

Case Study: Balancing an Integrated State/Federal Transportation Performance Measure Process with Public Participation in a Mid-Size Metropolitan Statistical Area, Kern COG, Bakersfield, CA





6 planners
3 modelers
6 admin staff

Unified Field Theory for Performance Measures (PM)

3 Dimensions of RTP PM Integration in Kern

Geographic Level
System Level (RTP) – Sub Population Level or Project Level (FTIP)

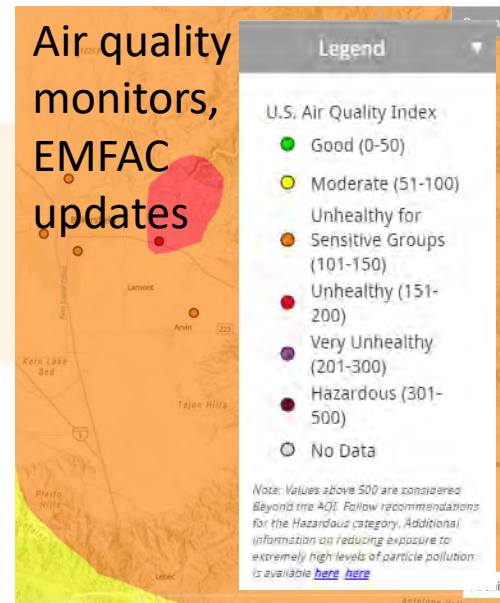
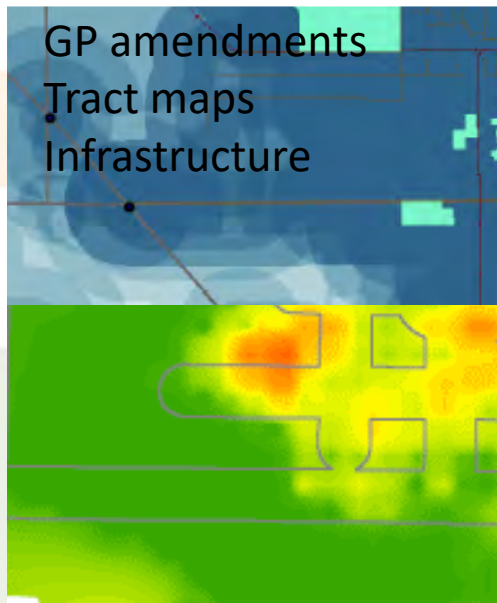
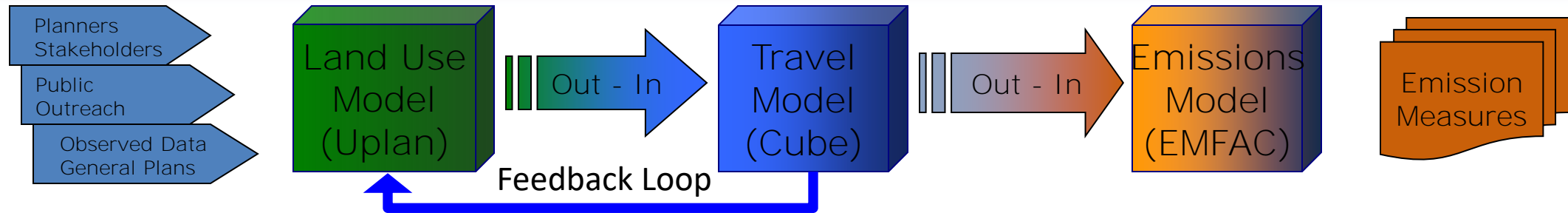
PM

**Public Participation Workshop vs. Plan
Outreach Scenarios — Plan Alternatives**

Data Timeframe
Observed(Fed PMs) — Forecasted(RTP)



Land Use/Travel Model Forecasting Method is Based on Observed (Lag) Data and Update Every 4 years



PMs Measure RTP Goals – Plan, System Level, Travel Model Forecast Data Timeframe (mostly) *RTP Ch. 2 & App. D*

- 1) **Mobility/Health Equity (Tables D4, 5)** – Calculates average trip time by mode (auto and transit) from aggregate Transportation Analysis Zones (TAZs) [**Vehicle hours/trips**]
- 2) **Accessibility/Economic Well-Being/Health Equity (D6, 7)** – Calculates average trip time by mode (auto and transit) to major job centers at the aggregate TAZ level. Accessibility also provides an economic measure by indicating the level of congestion around major job centers that may affect freight movement [**Vehicle hours/trips to job centers**]
- 3) **Efficiency/Cost-Effectiveness (D8, 9)** – Calculates the planned expenditure per passenger miles traveled. Calculates passenger miles traveled by both vehicle and transit networks for current and planned transit projects (increased headway, new routes) and capacity-increasing road project links in future years, at the aggregate TAZ level. These figures are divided by the total investment in these projects and used to calculate their cost-effectiveness [**Person miles traveled/cost**]
- 4) **Livability/Consumer Satisfaction (D10)** – Calculates the average trip delay after feedback between constrained and unconstrained roadways on links at the aggregate TAZ level [**Minutes of delay**]



Kern RTP PMs (continued)

*References
federal
conformity
analysis*

5) Environment/Health Equity (D11) – Calculates **vehicle emissions of NOx per person** for the valley and mountain/desert portions of Kern and PM-10 for the Indian Wells Valley. NOx is a precursor emission for both ozone and particulate matter 2.5 for which the Mojave Desert (including mountain areas) and the San Joaquin Valley portions of Kern have exceeded the federal standards. The Indian Wells Valley portion of Kern has only exceeded the PM-10 standard

6) Environment/Health Equity (D12, 17) – Calculates the percentage change in **households within ¼ mile of roadway volumes greater than 100,000** in urban and the various aggregated TAZ levels

*Similar PM2
but forecast*

7) Sustainability/Preservation (D13) – Provides for maintenance as the system expands

*Stakeholder
requested*

8) Environment/Land Consumption/Health Equity (D16) – Calculates percent change in farmland outside city spheres of influence

8) Equity (D14, 15) – Calculates the passenger miles traveled and compares to the percentage of investment in each area [Percent of **Person Miles Traveled** in and out of analysis areas compared to Percent of Cost]



Kern RTP PMs (continued)

Similar PM3 but forecast **9) Reliability/Congestion (D18)** – Calculates the distance of Level of Service (LOS) D through F links [**Vehicle miles of travel in congestion**]

Similar PM1 but forecast **10) Reliability/Safety/Health Equity (D19)** – Calculates the percentage increase between property damage, injury, and fatal accident rates between base year 2020 and 2046 [**expected accident rates** by type and volume]

11) Federal PM1 Safety/Health Equity (D20) – Calculates **vehicle fatality and serious injury rates per 100M miles traveled, and Bicycle/Pedestrian combined fatality/serious injury rates** per 1000 people

12) Federal PM2 Sustainability/Preservations (D21) – Calculates **percent pavement and bridge condition that is rated good or fair** on National Highway System (NHS) and compare to the target

13) Federal PM3 Mobility/Accessibility (D22) – Calculates **travel time reliability** on NHS using NPMRDS data and compares to the state target

Observed data



2000 – Evolving/Overlapping Plan Geographic Areas

- 10 Federal System Level PMs
- Federal EJ Areas

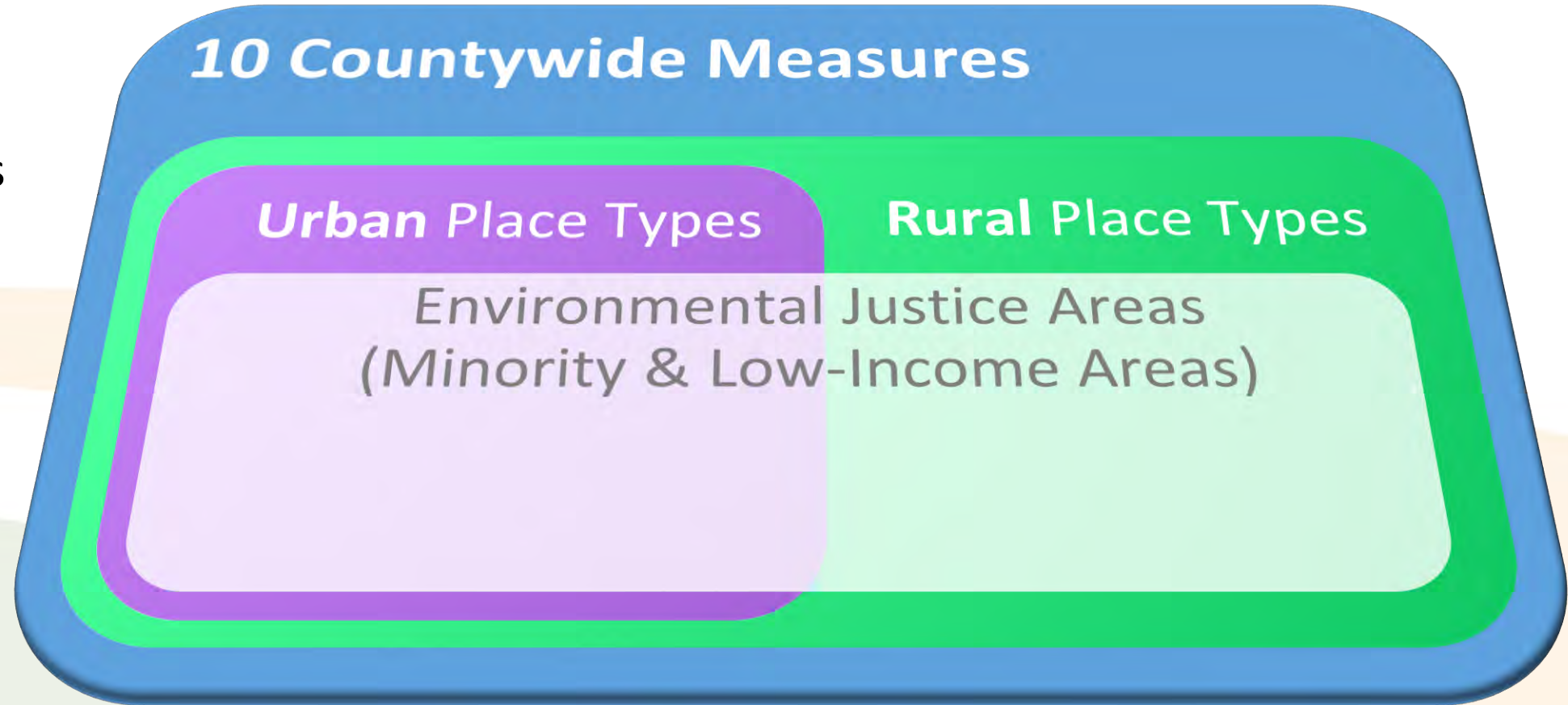
10 Countywide Measures

Environmental Justice Areas
(Minority & Low-Income Areas)



