



AGENDA
KERN REGIONAL
TRANSPORTATION MODELING COMMITTEE (TMC)

A sub-committee of Transportation Technical Advisory Committee (TTAC)
(merged with the Kern Climate Change Task Force in May 2010)

KERN COG BOARD ROOM
1401 19TH STREET, THIRD FLOOR
BAKERSFIELD, CALIFORNIA

WEDNESDAY
October 26, 2011
9:00 A.M.

WEB SITE: <http://www.kerncog.org/cms/agendas-minutes/transportation-modeling>

PARKING: All-day free parking in the unmarked spaces of the garage located at 19th and L Streets. This is an open meeting; local government planning, public works staffs are encouraged to attend.

DISCLAIMER: This agenda includes the proposed actions and activities, with respect to each agenda item, as of the date of posting. As such, it does not preclude the Committee from taking other actions on items on the agenda which are different or in addition to those recommended.

- I. Introductions/Sign-in Sheet
- II. Meeting Notes from August, 2011 – See *Attachment* – **Approve**
- III. Update on Regional Planning Advisory Committee – Meeting notes from the August 31 and October 5th RPAC attached. – Information.
- IV. Regional Traffic Count Program (Heimer/Flickinger) – Continued from last meeting. (See August 2011 staff report) **Approve Recommended Action:** The attendants of the June 22 meeting recommended to count more of the locations that were counted in the past. With the remaining budget, the counts shall continue again from our original list.
Maps Available at: -
http://www.kerncog.org/docs/transportation/LandUseModelInputLayers_Maps_08102011.pdf
- V. 2010 Census Data Forecast Checkpoint – Socioeconomic data update (Ball) – **Approve Recommended Action:** Approve the 2010 Forecast TAZ data updated to the 2010 Census.
- VI. Draft Land Use Model Update and review Methodology documentation
(<http://kerncog.org/cms/climatechange>) (Hightower) – **Information**
- VII. Draft Land Use Model Sample Project Level Model Run (Hightower) – **Information**
- VIII. Draft SCS Centers Conceptual View (Invina) – **Information**
- IX. Model Improvement Program Update – Status/Timeline/Process – (Ball) **Information**
- X. Kern COG Modeling Activity Report (Ball) – **Information**
 - CTC Draft Statewide Transportation System Needs Assessment- **Information**
 - Sensativity model runs to improve VMT
 - PM10 and PM2.5 hot spot analysis for City of Bakersfield.
- XI. Other Business/Schedule Next Meeting – Wed., December 14, 2011 9:00AM at Kern COG
- XII. Adjourn



**Kern Regional Transportation Modeling Committee (TMC)
A Subcommittee of the Kern COG TTAC**

Meeting Notes
August 24, 2011

I. Members Present:

Steven Young	County of Kern Roads
Warren Maxwell	County of Kern Roads
Brian Blacklock	County of Kern Roads
Craig Murphy	County of Kern Planning
Ed Murphy	City of Bakersfield
Karl Davisson	City of Bakersfield
John Ussery	City of Bakersfield
Douglas Bowen	Pacific Traffic Data
Mike McCabe	City of Delano
Wayne Clausen	City of Shafter
Dave Dmohowski	Premier Planning Group
Patty Poire	Western Property
Paul Gorte	City of Taft
Rebecca Moore	LAFCO
David Berggren	Caltrans

Staff Present:

Ben Raymond	Kern Council of Governments
Michael Heimer	Kern Council of Governments
Ed Flickinger	Kern Council of Governments
Rochelle Invina	Kern Council of Governments
Becky Napier	Kern Council of Governments
Vincent Liu	Kern Council of Governments

- II. Meeting Notes from June 22, 2011 – Action:** Please note that Renee Nelson is from Clean Water and Air Matters, not County of Kern Planning – **Approved with correction.**
- III. Follow-up memo on items from June 22, 2011 TMC meeting** - Reviewed and discussed no additional follow-up needed.
- IV. Regional Planning Advisory Committee – Information.** Minutes from Aug 3, 2011 meeting were available for committee review. Required to report climate change forecast. Mailed Census numbers. No questions or comments were made from the committee.
- V. Status of San Joaquin Valley Guidance Framework Revision – Information.** List of changes and consistency changes incorporated into document. Two changes of Ted James were not incorporated. First was to eliminate Greenprint. A grant has been received and work is already underway on it. Second, Mr. James requested to

eliminate the San Joaquin Planning committee group. The group was already existing. A copy of the letter requesting changes was distributed with the agenda. Mr. James was o.k. with leaving these two provisions in the document. The Policy Council will meet next week to accept document. Kern COG's representatives will be Cheryl Wegman, Mayor Pro Tem of Wasco; Manuel Cantu, Mayor of McFarland; and Harold Hansen, Council Member for the City of Bakersfield as the alternate. The final draft document is available on line at: <http://www.valleyblueprint.org/news/2011/08/04/blueprint-roadmap-revised-final-draft-deliverables-available-aug-4-2011.html>

- VI. 2010 Census/TAZ Household Comparison – Information.** Showed Metro Bakersfield Map. Verified housing units compared TAZ and Census data if correct. Demonstrated methods of verification on the map. Overall census data is correct even though some places TAZ data is more correct. Before used census data from 2000. Now bringing forecast in line with 2010. Validation of income is 2008. Housing data from 2010 is now being used.
- VII. 2nd Draft SCS Conceptual View Centers Map – Information, Map Changes due to Kern COG by August 31.** Incorporated changes. This draft eliminates resource areas within the spheres of influence as requested by Shafter and required by SB 375. Purpose is to provide a conceptual view of some of the strategies being considered as part of the Sustainable Communities (SCS). The map shows village centers, towns, etc. Seek input from locals about General Plan. The existing plan versus potential which is a possibility was discussed and clarified. To provide better clarity the County of Kern suggested that we should break the centers into phased series of maps and provide markups of SCS maps by RPAC meeting. Shafter requested full comments be distributed at the Aug. 31 RPAC meeting. Future issues that need to be discussed include consistency between the SCS and a local general plan. One solution is to make the map more accurately reflect the general plan. Uplan generalized land use designations not specific enough to properly reflect local general plans.
- VIII. Draft Land Use Model Input Layers and Parameters – Information, Map Changes due to Kern COG by August 31.** Goal is for the SCS to meet the target so we don't have to do an Alternative Planning Strategy (APS). The maps distributed are input layers to the Uplan land use model and are based on the same layers used 1.5 years ago as part of the target setting process. The Uplan land use model provides input to the transportation model which provide input into the EMFAC model that outputs CO2. It was suggested that school districts be considered as an attractor. The Census data control total inputs are an input to the Land Use model. Industrial zone is listed as an attractor and represents more of an enterprise zone. All layers constrained to what is depicted on the consolidated general plan layer. Make sure land uses in the combined general plan layer accurate reflect each communities designations. Electronic versions of the input layers and documentation can be found at: <http://kerncog.org/cms/agendas-minutes/transportation-modeling>.
- Requested Action:** Locals should review model input layers by August 31. After comments Kern COG will run new Land Use model. Can then tell what is a better representation of growth for locals versus manually inputting Land Uses.
- IX. Regional Traffic Count Study – Staff Report** was discussed and agreeing to Option 3 – Count locations every 6 months and add historic count locations using the Regional Transportation Monitoring Improvement Plan guidance. It was requested that this item move toward the top of the list since some of the members had to leave during the middle of the discussion. **Requested Action:** Local Jurisdictions need to identify the count locations they want added. **Item continued to the October meeting.**
- X. Kern COG Modeling Activity Report – discussion** to be carried over to next meeting.
- XI. SCS support Studies – discussion** to be carried over to next meeting.
- XII. Other Business/Schedule Next Meeting:**
New time: Wed., October 26, 2011 9:00 AM at Kern COG
- XIII. Adjournment**

KERN COUNCIL OF GOVERNMENTS
REGIONAL PLANNING ADVISORY COMMITTEE

KERN COG CONFERENCE ROOM
1401 19TH STREET, THIRD FLOOR
BAKERSFIELD, CALIFORNIA

WEDNESDAY
August 31, 2011
1:30 P.M.

Chairman Clausen called the meeting to order at approximately 1:37 P.M.

I. ROLL CALL

MEMBERS PRESENT:

Issac George	City of Arvin
Dennis McNamara	City of McFarland
David James	City of Tehachapi
Wayne Clausen	City of Shafter
Paul Gorte	City of Taft
Karen King	GET
Craig Murphy	County of Kern
Mike McCabe	City of Delano (telephone)
Jeff Sorensen	Caltrans (telephone)

STAFF:

Becky Napier	Kern COG
Rob Ball	Kern COG
Troy Hightower	Kern COG
Ed Flickinger	Kern COG
Bob Snoddy	Kern COG

OTHER:

Carlos Hernandez	COH & Associates Inc.
Mark Smith	Grubb & Ellis/ASV Associates
Patty Poire	Western Properties
Leigh Ann Cook	Bakersfield Chamber
Barry Nienke	Kern County Roads
Warren Maxwell	Kern County Roads
Greg Garrett	City of Tehachapi

- II. PUBLIC COMMENTS:** This portion of the meeting is reserved for persons to address the Committee on any matter not on this agenda but under the jurisdiction of the Committee. Committee members may respond briefly to statements made or questions posed. They may ask a question for clarification; make a referral to staff for information or request staff to report to the Committee at a later meeting. **SPEAKERS ARE LIMITED TO TWO MINUTES. PLEASE STATE YOUR NAME AND ADDRESS FOR THE RECORD PRIOR TO MAKING A PRESENTATION.**

None

III. APPROVAL OF DISCUSSION SUMMARIES

- a. Meeting of June 1, 2011
- b. Meeting of July 6, 2011
- c. Meeting of August 3, 2011

Mr. Craig Murphy made a motion to approve the Discussion Summaries of June 1, July 6, and

August 3, 2011 as presented, seconded by Ms. King, motion carried.

IV. LAND USE MODEL INPUT LAYERS AND PARAMETERS

Mr. Ball stated that on September 23, 2010, as required by statute under SB 375, the ARB Board of Directors set provisional targets to reduce emissions for the San Joaquin Valley Municipal Planning Organizations (MPO's) at 5% by 2020, and 10% by 2035. ARB has given the SJ Valley MPO's an opportunity to submit revised targets in 2012. Kern COG will be required to develop a Sustainable Communities Strategy (SCS) for the 2013/14 Regional Transportation Plan (RTP) that meets the target. Kern COG staff plans to use the Land Use Model to assist in the development of the revised targets and the SCS.

After discussion and questions from the Committee, Mr. Ball stated that Kern COG staff is requesting comments and input on the input layers by August 31, 2011.

V. DRAFT METROPOLITAN BAKERSFIELD TRANSIT SYSTEM LONG-RANGE PLAN – SHORT-RANGE, MID-RANGE, AND LONG-RANGE SERVICE MAPS

Mr. Snoddy stated that on January 21, 2010, Kern COG and Golden Empire Transit District (GET) contracted with Nelson/Nygaard Consulting Associates to prepare the metropolitan Bakersfield Transit System Long-Range Plan (LRP). The consultant is beginning to model mid and long term service plan maps. The maps are currently available at: http://www.kerncog.org/cms/attachments/348_DraftMetroTransit-Maps.pdf. Mr. Snoddy advised the Committee that the maps are subject to significant changes once the modeling is complete.

This item was for Information only

VI. LOCAL AGENCY FORMATION COMMISSION SEAT ON THE REGIONAL PLANNING ADVISORY COMMITTEE

Ms. Napier stated that during previous meetings, the Regional Planning Advisory Committee (RPAC) discussed requesting the Kern COG Board create a seat on the RPAC for the Local Agency Formation Commission (LAFCO). Ms. Napier advised the Committee that Rebecca Moore, Executive Officer, LAFCO, discussed the possibility of being part of the RPAC with the LAFCO attorney and the LAFCO Board of Directors. After those discussions, LAFCO and Kern COG staff recommended creating one permanent ex-officio non-voting member for LAFCO on the RPAC.

Mr. George made a motion to recommend the Kern COG Board of Directors adopt the revised RPAC By-Laws to create one permanent ex-officio non-voting member for LAFCO, seconded by Mr. James, motion carried.

VII. PROJECT SELECTION PROCESS UPDATE

Mr. Ball stated that In October 2007 the Kern COG Board directed staff to update the transportation project selection process. An initial attempt by staff to update the process combined with the passage of state greenhouse gas goals resulted in the Board requesting a consultant be retained. Mr. Ball introduced Mr. Carlos Hernandez of COH & Associates who provided background information to the Committee. Mr. Hernandez invited Committee members to participate in a kick-off workshop on September 28, 2011 and provide input into the project selection process.

The following items were handed out at the meeting:

- a. Policies & Procedures Version III
- b. Powerpoint Presentation

- c. Resource Bibliograph
- d. Best Practices Other Agencies

This item was for information only.

VIII. DISCUSSION SUMMARIES/MEETING UPDATES:

- a. Transportation Technical Advisory Committee (TTAC) Meeting Notes of July 6, 2011
- b. August 24, 2011 Kern Regional Transportation Modeling Committee (TMC) Meeting Update – Meeting Notes were handed out at the meeting.

IX. THE REQUIREMENTS OF SB 375: STARTING WITH THE SCS AND APS (Napier)

Chairman Clausen stated that this item was discussed at the July 6 and August 3 meetings. He stated that they would continue to review SB 375 Legislation and the provisions that focus on the required elements of the SCS and APS. The Committee reviewed the APS requirements, Scope of Authority and the Air Resources Board Review of SCS and APS.

The following items were handed out at the meeting:

- a. ARB Methodology to review Greenhouse Gas Reductions of the SCS
- b. KCOG SB 375 Modeling Methodology – Draft
- c. Comments on SCS Centers Maps

This item was for information only.

X. INFORMATION ITEMS/ANNOUNCEMENTS

- a. California Partnership for the SJV Sustainable Communities Work Group Meeting Agenda - September 8, 2011, in Bakersfield
 - i. Sustainable Communities Work Group Overview
 - ii. Sustainable Communities Strategic Action Proposal Update
- b. COG Directors Draft Staff Report on “How to Work Together for SB 375 Target Setting”

XI. MEMBER ITEMS

There were none.

XII. ADJOURNMENT

The next meeting will be October 5, 2011 at 1:30 P.M. With no further business, the meeting was adjourned at 3:34 p.m.

KERN COUNCIL OF GOVERNMENTS
REGIONAL PLANNING ADVISORY COMMITTEE

KERN COG CONFERENCE ROOM
1401 19TH STREET, THIRD FLOOR
BAKERSFIELD, CALIFORNIA

WEDNESDAY
October 5, 2011
1:30 P.M.

Chairman Clausen called the meeting to order at approximately 1:35 P.M.

I. ROLL CALL

MEMBERS PRESENT:

Michael Bevins	City of California City
Wayne Clausen	City of Shafter
Paul Gorte	City of Taft
David James	City of Tehachapi
Craig Murphy	County of Kern
Mike McCabe	City of Delano (telephone)
Rebecca Moore	LAFCO (non-voting)

STAFF:

Becky Napier	Kern COG
Rob Ball	Kern COG
Troy Hightower	Kern COG
Raquel Pacheco	Kern COG
Linda Urata	Kern COG

OTHER:

Patty Poire	Western Properties
Barry Nienke	Kern County Roads
Warren Maxwell	Kern County Roads
Vince Zaragoza	Geo-economics' & Planning

- II. PUBLIC COMMENTS:** This portion of the meeting is reserved for persons to address the Committee on any matter not on this agenda but under the jurisdiction of the Committee. Committee members may respond briefly to statements made or questions posed. They may ask a question for clarification; make a referral to staff for information or request staff to report to the Committee at a later meeting. **SPEAKERS ARE LIMITED TO TWO MINUTES. PLEASE STATE YOUR NAME AND ADDRESS FOR THE RECORD PRIOR TO MAKING A PRESENTATION.**

None

III. APPROVAL OF DISCUSSION SUMMARIES

- a. Meeting of August 31, 2011

There was not a quorum for the meeting; therefore, the August 31 meeting minutes will be considered at the next regular meeting.

IV. MPO REGIONAL TARGETS/SCS STRATEGIES

Ms. Napier stated that the California Air Resources Board requested a recommendation from the eight MPOs on multi-MPO SB 375 regional target setting and Sustainable Community Strategy coordination as part of the 2012 provisional SB-375 target update. The decision to work together toward the development of multi-county goals, policies, and/or SCSs is at the discretion of each MPO. Why should an MPO contemplate anything other than individual MPO targets? Each MPO should evaluate the flexibility to define the regional target to identify which option has the potential to provide the most benefit. One potential advantage of a multi-MPO target includes the flexibility to share greenhouse gas emissions reductions.

Areas where SCS coordination might make sense for multi-county coordination include:

- Greenhouse gas emissions quantification methodology;
- SR-99;
- Ridesharing/Vanpooling;
- Cross County Transit Services;
- Short Haul Rail; and
- Transportation Project development (where projects straddle multiple counties, local jurisdictions and MPOs currently coordinate development of multi-county projects).

Areas where SCS coordination does not make sense and is not recommended being coordinated include:

- Land use planning (local decision); and
- Transportation Project development (where projects are contained within one county).

After discussion the Committee requested that staff alert the Transportation Planning Policy Committee (TPPC) that due to lack of a quorum they could not take official action. Those in attendance concurred that they agreed with the TPPC 1) instructing staff to prepare a Kern MPO SB 375 regional target; 2) instructing staff to assess multi-MPO SB 375 regional target(s); and 3) instructing staff to participate in voluntary development of SCS goals and/or strategies with the other 7 MPOs to identify possible benefits to the Kern region.

