |
| E. A. Shields Inc. | Bakersfield | Stillwell Equipment Sales | Bakersfield | Bakersfield Cotton Warehouse | Bakersfield | Barsrow Transfer \& Storage | Barstow |
| Mid-Cal Materials Inc. | Bakersfield | Sully \& Sons Hydraulics Inc | Bakersfield | BS\&E Co Inc. | Bakersfield | Fidelity Moving Co Inc | Barstow |
| Vulcan Materials Co. | Bakersfield | Golden State Metals | Bakersfield | Flashco | Bakersfield | Pro Flame | Barstow |
| Walco International | Bakersfield | Sunridge Nurseries | Bakersfield | Virginia Ford Trucking, Inc. | Bakersfield | Silver Valley Propane | Barstow |
| Kern Chemical \& Equipment Co. | Bakersfield | Zack's Big Tree Nursery | Bakersfield | Western Warehouse | Bakersfield | Barstow Refrigeration | Barstow |
| Sierra Recycling \& Demolition | Bakersfield | Atlantic Oil Co. | Bakersfield | Indoff inc | Bakersfield | Clemmer Services Inc | Barstow |
| Bakersfield Cold \& Dry Storage | Bakersfield | Jr Pallets | Bakersfield | Galbraith's Horse Trailer Sales | Bakersfield | H \& B Refrigerations Service | Barstow |
| Kern Ice \& Cold Storage Co. | Bakersfield | Kimber Pallets | Bakersfield | Barstow Auto Sales | Barstow | High Desert Refrigeration | Barstow |
| United States Cold Storage | Bakersfield | Kimber Pallets | Bakersfield | Eugene Villanueva Jeep | Barstow | Ice Machine Service | Barstow |
| R \& N Enterprises | Bakersfield | Kern Oil \& Refining | Bakersfield | Ideal Auto Center | Barstow | Barstow Transfer \& Storage | Barstow |
| Central Valley Packaging | Bakersfield | Wholesale Fuel, Inc. | Bakersfield | Soutar's Chrysler Dodge Jeep | Barstow | Miller Transfer \& Storage | Barstow |
| Frank H. Guidera Co | Bakersfield | Brown \& Fowler Construction | Bakersfield | Soutar's Ford Lincoln Mercury | Barstow | Cardiff Trucking | Barstow |
| Peter Deboer Dairy | Bakersfield | Griffith Co | Bakersfield | A-I Auto Wreckers | Barstow | G E Transportation | Barstow |

## CCROA CORPORATION <br> PLANNING \& ENGINEERING

Table 5-I: Initial Survey Candidate List (Continued)