2010 – Evolving/Overlapping Plan Geographic Areas

- 10 Federal System Level PMs
- Federal EJ Areas
- State of CA Smart Mobility Framework



2018 – Evolving/Overlapping Plan Geographic Areas

- 10 Federal System Level PMs
- Federal EJ Areas
- State of CA Smart Mobility Framework
- Federal Title VI Areas
- Fed PMs 1-3

10 Countywide Measures (2022 added all Fed PMs 1-3, NHS)

Urban Place Types

Rural Place Types

Environmental Justice Areas
(Minority & Low-Income Areas)

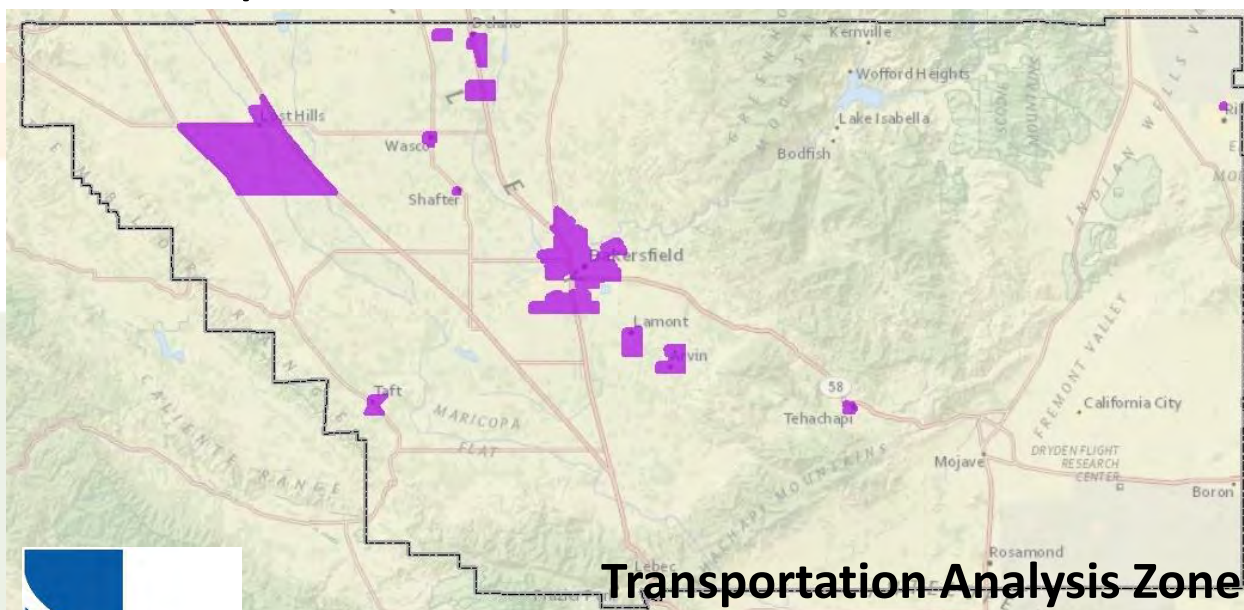
Federal Title IV Areas
(Minority Areas Only)



Kern County Identifying EJ Areas

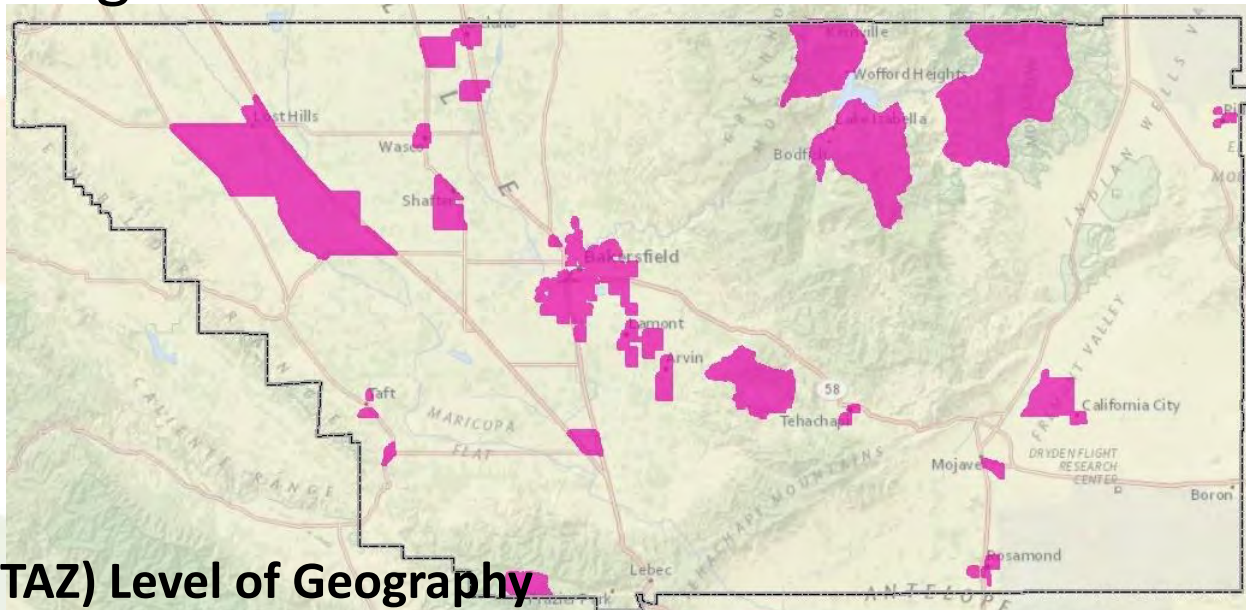
2004, 2007 RTPs

Kern COG 2000 Census Method
Predominantly Minority/Low
Income/Seniors



2011, 2014 RTPs

UC Davis CEVA Method
Disadvantaged/Environmental
Degraded Areas



Transportation Analysis Zone (TAZ) Level of Geography



Kern Council
of Governments



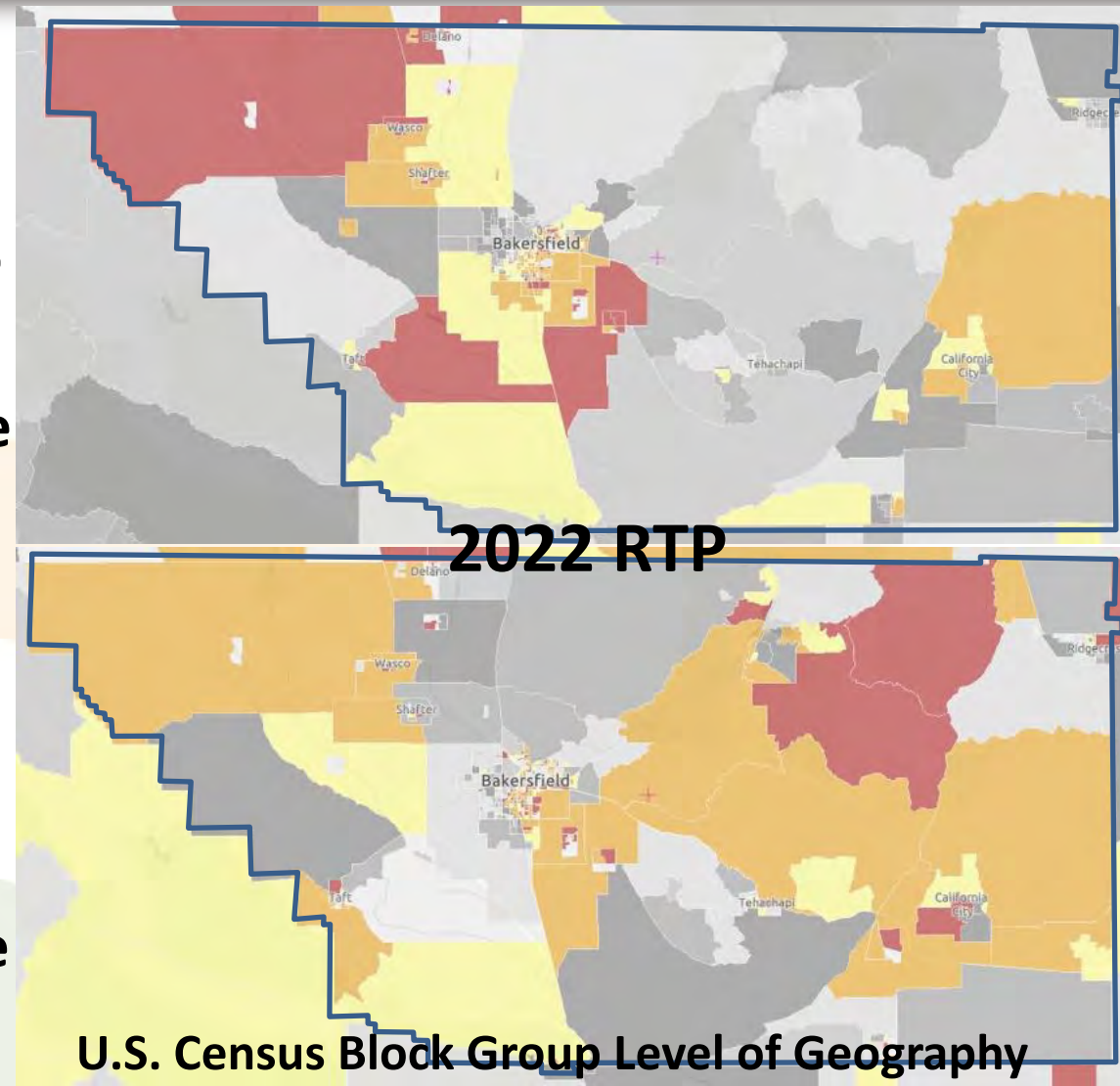
2018 – 2022 RTPs – U.S. EPA EJ Screen Tool

Input Layers <https://www.epa.gov/ejscreen>

- **Title VI – Persons of Color Areas –**
Title VI, 42 U.S.C. § 2000d et seq. 1964 Civil Rights Act. No person, on the grounds of race, color, or national origin, is excluded from participation in, denied the benefits of, or subjected to discrimination under any program or activity receiving Federal financial assistance.
- **Environmental Justice (EJ) – Low Income Areas and/or Persons of Color** – Executive Order 12898 issued by President Clinton in 1994. Its purpose is to focus attention on the environmental and human health effects of federal actions on minority and low-income populations ONLY with the goal of achieving environmental protection for all communities.