V. DRAFT SB 375 COORDINATION WORK PLAN AND FRAMEWORK

Mr. Ball stated at the September COG Board meeting staff was requested to work with the RPAC to update the SB 375 Coordination Work Plan to add a Framework for developing the Sustainable Communities Strategy. The RPAC held a special meeting on September 28 to consider updating the SB 375 Coordination Work Plan and Framework. At the September 28 meeting, the Committee directed staff to update what had been completed on the Work Plan and suggested specific language to add for a framework for developing the SCS and bring it back to the meeting today.

After extensive discussion by the Committee, it was decided that the Framework needed to be a stand-alone document. The Framework will be revised and brought back to the Committee at its regularly scheduled meeting of November 2, 2011.

VI. PUBLIC INVOLVEMENT PROCEDURE UPDATE

Mr. Ball stated that federal regulations require Kern COG to adopt a plan for public participation prior to beginning a major update to the Regional Transportation Plan. A proposed amendment to the Public Involvement Procedure also includes new state requirements for a 55 day review for the SCS, and to other clarifying changes. This policy document is scheduled for a 45 day public review period from September 30 to November 14, 2011.

This item was for information only.

VII. PROJECT SELECTION PROCESS UPDATE

Mr. Ball stated that a revised schedule has been developed for updating the process for selecting new transportation projects in the region. The new schedule allows the RPAC time to update the existing SB 375 coordination Work Plan and Framework for meeting state climate change goals. This item was for information only.

VIII. KERN HIGH OCCUPANCY VEHICLE/BUS RAPID TRANSIT STUDY (HOV/BRT STUDY) – MEETING NOTES

Mr. Ball reviewed the meeting notes from the August 31 kickoff meeting for the Kern High Occupancy Vehicle/Bus Rapid Transit Study. This study is one of many that are in process to advise the development of the RTP/SCS

IX. DISCUSSION SUMMARIES/MEETING UPDATES:

- a. Transportation Technical Advisory Committee (TTAC) Meeting Notes of August 31, 2011
- b. August 24, 2011 Kern Regional Transportation Modeling Committee (TMC) Meeting Update (Revised)

X. INFORMATION ITEMS/ANNOUNCEMENTS

- a. Ms. Napier announced that staff was soliciting projects for the 2012/13 OWP. Project could include but are not limited to transportation studies, corridor studies, project study reports, and technical assistance grants.

XI. MEMBER ITEMS

There were none

XII. ADJOURNMENT

The next meeting will be November 2, 2011 at 1:30 P.M. With no further business, the meeting was adjourned at 4:21 p.m.



August 1, 2011

TO: Transportation Modeling Committee
FROM: Ron Brummett, Executive Director
By: Ed Flickinger, Regional Planner III
SUBJECT: AGENDA ITEM: IV
KERN COUNTY TRAFFIC COUNT STUDY

DESCRIPTION:

A contract with Pacific Traffic Data Services has been negotiated for an amount not to exceed \$79,676 for the preparation of the KERN COUNTY TRAFFIC COUNT STUDY. The adopted Kern COG Federal Transportation Improvement Program includes Federal Regional Surface Transportation Program (RSTP) funding (with local match) in FY 2011/12 budget to fund the Regional Transportation Monitoring Improvement Plan. The study is an annual program that is renewable annually up to 5 years.

DISCUSSION:

Pacific Traffic Data Services, our new traffic count contractor, can more than double the traffic counts that can be taken within the same budget. Our previous contractor completed our 1029 item count location list for \$78,825 on Non HPMS classification years and \$89,550 on HPMS classification years (those years took more than one year to complete our list). Our new contractor is contracted to complete our list for \$29,742.75 on Non HPMS classification years and \$31,805.25 on HPMS classification years.

We have 3 possibilities with this cost savings. First, we will be able to count locations at least twice a year. Second, we can count additional locations that were previously counted based on the maps sent. It is possible to increase the amount of locations of Local Significance based on our Regional Transportation Monitoring Improvement Plan (see Local Significance excerpt below), but when the price goes up we may not be able to maintain those. We would count these locations by creating a supplemental list. Whatever budget remaining, the counts can continue again from our original list. The other possibility is giving back some of the RSTP funds that resulted from the cost savings (The problem with that is when the traffic count price goes up, we will not have the funds to maintain much of the original traffic count list, and the consultant likely created the pricing based on our budgeted amount).

One last possibility is to use the remaining budget on speed surveys for the locations on the original traffic count list. The May 25 meeting action item was to Define needs/reasons for Speed Survey data. Speed Survey data is required by 2010 California RTP Guidelines

http://www.catc.ca.gov/programs/rtp/2010_RTP_Guidelines.pdf Section 3.2 RTP Modeling Requirements and Recommendations, p. 43: "*C. Regions with moderate to rapid growth, non-attainment AQ, or the potential for transit to significantly reduce VMT. ...11. Agencies should investigate their model's volume-delay function and ensure that speeds outputted from the model are reasonable. Road capacities and **speeds should be validated with surveys.***"

The drawback is that part of the project would most likely have to go out for bid and the economy of scale of having the current traffic count contractor do the same work could not be guaranteed. Also, it was discussed at the June 22 meeting that the jurisdictions that attended the meeting do their own surveys. However, the data needs to be shared with Kern COG for the Model Improvement Program (MIP) as discussed for the needs above. Based on this notice, the jurisdictions that did not attend the June 22 meeting are being asked for their interest in speed surveys as compared to the other discussed alternatives. Also, if those jurisdictions do their own speed surveys, the data also needs to be shared with Kern COG for the MIP.

The Regional Transportation Monitoring Improvement Plan (link http://www.kerncog.org/cms/attachments/265_Regional%20Transportation%20Monitoring%20Improvement%20Plan%20Final%20Report%201-4-08%20with%20TOC.pdf) with the excerpts of new locations and speed surveys are listed below.

Local Significance. Roadway segments of local significance represent locations that are important to the circulation within one community, but that generally do not play a large role in regional circulation. Together with community entry points, these locations collectively provide coverage of an individual community. Locations of local significance also include areas currently experience a high rate of growth.

Speed Survey Data. As discussed in the Needs Assessment, most of the jurisdictions in the County collect speed data, and most use their own staff to do so. Follow-up discussions revealed that speed data are generally collected for the purposes of establishing speed limits under State law. Since the legislative body of each jurisdiction must make findings to establish speed limits, it is appropriate that the responsibility for collecting the relevant data remain at the local level. Therefore, it is not recommended that speed survey data be incorporated into the RTMIP.

However, the pneumatic tube equipment used to provide traffic counts are also capable of producing speed information at the same time. Since the speed information is derived from the same raw data, there is little additional cost to collecting and reporting speed information. The accuracy of this type of speed information is not sufficient for establishing speed limits. It may, however, be of interest in monitoring congestion on particular roads or for route coordination. Therefore, it is recommended that Kern COG discuss with its member agencies whether such data would be useful.

RECOMMENDED ACTION:

The attendants of the June 22 meeting recommended to count more of the locations that were counted in the past. With the remaining budget, the counts shall continue again from our original list.



October 26, 2011

TO: Transportation Modeling Committee

By: Ben Raymond, Regional Planner II

SUBJECT: TMC AGENDA ITEM: V
CENSUS HOUSEHOLD DATA &
TAZ DATA COMPARISON - UPDATE

DESCRIPTION:

Kern COG has completed analysis of the 2010 Census data as a checkpoint of existing 2010 TAZ Forecast.

DISCUSSION:

The Census Bureau released the PL-94 171 file in March 2011. The PL-94 171 file includes data for Households, Occupied Households, and Vacant Households collected in the 2010 decennial census. Staff has performed analysis of Transportation Analysis Zone (TAZ) 2010 Forecasted Household data as it compares to Census 2010 Occupied Household data. The two primary objectives of the analysis were first to validate the Census Data, and upon validation update the TAZ 2010 data to the census data.

There are multiple steps in the analysis process to validate the Census data. The first step of the analysis was tying the block level data to the TAZ areas. The next steps were to identify TAZs which have a significant difference between census occupied households and TAZ households, of greater than 100. Then, perform analysis using aerial imagery, address points, and Kern Assessor data to determine the accuracy of the census data. 143 TAZs were analyzed. Of the 143 TAZs analyzed, 117 were determined to have census data that is more accurate than TAZ data, 11 were determined to have more accurate TAZ data and 15 were undeterminable with information available. The final phase of the analysis was checking the census blocks which overlap TAZ boundaries and reassigning household data if needed. Sixty overlapping blocks were analyzed and 34 needed household data reassigned. Attachment A includes tables summarizing this analysis.

Through the analysis two census blocks were identified as having significant errors. It was determined that the data from one of the blocks had most likely been applied to the other nearby block. This was the only significant error found and is the only proposed alteration to the Census Block data.

Over 91% of TAZs analyzed were determined to have census data that is more accurate than the 2010 TAZ forecast. It is staff's recommendation that we update 2010 Forecast to 2010

Census data as a checkpoint for Kern COG forecasts. Maps & Tables depicting the changes are included in Attachment B. As depicted in the attached maps, the census data shows more compacted growth in 2010. The Census data has shown an increase in persons per household, so while Kern COG's 2010 forecast was within 1% of the Census 2010 population, the number of households has decreased by 5%. This could be explained by the economic down turn forcing more young people to live at home longer, and unemployed persons living with family.

ACTION: Approve the 2010 Forecast TAZ data updated to the 2010 Census.

ATTACHMENT A: Data Analysis

143 TAZs Analyzed

TAZ	HHLD_TAZ	HHLD_Census	Cen_HousingUnits	Cen_Vacant	TAZ(-)CenHHLDs	CenError	Error Description	Note
747	1981.34	625	856	231	1356	1	Census Correct	
673	2154.28	1271	1994	723	883	1	Census Correct	1970 units counted
672	811.19	317	796	479	494	1	Census Correct	799 units counted
633	1223.52	741	1545	804	483	4	Neither Correct	1470 units counts
1335	479.76	0	0	0	480	1	Census Correct	
1686	431.52	1	1	0	431	1	Census Correct	
710	1156.90	800	999	199	357	1	Census Correct	1149 units counted
639	1187.98	863	1171	308	325	1	Census Correct	1251 units counted
50	273.30	0	0	0	273	1	Census Correct	
1459	574.98	311	321	10	264	4	Neither Correct	508 units
632	580.62	320	635	315	261	1	Census Correct	702 units counted; hVRate
705	585.03	329	561	232	256	1	Census Correct	546 units counted
1049	2360.33	2124	2729	605	236	1	Census Correct	2766 Counted
718	913.84	679	970	291	235	1	Census Correct	967 units counted; hVRate
277	1199.95	990	1183	193	210	1	Census Correct	
1300	429.89	233	259	26	197	4	Neither Correct	346 units
754	754.33	563	826	263	191	1	Census Correct	813 units counted
589	632.75	442	615	173	191	1	Census Correct	521 units counted
904	184.98	0	0	0	185	1	Census Correct	
1359	183.57	0	0	0	184	1	Census Correct	
845	1209.81	1035	1118	83	175	1	Census Correct	892 units counted
335	704.97	532	715	183	173	1	Census Correct	
605	966.33	802	857	55	164	2	TAZ Correct	944 units counted
1355	235.70	72	75	3	164	1	Census Correct	
146	599.18	438	504	66	161	1	Census Correct	
366	691.43	531	590	59	160	2	TAZ Correct	
58	1428.94	1269	1324	55	160	4	Neither Correct	1370 units: RECHECK
960	806.45	647	797	150	159	1	Census Correct	786 units counted
413	440.59	285	315	30	156	1	Census Correct	
1380	674.97	528	664	136	147	1	Census Correct	
269	960.96	816	941	125	145	1	Census Correct	
384	744.47	600	667	67	144	1	Census Correct	509 units counted
711	1457.20	1313	1680	367	144	4	Neither Correct	1514 units counted
613	418.97	279	300	21	140	1	Census Correct	296 units counted
114	958.96	823	961	138	136	1	Census Correct	
283	644.97	511	610	99	134	1	Census Correct	
389	359.99	228	238	10	132	4	Neither Correct	300 units
1051	131.99	2	2	0	130	1	Census Correct	
276	643.97	514	607	93	130	1	Census Correct	

ATTACHMENT A: Data Analysis

143 TAZs Analyzed

TAZ	HHLD_TAZ	HHLD_Census	Cen_HousingUnits	Cen_Vacant	TAZ(-)CenHHLDs	CenError	Error Description	Note
961	541.96	413	456	43	129	2	TAZ Correct	580 units counted
786	268.02	142	245	103	126	1	Census Correct	265 units counted
1394	393.40	268	293	25	125	4	Neither Correct	atleast 600 units
264	948.96	824	916	92	125	1	Census Correct	
695	227.92	104	129	25	124	2	TAZ Correct	263 units
15	236.99	114	119	5	123	1	Census Correct	
972	480.55	358	443	85	123	1	Census Correct	487 Units Counted
795	121.00	0	0	0	121	1	Census Correct	
1279	338.97	221	246	25	118	1	Census Correct	
739	342.15	225	236	11	117	1	Census Correct	266 units counted
46	495.35	379	391	12	116	1	Census Correct	
65	1044.22	928	1079	112	116	1	Census Correct	CAdd 39 from64
109	1190.95	1075	1231	156	116	1	Census Correct	
415	305.18	191	199	8	114	1	Census Correct	
1490	463.98	350	377	27	114	1	Census Correct	
509	907.86	795	908	113	113	1	Census Correct	891 units counted
12	328.78	217	222	5	112	1	Census Correct	
552	872.71	761	885	124	112	1	Census Correct	869 units counted
850	165.79	55	185	130	111	1	Census Correct	157 units counted
1581	445.60	335	381	46	111	2	TAZ Correct	455 units counted
315	994.96	885	1024	139	110	1	Census Correct	
715	261.29	152	247	95	109	1	Census Correct	219 units counted
798	671.28	563	669	106	108	1	Census Correct	650 units counted
773	399.06	292	414	122	107	1	Census Correct	459 units counted
534	357.01	252	345	93	105	1	Census Correct	323 units counted
1622	111.51	8	9	1	104	1	Census Correct	
860	549.33	446	566	120	103	1	Census Correct	546 units counted
388	388.15	285	294	9	103	1	Census Correct	
712	303.20	202	348	146	101	1	Census Correct	362 units counted
1332	50.97	0	0	0	51	5	Corrected	0 units
962	1049.07	1015	1233	218	34	4	Neither Correct	1126 units counted
743	491.81	466	631	165	26	1	Census Correct	666 units counted
1446	127.92	110	113	3	18	1	Census Correct	CAdded 100; from21
554	1117.75	1102	1266	164	16	1	Census Correct	1272 units counted
375	15.04	0	238	0	15	1	Census Correct	
121	339.99	326	440	114	14	1	Census Correct	Census too many H_Units
1331	2.25	0	253	0	2	1	Census Correct	
21	1.74	0	0	0	2	5	Corrected	CMoved 100; to1446
24	326.99	331	361	30	-4	1	Census Correct	368 units; CMove128

ATTACHMENT A: Data Analysis

143 TAZs Analyzed

TAZ	HHLD_TAZ	HHLD_Census	Cen_HousingUnits	Cen_Vacant	TAZ(-)CenHHLDs	CenError	Error Description	Note
240	402.98	423	434	11	-20	1	Census Correct	CAdded128
221	742.66	764	885	121	-21	1	Census Correct	
1050	144.99	168	252	84	-23	1	Census Correct	227 units counted
772	1069.48	1096	1193	97	-27	2	TAZ Correct	1166 units counted
164	836.97	877	990	113	-40	1	Census Correct	
1620	272.73	315	402	87	-42	1	Census Correct	410 units counted
602	314.32	362	443	81	-48	1	Census Correct	412 units counted
576	425.52	479	627	148	-53	1	Census Correct	574 units counted
1128	174.99	234	281	47	-59	1	Census Correct	
1277	330.81	390	437	47	-59	1	Census Correct	
548	310.84	378	422	44	-67	1	Census Correct	423 units counted
1023	402.90	471	529	58	-68	2	TAZ Correct	
1647	655.34	724	791	67	-69	4	Neither Correct	935 units counted
611	595.11	668	709	41	-73	4	Neither Correct	782 units counted
657	275.99	350	392	42	-74	1	Census Correct	360 units counted
919	281.01	356	388	32	-75	1	Census Correct	357 units counted
952	130.17	207	231	24	-77	1	Census Correct	237 units counted
169	353.40	432	458	26	-79	1	Census Correct	
1017	197.99	280	310	30	-82	1	Census Correct	
434	565.45	649	686	37	-84	1	Census Correct	691 Counted
140	297.99	383	401	18	-85	1	Census Correct	
168	533.98	620	660	40	-86	1	Census Correct	
354	740.97	827	917	90	-86	1	Census Correct	
577	953.90	1041	1319	278	-87	1	Census Correct	1329 units counted
1613	62.29	155	172	17	-93	5	Corrected	SplitBlock 86 Counted: RE-EVAL
330	361.99	459	490	31	-97	1	Census Correct	
76	831.97	930	980	50	-98	1	Census Correct	
1392	228.01	327	364	37	-99	1	Census Correct	
1124	55.24	160	181	21	-105	1	Census Correct	
682	59.95	165	178	13	-105	1	Census Correct	
1039	24.94	130	145	15	-105	4	Neither Correct	Census Error
55	170.65	283	307	24	-112	1	Census Correct	
538	7.00	120	132	12	-113	1	Census Correct	
1487	204.59	320	344	24	-115	1	Census Correct	CBoundary <> TAZ
531	3.08	119	132	13	-116	1	Census Correct	173 units counted
1132	473.98	590	626	36	-116	1	Census Correct	
681	85.86	207	227	20	-121	1	Census Correct	
456	507.62	629	653	24	-121	1	Census Correct	700 Counted
457	506.29	630	641	11	-124	1	Census Correct	623 Counted