| Name | City | Name | City | Name | City | Name | City |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Garrett Moving \& Storage | Barstow | Progress Rail Service | Mojave | Bidart Bros Apple Packing | Shafter | Tehachipi Furniture \& Mattress | Tehachapi |
| M V Transportation | Barstow | Valpey's Auto \& Truck Salvage | Mojave | H \& D Trucking | Squaw Valley | Integrity Glass | Tehachapi |
| Pilot Transportation | Barstow | Bell Aviation Service | Mojave | Unique Bacterial Distributors | Tehachapi | Safelite Auto Glass | Tehachapi |
| Roman Trucking | Barstow | Capsed Ltd | Mojave | Dublos Chemical | Tehachapi | Tehachipi Auto Glass | Tehachapi |
| Burtec Waste/Desert Disposal Service | Barstow | Derringer Aircraft Co LLC | Mojave | Adee Honey Farms | Tehachapi | Hartnett Apple Farm | Tehachapi |
| Big Snowy Resources LP | Boron | Hidden Valley Helicopters | Mojave | L W Spiro \& Assoc | Tehachapi | Techachipi Mountain Vineyard | Tehachapi |
| US Borax Inc | Boron | National Test Pilot School | Mojave | Double R Car Co | Tehachapi | Central Valley Steel Buildings | Tehachapi |
| Cal Sanitation-Kramer Service | Boron | P \& M Aircraft | Mojave | Tehachipi Auto Sales | Tehachapi | Home Depot | Tehachapi |
| Lift Tech | California City | Voyager Aerospace | Mojave | Front Line Auto Sales | Tehachapi | Pioneer Home Center | Tehachapi |
| Benz Propane | California City | Antelope Valley General Aviation | Mojave | Hiway Motors | Tehachapi | Tehachipi Lumber Co | Tehachapi |
| Whites Auto Dismantling | California City | Kieff \& Sons Ford | Mojave | Abbey Carpet of Tehachipi | Tehachapi | A-I Appliance \& Air Conditioning | Tehachapi |
| McClusky Machinery | Edison | Paradise Motorz | Mojave | Cottage Carpets | Tehachapi | A-I Appliance \& Air Conditioning | Tehachapi |
| Buds Oil Co. | Edison | Proto Flight | Mojave | Inner-Spec Tile \& Design | Tehachapi | Oak Valley Appliance | Tehachapi |
| Desert View Dairy | Hinkley | Carder's truck Repair | Mojave | Moses-Master Carpet | Tehachapi | Quartz Hill Mechanical | Tehachapi |
| Austin \& Austin | Keene | Mojave Motors | Mojave | B S \& E Equipment Rental | Tehachapi | Sears Roebuck \& Co | Tehachapi |
| Maxco Supply | Lamont | Ramos-Strong Inc | Mojave | Benz Sanitation/Tehachipi Sanitation | Tehachapi | Just Johnson Tehachipi | Tehachapi |
| Grimmway Farms | Lamont | Doomid Inc. | Mojave | Solveson Crane Co | Tehachapi | Carlton Global Resources LLC | Tehachapi |
| Cal Organic Farms | Lamont | Ramos-Strong Inc | Mojave | Tehachipi Dismantling \& Equipment | Tehachapi | CTV | Tehachapi |
| Kirschenmann Enterprises, inc | Lamont | S \& Y Carpet \& Furniture | Mojave | Foothill Farms | Tehachapi | Benz Propane | Tehachapi |
| Calpine Containers | Lamont | Highway Glass | Mojave | Keene Ranch | Tehachapi | Tehachipi Rock \& Landscape | Tehachapi |
| Del Campo Trucking | Lamont | Jaco Oil | Mojave | Loop Ranch | Tehachapi | Ward Automatic Machine Products | Tehachapi |
| Mountain Propane | Lancaster | Paramount Petroleum Corp | Mojave | Morning Star Ranch | Tehachapi | Wasco Inc | Tehachapi |
| Suburban Propane | Lancaster | Oasis Protective Covers | Mojave | Mountain Delights | Tehachapi | H B Trucking | Tehachapi |
| Nickolson Trucking | Minden | ESI Operating Svc | Mojave | Nunes Ranch | Tehachapi | West-Mark | Tehachapi |
| Interorbital Systems | Mojave | Ridgetop Energy LLC | Mojave | Old Town Ranch | Tehachapi | Wade Trucking | Tehachapi |
| Voyager Aerospace | Mojave | Got Rocks | Mojave | Pass Creek Ranch | Tehachapi | M L Enterprise Warehouse | Tehachapi |
| Xcor Aerospace | Mojave | United Rentals | Ridgecrest | Tanglewood Farm | Tehachapi | Hartman's H2o Trucking | Tehachapi |
| Nikior Chemical | Mojave | Mom's Furniture | Ridgecrest | Tranquility Farm | Tehachapi | American Borate Co | Yermo |
| PPG Aerospace | Mojave | BCI Trucking | Ridgecrest | Hemme Hay \& Feed | Tehachapi |  |  |
| Desert Truck Service | Mojave | Bertrand Enterprises | Ridgecrest | Ranch Service \& Supply Co | Tehachapi |  |  |
| Doomid, Inc. | Mojave | Boydston Construction Co. | Ridgecrest | Alton's Furniture Gallery | Tehachapi |  |  |
| East Kern Airport District | Mojave | SPG Fork Lift | Rosamond | Furniture Outlet New \& Used | Tehachapi |  |  |
| Hansen Enterprises | Mojave | Feed Works | Rosamond | Hillside Interiors | Tehachapi |  |  |
| Price Saver Truck Stop | Mojave | Delta Liquid Energy | Rosamond | R \& P Designs | Tehachapi |  |  |