**Persons
of Color
80th
Percentile**

**Low
Income
80th
Percentile**



2018 – 2022 RTPs – U.S. EPA EJ Screen Tool Input Layers Combined for EJ Areas and Converted from Block Groups to TAZs

Title VI
Areas

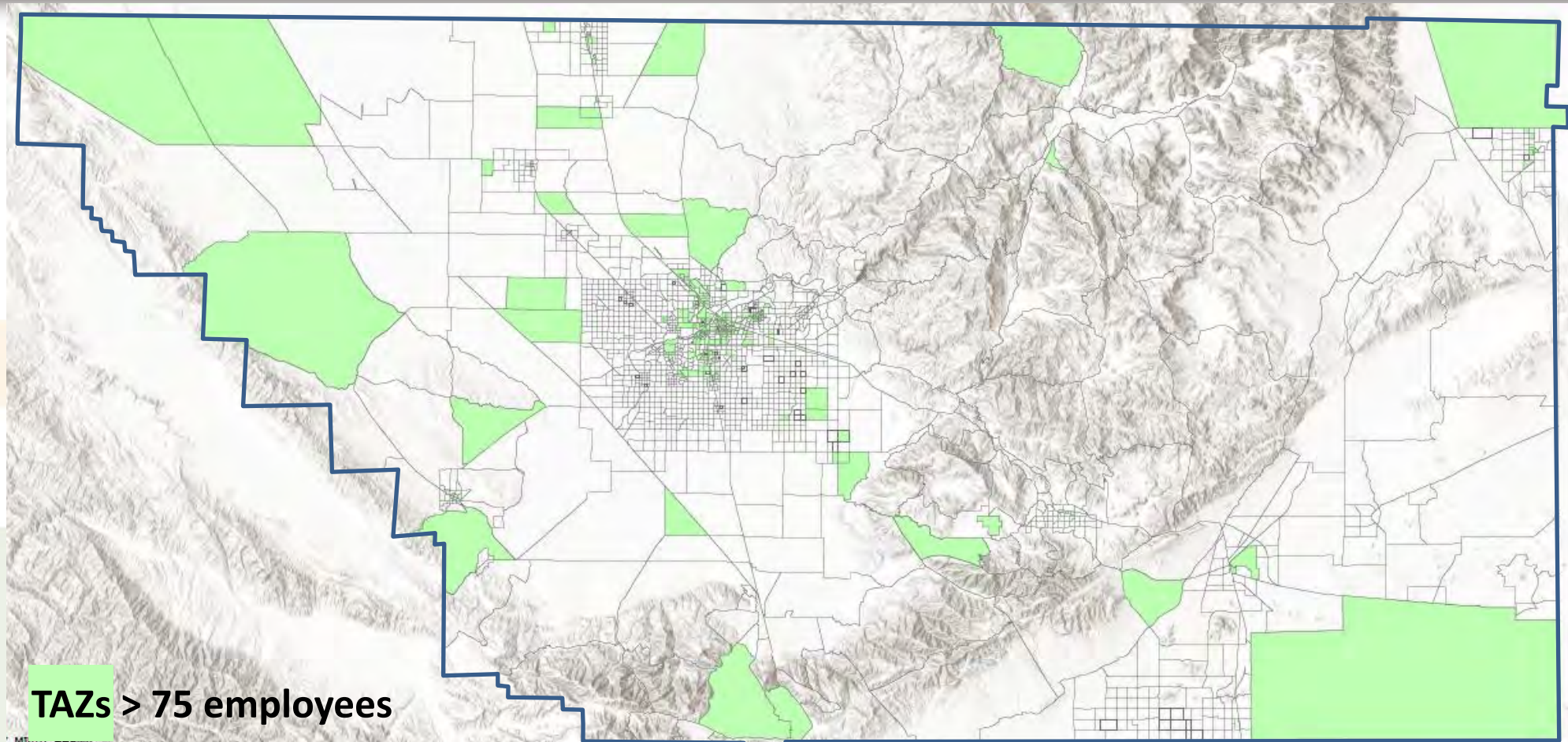
2018 RTP
2016 EJ Screen

EJ
Areas

TAZ Level of Geography

2022 RTP
2019 EJ Screen

Example PM – Accessibility For Commuters & Freight (Average Travel Time to Major Job Centers) – Job Centers Map



TAZs > 75 employees



2000 – Evolving/Integrated PM Result Tables (1 of 19 Result Tables)

Accessibility: Commuters/Freight (Average Travel Time to Job Centers)

Table D-6a: All TAZs Average Travel Time to Major Job Centers – Highway (minutes)

Place Type	2020	2046 Build	2046 No Build
Countywide	12.09	12.37	12.74

Table D-6b: EJ TAZs Average Travel Time to Major Job Centers – Highway (minutes)

Place Type	2020	2046 Build	2046 No Build
Countywide	12.05	12.29	12.66

- Travel times get worse in 2046 but no build is worse than build
- EJ (Table D-6b) countywide areas fare better than all areas
- Table Matrix for highways & transit for most measures

2010 – Evolving/Integrated PM Result Tables (1 of 17 Result Tables)

Accessibility (Average Travel Time to Job Centers)

Table D-6a: All TAZs Average Travel Time to Major Job Centers – Highway (minutes)

Place Type	2020	2046 Build	2046 No Build
Urban/Metro	10.15	10.29	10.69
Rural Areas	16.96	17.36	17.28
Countywide	12.09	12.37	12.74

Table D-6b: EJ TAZs Average Travel Time to Major Job Centers – Highway (minutes)

Place Type	2020	2046 Build	2046 No Build
Urban/Metro	9.83	10	10.38
Rural Areas	18.24	18.18	18.34
Countywide	12.05	12.29	12.66

- Added Smart Mobility Framework (Urban/Rural)
- No Build is Worse than Build for all areas.
- EJ Rural areas (Table D-6b) perform worse than all areas but countywide fares better

2018 – Evolving/Integrated PM Result Tables (1 of 17 Result Tables)

Accessibility (Average Travel Time to Job Centers)

- Added Title VI Areas
- No Build is Worse than Build for all areas.
- Title VI areas (Table D-6b) perform better than all areas countywide but worse for rural.

Table D-6a: All TAZs Average Travel Time to Major Job Centers – Highway (minutes)

Place Type	2020	2046 Build	2046 No Build
Urban/Metro	10.15	10.29	10.69
Rural Areas	16.96	17.36	17.28
Countywide	12.09	12.37	12.74

Table D-6b: EJ TAZs Average Travel Time to Major Job Centers – Highway (minutes)

Place Type	2020	2046 Build	2046 No Build
Urban/Metro	9.83	10	10.38
Rural Areas	18.24	18.18	18.34
Countywide	12.05	12.29	12.66

Table D-6c: Title VI TAZs Average Travel Time to Major Job Centers - Highway (minutes)

Place Type	2020	2046 Build	2046 No Build
Urban/Metro	9.96	10.15	10.59
Rural Areas	19.42	19.31	19.68
Countywide	12.02	12.29	12.75

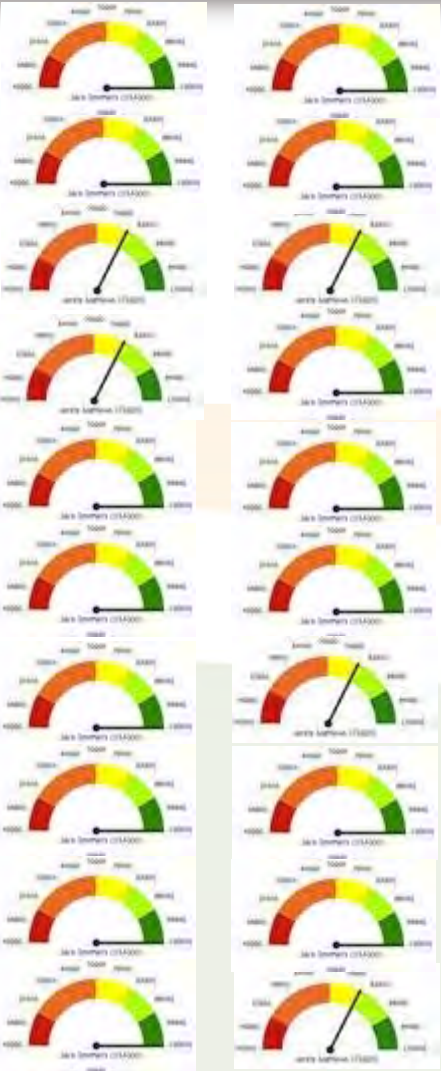
RTP Measures Correspond to RTP Goals

8 out of 10 Measures have a State Required Health Equity Component

2018

2022

1. **Mobility/Health Equity** (transit) – Improve the mobility of people and freight;
2. **Accessibility/Economic Being/Health Equity** (transit) – Improve accessibility to, and the economic well being of, major employment and other regional activity centers;
3. **Efficiency/Cost Effectiveness/Health Equity** (transit) – Maximize the efficiency and cost effectiveness of the existing and future transportation system;
4. **Livability/Customer Satisfaction** – Promote livable communities and satisfaction of consumers with the transportation system;
5. **Environment/Health Equity** – Improve Local and Regional Air Quality
6. **Sustainability/Preservation** – Provide for preservation and expansion of the system while minimizing effects on the environment;
7. **Equity/Health Equity** (transit) – Ensure an equitable distribution of the benefits among various demographic and user groups.
8. **Land Consumption/Health Equity** – Promote walking and biking through more compact development options
9. **Health Equity** – Promote Health Care Cost Savings
10. **Reliability/Safety/Health Equity** – Improve the reliability and safety of the transportation system;



2018-2022 – Efficiency of Transit Expenditures

Average investment per daily passenger mile traveled

Table D-9a: Average Daily Investment per Passenger Mile Traveled – Transit

2018 RTP

Place Type	2042
Urban/Metro	.32
Rural Areas	.27
Countywide	.32

2022 RTP

Place Type	2046
Urban/Metro	1.80
Rural Areas	3.20
Countywide	2.00

- Higher \$ means we are spending more in that area

Table D-9b: EJ TAZs Average Daily Investment per Passenger Mile Traveled – Transit

Place Type	2042
Urban/Metro	.43
Rural Areas	.20
Countywide	.38

Place Type	2046
Urban/Metro	2.02
Rural Areas	2.65
Countywide	2.18

- EJ Rural Area expenditures more efficient than countywide may be an issue

Table D-9c: Title VI TAZs Average Daily Investment per Passenger Mile Traveled – Transit

Place Type	2042
Urban/Metro	.49
Rural Areas	.13
Countywide	.40

Place Type	2046
Urban/Metro	2.38
Rural Areas	3.87
Countywide	2.62

- Dial-a-ride/ Miocar in rural areas not analyzed

2022 – Equity Transit \$ Compared to PMT

- Higher \$ means we are spending more in that area
- Rural Area expenditures less than PMT which may be an issue
- Dial-a-ride/Miocar in rural areas not analyzed