ATTACHMENT A: Data Analysis

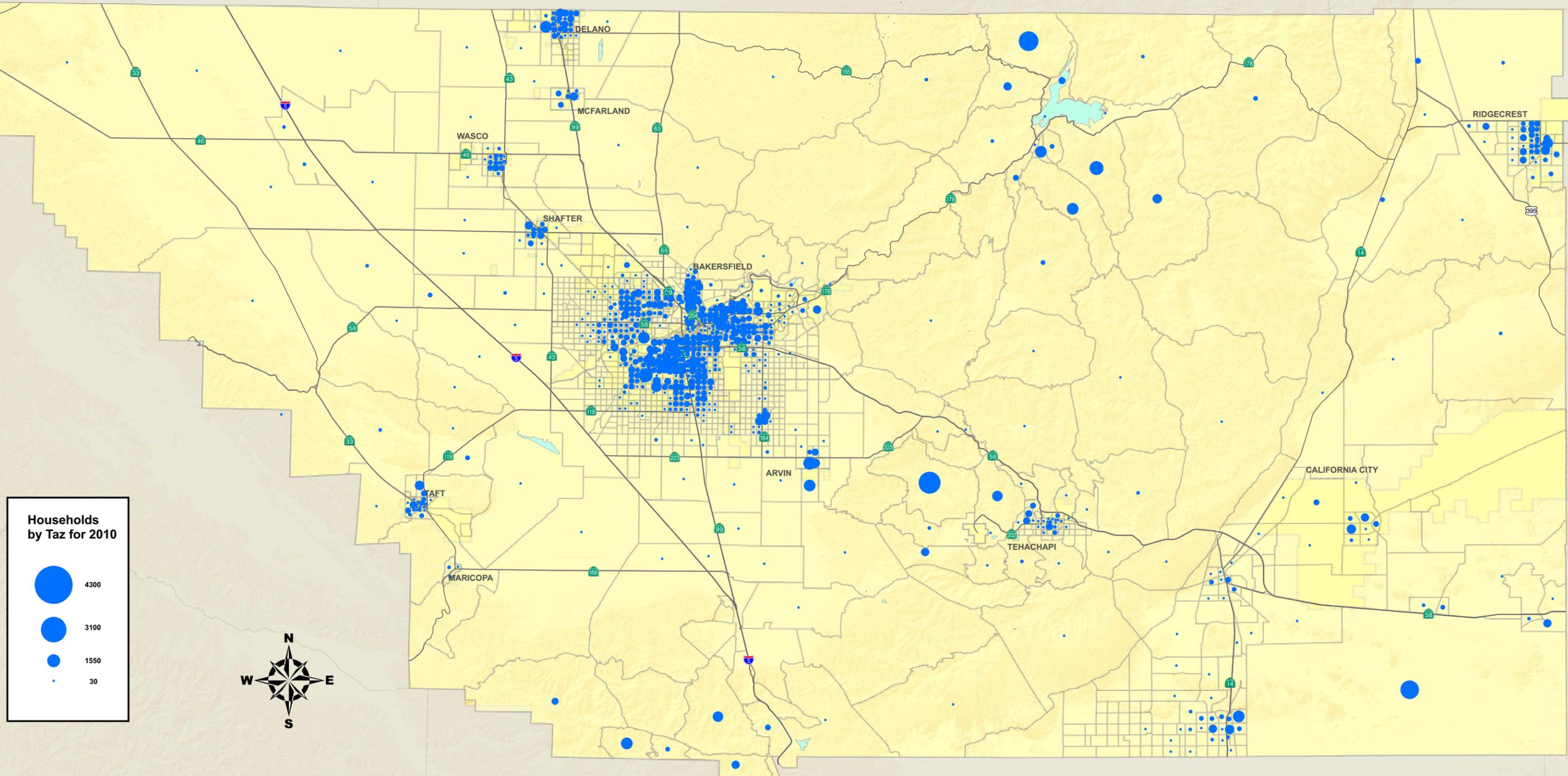
143 TAZs Analyzed

TAZ	HHLd_TAZ	HHLd_Census	Cen_HousingUnits	Cen_Vacant	TAZ(-)CenHHLds	CenError	Error Description	Note
578	731.33	861	1040	179	-130	4	Neither Correct	1102 units counted
999	388.98	520	555	35	-131	1	Census Correct	
77	980.96	1112	1181	69	-131	1	Census Correct	
244	39.79	172	188	16	-132	1	Census Correct	
521	1339.90	1473	1547	74	-133	4	Neither Correct	1493 Counted
1412	571.98	711	746	35	-139	1	Census Correct	
1135	90.36	234	261	27	-144	4	Neither Correct	200 units; 61 CMoved
166	505.98	654	693	39	-148	1	Census Correct	
341	498.98	647	699	52	-148	4	Neither Correct	573 units
301	243.99	397	466	69	-153	1	Census Correct	
138	595.98	752	793	41	-156	1	Census Correct	
134	597.90	760	812	52	-162	1	Census Correct	
495	751.93	925	1108	183	-173	1	Census Correct	1105 Counted
1486	158.63	339	345	6	-180	1	Census Correct	
546	762.83	946	1015	69	-183	1	Census Correct	1018 units counted
479	594.40	804	832	28	-210	1	Census Correct	796 Counted
1417	349.23	585	602	17	-236	1	Census Correct	
1434	382.25	622	638	16	-240	1	Census Correct	
10	1204.95	1457	1582	125	-252	1	Census Correct	
186	261.99	519	549	30	-257	1	Census Correct	
179	26.00	290	320	30	-264	1	Census Correct	
130	785.97	1059	1137	78	-273	2	TAZ Correct	
1449	296.33	596	665	69	-300	2	TAZ Correct	
1395	47.16	361	388	27	-314	2	TAZ Correct	
219	491.98	862	970	108	-370	1	Census Correct	
1004	243.99	786	947	161	-542	4	Neither Correct	690 units

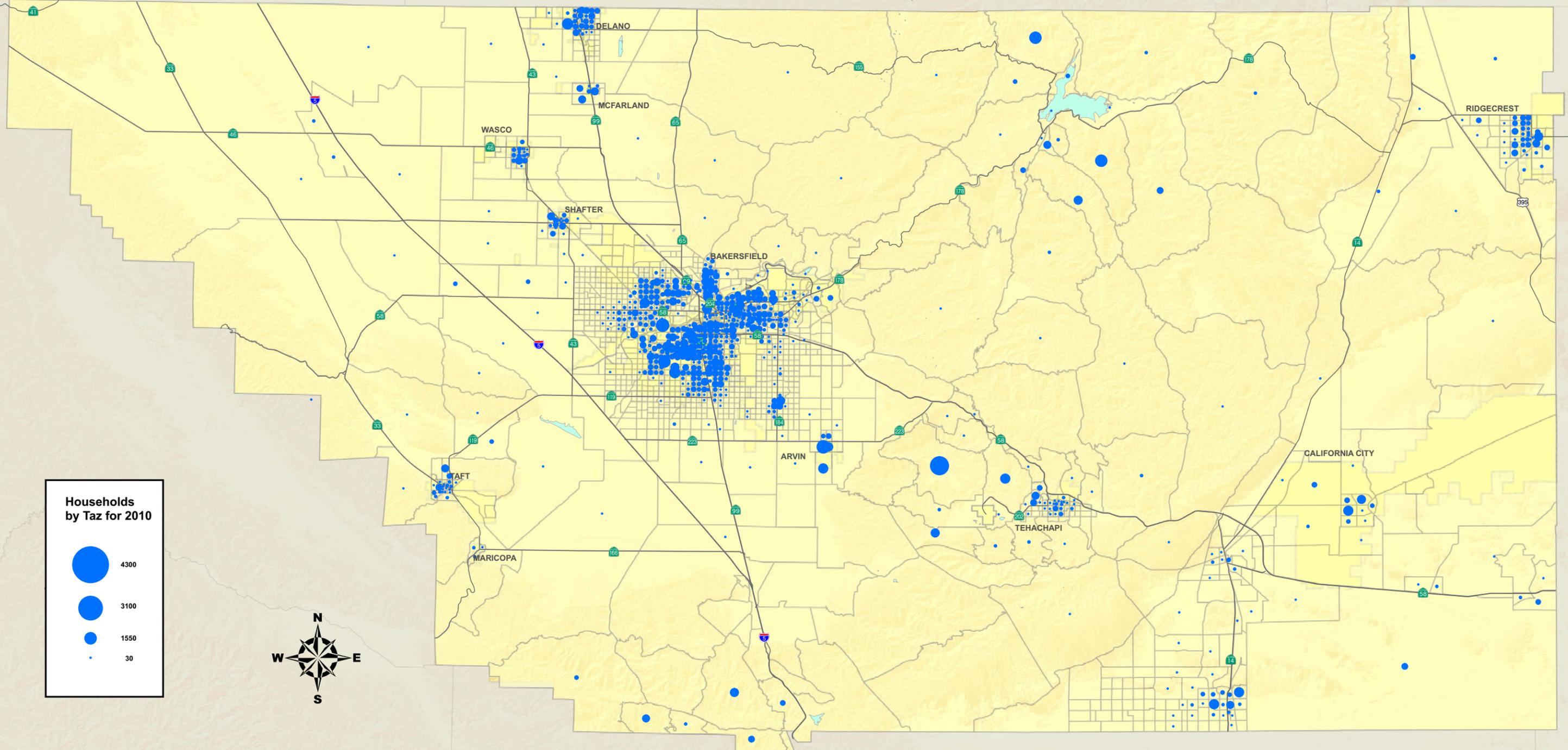
ATTACHMENT A: Data Analysis
34 Census Block/TAZ Overlapping Boundary Corrections

TAZ_from	TAZ_to	Census HUnits Moved	Census Occupied Moved	Status
21	1446	100	98	Fixed
24	240	128	128	Fixed
48	52	15	14	Fixed
52	387	34	31	Fixed
57	259	31	31	Wash
64	65	39	39	Fixed
204	1120	41	31	Fixed
207	996	24	24	Fixed
259	57	20	20	Wash
379	1351	66	62	Fixed
379	1353	18	16	Fixed
397	1188	67	38	Fixed
496	1581	70	70	Fixed
540	532	26	26	Fixed
585	431	90	90	Fixed
614	603	22	10	Undeterminable
679	992	47	47	Fixed
962	961	127	111	Fixed
992	680	59	59	Fixed
1064	1065	29	29	Fixed
1125	1124	33	29	Fixed
1135	136	31	26	Fixed
1135	1136	30	25	Fixed
1142	129	77	77	Fixed
1187	399	33	23	Fixed
1272	1273	28	26	Fixed
1278	1279	39	39	Fixed
1296	384	104	104	Fixed
1332	375	238	208	Fixed
1332	1331	253	222	Fixed
1039	1396	NotMoved: 145	NotMoved: 130	CensusError
1411	1410	25	25	Fixed
1434	389	56	56	Fixed
1435	388	94	94	Fixed
1448	7	26	26	Fixed
1613	695	119	109	Fixed
1649	702	30	30	Fixed
1355	378	35	35	Fixed

2010 Existing Forecast Households



2010 Census Updated Households

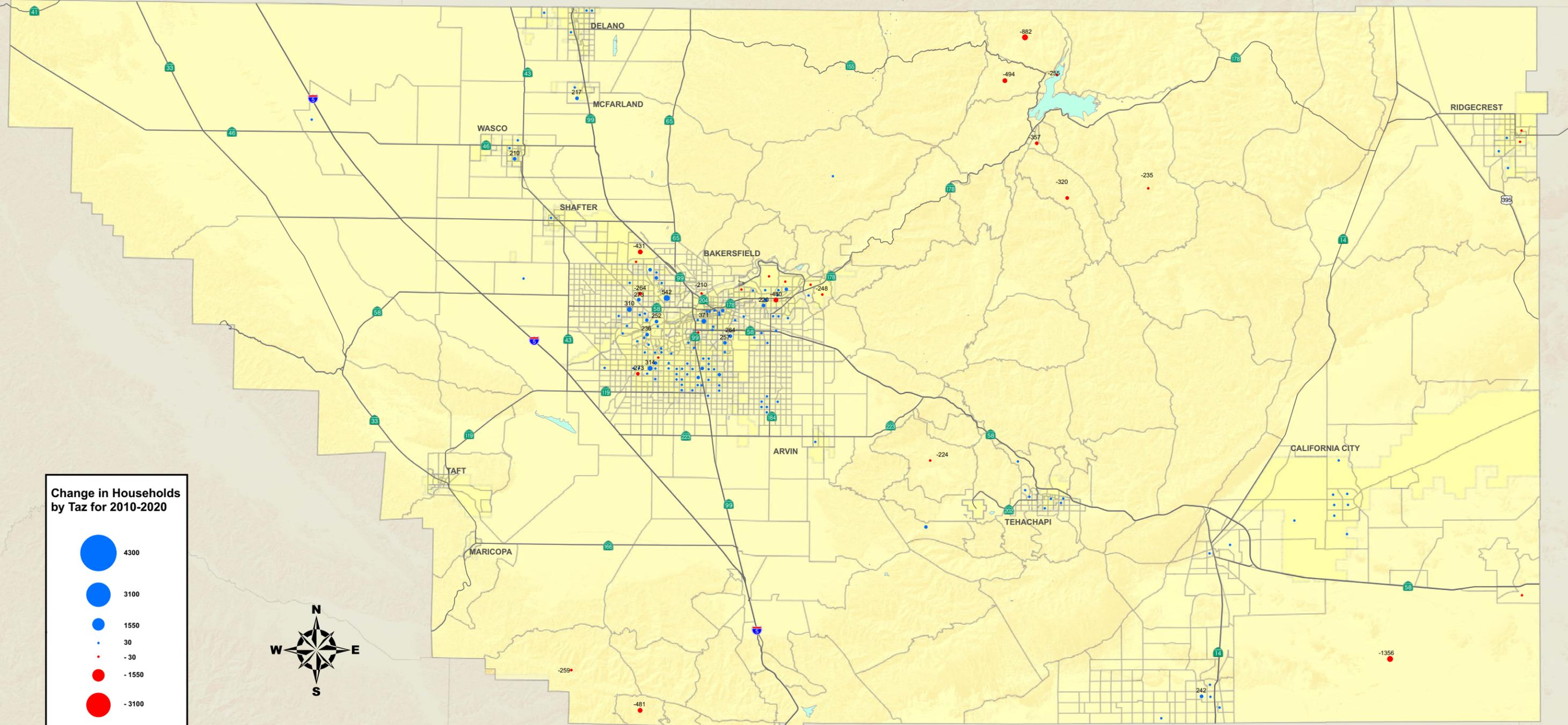


Households by Taz for 2010

- 4300
- 3100
- 1550
- 30



2010 Forecast to 2010 Census Change in Households (Census - Forecast)



ATTACHMENT B: 2010 Forecast Adjustments

Subregion- and RSA	2010 Census Checkpoint				2010 Existing Forecast Values				Difference Between Census and 2010 Forecast (Census - Forecast)	
	Total Population	Household Population	Group Quarters	Number of Households	Total Population	Household Population	Group Quarters	Number of Households	Total Population	Number of Households
Westside Kern	21,884	18,767	3,117	6,189	19,659	18,873	785	7,206	2,226	(1,017)
Greater Taft/Maricopa	21,884	18,767	3,117	6,189	19,659	18,873	785	7,206	2,226	(1,017)
Delano_McFarland	69,114	56,902	12,213	13,712	62,942	54,706	8,236	14,039	6,172	(328)
Greater Delano/McFarland	69,114	56,902	12,213	13,712	62,942	54,706	8,236	14,039	6,172	(328)
Wasco	29,981	24,221	5,759	6,087	29,904	22,478	7,426	6,165	77	(78)
Greater Wasco	29,981	24,221	5,759	6,087	29,904	22,478	7,426	6,165	77	(78)
Tehachapi_Frazier	45,242	39,240	6,002	15,098	45,744	37,344	8,400	16,350	(502)	(1,252)
Greater Frazier Park	8,577	8,577	-	3,484	8,517	8,500	17	4,588	60	(1,104)
Greater Tehachapi	36,665	30,663	6,002	11,614	37,227	28,844	8,383	11,762	(562)	(148)
Metro	583,457	576,686	6,770	179,180	587,128	577,684	9,444	185,055	(3,672)	(5,875)
Greater Arvin	20,698	20,347	351	4,596	21,931	21,799	132	4,975	(1,233)	(379)
Greater Shafter	25,933	23,660	2,274	6,212	31,737	28,094	3,642	7,110	(5,803)	(898)
Metro - Central	20,769	20,369	400	8,248	21,181	19,822	1,360	8,462	(413)	(214)
Metro - N.O.R.	129,183	128,800	384	44,451	137,849	137,483	366	46,464	(8,666)	(2,013)
Metro - Northeast	97,970	96,707	1,263	29,451	103,184	101,267	1,918	31,939	(5,214)	(2,488)
Metro - Southeast	142,696	141,596	1,101	37,484	127,543	126,767	776	37,053	15,153	431
Metro - Southwest	146,207	145,208	999	48,739	143,703	142,454	1,249	49,052	2,504	(314)
Southeast Kern	44,412	41,544	2,868	14,625	46,777	43,339	3,439	16,381	(2,366)	(1,756)
Greater Cal City/Mojave	22,753	20,121	2,632	7,307	22,021	18,586	3,435	7,959	732	(652)
Greater Rosamond	21,658	21,423	236	7,318	24,756	24,753	3	8,422	(3,098)	(1,104)
Lake Isabella	16,500	16,423	78	7,634	16,945	16,630	314	10,951	(445)	(3,316)
Greater Lake Isabella	16,500	16,423	78	7,634	16,945	16,630	314	10,951	(445)	(3,316)
Indian Wells	35,011	34,817	193	13,775	36,501	36,145	356	15,180	(1,490)	(1,406)
Greater Ridgecrest	35,011	34,817	193	13,775	36,501	36,145	356	15,180	(1,490)	(1,406)
Grand Total	845,600	808,600	37,000	256,300	845,600	807,200	38,400	271,327	0	(15,027)



October 19, 2011

TO: Kern Regional Transportation Modeling Committee

FROM: RONALD E. BRUMMETT
EXECUTIVE DIRECTOR

BY: Rob Ball, Director of Planning
Troy Hightower, Planner II

SUBJECT: AGENDA ITEM: VI
Draft Land Use Model Update and review Methodology documentation

DESCRIPTION:

On September 23, 2010 as required by statute under SB 375 the ARB Board of Directors set provisional targets to reduce emissions for the San Joaquin Valley Municipal Planning Organizations (MPO's) at 5% by 2020, and 10% by 2035. ARB has given the SJ Valley MPO's an opportunity to submit revised targets in 2012. Kern COG will be required to develop a Sustainable Communities Strategy (SCS) for the 2013/14 Regional Transportation Plan (RTP) that meets the target. Kern COG staff plans to use the Land Use model to assist in the development of the revised targets, and the SCS.