## KOA CORPORATION

PLANNING \& ENGINEERING
Table 5-2: Distribution Center List

| Name | Street Address | City | Type |
| :--- | :--- | :--- | :--- |
| Target Dist. Center | 3880 Zachary Avenue | Shafter | Retail |
| Cal Cot | P.O. Box 259 | Bakersfield | Agriculture |
| Frito Lay | 2280 I Highway 58 | Bakersfield | Food |
| Car Quest | 34928 McMurty Avenue | Bakersfield | Retail |
| Walmart | I250 W. Henderson Ave. | Porterville | Retail |
| Paramount | I90I S. Lexington St. | Delano | Agriculture |
| Tejon Ranch/IKEA Dist.Center | 4436 Lebec Road | Lebec | Information |
| Nestles | 730 I District Boulevard | Bakersfield | Food |
| Heidelberg Cement | I3573 Tehachapi Blvd. | Tehachapi | Industrial |
| Portland Cement | 9350 Oak Creek Road | Mojave | Industrial |
| Western United Dairymen | I3I5 K Street | Modesto | Agriculture |
| Rio Bravo Tomato Co. LLC | PO Box 5I5 | Buttonwillow | Agriculture |

Table 5-3: Fleet Survey Respondents

| Name | Type | Use | Comments on SR-58 Use |
| :---: | :---: | :---: | :---: |
| Barstow Fuel | Fuel Oil | Infrequent | Too infrequently to comment |
| Bartley Trucking | Trucking | Weekly to Daily | Uses SR-58, but gave no details |
| Benchmark Apiaries | Beekeeper | Frequent - small trucks | Use often, but only with pickups |
| Benz Propane | Propane Distributor | Weekly to Daily | Daily propane distribution runs |
| Benz/Tehachapi Sanitation | Sanitation | Weekly to Daily | Uses daily, but gave no details. |
| Bolthouse Farms | Grower-Shipper | Infrequent | Very rarely use, but not regularly enough to comment |
| Calcot Ltd | Cotton sales | Outside truckers | Only use outside truckers |
| Carquest | Auto Parts | Frequent - small trucks | Daily deliveries as far as Bishop |
| Cox Petroleum Transport | Trucking | Multiple Daily | Petroleum products -- est. I, 000+ weekly trips |
| Cox Petroleum Transport Co. | Trucking |  | See above |
| De Le Garza Trucking Co. | Trucking | Seasonal/Project | About 20 trips/week in season. (Jan-Mar) Carrots |
| Delta Liquid Energy | Petroleum products | Weekly to Daily | Regular delivery of petroleum products |
| Frito-Lay | Food Products | Frequent - small trucks | 21 weekly delivery routes use SR-58. Sometimes to LA |
| Garrett Moving \& Storage | Trucking | Weekly to Daily | Use I-5 times weekly for household goods moving |
| Grimmway Farms | Farm | Seasonal/Project | Many times daily in season, but Juarez does all trucking |
| Happie Bee Co. | Beekeeper | Frequent - small trucks | Use often, but only with pickups |
| ISD Transportation | Trucking | Weekly to Daily | 7+ weekly rt's. Produce to East, Gen'I merchandise to West |
| Keystone Transportation | Target Dedicated Trucker | Weekly to Daily | Use daily to Palmdale, Lancaster \& Apple Valley |
| Lawson Trucking | Trucking | Seasonal/Project | No trips now, but sometimes 100+ weekly. Rock, etc. |
| Lehigh/Southwest Cement | Cement | Infrequent | 60 weekly trips. Deliver cement, return empty. Regional |
| Mountain Propane | Gas Sales | Weekly to Daily | Regular propane deliveries |
| Patterson Motor Freight | Trucking | Weekly to Daily | 2 weekly trips each direction. Oilfield equip to TX \& WY |
| Pro Flame | Propane Distributor | Weekly to Daily | Twice weekly for propane deliveries |
| Ramos-Strong Inc | Fuel Dealer | Weekly to Daily | Uses daily for petroleum product delivery |
| Silver Valley Propane | Propane Distributor | Infrequent | Use for propane deliveries, but too little to comment |
| Suburban Propane | Lubricating Oils | Weekly to Daily | Regular delivery of petroleum products |
| Swift Transportation | Target Dedicated Trucker | Infrequent | Use SR-58 only if Grapevine closed |
| Tehachapi Lumber Co | Lumber | Infrequent | Uses infrequently for lumber delivery in local area |
| Triple E Trucking | Sand \& Gravel | Multiple Daily | Around 300 weekly trips. Sand, gravel, etc. |
| Valley Propane Service | Propane Sales | Weekly to Daily | Regular propane delivery route ( 14 times weekly) |
| Virginia Ford Trucking, Inc. | Trucking | Multiple Daily | I00's of weekly trips. Sand, gravel, etc. Kern County only |
| Wade Trucking | Trucking | Multiple Daily | 15-20 trips weekly. Carries bulk cement |
| Wholesale Fuel, Inc. | Petroleum Products | Multiple Daily | Runs regular petroleum product delivery routes ( $70+/ \mathrm{wk}$ ) |