Table D-14a: All TAZs Percentage of Passenger Miles Traveled Verses Planned Transportation Investment by 2046 – Highways (miles, \$)

Place Type	2046 PMT	Total Investment*	PMT % (countywide)	Investment % (countywide)
Urban/Metro	20,430,000	1,878,000,000	48	80
Rural Areas	21,923,000	460,000,000	52	20
Countywide	42,353,000	2,338,000,000	100	100

Table D-14b: EJ TAZs Percentage of Passenger Miles Traveled Verses Planned Transportation Investment by 2046 – Highways (miles, \$)
(EJ areas should receive investment roughly equal to or greater than the % PMT)

Place Type	2046 PMT	Total Investment	PMT % (compared to all TAZs countywide)	Investment % (compared to all TAZs countywide)
Urban/Metro	14,853,000	1,537,000,000	35	66
Rural Areas	18,776,000	288,000,000	44	12
Countywide	33,629,000	1,825,000,000	79	78

Table D-14c: Title VI TAZs Percentage of Passenger Miles Traveled Verses Planned Transportation Investment by 2046 – Highways (miles, \$)
(Title VI areas should receive investment roughly equal to or greater than the % PMT)

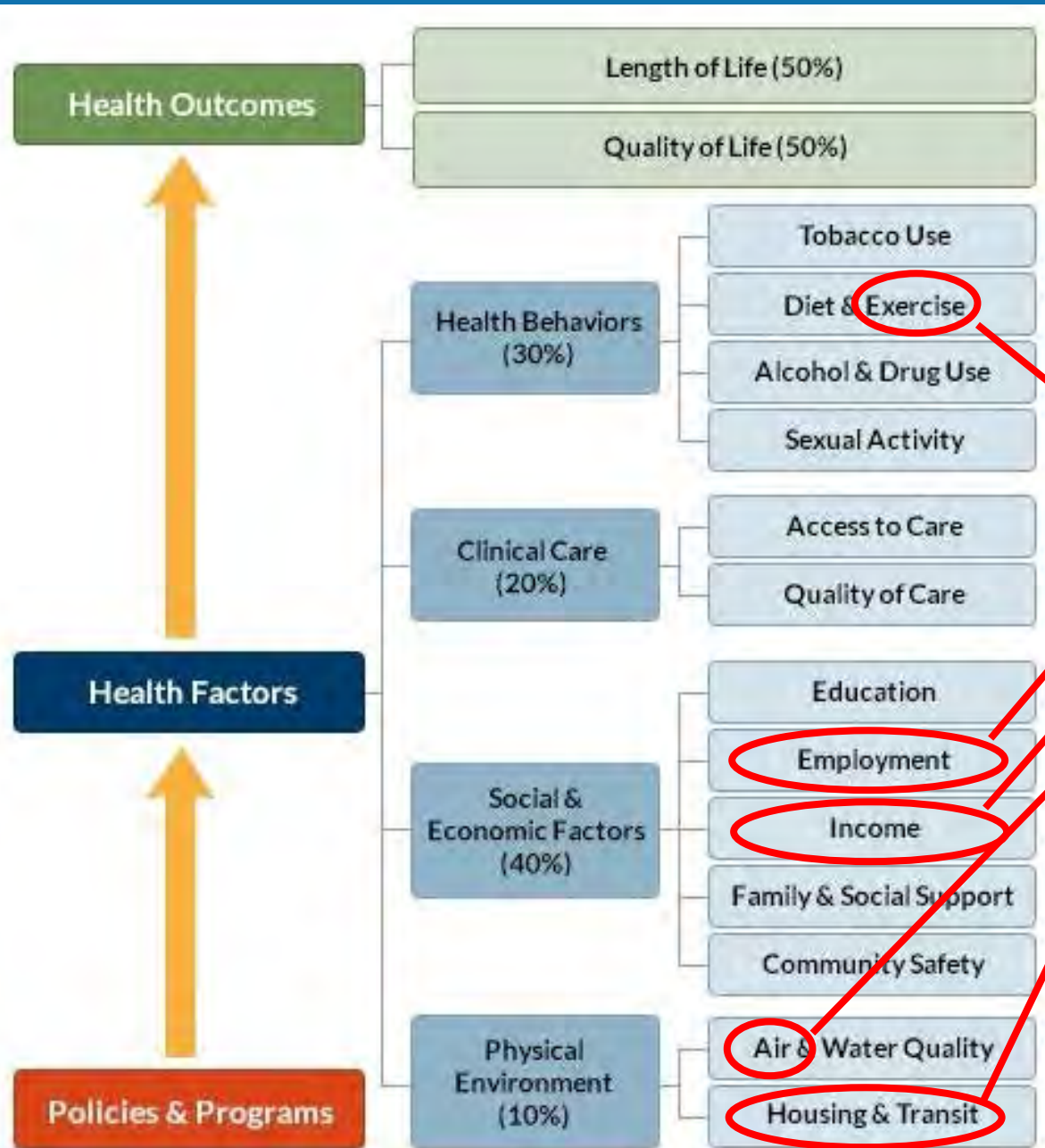
Place Type	2046 PMT	Total Investment	PMT % (compared to all TAZs countywide)	Investment % (compared to all TAZs countywide)
Urban/Metro	13,509,000	1,400,000,000	32	60
Rural Areas	14,404,000	153,000,000	34	7
Countywide	27,913,000	1,553,000,000	66	66

2022 – Reliability/Safety – Forecasted Increase in Accidents

Table D-19a: All TAZs Annualized Accident Statistics for Annual Average Daily Traffic
Countywide

Countywide				Title VI Areas
Place Type	2020	2046	Percentage Increase	Percentage Increase
Urban/Metro				
Property damage	3,112	3,897	25	24
Injury	1,774	2,221	25	24
Fatality	63	80	27	24
Rural				
Property damage	3,657	4,432	21	24
Injury	2,086	2,526	21	24
Fatality	70	90	29	28
Countywide				
Property damage	6,783	8,344	23	24
Injury	3,866	4,756	23	24
Fatality	137	170	24	22

San Joaquin Valley Counties Health Ranking Consistently at or Near State's Worst Since 2010



Transportation Related Factors affect less than 30% of the region's health ranking:

- 4% - Exercise (walking, biking)
- **8% - Employment (economic growth)**
- **8% - Income (economic growth)**
- 2.5% - Air (vehicle emissions)
- 5% - Housing & Transit (job access, walking)

More than half of the Transportation Related Factors are **economic growth** related.

Source:

County Health
Rankings & Roadmaps

Building a Culture of Health, County by County

A Robert Wood Johnson Foundation program

<http://www.countyhealthrankings.org/explore-health-rankings/our-methods>

Federal Safety, Road Condition, and Travel Time PMs 1-3 Use Observed Data Rather than Forecasted Model Data

<https://www.kerncog.org/federal-performance-measures/>

Required for 2018 RTP

- PM1 (Safety) Approved by RPAC/COG Board in February 2018 and included in the 2018 RTP

New for 2022 RTP

- PM2 (Bridge-Pavement Condition)
- PM3 (Travel Time Reliability)

Federal Performance Measures

Under the requirements of the federal transportation spending bill (*MAP-21*) states and metropolitan planning organizations are required to annually monitor performance measure progress through the statewide and metropolitan planning process for the following items:

PM 1 – Safety

PM 2 – Bridge and Pavement Condition

PM 3 – Travel Time Reliability

Transportation Performance Measures – 2022 *PM 1*

Transportation Performance Measures – 2021 *PM 1-2*

Transportation Performance Measures – 2020 *PM 1*

Transportation Performance Measures – 2019 *PM 1*

Transportation Performance Measures – 2018 *PM 1-3*

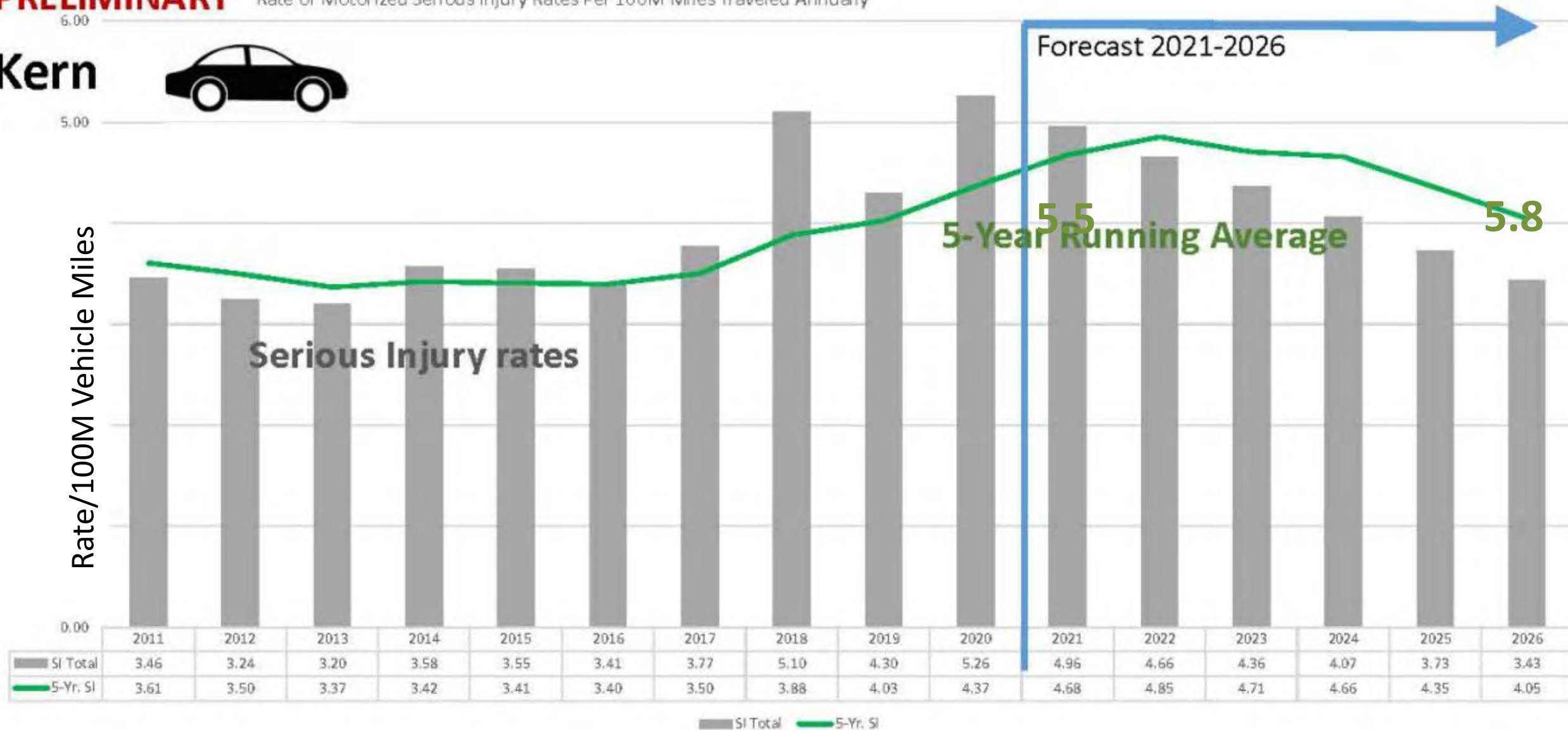
In addition, Kern COG includes an Integrated Performance Measures Analysis as an appendix to the most recently adopted [Regional Transportation Plan](#).