DISCUSSION:

Background

In September 2008 the Governor signed Senate Bill (SB) 375 to control Climate Change emissions from cars, SUVs and light duty trucks. SB 375 requires MPO's in the state to perform new levels of Land Use and Transportation modeling to support development of Sustainable Communities Strategies which are now required for Regional Transportation Plans. Copies of the ARB staff report and related material are available at <http://www.arb.ca.gov/cc/sb375/sb375.htm>.

Kern COG staff first presented the Land Use modeling methodology and Input (attraction) Layers at the September 29, 2009 meeting of the Climate Change Task Force, which has become the Transportation Modeling Committee (TMC). The methodology was largely derived from the UPlan GIS-based modeling process used to develop the Kern Regional Blueprint. The UPlan program has been upgraded to version 2.66. The input layers and parameters were updated as well. The process of updating the model is on-going.

Kern COG is collaborating with the other SJ Valley MPO's in a Model Improvement Program (MIP). The goal of the MIP is to review current modeling capabilities, review more advanced models that may be available, and provide recommendations for the SJ Valley MPO's to enhance, or upgrade their models. The outcome of this program will be used to help SJ Valley MPO's perform the modeling requirements of SB 375. This effort does include the land use models, but it is largely focused on the transportation models. The results of the MIP are scheduled to be available in February 2012.

Recent Activity

On February 23, 2011, Kern COG staff presented to the TMC the modeling methodology and updated input layers for the Land Use model. A draft version of the land use model methodology documentation was distributed to the Committee. Initial model run results were also presented.

On May 25, 2011, Kern COG staff presented to the TMC the updated input layers that are being used in the land use model. Namely, the Combined (County-wide) Land Use Map, and the Input Attraction Layers. Committee members were asked to review the maps and provide comments by July 31, 2011.

On June 22, 2011, and August 3, 2011 Kern COG staff presented an overview of the latest Land Use model (Run D06) to the newly formed Regional Planning Advisory Committee. The comment period was extended to August 31, 2011.

On September 28, 2011 Kern COG staff announced at the RPAC meeting that a draft land use model (Run E02) was prepared based on the inputs received as of August 31, 2011 by member jurisdictions and stakeholders

Over the last 8 months Kern COG staff has been updating the input layers to reflect changes, new data and comments received from member jurisdictions, committee members, and other stakeholders. Kern COG staff has identified the latest version of the model (Run E05) the Draft Alternative 2035 land use.

Kern COG staff has also been developing documentation of the land use model methodology that is being used. Electronic versions of the input layers and documentation can be found at: <http://kerncog.org/cms/agendas-minutes/transportation-modeling>.

Next Steps

Kern COG plans to continue ongoing development of the land use models to assist in the preparation of the Sustainable Communities Strategy for the 2013/2014 RTP with the assistance and oversight of the Kern Regional Transportation Modeling Committee, Technical Transportation Advisory Committee, and the Regional Planning Advisory Committee. This will include reviewing the modeling methodology and development of the UPlan and CubeLand based Land Use models. This same process will be used to submit revised targets to ARB in late 2012 for their consideration.

Kern COG staff has begun development of a new Base land use model. This model uses the same parameters and input layers as the Alternative model, except that the Urban and Built Areas layer has been modified to not reflect infill development. A Project Level land use model is also being developed. The Project Level model will demonstrate how the land use model can be used to model growth for a specific area or project.

Kern COG staff plans to present the Draft Base Land Use model with emissions data at the December 14, 2011 TMC meeting and at the January 4, 2011 RPAC meeting.

Attachments (copies of attachments and model data are available from the Kern COG website)

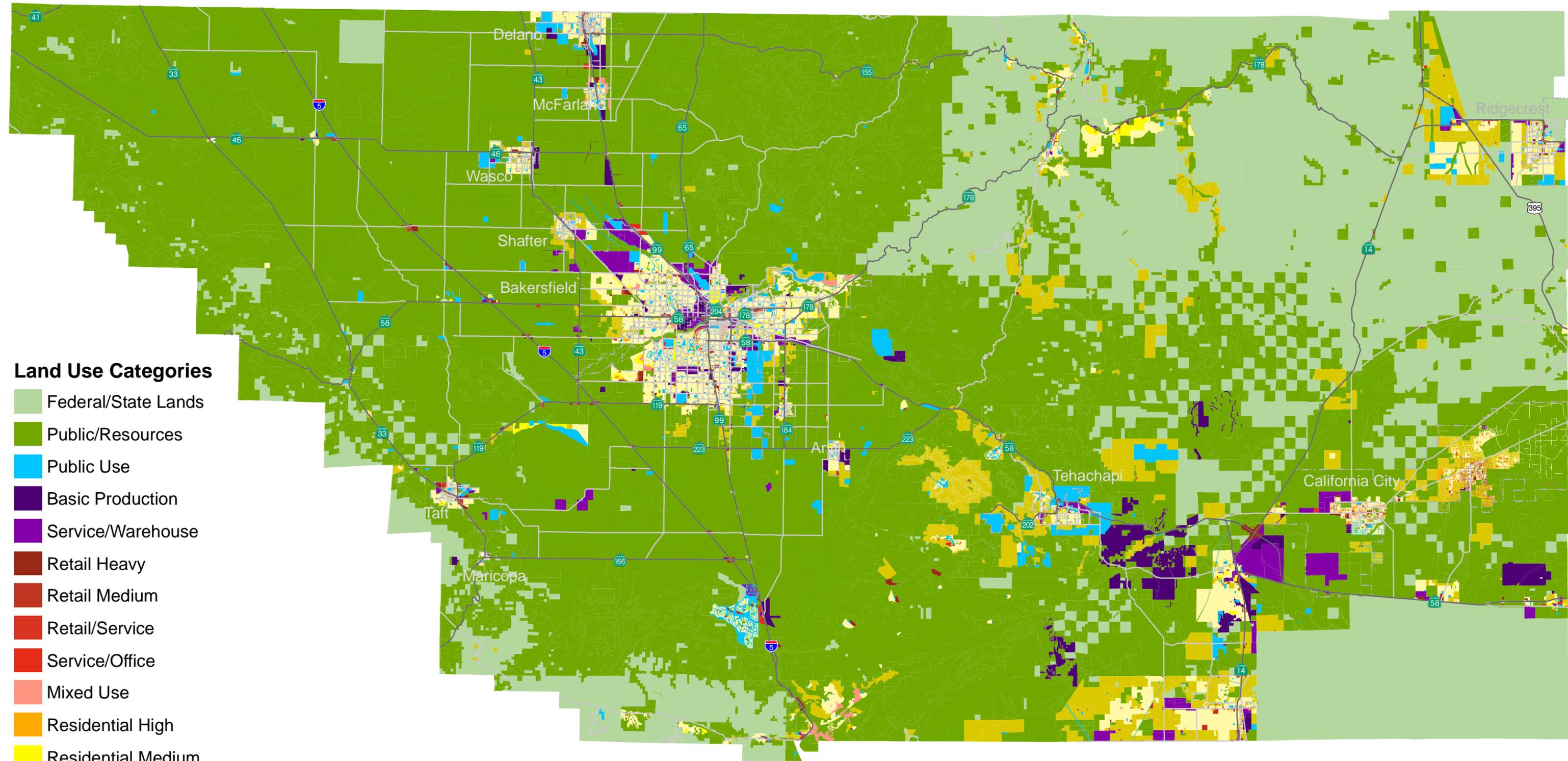
1. Combined Land Use Map
2. Modeling Methodology Documentation

Meeting Schedule

December 14, 2011 – TMC Review Draft Base Land Use Model
January 4, 2012 - RPAC Review Draft Base Land Use Model

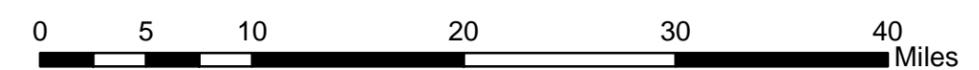
ACTION: Information

DRAFT Kern County Region - Combined Land Use Model Input Layer



- Land Use Categories**
- Federal/State Lands
 - Public/Resources
 - Public Use
 - Basic Production
 - Service/Warehouse
 - Retail Heavy
 - Retail Medium
 - Retail/Service
 - Service/Office
 - Mixed Use
 - Residential High
 - Residential Medium
 - Residential Low
 - Residential Very Low
 - City Limits

DRAFT- For use with Land Use Model





KERN SB 375 MODELING METHODOLOGY - DRAFT

Kern Council of Governments

8/11/2011

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Uplan Land Use Model

UPlan History and Applications

1. UPlan Development and Funding
2. UPlan's Objectives and Uses

How Model Allocates New Growth

1. Cells
2. Attractions
3. Discouragements
4. Weighting
5. Buffers
6. Masks

Kern COG Methodology

SB375 Modeling & Target Setting

1. Kern County Climate Change Task Force

Land Use Model Method

1. Kern COG SB375 Model Chart
 - 1). Planners & Public Outreach
 - 2). UPlan
 - 3). CUBE
 - 4).EMFAC

Basic Rules UPlan Operates By

Creating Scenarios

1. Technical Tools
 - 1). Existing Models
 - 2). New Model Development
2. Current Trends – Business As Usual
3. Alternative Scenarios

Data Input Parameters

1. Data
 - 1). Base Years
2. Matrixes
 - 1). Population Matrix
 - 2). Employment Matrix

Geographic Parameters

1. Draft Sub-Regional GHG Targets
2. Subareas
3. Model Outputs

Technical Appendix

EXECUTIVE SUMMARY

SB 375 SUMMARY OF REQUIREMENTS

Municipal Planning Organizations “MPO” are required to prepare a Sustainable Communities Strategy as a part of the Regional Transportation Plan “RTP”. The SCS must meet the emission targets set for each MPO by the Air Resources Board for the years 2020 and 2035.

The purpose of the SCS is to reduce vehicle emissions from light-duty trucks and passengers vehicles by improvements in Land Use and Transportation planning.

The targets for Kern Council of Governments “Kern COG” the MPO for the County of Kern are 5% reduction by 2020 and 10% reduction by 2035. These targets are planned for review by ARB in 2012.

MODEL DEVELOPMENT

LAND USE AND TRANSPORTATION MODEL DEVELOPMENT

Kern COG has adapted the same methodology used in the Blueprint process for land use modeling based on the UPlan modeling software developed by UC Davis.

Model parameters, assumptions, inputs, and reference information such as General Plans have been provided by Kern COG’s member agencies. The Kern COG Transportation Modeling Committee and other stakeholders have provided input and oversight to the development of the model. The original spreadsheet based land use model will continue to be developed and supported.

Kern COG is using its existing Cube transportation model validated in 2006. It was enhanced in 2010 to include the 4D’s, and modified to run in Cube Voyager.

INTEGRATED LAND USE AND TRANSPORTATION MODEL DEVELOPMENT

Kern COG has developed a procedure that allows the output from the Land Use model to become the input for the transportation model. Evaluation and testing of the new CubeLand integrated land use and transportation model is underway.

TECHNICAL METHODOLOGY

Kern COG intends to use the UPlan/Cube modeling platform to develop the many scenarios required for the development and adoption of the Sustainable Communities Strategy and Alternative Planning Strategy. Kern COG further intends to consult with member agencies, stakeholders, other MPO’s and ARB as part of the SCS development process.

UPLAN PROGRAM OBJECTIVES AND METHODOLOGY

SB 375 BACKGROUND

Achieve GHG Emission Reduction Target Through SCS

Integrate Regional Planning for Transportation, Land Use, and Housing

Full and Open Participation

UPLAN HISTORY AND APPLICATIONS

UPLAN DEVELOPMENT AND FUNDING

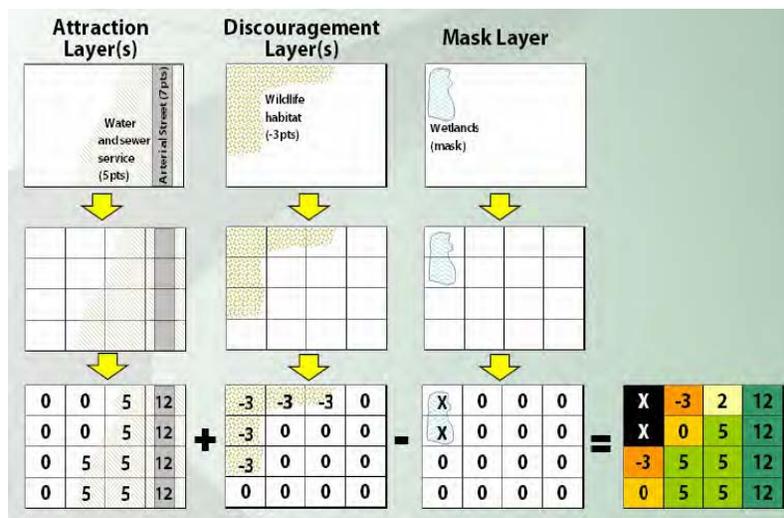
Developed at Information Center for the Environment at UC Davis

Funding received for development originates from several government agencies, including the California Department of Transportation and the California Energy Commission.

UPLAN'S OBJECTIVES AND USES

“UPlan was designed to help regions study the interactive effects of growth and development by projecting future land use patterns. It shows how decisions made today are most likely to impact the region decades into the future.” (ShastaFORWARD)

HOW MODEL ALLOCATES NEW GROWTH

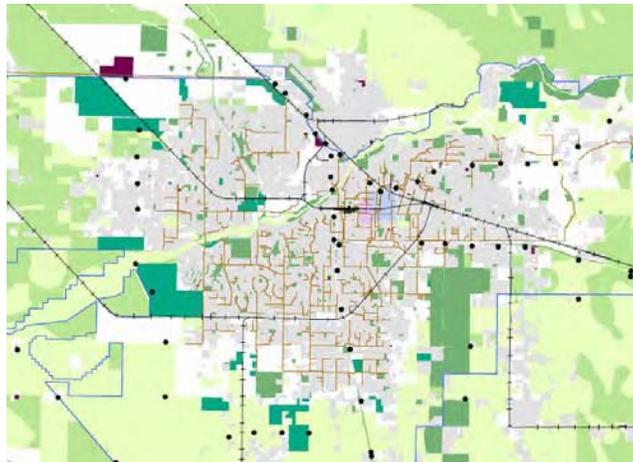


CELLS

UPlan functions by dividing land into “cells”, not parcels or TAZs. These cells are equal in size and can only contain one type of future planned growth, although hybrid types can be created to consolidate other types, such as the “Mixed Use” type, showing both residential and commercial growth. Kern’s model has 50 by 50 meter cells.

ATTRACTIONS

An attraction could be any number of things that would promote future growth in that particular region, such as availability of electricity, water, sewer, and road infrastructure. Attractions can also be non-physical things, such as political boundaries or tax incentives. An attraction will draw the allocation of growth to it, in other words, cells with attractions will have growth allocated to them before cells without.



DISCOURAGEMENTS

A discouragement is the opposite of an attraction; an undesirable feature of a place where future development may take place, such as sandy soil. A discouragement does not prevent growth, although it will stop allocation of it until all other areas of that type are allocated. A discouragement represents an area that would cost more to develop or one that wouldn't have good attributes.

Kern's Land Use Model does not use discouragements

WEIGHTING

Weighting is how UPlan balances attractions and discouragements, as well as how the user can determine how much an attractor will attract growth and how much a discouragement will repel it. For example, if a cell has both an attractor and a discouragement, the values of them can be thought as positive and negative values, respectively. If the cell has an attractor with a weight of ten and a discourager with a weight of five, the total value of the cell will be $10 - 5 = 5$, so the cell will still have an attractive value to it. An example of the usefulness of weighting something would be the absolute need for industrial areas to develop with a water supply, thus any water layers would have a very high attraction weight to them for industrial growth.