The respondents provide a good variety of operators and services. About two-thirds of the respondents were commercial carriers, and the remainder were private fleets. The respondents represent about equal numbers of national, regional and local carriers. About half of the respondents were based in Bakersfield, about forty percent were based elsewhere in the study area, and about ten percent were based outside the study area. Figure 5-2 shows a sample of truck fleet locations near SR58 in Bakersfield.

The commodities hauled varied from produce and food products to petroleum products, general merchandise and specialized equipment.


### 5.2 Local Users

Haulers of sand, gravel, rock and asphalt reported the heaviest local use of SR-58. One respondent in this category reported "hundreds of trips per day" on that route. Another estimated over 300 trips per week. These firms reported that their use of SR-58 depending largely on paving projects. Their use increased in the summer, and virtually halted in the winter. They normally did not re-route their trucks during storms because there was no paving work done during a storm. Their overall use of the study route increased in the last five years. No other large category of users estimated usage in these magnitudes.

One petroleum hauler had its operations adjacent to SR-58 in eastern Bakersfield, and reported extremely heavy usage (running at perhaps 2,000 to 3,000 trips per week). Its use has increased as oil prices have risen, and Kern County pumping has changed.

Other local carriers involved wholesale delivery of petroleum products (primarily gasoline and propane) to dealers, and to individual customers. There were similar periodic delivery routes for food products and auto parts. Most Less-than-Truckload (LTL) activity reported fell into this category (i.e. supplying local outlets on periodic delivery routes). There were also various service routes such as apiaries and septic service, but these involved pickup-sized vehicles rather than large trucks.

Most of the local activity centered on Bakersfield, but there were also some local delivery routes in the area from Tehachapi to Mojave, and in the area surrounding Barstow.

### 5.3 Regional Activities

The great bulk of the regional activity reported came in hauls to and from the Los Angeles area. Here, truckers use SR-58 for at least three different reasons:

- As a primary route for shipment, usually to the eastern areas such as San Bernardino and Riverside Counties;
- As an alternative to l-5 over the Grapevine during storms; and
- As a preferred alternative to $\mathrm{I}-\mathrm{IO}$ and $\mathrm{I}-2 \mathrm{IO}$ for shipments to eastern Los Angeles County when traffic congestion slows the Los Angeles County east-bound routes.

Virtually all of the users to or from the Los Angeles and Inland Empire areas reported using US-395 through Adelanto to connect with SR-58, although a few reported using SR-I4 through Lancaster and Palmdale.

A very great number of respondents reported that $S R-58$ is less affected by adverse weather and route conditions than is I-5, and they re-route trucks over SR-58 often during the winter months. In addition, almost all respondents found SR-58 less crowded than the Los Angeles County eastbound freeways, such as I-IO or I-2IO, and I-5. Although the overall length of I-5 was shorter, it often took longer. Many of the dispatchers commented that their drivers had far fewer complaints about SR-58 than they did about other routes, although virtually all of them expressed concern about the area near Kramer Junction (see discussion below).

### 5.4 National Activities

Those reporting national activities largely used SR-58 to haul goods to points east using I-I5 through Las Vegas, although some reported using l-40 and I-IO. Produce was the most common commodity reported on eastbound shipments, with general merchandise most likely to come west. Other than at Bakersfield, no carrier with national operations reported any base, terminal or layover location on the study route.