Kern



Rate/100M Vehicle Miles



Source: CHP SWITRS data, Kern COG Travel Model

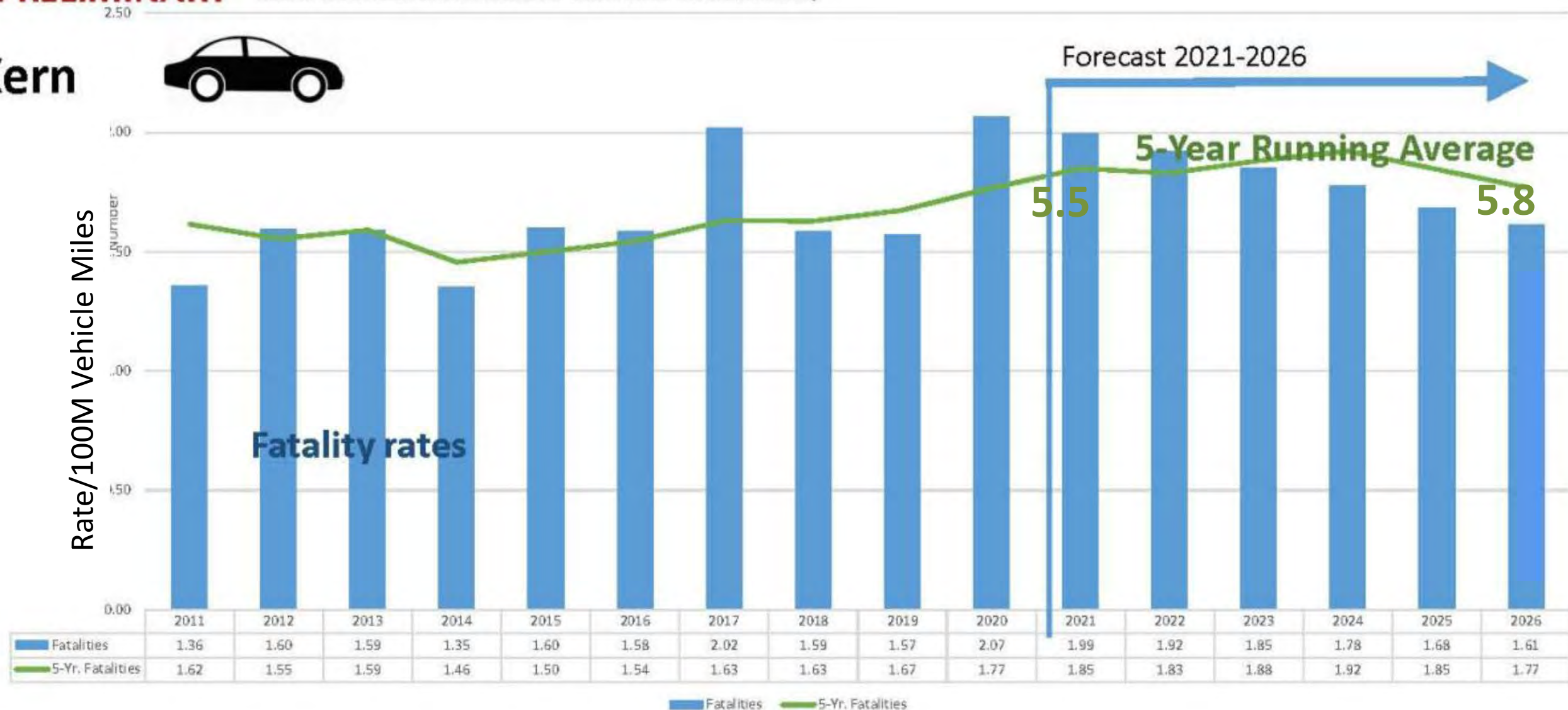
Forecast years assume base year serious Injury rates per mile of travel (VMT) stay same.

Target assumes we will do better than the base year model rate.

Kern



Rate/100M Vehicle Miles



Source: CHP SWITRS data, Kern COG Travel Model

Forecast years assume base year fatality rates per mile of travel (VMT) stay same.

Target assumes we will do better than the base year model rate.

PRELIMINARY – Optional Measure (not federally required)

Kern

Rate\1000 Population

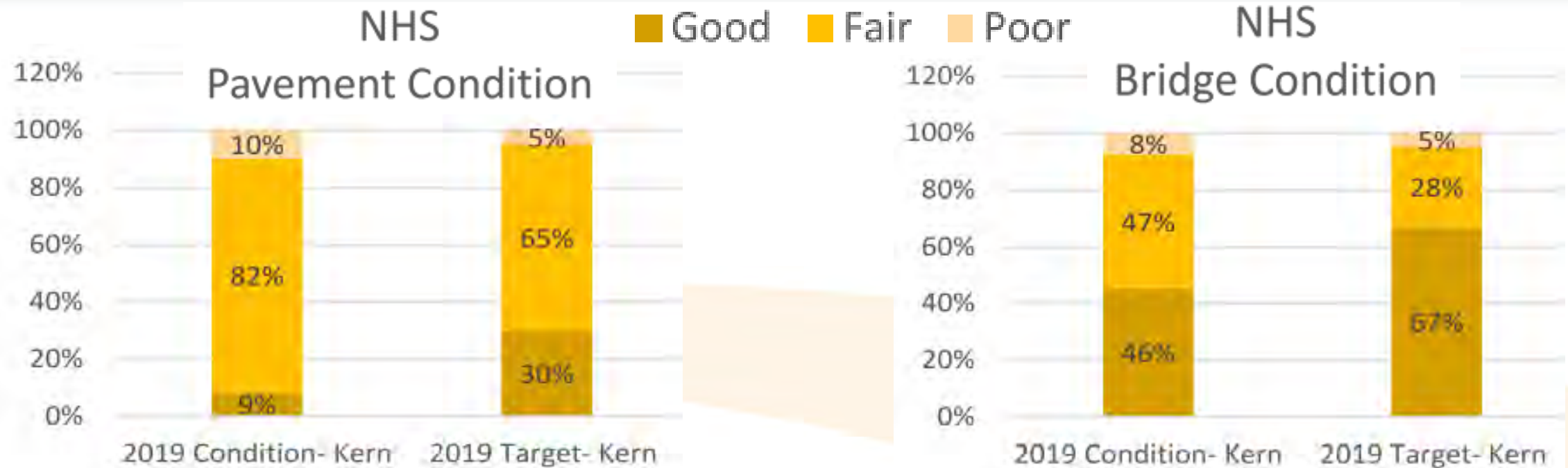


Source: CHP SWITRS data, Kern COG Travel Model

Forecast years assume base year fatality rates per mile of travel (VMT) stay same.

Target assumes we will do better than the base year model rate.

Federal PM2 Pavement/Bridge Condition on National Highway System (NHS) Routes



Simplified PM2
Reporting in RTP
Integrated PM Section

PM-2 Road Pavement/Bridge Condition	2019 Observed % Good or Fair	2019 Target % Good or Fair
Pavement Condition – NHS Routes	90	95
Bridge Condition – NHS Routes	93	95