0	0	5	12
0	0	5	12
0	5	5	12
0	5	5	12

BUFFERS

Attractions or discouragements may be surrounded by a user defined sphere of coordinates or 'buffer'. The user decides the number and width of the buffers. The highest attraction or discouragement values are given to buffers that have the greatest proximity to the feature. A buffer could be used in the situation of a freeway interchange and commercial growth. Clearly, businesses will wish to be closest to the freeway in order to obtain more customers, so areas closest the freeway should be modeled with the highest attraction value, with areas further away slowly decreasing in value relative to the distance from the freeway. Below is a screen shot showing an example of the input parameters for a buffer and a screenshot showing the accumulated buffers the model will use as the attraction for each of the land use types.

Uplan 2 (Attractors) - Kern

Attraction Layers Selection and Buffering

Land Use Group
Residential High and Medium

Available Layers

- Arterials
- Bakersfield
- Blocks with Growth
- Build 2000-06
- Cal City
- comm 1101c

Selected Layers

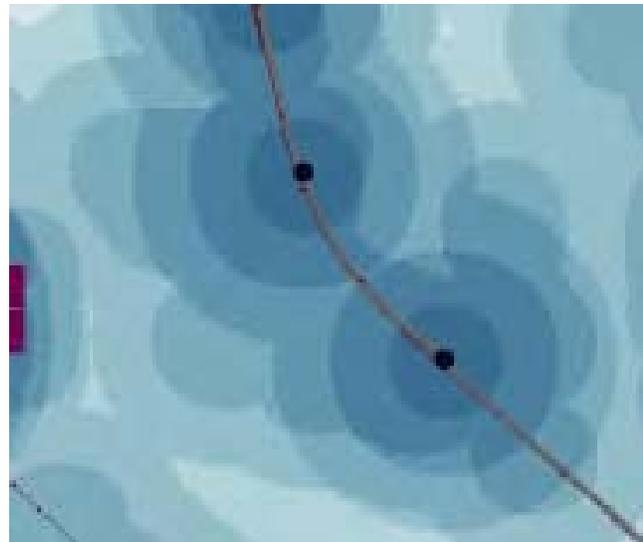
- Annex 0125
- CL 0131
- GPAs 0206
- Hillsides
- mcallisterb
- NFsewer

Buffer Parameters for Selected Layer (Meter)

Buffer #	From	To	Weight
1	0	0	25
2	0	1000	20
3	1000	1500	15
4	1500	2000	5

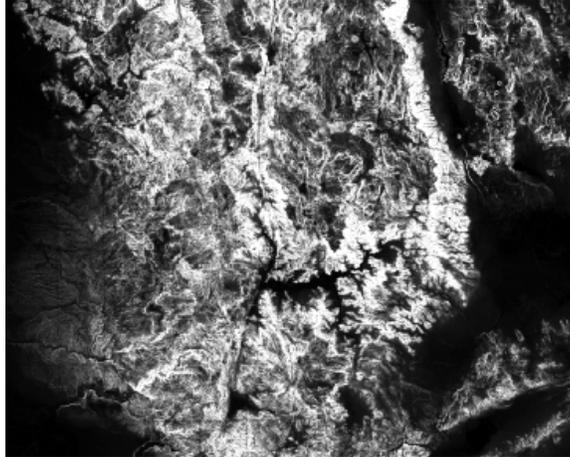
From: To: Weight:

< Back Next > Cancel



MASKS

A mask is effectively an infinite discouragement, preventing all growth in that particular cell, even if all other cells have been assigned growth and unassigned growth still remains. A good candidate for a mask in UPlan would be lakes or cliffs where growth would be (by today's economic and technological standards) improbable.



KERN COG METHODOLOGY

SB 375 MODELING AND TARGET SETTING

KERN COUNTY CLIMATE CHANGE TASK FORCE

Objective:

To assist Kern COG and its member agencies to meet the goals and objectives of Senate Bill No. 375 (SB 375) within the required time frame.

While it is months away until the draft targets will be known, Kern COG has recognized the need to begin the daunting task of coordinating the regional planning, housing, and transportation planning processes into a strategy to meet the intention of the Legislation. This will be an evolving process as regions throughout the state work together to establish and understand the targets, educate stakeholders and decision makers, define the Sustainable Community Strategy, understand the transportation funding implications as well as the housing projections.

For the purposes of outlining the COG's effort in compliance with the Legislation and how Kern COG's consulting efforts may assist, we have broken the efforts into three consecutive steps. Within each step, there are three components: education, technical, and strategy.

The tasks outlined below are efforts we anticipate the COG to undertake ***with assistance and guidance from consulting services as needed.***

Phase 1: Positioning the COG to participate in the SB 375 implementation process. This part would begin now and would continue until CARB RTAC releases the draft GHG emission reduction target setting methodology. The purpose of this effort is ultimately to position the COG to be prepared to carry out the SB 375 requirements. *Timeline: Now to September 30, 2009.*

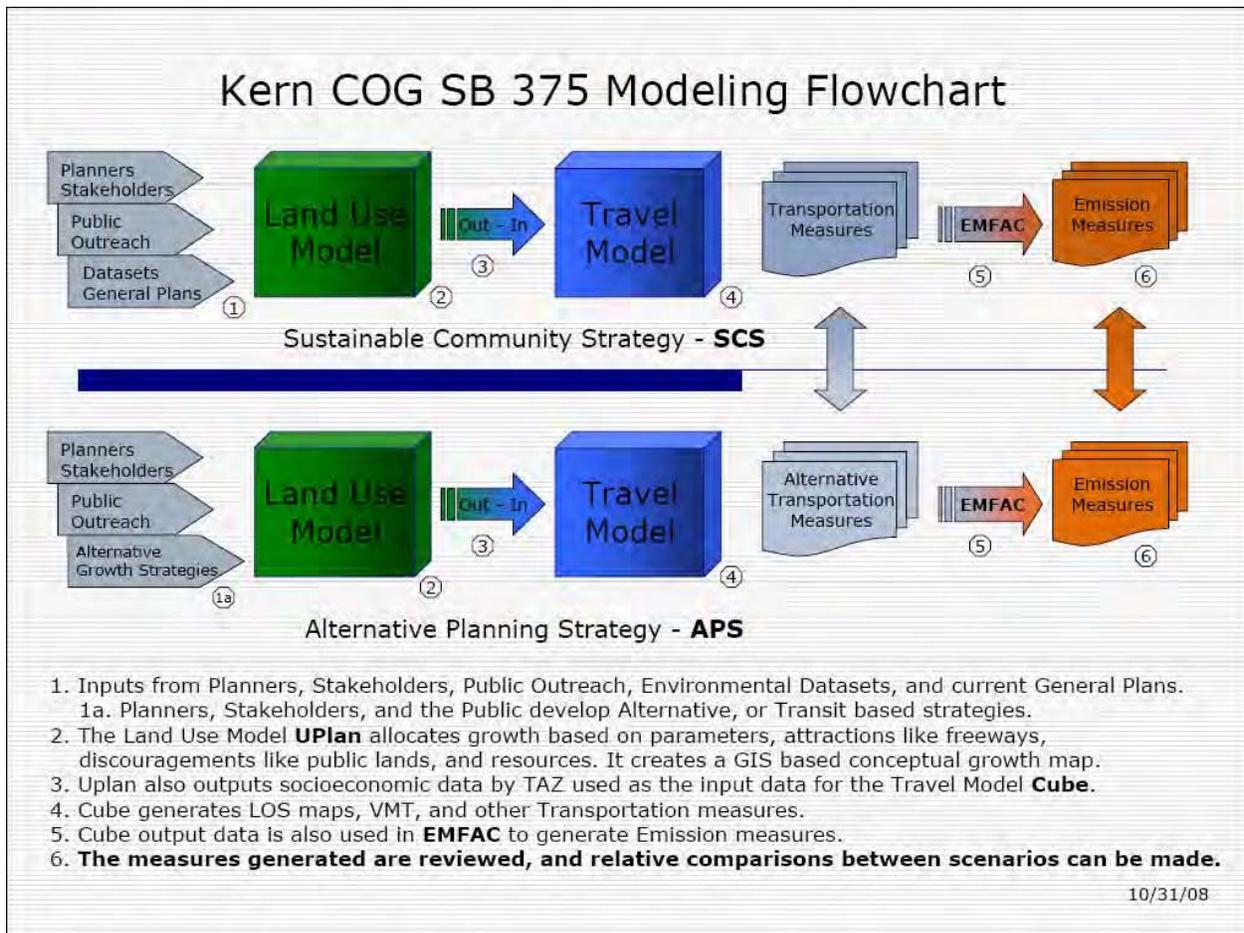
Phase 2: Preparing the structure to meet the targets. This period begins once CARB RTAC releases the target setting methodology to the COG. *Timeline: October 1, 2009 to September 30, 2010.*

Phase 3: Complying with SB 375. This period begins once the Regional targets are final and accepted and the COG must prepare the RTP, the SCS, and the RHNA. *Timeline: October 1, 2010 to adoption of the RTP and RHNA.*

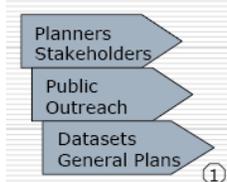
LAND USE MODEL METHOD

KERN COG SB375 MODEL

- U Developed from Blueprint Processed Modeling
- Based on GIS based UPlan land use model
- Use existing CUBE transportation model



Planners & Public Information



The planners provide information about their forecasts and predictions using the spreadsheet model, public agencies provide general plans, and private stakeholders provide information on forthcoming developments. A

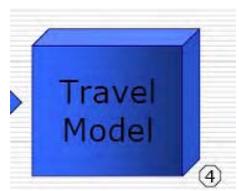
public outreach program is also conducted to better predict public opinion on future growth. This information is compiled and put into a matrix for the UPlan Land Use input.

UPlan Land Use Model



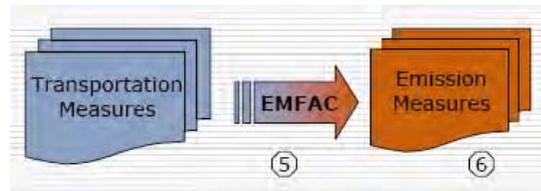
The UPlan model, as described earlier, takes this information and predicts where new growth will be allocated, this information is then inputted to the Cube Travel Model.

Cube Travel Model



The Cube Travel Model then takes this information and calculates VMT (Vehicle Miles Traveled); this provides input for the EMFAC.

EMFAC Conversion



EMFAC takes the Transportation Measures from Cube and calculates the carbon emissions.

BASIC RULES UPLAN OPERATES BY

People take up space

People live in groups known as Households

Different household types take up different amounts of space

Some portion of each household is employed

Different forms of employment require different amounts of space

Each residential type has attributes that attract or discourage growth

Each employment type has attributes that attract or discourage growth

Some things block all growth (i.e. a lake)

The general plan determines where future growth will occur and what type it will be

Growth will happen in the areas with the most attractions first, then the next most attractive, then the third most attractive, and so on.

CREATING SCENARIOS

TECHNICAL TOOLS

Existing Models

- Socioeconomic Growth Forecasts
- Trip-based travel demand model
- 4-D technical tool (intra-zonal travel demand)
- Emissions model (ARB's EMFAC Model)

New Model Development

- Land Use Model (UPlan)
- San Joaquin Valley MPO's Model Improvement Program "MIP" is in progress
- Cubeland integrated Land Use and Transportation model is in development

CURRENT TRENDS – BUSINESS AS USUAL

Current trends represent are the input parameters for what is "business as usual" without any major change, based on historic growth rates and "normal" planning methodologies.

ALTERNATIVE SCENARIOS

The alternative scenario is the "what if" part of the model. These scenarios are where planners can see what may happen in various hypothetical situations, which can be used to find a Sustainable Community Strategy.

ASSUMPTIONS

DATA

Base Years – 2005(2010), 2020, 2035

Census

Population

Employment

Existing Land Use

Existing Zoning

General Plans

Additional Blueprint Projects

Base Year Transportation Inventories

Baseline Transportation Inventories

MATRIXES (SPEARDSHEET BASED WORKSHEETS)

Population Matrix

5 Population Categories – (Consolidated from county and cities individual general plans)

High Density Residential

Medium Density Residential

Low Density Residential

Very Low Density Residential

Mixed Use (Residential & Industrial)

Demographic Reference Information:

Population – Kern Adopted Population Growth Tables

People per household

Future population

Employees per household

Employment Matrix

6 Employment Categories – (See previous definition on population categories)

BASIC – Basic Employment

RHRET – Retail High

RMRET – Retail Medium

RETSER – Retail Service

SOSER – Service Other

BWOTH – Basic Warehouse

GEOGRAPHIC PARAMETERS

DRAFT SUB-REGIONAL GHG TARGETS

Develop Draft Sub-regional Targets to meet Regional Target

Flexibility within Sub-region on SCS

Possible Joint Sub-regional SCS

KCOG Assistance to Sub-regions Where Necessary

Finalize Based on Regional Dialogue

SUBAREAS

Subarea #1 – Westside Kern – Major cities include Taft & Maricopa

Subarea #2 – Delano/McFarland

Subarea #3 – Wasco

Subarea #4 – Tehachapi/Frazier

Subarea #5 – Metro – Major cities include Bakersfield, Shafter, & Arvin

Subarea #6 – Southeast Kern – Major cities include Cal City, Mojave, & Rosamond

Subarea #7 – Lake Isabella

Subarea #8 – Indian Wells – Major cities include Ridgecrest & Inyokern

LAYERS

TAZ – Traffic Analysis Zones

Sub Areas – Consolidation of TAZs that the model uses

Extent – Kern County Lines

Cities General Plans

Slope – (sometimes as a mask)

Attractors (no discouragers are used for Kern's application)

Masks – (such as existing urban)

MODEL OUTPUTS

Final Allocation (All land use types)

Final Attraction Layer

Datasets output (spreadsheet.dbf)

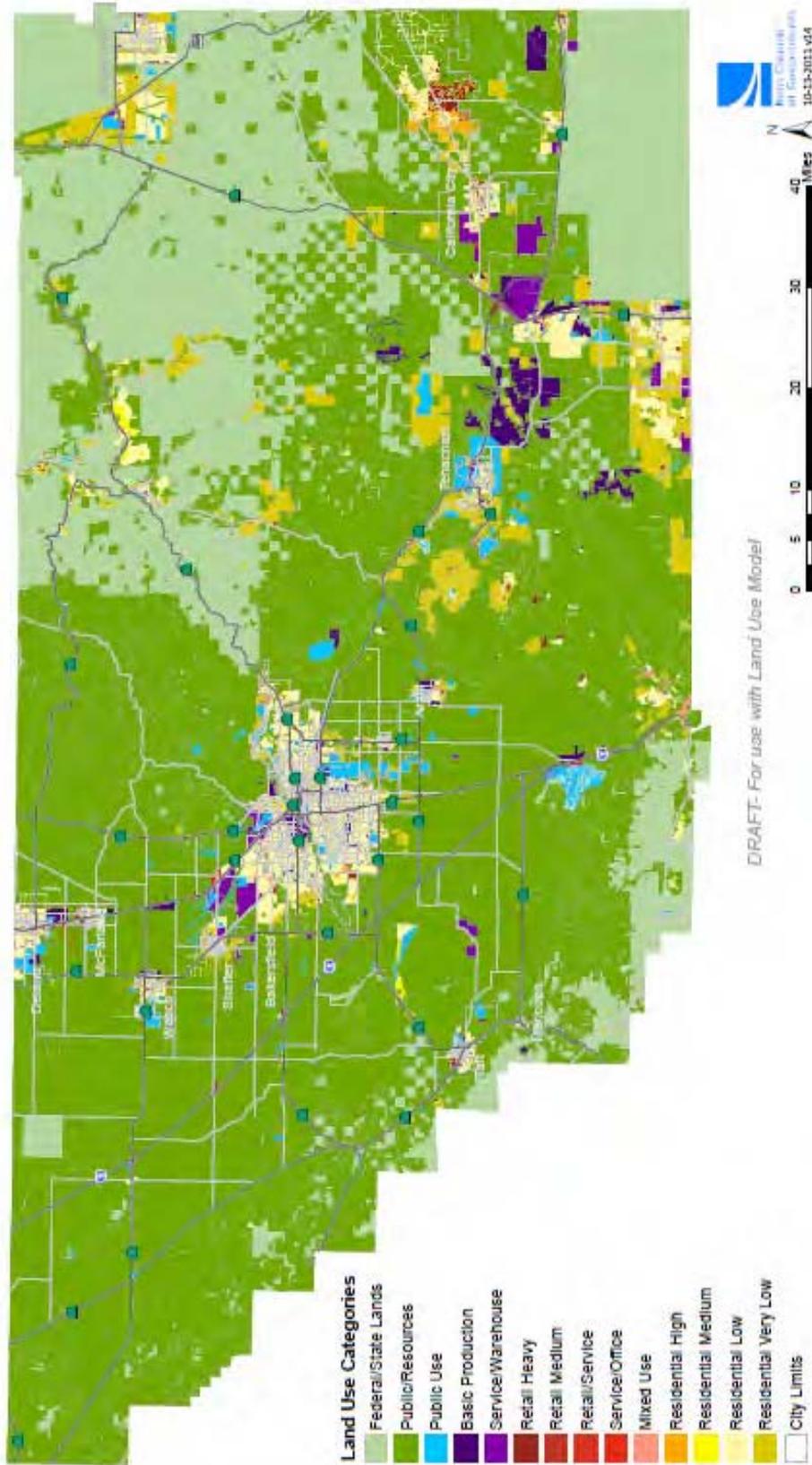
- Allocation Stats
- Land Consumption (see Appendix B)
- Results by TAZ
- TAZ export to socio-economic spreadsheet (used for travel model)