### 5.5 Study Area Fleets

There were a variety of fleets based in the study area. All of these were in Bakersfield, except for one moving company in Barstow. The rock/sand/gravel/asphalt and the petroleum delivery fleets dispatch their trucks several times a day, and account for the great bulk of total trips reported. Most of these reported only regional or local activity.

The only LTL deliveries reported were those making regular delivery routes for petroleum products, food products and auto parts. ${ }^{1}$ These were also the only respondents reporting regular use of SR-I4 northbound to the Bishop area. These respondents usually reported that they would make deliveries on a regular schedule, regardless of the amount of the load, and were usually equipped to supply product to customers in severe weather.

There were also a few operators of fleets with national scope in Bakersfield. They would normally dispatch one vehicle or less eastbound per day, and would receive one vehicle westbound as well. This was full truckload service. One respondent, who hauled oilfield equipment nationwide, reported making LTL shipments, however.

### 5.6 Operational Metrics

### 5.6.I Usage

Since most of the respondents did not report usage of SR-58, these results reflect only those who actually reported use of the study area. Most reported between 10-20 weekly trips. About fifteen percent reported fewer than 10 weekly trips, while about twenty percent reported $20-50$ trips per week. As reported earlier, the paving and construction material suppliers and petroleum transporters reported the heaviest usage; one estimated over 2,000 weekly trips. The construction material haulers emphasized that their usage depended on the number of paving and construction jobs, and thought they may see less activity if construction continues to decrease. Conversely, the petroleum haulers believed

[^0]that they were seeing increased activity due to the higher price of petroleum, and that this would probably continue if the price of petroleum stayed high.

The LTL delivery route operators reported between two and three supply trips weekly each. They all reported additional trips as needed, however. The full truckload operators reported trips originating daily, although there appeared to be fewer doing so on Sundays.

Two carriers reported lower business in the last five years. Five reported increases. Most reported fairly steady business during that time period.

### 5.6.2 Seasonality

While most operators reported some seasonality, there was no uniformity as to the season. General merchandise carriers reported increases in October and November. Produce haulers generally reported more traffic in summer and little in winter, but carrot haulers reported January - March as their biggest season. Construction-dependent operators reported more activity in summer and very little from December - March. Petroleum product suppliers reported variations in amounts delivered through the seasons, but most reported that this affected the load, rather than the frequency of trips.

### 5.6.3 Equipment and Commodities Transported

Most carriers operate semi tractor-trailers (a separate tractor pulling one or more trailers), although the petroleum-product and cement suppliers often use straight trucks (a single unit such as a cement mixer or dump truck). The respondents reported a great variety of goods transported, from foodstuffs to petroleum products. No generalization was possible with the responses provided.

### 5.7 Adverse Weather

Most respondents reported changes in the use of SR-58 during adverse weather. Specifically, most reported re-routing trucks from l-5 over the Grapevine to SR-58. Most felt that SR-58 was less subject to closure during adverse weather. Some respondents, however, noted that SR-58 was more susceptible to blowing dust, and closure, than l-5. The rock/gravel/sand/asphalt haulers reported no rerouting in adverse weather - if the weather was bad, there would be no need for their product that day.

### 5.8 Comments On Operating Conditions On SR-58

The most common response was that SR-58 was a relatively good route, and that there were few driver complaints compared with alternatives. There were nonetheless certain matters mentioned almost uniformly:

- There is a two-lane stretch at and around Kramer Junction that virtually everyone using that route reported to be dangerous, crowded and slow.
- Most appreciated the added lane at the SR-99/SR-58 junction, but felt that the extra lane should extend further to the east.
- A few respondents felt that there were increased sand and dust problems west of Mojave after the bypass was built, due to inadequate ground cover. All emphasized, however, that they appreciated that bypass.
- Those respondents whose operations were most localized around Bakersfield felt that the road there needed general reconditioning or rebuilding.

Overall, with the exceptions noted above, most respondents felt that their drivers liked the route.


[^0]:    ${ }^{1}$ This study did not attempt to contact parcel services such as UPS or Federal Express. This is discussed in this section on suggested future study.