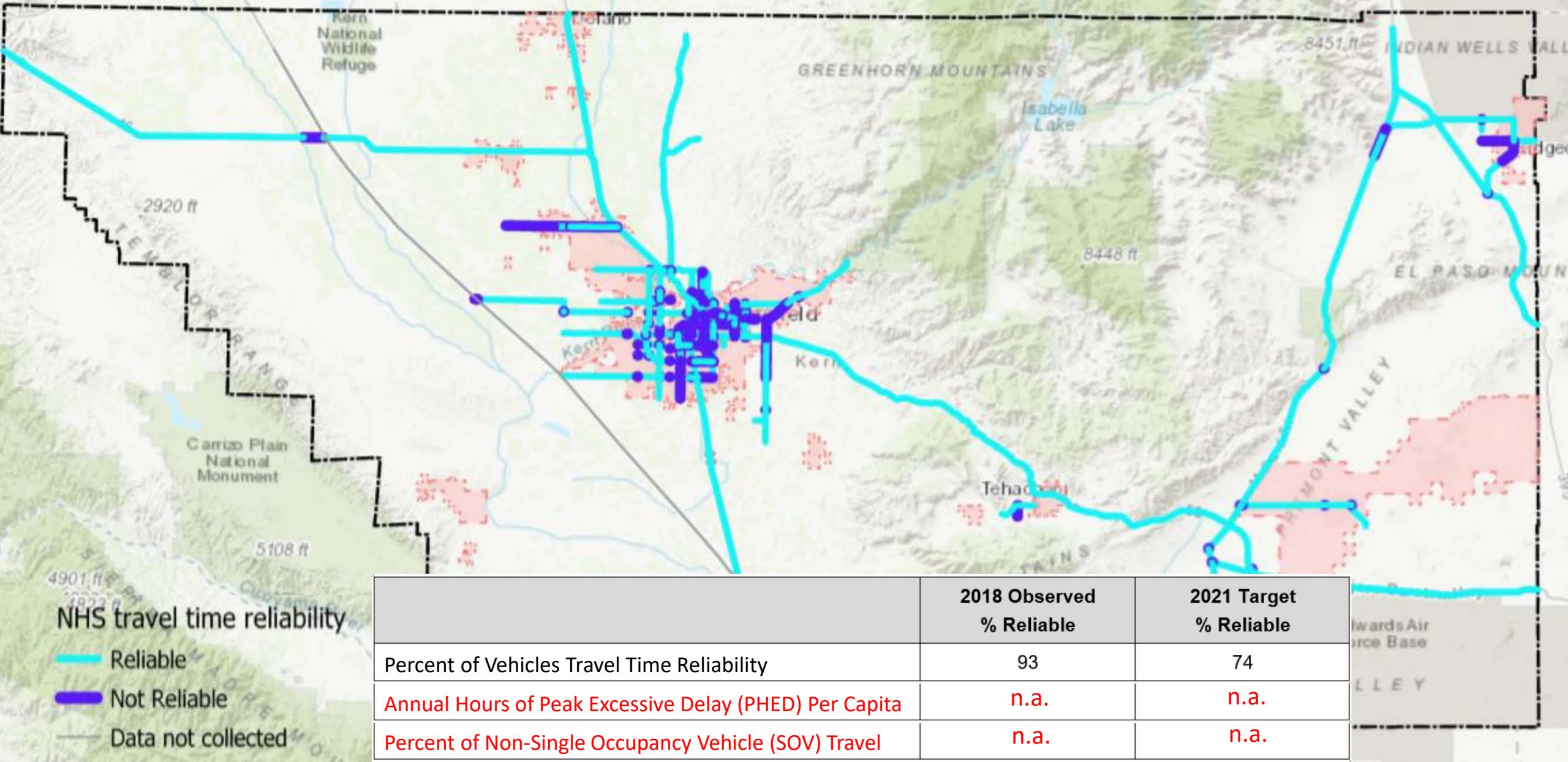


PM3

93% 2018 Travel Time Reliability, 2021 Target 74%

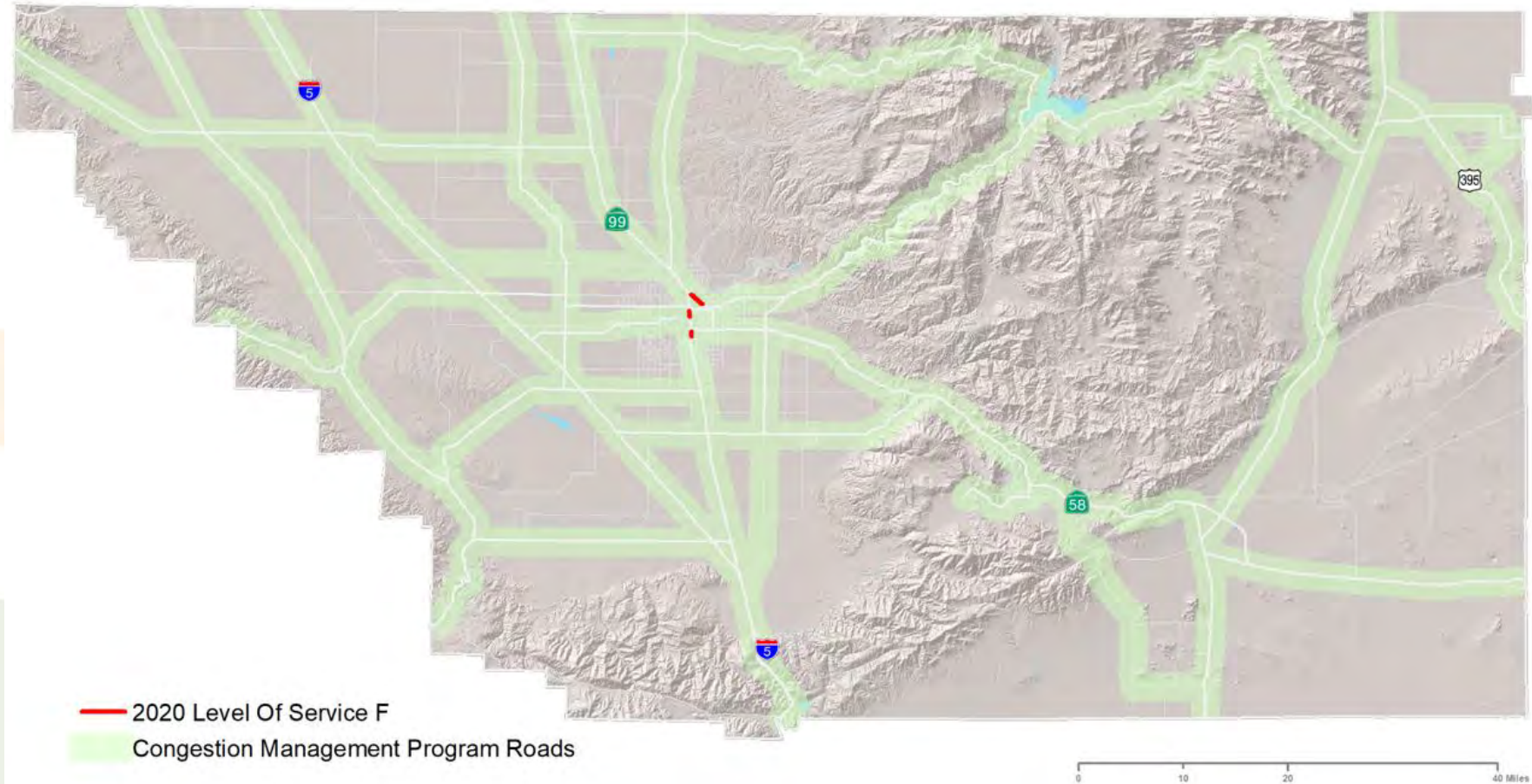
Data from NPMRDS

Fall 2022: Two New CMAQ PMs: PHED & Non-SOV for Urbanized Areas >200k



Congestion Management Program PMs

- State routes and selected major local arterials
- Base year model validation LOS
- LOS F routes subject to corridor study that looks at alternative modes



Federal Transportation Improvement Program (FTIP) PMs

Table 7: PM 3 Projects

Summary of Performance Projects in the 2023 FTIP

Category	Number of Projects	% of Projects	Total Project Cost	% of Total Project Cost	Funding in the 4-Year Element	% of Funding in the 4-Year Element
Interstate Reliability Projects	0	0%	0	0%	0	0%
Non-Interstate Reliability Projects	1	1%	\$10,000,000	1%	\$10,000,000	1%
Truck Travel Time Projects	0	0%	0	0%	0	0%
CMAQ Projects	28	19%	\$58,628,651	3%	\$38,973,797	4%
Peak-hour Excessive Delay Projects	0	0%	0	0%	0	0%
Non-SOV Travel Projects	0	0%	0	0%	0	0%
Total PM 3 Projects	29	20%	\$68,628,651	4%	\$48,973,797	5%
Non-PM 3 Projects	118	80%	\$1,619,684,895	96%	\$846,134,101	95%
Total FTIP Investments	147	100%	\$1,688,313,546	100%	\$895,107,898	100%

Table 11: TAM Projects

Summary of Transit Asset Management Projects in the 2023 FTIP

Category	Number of Projects	% of Projects	Total Project Cost	% of Total Project Cost	Funding in the 4-Year Element	% of Funding in the 4-Year Element
Transit Asset Projects	8	5%	\$30,289,186	2%	\$625,000	1%
Non-Transit Asset Projects	139	95%	\$1,658,024,360	98%	\$894,482,898	99%
Total FTIP Investments	147	100%	\$1,688,313,546	100%	\$895,107,898	100%

CAPTI & CPT conformance
RTIP performance

Regional Transportation Improvement Program (RTIP)

STIP Guidelines Now Require Project Level PMs

Table B2 Evaluation - Project-Level Cost-Effectiveness Indicators and Measures								
Indicator / Measure	2042 No Build	2042 Build	2042 No Build	2042 Build	2042 No Build	2042 Build	2042 No Build	2042 Build
	SR 58 Truck Climbing Lanes		SR 99/204 Hageman		SR 46 Widening		SR 14 Widening	
Reduce Vehicle Miles Traveled	NA	NA	NA	NA	NA	NA	NA	NA
Reduce Percent of congested VMT (at or below 35 mph)	NA	NA	NA	NA	NA	NA	NA	NA
Change in commute mode share (travel to work or school)	NA	NA	NA	NA	NA	NA	NA	NA
Reduce percent of distressed state highway lane-miles	NA	NA	NA	NA	NA	NA	NA	NA
Improve Pavement Condition Index (local streets and roads)	NA	NA	NA	NA	NA	NA	NA	NA
Reduce % of highway bridge lane-miles in need of replacement or rehabilitation (sufficiency rating of 80 or below)	NA	NA	NA	NA	NA	NA	NA	NA
Reduce % of transit assets that surpassed FTA useful life period	NA	NA	NA	NA	NA	NA	NA	NA
Reduce Highway Buffer Index (the time cushion added to the average commute travel times to ensure on-time arrival).	NA	NA	NA	NA	NA	NA	NA	NA
Reduce fatalities and serious injuries per capita	NA	NA	NA	NA	NA	NA	NA	NA
Reduce fatalities and serious injuries per VMT	NA	NA	NA	NA	NA	NA	NA	NA
Increase percent of housing and jobs within 0.5 miles of transit stops with frequent transit service	NA	NA	NA	NA	NA	NA	NA	NA
Reduce mean commute travel time (to work or school)	NA	NA	NA	NA	NA	NA	NA	NA
Change in acres of agricultural land	NA	NA	NA	NA	NA	NA	NA	NA
CO ₂ emissions reduction per capita	NA	NA	NA	NA	NA	NA	NA	NA
<i>Mobility Goal - Ave. Peak Period Travel Time</i>	NA	NA	NA	NA	0.08	0.05	NA	NA
<i>Mobility Goal - Ave. Non-Peak Travel Time</i>	NA	NA	NA	NA	0.08	0.05	NA	NA
<i>Mobility Goal - Passenger Hours of Delay / Year</i>	NA	NA	NA	NA	10,657	10,657	NA	NA
<i>Efficiency Goal – Daily VMT per Capita</i>	NA	NA	NA	NA	2.59	2.59	NA	NA
<i>Reliability Goal – Daily Vehicle Hours Delay per Capita</i>	NA	NA	NA	NA	0.002	0.000	NA	NA
<i>Reliability Goal – Daily congested VMT per Capita</i>	NA	NA	NA	NA	0.409	0.000	NA	NA
<i>Safety Goal – Injury Collisions / (M) VMT</i>	NA	NA	NA	NA	NA	NA	0.63	0.38
<i>Sustainability Goal – Benefit Cost Analysis</i>	NA	NA	1	0	0	1.0	0	0.655

Balancing Environmental Justice Analysis with Meaningful Opportunities for Public Involvement



Kern Black Chamber of Commerce – Alliance Against Family Violence Awards and Theatrical Event at Mill Creek Community Church sponsored by Kern COG



Indian Petroglyph Festival Booth in Ridgecrest, CA



N. Lamont neighborhood driveway event sponsored by Leadership Counsel for Justice & Accountability

Federal Environmental Justice (EJ)

- Executive Order 12898 issued by President Clinton in 1994, **in 2012, U.S. DOT Order 5610.2(a), clarified EJ procedures for federal transportation planning processes.**
- EJ principles are to be considered throughout planning and decision-making process
- **EJ Procedures shall provide meaningful opportunities for public involvement during the planning and development of programs, policies, and activities, including potential effects, alternatives, and mitigation measures.**