Technical Appendix

Appendix A

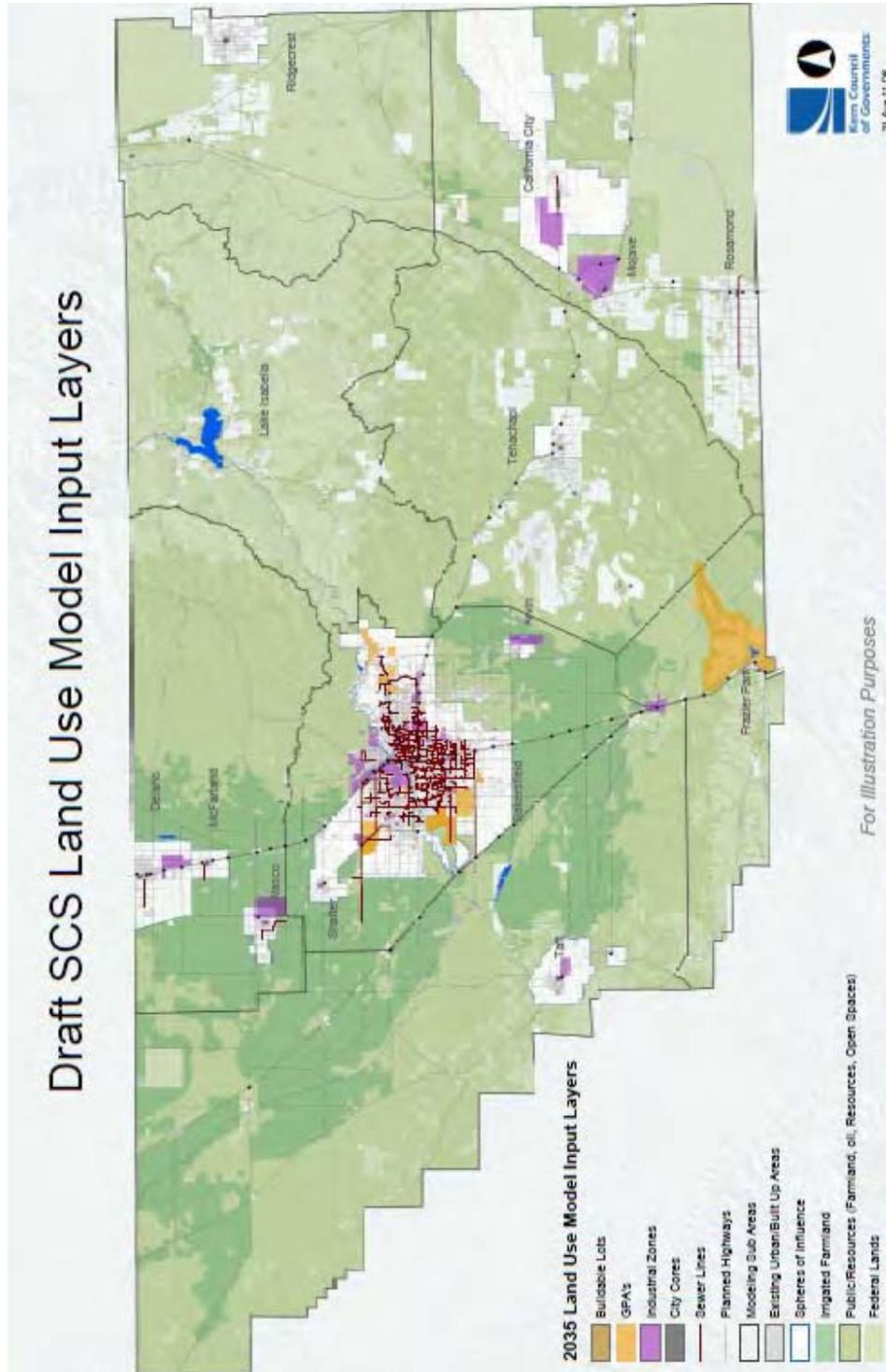
Combined Land Use Map – (13B)

DRAFT Kern County Region - Combined Land Use Model Input Layer



Appendix B

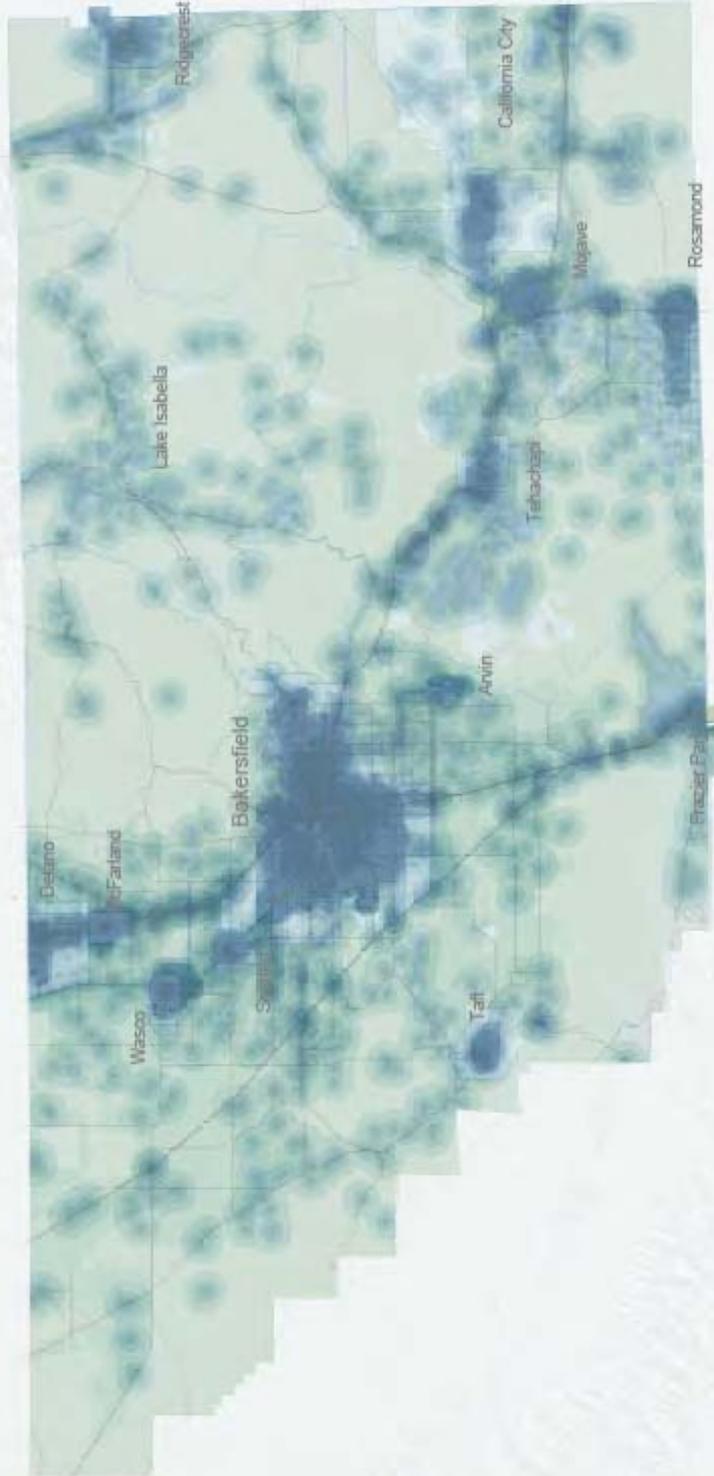
Land Use Model Attraction Layers



Appendix C

Accumulated Attraction Buffers

Draft Base Land Use Model - Attraction Buffers



For Illustration Purposes

Appendix E

Sample Uplan Output – Land Consumption

Acres Consumed by Model Sub Area

- Subareas**
1. Westside Kern
 2. North Central Kern
 3. Frazier Park
 4. Tehachapi
 5. Metro Bakersfield
 6. Southeast Kern
 7. Lake Isabella
 8. Indian Wells

Sub Area	RH Acres	RM Acres	RL Acres	RVL Acres	IN Acres	CH Acres	CL Acres
1	80	122	931	14	93	227	0
2	421	639	4870	75	3365	380	4
3	86	132	926	1548	335	83	0
4	144	200	1377	10424	495	347	0
5	6221	10816	38342	1767	14806	869	15644
6	282	393	3718	54	9231	503	0
7	56	85	644	10	0	32	0
8	143	216	1647	25	23	0	0
	7433	12603	52455	13917	28348	2441	15648
				86408			

Acres Consumed by Model Scenario

Scenario	RH	RM	RL	RVL	Total Ag Presv
Major	26,488	56.3%	56.31%	10,618	22.57%
Moderate	11,661	16.2%	16.21%	17,492	24.32%
Some	7,433	8.6%	8.60%	12,603	14.59%
No	2,035	2.0%	1.98%	5,968	5.80%
	47,617		46,681		
	2500		0.61776		

Appendix C

Draft Combined Land Use – Conversion Matrix Table

Combined Land Use - General Plan Conversion Matrix Table								
								10/11/2011
Uplan Abbreviation	Uplan Description	Jurisdiction Maximum Dwelling Units /Gross Acre	Jurisdiction Average Dwelling Units /Gross Acre	Model Average Dwelling Units /Gross Acre	Model Gross Acre /Household	Typical Jobs /Gross Acre	Model Floor Area Ratio	Model Average Sq. Footage
RH	Residential High Density	18 to 73	15	12.5	0.08	0	0	0
RM	Residential Medium Density	11 to 17	8 to 10	8.3	0.12	0	0	0
RL	Residential Low Density	2 to 10	2 to 7	4	0.25	0	0	0
RVL	Residential Very Low Density	0.05 to 1	0.05 to 1	0.2	5	0	0	0
UR	Urban Reserve	18 to 73	15	4	0.08	11 to 17	0.25	269
MU	Mixed Use	18 to 73	15	4	0.08	11 to 17	0.25	269
RSC	Resources	0	0	0	0	0	0	0
BP	Basic/Production	0	0	0	0	6 to 13	0.16	1361
REH	Retail/Heavy	0	0	0	0	11 to 17	0.25	269
REM	Retail/Medium	0	0	0	0	17	0.25	269
RS	Retail/Service	0	0	0	0	34	0.25	269
SO	Service/Office	0	0	0	0	26	0.25	837
SW	Service/Warehouse	0	0	0	0	14	0.25	837
PU	Public Use	0	0	0	0	0	0	0
Fed/St	Federal/State	0	0	0	0	0	0	0

Jurisdiction	General Plan Code	General Plan Description	Uplan Code	Uplan Description	SUBREGION
Arvin	AG	Agriculture	RSC	Resources	Metro Bakersfield Area
Arvin	ER	Estate Residential	RVL	Residential Very Low Density	Metro Bakersfield Area
Arvin	GC	General Commercial	REH	Retail/Heavy	Metro Bakersfield Area
Arvin	HDR	High Density Residential	RH	Residential High Density	Metro Bakersfield Area
Arvin	HI	Heavy Industrial	BP	Basic/Production	Metro Bakersfield Area
Arvin	LDR	Low Density Residential	RL	Residential Low Density	Metro Bakersfield Area
Arvin	LI	Light Industrial	BP	Basic/Production	Metro Bakersfield Area
Arvin	PARK	Park	PU	Public Use	Metro Bakersfield Area
Arvin	PF	Public Facilities	PU	Public Use	Metro Bakersfield Area
Arvin	PUD	Planned unit development	MU	Mixed Use	Metro Bakersfield Area
Arvin	SCHOOL	School	PU	Public Use	Metro Bakersfield Area

Jurisdiction	General Plan Code	General Plan Description	Upland Code	Upland Description	SUBREGION
Bakersfield	LR	Low Density Residential	RL	Residential Low Density	Metro Bakersfield Area
Bakersfield	R-EA	Extensive Agriculture- minimum 80-acre parcel size for lands under "Williamson Act" contract; 20-acre minimum, lands not under contract	RSC	Resources	Metro Bakersfield Area
Bakersfield	ER	Estate-min. 1 net acre/unit	RVL	Residential Very Low Density	Metro Bakersfield Area
Bakersfield	GC	General- max. 1.0 FAR, 4 stories	REH	Retail/Heavy	Metro Bakersfield Area
Bakersfield	HC	Highway-max .4 FAR***3 stories	REH	Retail/Heavy	Lake Isabella
Bakersfield	HC	Highway-max .4 FAR***3 stories	REH	Retail/Heavy	Metro Bakersfield Area
Bakersfield	HI	Heavy Industrial- .4 FAR, 14 stories	BP	Basic/Production	Metro Bakersfield Area
Bakersfield	HMR	High Medium Density Res- greater than 7.26 and less than or equal to 17.42 dwelling units/net acre; County-less than or equal to 17.42 dwelling units/net acre	RM	Residential Medium Density	Metro Bakersfield Area
Bakersfield	HR	High Density- City-greater than 17.42 and less than or equal to 72.6 dwelling units/net acre; County-less than or equal to 29 dwelling units/net acre	RH	Residential High Density	Metro Bakersfield Area
Bakersfield	LI	Light Industrial- 1.0 FAR, 6 stories	BP	Basic/Production	Metro Bakersfield Area
Bakersfield	LMR	Low Medium Density- City-greater than 4.0 and less than or equal to 10.0 dwelling units/net acre; County-less than or equal to 10 dwelling units/net acre	RL	Residential Low Density	Metro Bakersfield Area
Bakersfield	LMR/LR	Low Medium Density- City-greater than 4.0 and less than or equal to 10.0 dwelling units/net acre; County-less than or equal to 10 dwelling units/net acre Low Density- less than or equal to 7.26 dwelling units/net acre	RL	Residential Low Density	Lake Isabella
Bakersfield	LMR/LR	Low Medium Density- City-greater than 4.0 and less than or equal to 10.0 dwelling units/net acre; County-less than or equal to 10 dwelling units/net acre Low Density- less than or equal to 7.26 dwelling units/net acre	RL	Residential Low Density	Metro Bakersfield Area
Bakersfield	LR	Low Density- less than or equal to 7.26 dwelling units/net acre	RL	Residential Low Density	Metro Bakersfield Area
Bakersfield	LR/PS	Low Density- less than or equal to 7.26 dwelling units/net acre Public and private schools	RL	Residential Low Density	Metro Bakersfield Area
Bakersfield	MC	Major Commercial- max 1.0 FAR, 6 stories	REH	Retail/Heavy	Metro Bakersfield Area
Bakersfield	MUC	Mixed Use- max 3.0 FAR	MU	Mixed Use	Metro Bakersfield Area
Bakersfield	OC	Office Commercial- max 1.0 FAR, 4 stories	RES	Retail/Service	Metro Bakersfield Area
Bakersfield	OS	Open Space- Floodplains and Resource Management	RSC	Resources	Lake Isabella
Bakersfield	OS	Open Space- Floodplains and Resource Management	RSC	Resources	Metro Bakersfield Area
Bakersfield	OS-P	Parks- Includes all city and county parks as as public and private recreation facilities	PU	Public Use	Metro Bakersfield Area

Bakersfield	OS-S	Parks- Includes all city and county parks as as public and private recreation facilities	PU	Public Use	Lake Isabella
Bakersfield	OS-S	Parks- Includes all city and county parks as as public and private recreation facilities	PU	Public Use	Metro Bakersfield Area
Bakersfield	OTHER JURIS	Bakersfield	MU	Mixed Use	Lake Isabella
Bakersfield	OTHER JURIS	Bakersfield	MU	Mixed Use	Metro Bakersfield Area
Bakersfield	P	Public Facilites	PU	Public Use	Metro Bakersfield Area
Bakersfield	P-SW	Solid Waste Facility Sites	PU	Public Use	Metro Bakersfield Area
Bakersfield	PS	Public and Private Schools	PU	Public Use	Metro Bakersfield Area
Bakersfield	PT	Public Transportation	PU	Public Use	Lake Isabella
Bakersfield	PT	Public Transportation	PU	Public Use	Metro Bakersfield Area
Bakersfield	R- EA	Extensive Agriculture- minimum 80-acre parcel size for lands under "Williamson Act" contract; 20-acre minimum, lands not under contract	RSC	Resources	Lake Isabella
Bakersfield	R- EA	Extensive Agriculture- minimum 80-acre parcel size for lands under "Williamson Act" contract; 20-acre minimum, lands not under contract	RSC	Resources	Metro Bakersfield Area
Bakersfield	R-IA	Intensive Agriculture- min. 20-acres parcel size	RSC	Resources	Lake Isabella
Bakersfield	R-IA	Intensive Agriculture- min. 20-acres parcel size	RSC	Resources	Metro Bakersfield Area
Bakersfield	R-MP	Mineral and Petroleum- min. land use designation size 5-acres	RSC	Resources	Lake Isabella
Bakersfield	R-MP	Mineral and Petroleum- min. land use designation size 5-acres	RSC	Resources	Metro Bakersfield Area
Bakersfield	RR	Rural- min. 2.5 gross acres/unit	RL	Residential Low Density	Metro Bakersfield Area
Bakersfield	SEWER	Bakersfield	PU	Public Use	Metro Bakersfield Area
Bakersfield	SI	Service Industrial- .4 FAR, 6 stories	SW	Service/Wharehouse	Metro Bakersfield Area
Bakersfield	SR	Suburban Residential- less than or equal to 4 dwelling units/net acre	RL	Residential Low Density	Metro Bakersfield Area
Bakersfield	SR/LR	Suburban Residential- less than or equal to 4 dwelling units/net acre Low Density- less than or equal to 7.26 dwelling units/net acre	RL	Residential Low Density	Metro Bakersfield Area
Bakersfield	UER	Estate Residential	RL	Residential Low Density	Metro Bakersfield Area
Bakersfield	WM-GC	General Commercial	REH	Retail/Heavy	Metro Bakersfield Area
Bakersfield	WM-HMR	High Medium Residential	RM	Residential Medium Density	Metro Bakersfield Area
Bakersfield	WM-HR	High Residential	RH	Residential High Density	Metro Bakersfield Area
Bakersfield	WM-LMR	Low Medium Residential	RL	Residential Low Density	Metro Bakersfield Area
Bakersfield	WM-LR	Low Residential	RL	Residential Low Density	Metro Bakersfield Area
Bakersfield	WM-MU	Mixed Use	MU	Mixed Use	Metro Bakersfield Area
Bakersfield	WM-OC	Office Commercial	RES	Retail/Service	Metro Bakersfield Area
Bakersfield	WM-SU	Mixed Use	MU	Mixed Use	Metro Bakersfield Area