Photos by Rob Ball



Over 7,000 Participated in Meaningful Opportunities for Public Involvement with Appropriate Translation Services



Over 80 Public Outreach Opportunities Over 4-Yr. Process

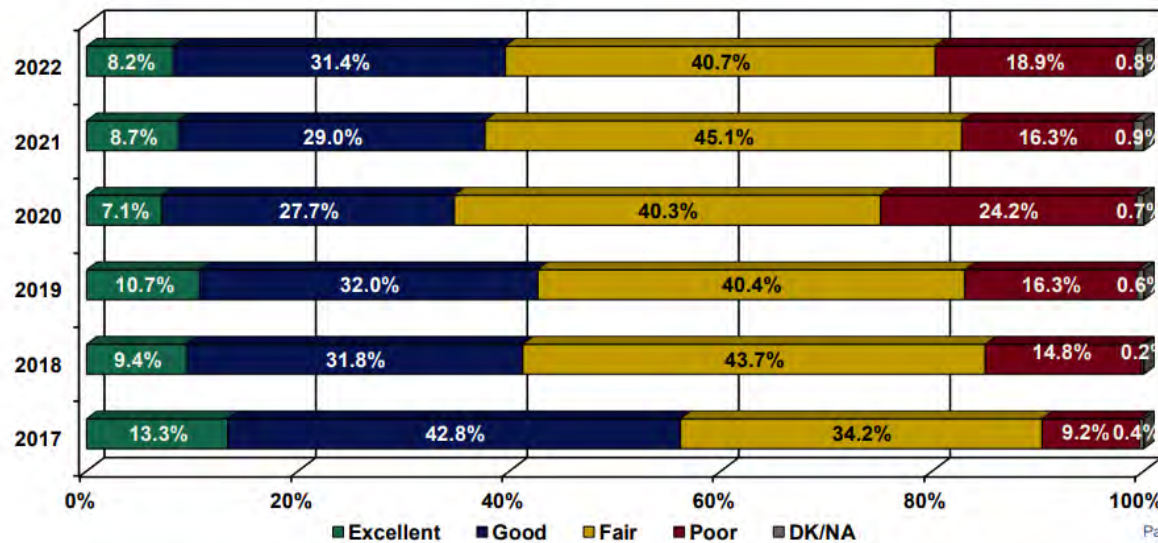
- 1 Website, Interactive Survey Game Tool
- 4 MetroQuest online surveys
- 4 Annual Phone/Text Surveys – over-sampled in outlying areas
- 25 Public Regional Planning Advisory Committee meetings
- 12 City Council and Board of Supervisor Presentations
- 13 Clean Mobility Options Needs Assessments for Disadvantaged Communities and 2 Tribes
- 13 Stakeholder Hosted Mini-Grant Workshops
- 9 Local Road Safety Planning Meetings
- 3 Environment/Social Equity; Business/Ind. Roundtable Mtgs.
- 2 Publicly Advertised Hearings in Shafter, Bakersfield

Public Input is an Observed PM Data Source: Annual 1,200 Person Statistically Valid Phone Survey – 2007-2022

Q13. Rating of Traffic Flow in City or Town (n=1,343)

GODBE RESEARCH
Gain Insight

When asked to rate the flow of traffic in their city or town, residents held nearly the same opinion as in the 2021 survey. There was, however, a small decrease in those who said traffic flow was "Fair," balanced by a slight increase in residents who rated it "Poor." There was also a slight, but statistically insignificant increase in the number of residents who rated traffic as "Good." Overall, nearly two out of five residents had a positive view of traffic flow ("Excellent" at 8.2% and "Good" at 31.4%). In addition, two out of five residents had a "Fair" view of traffic (40.7%), while about one in six respondents gave traffic a rating of "Poor" (18.9%).

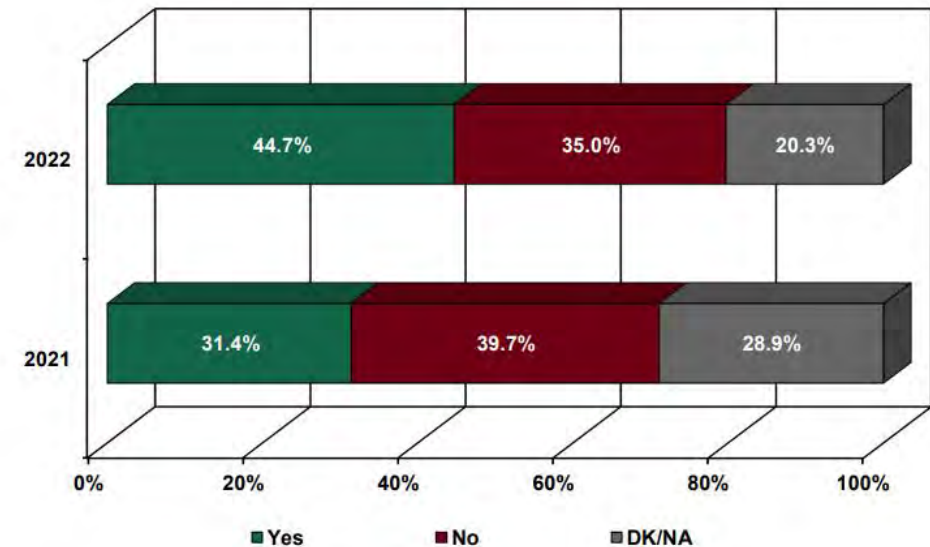


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Q11. Will Continue Telecommuting or Working From Home Post-COVID-19 Crisis (COVID-19 telecommuters from Q10) (n=325)

GODBE RESEARCH
Gain Insight

Residents who reported they began telecommuting or working from home with the COVID-19 crisis were asked a follow up question to learn if they would continue this practice after the crisis. More than 2 out of 5 respondents said that they would, an increase of 13.3% over 2021 results. About a third said they would not, and about one in five either did not know or had no answer for this question.



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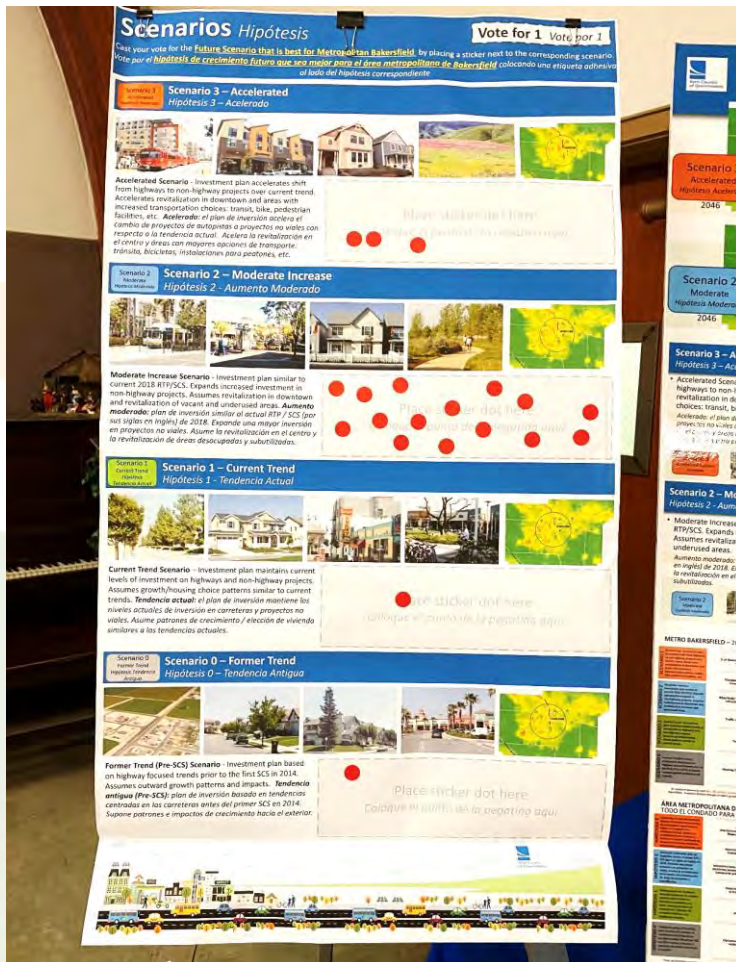
Kern Council
of Governments



Dot Board Exercise at Events/Mini-Grant Workshops

- Comparing Scenarios with Performance Measures

Dot Board Voting



- Process used 4 scenarios each progressively more ambitious in terms of density and strategy implementation.
- Scenarios were similar to 2014 RTP educational outreach process.
- Scenario votes were weighted to develop the preferred alternative, allowing a range of results well beyond the 4 alternatives presented.
- Preferred or “Plan” scenario had very similar results as the 2014 RTP, at about scenario 3.

HIPÓTESIS 1

Extiende las opciones de inversión en desarrollo de terrenos y transporte de las últimas décadas hasta el año 2035 y más. Supone las tendencias históricas de crecimiento periférico del área metropolitana.

- Las inversiones en transporte favorecen la infraestructura de la calzada.
- Inversión modesta en estrategias para peatones y bicicletas.
- Carece de mejoras de servicio significativas para el transporte público.
- En cuanto a las opciones de vivienda, no cumple con las tendencias observadas en el mercado con respecto a viviendas ubicadas en zonas donde sea posible trasladarse preferentemente a pie.
- Inversión concentrada en mejoras de seguridad y capacidad, que incluye la circunvalación del sur (South Beltway) para 2040.
- Fondos para mantenimiento insuficientes en un 22%.
- Supone una renovación menor de la zona céntrica (Downtown).
- Supone un aumento de 2/3 en los costos de combustible para 2035.

HIPÓTESIS 2

Plan de inversión similar al de la Hipótesis 1. Aumenta la inversión en mantenimiento de calzada e infraestructura para transporte público, bicicletas y peatones. Supone la renovación de zonas desocupadas y subutilizadas para respaldar la inversión en la ampliación de las opciones de transporte.

- Inversión concentrada en el mantenimiento y en comunidades más aptas para la circulación de transporte público, bicicletas y peatones.
- Mejora en la conectividad entre modos de viaje.
- Contempla calles más seguras y un movimiento de mercancías más eficiente.
- Cambio modesto en la demanda de opciones de vivienda más aptas para la circulación de transporte público, bicicletas y peatones, que se encuentren más cerca de los trabajos y los centros de compras.
- Posterga la circunvalación del sur (South Beltway).

HIPÓTESIS 3

Plan de inversión similar al de la Hipótesis 2. Supone la renovación de la zona céntrica (Downtown) y de zonas desocupadas y subutilizadas para respaldar la ampliación de las opciones de transporte.

- Aumento moderado en la demanda de opciones de vivienda más aptas para la circulación de transporte público, bicicletas y peatones, que se encuentren más cerca de los trabajos y los centros de compras.

HIPÓTESIS 4

Acelera la inversión en infraestructura para transporte público, bicicletas y peatones en 15 años, a 2020. Extiende la renovación a las zonas con mayor servicio de transporte público.

- Cambio radical en la demanda de opciones de vivienda más aptas para la circulación de transporte público, bicicletas y peatones, que se encuentren más cerca de los trabajos y los centros de compras.
- Requiere una nueva inversión en infraestructura con un plazo más corto.

Todas las hipótesis suponen un crecimiento este crecimiento se producirá dentro del Área de la tierra

METRO BAKERSFIELD—2035 COUNTYWIDE SCENARIO CHARACTERISTICS

SCENARIO 1

Extends land development and transportation investment choices of past decades out to 2035 and beyond. Assumes historic trends in peripheral growth in the metropolitan area.

- Transportation investments favor roadway infrastructure.
- Modest investment in walk and bike strategies.
- Lacks major service improvements to transit.
- Housing choice does not meet observed market trends for more walkable housing choices.
- Investment focused on capacity and safety improvements including a South Beltway by 2040.
- Maintenance underfunded by 22%.
- Minor revitalization of Downtown assumed.
- Assumes 2/3 increase in fuel costs by 2035.

SCENARIO 2

Investment plan similar to Scenario 1. Increases investment in roadway maintenance and transit, bike, and walk infrastructure. Assumes revitalizations of vacant and underused areas to support investment in broader transportation choices.

- Investment focused on maintenance and more transit, bike, and walk friendly communities.
- Improved connectivity between modes of travel.
- Provides safer roads and more streamlined goods movement.
- Modest change in demand for more transit, bike and walk friendly housing choices closer to jobs and shopping.
- Postpones South Beltway.

SCENARIO 3

Investment plan similar to Scenario 2. Assumes revitalization of Downtown, vacant, and underused areas to support the broader transportation choices.

- Moderate increase in demand for more transit, bike, and walk friendly housing choices closer to jobs and shopping.

SCENARIO 4

Accelerates investment in transit, bike, walk infrastructure by 15 years to 2020. Expands revitalization to areas with increased transit service.

- Major shift in demand for more transit, bike and walk friendly housing choices closer to jobs and shopping.
- Requires new investment in infrastructure with an expedited time frame.

% of Maintenance Funded



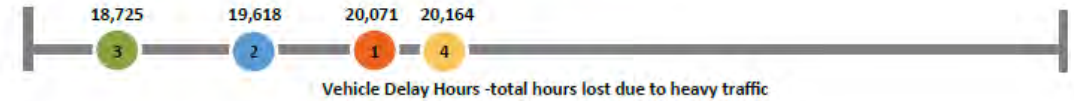
Transportation Investment



Bike/Walk/Transit Infrastructure



Traffic Impact



Timeline



Housing Choice



All scenarios assume growth to 1.3 million people; 417,000 households; and 461,000 jobs in Kern county by 2035. Approximately 2/3 of this growth is within Metropolitan Bakersfield. Scenarios analyze changes in Metro growth using Kern Council of Governments' land use and transportation modeling tools. Modeling documentation is available online at:

<http://www.kerncog.org/transportation-modeling>

Todas las hipótesis suponen el mismo crecimiento general en términos de población, viviendas y empleo.



Costos de infraestructura local

HIPÓTESIS 1 Extiende las opciones de inversión en desarrollo de terrenos y transporte de las últimas décadas hasta el año 2035 y más. Supone las tendencias históricas de crecimiento periférico del área metropolitana.

\$1.9
mil millones

HIPÓTESIS 2 Plan de inversión similar al de la Hipótesis 1. Aumenta la inversión en mantenimiento de calzada e infraestructura para transporte público, bicicletas y peatones. Supone la renovación de zonas desocupadas y subutilizadas para respaldar la inversión en la ampliación de las opciones de transporte.

\$1.90
mil millones

HIPÓTESIS 3 Plan de inversión similar al de la Hipótesis 2. Supone la renovación de la zona céntrica (Downtown) y de zonas desocupadas y subutilizadas para respaldar la ampliación de las opciones de transporte.

\$1.83
mil millones

HIPÓTESIS 4 Acelera la inversión en infraestructura para transporte público, bicicletas y peatones en 15 años, a 2020. Extiende la renovación a las zonas con mayor servicio de transporte público.

\$1.68
mil millones

¹ En dólares de 2012 (acumulado a 2035)

METRO BAKERSFIELD—2035 COUNTYWIDE SCENARIO OUTCOMES

All Scenario assume same overall growth in population, households, and jobs.



Local Infrastructure Costs¹



Water Use²



Energy Independence³



Vehicle Miles Traveled (VMT) & Fuel Consumption⁴



Public Health Cost⁵



Household Transportation Costs⁶



Automobile Air Emissions⁷



Land Consumption⁸

SCENARIO 1 Extends land development and transportation investment choices of past decades out to 2035 and beyond. Assumes historic trends in peripheral growth in the metropolitan area.

\$1.98
billion

1,042
million gallons

35,243
billion Btu

13.28
billion VMT
7.85
billion gallons

\$3.26
million
0Base Reduced Annual Respiratory Incidences

\$22,904

18.32
tons NOx
14.31
lbs CO₂ per capita

83.09
sq. miles

SCENARIO 2 Investment plan similar to Scenario 1. Increases investment in roadway maintenance and transit, bike, and walk infrastructure. Assumes revitalization of vacant and underused areas to support investment in broader transportation choices.

\$1.90
billion

925
million gallons

34,574
billion Btu

13.13
billion VMT
7.74
billion gallons

\$3.13
million
-329 Reduced Annual Respiratory Incidences

\$22,647

18.10
tons NOx
14.12
lbs CO₂ per capita

71.93
sq. miles

SCENARIO 3 Investment plan similar to Scenario 2. Assumes revitalization of Downtown, vacant, and underused areas to support the broader transportation choices.

\$1.83
billion

892
million gallons

34,253
billion Btu

13.28
billion VMT
7.63
billion gallons

\$3.11
million
-643 Reduced Annual Respiratory Incidences

\$22,423

17.89
tons NOx
13.93
lbs CO₂ per capita

68.93
sq. miles

SCENARIO 4 Accelerates investment in transit, bike, and walk infrastructure by 15 years to 2020. Expands revitalization to areas with increased transit service.

\$1.68
billion

789
million gallons

33,383
billion Btu

13.28
billion VMT
7.41
billion gallons

\$3.07
million
-1,242 Reduced Annual Respiratory Incidences

\$21,938

17.89
tons NOx
13.93
lbs CO₂ per capita

57.51
sq. miles

¹ In 2012 dollars (cumulative to 2035)

² 2035 Daily water usage from new growth

³ Annual in 2035

⁴ Cumulative to 2035

⁵ Daily health-related costs due to transportation-related pollutant emissions

⁶ In 2012 dollars (annual in 2035)

⁷ Based on a weekday in 2035

⁸ Cumulative to 2035

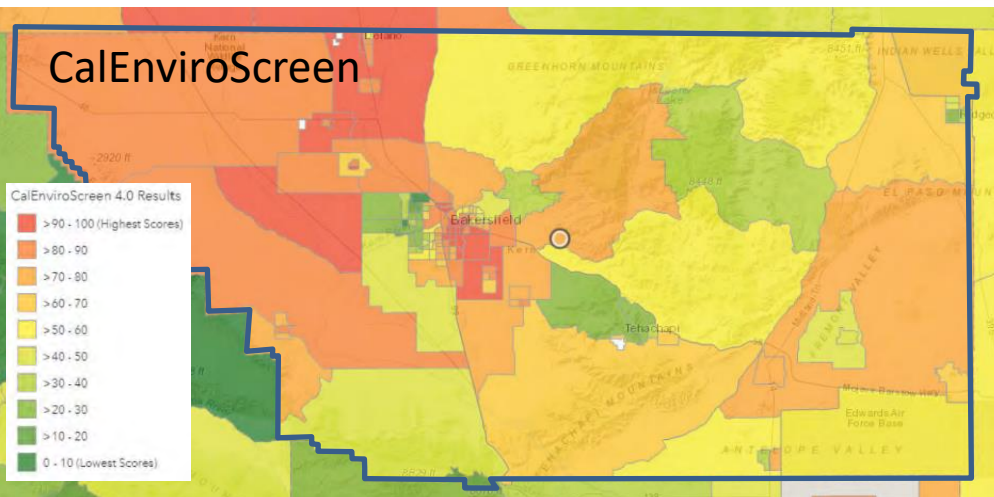
RTP Environmental Document PMs

- 140 impact measure tables with 1-4 Alternatives: Plan, No Project, Old Plan, Countywide Infill
- CalEnviroScreen 4.0 used to identifies disadvantage communities that have a higher pollution burden-census tract level

Table 5.0-17
Impact Comparison Among RTP and Alternatives

Impact Measure ¹	Plan	No Project	Old Plan	Countywide Infill
<i>Population, Housing and Employment</i>				
Population	1,186,600	1,186,600	1,186,600	1,186,600
Households	350,700	350,700	350,700	350,700
Employment	395,100	395,100	395,100	395,100
<i>Land Use and Biological Resources</i>				
Open space land consumed (acres)	19,141	27,322	>Plan	< Plan
<i>Agricultural Resources</i>				
Farmland Consumed (acres)	5,377	10,990	>Plan	< Plan
<i>Traffic</i>				
Total Annual VMT (billions)	10.35	10.80	10.376	10.145
VMT per capita	23.91	24.93	23.96	23.42
Congested Hours (County)	714,515	750,074	714,899	698,825
Congested Hours (Metro Core)	365,934	398,360	363,649	354,833
<i>Air Quality/Health</i>				
SJV NOx ton/day (budget = 18.6)	9.01	9.39	9.03	8.83
Total SB 375 CO2 (tons/day)	15.42	16.17	15.42	15.11
Per capita SB 375 CO2 (lbs.)	15.03	15.81	15.44	15.04
2046 vs 2020 (SB 375 CO2 % reduced)	-18.51	-17.76	-18.49	-18.82
Households within 500 feet of high volume roadways ²	6,920	5,641	6,685	8,537
Households w/in 0.25 mile freeways with high AQI	25,091	18,655	26,157	31,536
Households within 0.25 mile of RTP Projects ⁴	31,269	1,838	31,617	33,533
<i>Energy Use</i>				
Annual Gasoline and Diesel 2046 million gallons	448.18	467.56	449.09	439.28
<i>Water Use</i>				
2046 Residential Water Use million gallons /year	91,841	94,134	91,430	88,826

CalEnviroScreen



Other Ideas / Comments / Questions / Contacts

For More Information: www.kerncog.org

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