Kern River Plan	1.2	Incorporated Cities	MU	Mixed Use	Metro Bakersfield Area
Kern River Plan	3.1	Public or Private Recreation Areas	PU	Public Use	Metro Bakersfield Area
Kern River Plan	3.1	Public or Private Recreation Areas	PU	Public Use	Metro Bakersfield Area
Kern River Plan	3.1	Public or Private Recreation Areas	PU	Public Use	Metro Bakersfield Area
Kern River Plan	3.3	Other Public Facilities	PU	Public Use	Metro Bakersfield Area
Kern River Plan	3.3	Other Public Facilities	PU	Public Use	Metro Bakersfield Area
Kern River Plan	4.3	Specific Plan Required	MU	Mixed Use	Metro Bakersfield Area
Kern River Plan	4.3	Specific Plan Required	MU	Mixed Use	Metro Bakersfield Area
Kern River Plan	4.3	Specific Plan Required	MU	Mixed Use	Metro Bakersfield Area
Kern River Plan	5.2	Maximum 16 Units/Net Acre	RM	Residential Medium Density	Metro Bakersfield Area
Kern River Plan	5.3	Maximum 10 Units/Net Acre	RL	Residential Low Density	Metro Bakersfield Area
Kern River Plan	5.35	Maximum 7.25 Units/Net Acre	RL	Residential Low Density	Metro Bakersfield Area
Kern River Plan	5.35	Maximum 7.25 Units/Net Acre	RL	Residential Low Density	Metro Bakersfield Area
Kern River Plan	5.35	Maximum 7.25 Units/Net Acre	RL	Residential Low Density	Metro Bakersfield Area
Kern River Plan	5.4	Maximum 4 Units/Net Acre	RL	Residential Low Density	Metro Bakersfield Area
Kern River Plan	5.4	Maximum 4 Units/Net Acre	RL	Residential Low Density	Metro Bakersfield Area
Kern River Plan	5.5	Maximum 1 Unit/Net Acre	RVL	Residential Very Low Density	Metro Bakersfield Area
Kern River Plan	5.6	Minimum 2.5 Gross Acres/Unit	RVL	Residential Very Low Density	Metro Bakersfield Area
Kern River Plan	5.6	Minimum 2.5 Gross Acres/Unit	RVL	Residential Very Low Density	Metro Bakersfield Area
Kern River Plan	5.6	Minimum 2.5 Gross Acres/Unit	RVL	Residential Very Low Density	Metro Bakersfield Area
Kern River Plan	5.7	Minimum 5 Gross Acres/Unit	RVL	Residential Very Low Density	Metro Bakersfield Area
Kern River Plan	5.7	Minimum 5 Gross Acres/Unit	RVL	Residential Very Low Density	Metro Bakersfield Area
Kern River Plan	6.1	Major Commercial	REH	Retail Employment High	Metro Bakersfield Area
Kern River Plan	6.2	General Commercial	REM	Retail/Medium	Metro Bakersfield Area
Kern River Plan	6.2	General Commercial	REM	Retail/Medium	Metro Bakersfield Area
Kern River Plan	6.25	General Commercial	RES	Retail/Service	Metro Bakersfield Area
Kern River Plan	6.3	Highway Commercial	REH	Retail Employment High	Metro Bakersfield Area
Kern River Plan	7.1	Light Industrial	BP	Basic Production	Metro Bakersfield Area
Kern River Plan	7.1	Light Industrial	BP	Basic Production	Metro Bakersfield Area
Kern River Plan	7.1	Light Industrial	BP	Basic Production	Metro Bakersfield Area
Kern River Plan	7.2	Service Industrial	SW	Service/Warehouse	Metro Bakersfield Area
Kern River Plan	7.2	Service Industrial	SW	Service/Warehouse	Metro Bakersfield Area
Kern River Plan	7.2	Service Industrial	SW	Service/Warehouse	Metro Bakersfield Area
Kern River Plan	7.3	Heavy Industrial	BP	Basic Production	Metro Bakersfield Area

Kern River Plan		7.3 Heavy Industrial	BP	Basic Production	Metro Bakersfield Area
Kern River Plan		8.1 Intensive Agriculture (Min. 20 Acre Parcel Size)	RSC	Resources	Metro Bakersfield Area
Kern River Plan		8.1 Intensive agriculture (min. 20 acre parcel size)	RSC	Resources	Metro Bakersfield Area
Kern River Plan		8.4 Mineral and Petroleum (Min. 5 Acre Parcel Size)	RSC	Resources	Metro Bakersfield Area
Kern River Plan		8.4 Mineral and Petroleum (Min. 5 Acre Parcel Size)	RSC	Resources	Metro Bakersfield Area
Kern River Plan		8.4 Mineral and Petroleum (Min. 5 Acre Parcel Size)	RSC	Resources	Metro Bakersfield Area
Kern River Plan		8.5 Resource Management (Min. 20 Acre Parcel Size)	RSC	Resources	Metro Bakersfield Area
Kern River Plan		8.5 Resource Management (Min. 20 Acre Parcel Size)	RSC	Resources	Metro Bakersfield Area
Kern River Plan		8.5 Resource Management (Min. 20 Acre Parcel Size)	RSC	Resources	Metro Bakersfield Area
Metropolitan Bakersfield	ER	Estate Residential	RVL	Residential Very Low Density	Metro Bakersfield Area
Metropolitan Bakersfield	GC	General Commercial	REH	Retail/Heavy	Metro Bakersfield Area
Metropolitan Bakersfield	HC	Highway Commercial	REH	Retail/Heavy	Metro Bakersfield Area
Metropolitan Bakersfield	LI	Light Industrial	BP	Basic/Production	Metro Bakersfield Area
Metropolitan Bakersfield	LMR	Low Medium Density Residential	RL	Residential Low Density	Metro Bakersfield Area
Metropolitan Bakersfield	OS	Open Space - Includes Resource Management Areas, Agriculture, & Floodplains	RSC	Resources	Metro Bakersfield Area
Metropolitan Bakersfield	P	Publicly Owned Facilities	PU	Public Use	Metro Bakersfield Area
Metropolitan Bakersfield	PT	Public Transportation	PU	Public Use	Lake Isabella
Metropolitan Bakersfield	PT	Public Transportation	PU	Public Use	Metro Bakersfield Area
Metropolitan Bakersfield	R-EA	Extensive Agriculture	RSC	Resources	Lake Isabella
Metropolitan Bakersfield	R-EA	Extensive Agriculture	RSC	Resources	Metro Bakersfield Area
Metropolitan Bakersfield	R-IA	Intensive Agriculture	RSC	Resources	Lake Isabella
Metropolitan Bakersfield	R-IA	Intensive Agriculture	RSC	Resources	Metro Bakersfield Area
Metropolitan Bakersfield	R-MP	Mineral and Petroleum	RSC	Resources	Metro Bakersfield Area
Metropolitan Bakersfield	SI	Service Industrial	SW	Service/Warehouse	Metro Bakersfield Area
Metropolitan Bakersfield	SR	Suburban Residential	RL	Residential Low Density	Metro Bakersfield Area

Jurisdiction	General Plan Code	General Plan Description	Uplan Code	Uplan Description	SUBREGION
California City	commercial_office	CO	SO	Service/Office	Southeast Kern
California City	community_commercial	CC	REH	Retail/Heavy	Southeast Kern
California City	community_medical	CMC	RES	Retail/Service	Southeast Kern
California City	conservation_land	CL	RSC	Resources	Southeast Kern
California City	controlled_develop,public_parks,R*	CD	RSC	Resources	Southeast Kern
California City	estate_residential	Estate Residential	RVL	Residential Very Low Density	Southeast Kern
California City	estate_residential_wonderacres	Estate Residential - Wonderacres	RVL	Residential Very Low Density	Southeast Kern
California City	government_PF	Government	PU	Public Use	Southeast Kern
California City	heavy_industrial	HI	BP	Basic/Production	Southeast Kern
California City	high_density_residential	HDR	RH	Residential High Density	Southeast Kern
California City	light_industrial_research	Light Industrial - Research	BP	Basic/Production	Southeast Kern
California City	low_density_residential	LDR	RL	Residential Low Density	Southeast Kern
California City	medium_density_residential	MDR	RL	Residential Low Density	Southeast Kern
California City	medium_low_residential	MLR	RL	Residential Low Density	Southeast Kern
California City	neighborhood_commercial	NC	REH	Retail/Heavy	Southeast Kern
California City	regional_commercial	RC	PU	Public Use	Southeast Kern
California City	rural_density_residential	RDR	RVL	Residential Very Low Density	Southeast Kern
California City	service_commercial	SC	SO	Service/Office	Southeast Kern

Jurisdiction	General Plan Code	General Plan	Uplan Code	Uplan Description	SUBREGION
Delano	Agricultural	AG	RSC	Resources	Delano McFarland
Delano	Agricultural	AG	RSC	Resources	Wasco
Delano	Commercial	Commercial	REH	Retail/Heavy	Delano McFarland
Delano	Community Facilities	CF	PU	Public Use	Delano McFarland
Delano	Community Facilities	CF	PU	Public Use	Wasco
Delano	High Residential	HR	RH	Residential High Density	Delano McFarland
Delano	Industrial	I	BP	Basic/Production	Delano McFarland
Delano	Low Residential	LR	RL	Residential Low Density	Delano McFarland
Delano	Medium Residential	MR	RM	Residential Medium Density	Delano McFarland
Delano	Rural Residential	RR	RL	Residential Low Density	Delano McFarland
Delano	Rural Residential	RR	RL	Residential Low Density	Wasco
Delano	Service Commercial	SC	SO	Service/Office	Delano McFarland

Jurisdiction	General Plan C	General Plan Description	Uplan Code	Uplan Description	SUBREGION
Kern	1.1	State or Federal Land	FED/ST	Federal/State Land	Delano McFarland
Kern	1.1	State or Federal Land	FED/ST	Federal/State Land	Indian Wells
Kern	1.1	State or Federal Land	FED/ST	Federal/State Land	Lake Isabella
Kern	1.1	State or Federal Land	FED/ST	Federal/State Land	Metro Bakersfield Area
Kern	1.1	State or Federal Land	FED/ST	Federal/State Land	Southeast Kern
Kern	1.1	State or Federal Land	FED/ST	Federal/State Land	Tehachapi Frazier Park
Kern	1.1	State or Federal Land	FED/ST	Federal/State Land	Wasco
Kern	1.1	State or Federal Land	FED/ST	Federal/State Land	West Kern
Kern	1.2	Incorporated Cities	MU	Mixed Use	Delano McFarland
Kern	1.2	Incorporated Cities	MU	Mixed Use	Indian Wells
Kern	1.2	Incorporated Cities	MU	Mixed Use	Metro Bakersfield Area
Kern	1.2	Incorporated Cities	MU	Mixed Use	Southeast Kern
Kern	1.2	Incorporated Cities	MU	Mixed Use	Tehachapi Frazier Park
Kern	1.2	Incorporated Cities	MU	Mixed Use	West Kern
Kern	3.1	Public or Private Recreation Areas	PU	Public Use	Delano McFarland
Kern	3.1	Public or Private Recreation Areas	PU	Public Use	Lake Isabella
Kern	3.1	Public or Private Recreation Areas	PU	Public Use	Metro Bakersfield Area
Kern	3.1	Public or Private Recreation Areas	PU	Public Use	Tehachapi Frazier Park
Kern	3.1	Public or Private Recreation Areas	PU	Public Use	West Kern
Kern	3.2	Educational Facilities	PU	Public Use	Lake Isabella
Kern	3.2	Educational Facilities	PU	Public Use	Metro Bakersfield Area
Kern	3.2	Educational Facilities	PU	Public Use	Tehachapi Frazier Park
Kern	3.3	Other Facilities	PU	Public Use	Indian Wells
Kern	3.3	Other Facilities	PU	Public Use	Lake Isabella
Kern	3.3	Other Facilities	PU	Public Use	Metro Bakersfield Area
Kern	3.3	Other Facilities	PU	Public Use	Southeast Kern
Kern	3.3	Other Facilities	PU	Public Use	Tehachapi Frazier Park
Kern	3.3	Other Facilities	PU	Public Use	Wasco
Kern	3.3	Other Facilities	PU	Public Use	West Kern
Kern	3.4	Solid Waste Facilities	PU	Public Use	Delano McFarland
Kern	3.4	Solid Waste Facilities	PU	Public Use	Indian Wells
Kern	3.4	Solid Waste Facilities	PU	Public Use	Lake Isabella
Kern	3.4	Solid Waste Facilities	PU	Public Use	Metro Bakersfield Area
Kern	3.4	Solid Waste Facilities	PU	Public Use	Southeast Kern

Kern	3.4	Solid Waste Facilities	PU	Public Use	Tehachapi Frazier Park
Kern	3.4	Solid Waste Facilities	PU	Public Use	Wasco
Kern	3.4	Solid Waste Facilities	PU	Public Use	West Kern
Kern	3.4.1	Solid Waste Disposal Facility Buffer	PU	Public Use	Lake Isabella
Kern	3.4.1	Solid Waste Disposal Facility Buffer	PU	Public Use	Tehachapi Frazier Park
Kern	3.4.1	Solid Waste Disposal Facility Buffer	PU	Public Use	Wasco
Kern	3.7	Other Waste Facilities - Nonhazardous/Nondisposal	PU	Public Use	Lake Isabella
Kern	3.7	Other Waste Facilities - Nonhazardous/Nondisposal	PU	Public Use	Tehachapi Frazier Park
Kern	5.1	Maximum 29 Units/Net Acre	RH	Residential High Density	Lake Isabella
Kern	5.2	Maximum 16 Units/Net Acre	RM	Residential Medium Density	Indian Wells
Kern	5.2	Maximum 16 Units/Net Acre	RM	Residential Medium Density	Lake Isabella
Kern	5.2	Maximum 16 Units/Net Acre	RM	Residential Medium Density	Tehachapi Frazier Park
Kern	5.3	Maximum 10 Units/Net Acre	RL	Residential Low Density	Lake Isabella
Kern	5.3	Maximum 10 Units/Net Acre	RL	Residential Low Density	Metro Bakersfield Area
Kern	5.3	Maximum 10 Units/Net Acre	RL	Residential Low Density	Tehachapi Frazier Park
Kern	5.3	Maximum 10 Units/Net Acre	RL	Residential Low Density	West Kern
Kern	5.4	Maximum 4 Units/Net Acre	RL	Residential Low Density	Indian Wells
Kern	5.4	Maximum 4 Units/Net Acre	RL	Residential Low Density	Lake Isabella
Kern	5.4	Maximum 4 Units/Net Acre	RL	Residential Low Density	Metro Bakersfield Area
Kern	5.4	Maximum 4 Units/Net Acre	RL	Residential Low Density	Southeast Kern
Kern	5.4	Maximum 4 Units/Net Acre	RL	Residential Low Density	West Kern
Kern	5.5	Maximum 1 Unit/Net Acre	RVL	Residential Very Low Density	Indian Wells
Kern	5.5	Maximum 1 Unit/Net Acre	RVL	Residential Very Low Density	Lake Isabella
Kern	5.5	Maximum 1 Unit/Net Acre	RVL	Residential Very Low Density	Southeast Kern
Kern	5.5	Maximum 1 Unit/Net Acre	RVL	Residential Very Low Density	Tehachapi Frazier Park
Kern	5.6	Minimum 2.5 Gross Acres/Unit	RVL	Residential Very Low Density	Delano McFarland
Kern	5.6	Minimum 2.5 Gross Acres/Unit	RVL	Residential Very Low Density	Indian Wells
Kern	5.6	Minimum 2.5 Gross Acres/Unit	RVL	Residential Very Low Density	Lake Isabella
Kern	5.6	Minimum 2.5 Gross Acres/Unit	RVL	Residential Very Low Density	Metro Bakersfield Area
Kern	5.6	Minimum 2.5 Gross Acres/Unit	RVL	Residential Very Low Density	Southeast Kern
Kern	5.6	Minimum 2.5 Gross Acres/Unit	RVL	Residential Very Low Density	Tehachapi Frazier Park
Kern	5.7	Minimum 5 Gross Acres/Unit	RVL	Residential Very Low Density	Indian Wells
Kern	5.7	Minimum 5 Gross Acres/Unit	RVL	Residential Very Low Density	Lake Isabella
Kern	5.7	Minimum 5 Gross Acres/Unit	RVL	Residential Very Low Density	Metro Bakersfield Area
Kern	5.7	Minimum 5 Gross Acres/Unit	RVL	Residential Very Low Density	Southeast Kern

Kern	5.7	Minimum 5 Gross Acres/Unit	RVL	Residential Very Low Density	Tehachapi Frazier Park
Kern	5.7	Minimum 5 Gross Acres/Unit	RVL	Residential Very Low Density	Wasco
Kern	5.7	Minimum 5 Gross Acres/Unit	RVL	Residential Very Low Density	West Kern
Kern	5.8	Minimum 20 Gross Acres/Unit	RVL	Residential Very Low Density	Indian Wells
Kern	5.8	Minimum 20 Gross Acres/Unit	RVL	Residential Very Low Density	Lake Isabella
Kern	5.8	Minimum 20 Gross Acres/Unit	RVL	Residential Very Low Density	Tehachapi Frazier Park
Kern	6.1	Major Commercial	REH	Retail/Heavy	Lake Isabella
Kern	6.2	General Commercial	REM	Retail/Medium	Indian Wells
Kern	6.2	General Commercial	REM	Retail/Medium	Lake Isabella
Kern	6.2	General Commercial	REM	Retail/Medium	Metro Bakersfield Area
Kern	6.2	General Commercial	REM	Retail/Medium	Tehachapi Frazier Park
Kern	6.2	General Commercial	REM	Retail/Medium	Wasco
Kern	6.2	General Commercial	REM	Retail/Medium	West Kern
Kern	6.3	Highway Commercial	REH	Retail/Heavy	Delano McFarland
Kern	6.3	Highway Commercial	REH	Retail/Heavy	Indian Wells
Kern	6.3	Highway Commercial	REH	Retail/Heavy	Lake Isabella
Kern	6.3	Highway Commercial	REH	Retail/Heavy	Metro Bakersfield Area
Kern	6.3	Highway Commercial	REH	Retail/Heavy	Southeast Kern
Kern	6.3	Highway Commercial	REH	Retail/Heavy	Tehachapi Frazier Park
Kern	6.3	Highway Commercial	REH	Retail/Heavy	Wasco
Kern	6.3	Highway Commercial	REH	Retail/Heavy	West Kern
Kern	7.1	Light Industrial	BP	Basic Production	Lake Isabella
Kern	7.1	Light Industrial	BP	Basic Production	Metro Bakersfield Area
Kern	7.1	Light Industrial	BP	Basic Production	Southeast Kern
Kern	7.1	Light Industrial	BP	Basic Production	Tehachapi Frazier Park
Kern	7.1	Light Industrial	BP	Basic Production	West Kern
Kern	7.2	Service Industrial	SW	Service/Warehouse	Indian Wells
Kern	7.2	Service Industrial	SW	Service/Warehouse	Lake Isabella
Kern	7.2	Service Industrial	SW	Service/Warehouse	Metro Bakersfield Area
Kern	7.2	Service Industrial	SW	Service/Warehouse	Southeast Kern
Kern	7.2	Service Industrial	SW	Service/Warehouse	Tehachapi Frazier Park
Kern	7.2	Service Industrial	SW	Service/Warehouse	Wasco
Kern	7.2	Service Industrial	SW	Service/Warehouse	West Kern
Kern	7.3	Heavy Industrial	BP	Basic/Production	Lake Isabella
Kern	7.3	Heavy Industrial	BP	Basic/Production	Southeast Kern

Kern	7.3	Heavy Industrial	BP	Basic/Production	Tehachapi Frazier Park
Kern	7.3	Heavy Industrial	BP	Basic/Production	West Kern
Kern	8.1	Intensive Agriculture (Min. 20 Acre Parcel Size)	RSC	Resources	Delano McFarland
Kern	8.1	Intensive Agriculture (Min. 20 Acre Parcel Size)	RSC	Resources	Indian Wells
Kern	8.1	Intensive Agriculture (Min. 20 Acre Parcel Size)	RSC	Resources	Lake Isabella
Kern	8.1	Intensive Agriculture (Min. 20 Acre Parcel Size)	RSC	Resources	Metro Bakersfield Area
Kern	8.1	Intensive Agriculture (Min. 20 Acre Parcel Size)	RSC	Resources	Southeast Kern
Kern	8.1	Intensive Agriculture (Min. 20 Acre Parcel Size)	RSC	Resources	Tehachapi Frazier Park
Kern	8.1	Intensive Agriculture (Min. 20 Acre Parcel Size)	RSC	Resources	Wasco
Kern	8.1	Intensive Agriculture (Min. 20 Acre Parcel Size)	RSC	Resources	West Kern
Kern	8.2	Resource Reserve (Min. 20 Acre Parcel Size)	RSC	Resources	Delano McFarland
Kern	8.2	Resource Reserve (Min. 20 Acre Parcel Size)	RSC	Resources	Lake Isabella
Kern	8.2	Resource Reserve (Min. 20 Acre Parcel Size)	RSC	Resources	Tehachapi Frazier Park
Kern	8.2	Resource Reserve (Min. 20 Acre Parcel Size)	RSC	Resources	Wasco
Kern	8.2	Resource Reserve (Min. 20 Acre Parcel Size)	RSC	Resources	West Kern
Kern	8.3	Extensive Agriculture (Min. 20 Acre Parcel Size)	RSC	Resources	Delano McFarland
Kern	8.3	Extensive Agriculture (Min. 20 Acre Parcel Size)	RSC	Resources	Indian Wells
Kern	8.3	Extensive Agriculture (Min. 20 Acre Parcel Size)	RSC	Resources	Lake Isabella
Kern	8.3	Extensive Agriculture (Min. 20 Acre Parcel Size)	RSC	Resources	Metro Bakersfield Area
Kern	8.3	Extensive Agriculture (Min. 20 Acre Parcel Size)	RSC	Resources	Southeast Kern
Kern	8.3	Extensive Agriculture (Min. 20 Acre Parcel Size)	RSC	Resources	Tehachapi Frazier Park
Kern	8.3	Extensive Agriculture (Min. 20 Acre Parcel Size)	RSC	Resources	Wasco
Kern	8.3	Extensive Agriculture (Min. 20 Acre Parcel Size)	RSC	Resources	West Kern
Kern	8.4	Mineral and Petroleum (Min. 5 Acre Parcel Size)	RSC	Resources	Delano McFarland
Kern	8.4	Mineral and Petroleum (Min. 5 Acre Parcel Size)	RSC	Resources	Indian Wells
Kern	8.4	Mineral and Petroleum (Min. 5 Acre Parcel Size)	RSC	Resources	Lake Isabella
Kern	8.4	Mineral and Petroleum (Min. 5 Acre Parcel Size)	RSC	Resources	Metro Bakersfield Area
Kern	8.4	Mineral and Petroleum (Min. 5 Acre Parcel Size)	RSC	Resources	Southeast Kern
Kern	8.4	Mineral and Petroleum (Min. 5 Acre Parcel Size)	RSC	Resources	Tehachapi Frazier Park
Kern	8.4	Mineral and Petroleum (Min. 5 Acre Parcel Size)	RSC	Resources	Wasco
Kern	8.4	Mineral and Petroleum (Min. 5 Acre Parcel Size)	RSC	Resources	West Kern
Kern	8.5	Resource Management (Min. 20 Acre Parcel Size)	RSC	Resources	Indian Wells
Kern	8.5	Resource Management (Min. 20 Acre Parcel Size)	RSC	Resources	Lake Isabella
Kern	8.5	Resource Management (Min. 20 Acre Parcel Size)	RSC	Resources	Metro Bakersfield Area
Kern	8.5	Resource Management (Min. 20 Acre Parcel Size)	RSC	Resources	Southeast Kern

Kern	8.5	Resource Management (Min. 20 Acre Parcel Size)	RSC	Resources	Tehachapi Frazier Park
Kern	8.5	Resource Management (Min. 20 Acre Parcel Size)	RSC	Resources	Wasco
Kern	8.5	Resource Management (Min. 20 Acre Parcel Size)	RSC	Resources	West Kern
Kern	Wind Energy	Wind energy zoned areas - NOT in GP	BP	Basic/Production	Southeast Kern
Kern	Wind Energy	Wind energy zoned areas - NOT in GP	BP	Basic/Production	Tehachapi Frazier Park

Jurisdiction	General Plan Code	General Plan Description	Uplan Code	Uplan Description	SUBREGION
Actis		5.1 Maximum 29 Units/Net Acre	RH	Residential High Density	Southeast Kern
Actis		5.6 Minimum 2.5 Gross Acres/Unit	RVL	Residential Very Low Density	Southeast Kern
Actis		6.3 Highway Commercial	REH	Retail/Heavy	Southeast Kern
Actis		7.2 Service Industrial	SW	Service/Warehouse	Southeast Kern
Bear Valley Springs	Residential	Residential	RL	Residential Low Density	Tehachapi Frazier Park
Blackwells Corner	Ag. Oriented Industry	Agriculturally Oriented Industry	RSC	Resources	Wasco
Blackwells Corner	Commercial	Commercial	REH	Retail/Heavy	Wasco
Blackwells Corner	County Administrative Center Si*	Blackwells Corner	PU	Public Use	Wasco
Blackwells Corner	High Density Residential	High Density Residential	RH	Residential High Density	Wasco
Blackwells Corner	Low Density Mobilehome Subdivis*	Blackwells Corner	RL	Residential Low Density	Wasco
Blackwells Corner	Low Density Residential	Low Density Residential	RL	Residential Low Density	Wasco
Blackwells Corner	Medium Density Residential	Medium Density Residential	RM	Residential Medium Density	Wasco
Blackwells Corner	Mobilehome Park	Mobilehome Park	RL	Residential Low Density	Wasco
Blackwells Corner	Park Site - Greenbelt	Park Site - Greenbelt	RSC	Resources	Wasco
Blackwells Corner	School Site	School Site	PU	Public Use	Wasco
Blackwells Corner	Suburban Residential	Suburban Residential	RL	Residential Low Density	Wasco
Boron		1.1 State or Federal Land	Fed/St	Federal/State	Southeast Kern
Boron		3.1 Public or Private Recreation Areas	PU	Public Use	Southeast Kern
Boron		3.2 Educational Facilities	PU	Public Use	Southeast Kern
Boron		3.3 Other Facilities	PU	Public Use	Southeast Kern
Boron		5.2 Maximum 16 Units/Net Acre	RM	Residential Medium Density	Southeast Kern
Boron		5.3 Maximum 10 Units/Net Acre	RL	Residential Low Density	Southeast Kern
Boron		5.4 Maximum 4 Units/Net Acre	RL	Residential Low Density	Southeast Kern
Boron		5.5 Maximum 1 Unit/Net Acre	RVL	Residential Very Low Density	Southeast Kern
Boron		5.6 Minimum 2.5 Gross Acres/Unit	RVL	Residential Very Low Density	Southeast Kern
Boron		6.2 General Commercial	REM	Retail/Medium	Southeast Kern
Boron		6.3 Highway Commercial	REH	Retail/Heavy	Southeast Kern
Boron		7.1 Light Industrial	BP	Basic Production	Southeast Kern
Boron		8.5 Resource Management (Min. 20 Acre Parcel Size)	RSC	Resources	Southeast Kern
Buena Vista Hills		3.1 Specific Plan Required	PU	Public Use	West Kern
Buena Vista Hills		3.2 Specific Plan Required	PU	Public Use	West Kern
Buena Vista Hills		3.3 Other Facilities	PU	Public Use	West Kern
Buena Vista Hills		5.2	5.2 RM	Residential Medium Density	West Kern
Buena Vista Hills		5.3	5.3 RL	Residential Low Density	West Kern
Buena Vista Hills		5.4	5.4 RVL	Residential Very Low Density	West Kern
Buena Vista Hills		5.5	5.5 RM	Residential Medium Density	West Kern
Buena Vista Hills		5.6	5.6 RVL	Residential Very Low Density	Metro Bakersfield Area
Buena Vista Hills		5.6	5.6 RVL	Residential Very Low Density	West Kern
Buena Vista Hills		8.5 Resource Management (Min. 20 Acre Parcel Size)	RSC	Resources	West Kern
Buttonwillow and Vicinity	Ag. Oriented Industry	Agriculturally Oriented Industry	RSC	Resources	Metro Bakersfield Area
Buttonwillow and Vicinity	Central Bus. Dist.	Central Business District	REH	Retail/Heavy	Metro Bakersfield Area
Buttonwillow and Vicinity	Civic Center	Civic Center	PU	Public Use	Metro Bakersfield Area
Buttonwillow and Vicinity	Greenbelt Areas	Greenbelt Areas (Transmission Line Easements)	RSC	Resources	Metro Bakersfield Area
Buttonwillow and Vicinity	Intensive Agriculture	Intensive Agriculture	RSC	Resources	Metro Bakersfield Area
Buttonwillow and Vicinity	Light Industrial	Light Industrial	BP	Basic/Production	Metro Bakersfield Area
Buttonwillow and Vicinity	MS	Midway Substation	PU	Public Use	Metro Bakersfield Area

Buttonwillow and Vicinity	P	Park	PU	Public Use	Metro Bakersfield Area
Buttonwillow and Vicinity	PU	Public Utility	PU	Public Use	Metro Bakersfield Area
Buttonwillow and Vicinity	RY	Road Maintenance Yard	PU	Public Use	Metro Bakersfield Area
Buttonwillow and Vicinity	S	Buttonwillow School	PU	Public Use	Metro Bakersfield Area
Buttonwillow and Vicinity	Single Family Residence	Single Family Residence	RL	Residential Low Density	Metro Bakersfield Area
Buttonwillow and Vicinity	SL	Sanitary Landfill	PU	Public Use	Metro Bakersfield Area
Buttonwillow and Vicinity	SL/BD	Sanitary Landfill - Burn Dump Hazard	PU	Public Use	Metro Bakersfield Area
Buttonwillow and Vicinity	TP	Sewage Treatment Plant	PU	Public Use	Metro Bakersfield Area
Buttonwillow and Vicinity	Two Family Residence	Two Family Residence	RM	Residential Medium Density	Metro Bakersfield Area
Cache Creek		5.5 Maximum 1 Unit/Net Acre	RVL	Residential Very Low Density	Tehachapi Frazier Park
Cache Creek		5.6 Minimum 2.5 Gross Acres/Unit	RVL	Residential Very Low Density	Tehachapi Frazier Park
Cache Creek		5.8 Minimum 20 Gross Acres/Unit	RVL	Residential Very Low Density	Tehachapi Frazier Park
Cache Creek		6.3 Highway Commercial	REH	Retail/Heavy	Tehachapi Frazier Park
Cache Creek		7.2 Service Industrial	SW	Service/Warehouse	Tehachapi Frazier Park
Cal Centre		3.3 Other Facilities	PU	Public Use	Metro Bakersfield Area
Cal Centre		6.2 General Commercial	REM	Retail/Medium	Metro Bakersfield Area
Cal Centre		6.3 Highway Commercial	REH	Retail/Heavy	Metro Bakersfield Area
Caliente		5.3 Maximum 10 Units/Net Acre	RL	Residential Low Density	Lake Isabella
Caliente		5.3 Maximum 10 Units/Net Acre	RL	Residential Low Density	Tehachapi Frazier Park
Caliente		6.2 General Commercial	REM	Retail/Medium	Lake Isabella
Caliente		6.2 General Commercial	REM	Retail/Medium	Tehachapi Frazier Park
Caliente		8.1 Intensive Agriculture (Min. 20 Acre Parcel Size)	RSC	Resources	Lake Isabella
Caliente		8.1 Intensive Agriculture (Min. 20 Acre Parcel Size)	RSC	Resources	Tehachapi Frazier Park
Camelot (Phase I)		6.2 General Commercial	REM	Retail/Medium	Southeast Kern
Cameron Canyon		3.3 Other Facilities	PU	Public Use	Tehachapi Frazier Park
Cameron Canyon		5.7 Minimum 5 Gross Acres/Unit	RVL	Residential Very Low Density	Tehachapi Frazier Park
Cameron Canyon		5.8 Minimum 20 Gross Acres/Unit	RVL	Residential Very Low Density	Tehachapi Frazier Park
Cameron Canyon		8.2 Resource Agriculture (Min. 20 Acre Parcel Size)	RSC	Resources	Tehachapi Frazier Park
Cameron Canyon		8.4 Mineral and Petroleum (Min. 5 Acre Parcel Size)	RSC	Resources	Tehachapi Frazier Park
Cameron Canyon		8.5 Resource Management (Min. 20 Acre Parcel Size)	RSC	Resources	Tehachapi Frazier Park
Cameron Pointe		6.3 Highway Commercial	REH	Retail/Heavy	Metro Bakersfield Area
Cantil		5.6 Minimum 2.5 Gross Acres/Unit	RVL	Residential Very Low Density	Southeast Kern
Cantil		5.8 Minimum 20 Gross Acres/Unit	RVL	Residential Very Low Density	Southeast Kern
Cantil		8.1 Intensive Agriculture (Min. 20 Acre Parcel Size)	RSC	Resources	Southeast Kern
Cuddy Valley	Agricultural Reserve	Agricultural Reserve - 1 D.U./20 Acres	RSC	Resources	Tehachapi Frazier Park
Cuddy Valley	Medium Density Residential	Medium Density Residential	RM	Residential Medium Density	Tehachapi Frazier Park
Cuddy Valley	Permanent Open Space	Permanent Open Space	RSC	Resources	Tehachapi Frazier Park
Cuddy Valley	Reserve - Undesignated	Reserve - Undesignated	RSC	Resources	Tehachapi Frazier Park
Cuddy Valley	Rural Residential	Rural Residential	RVL	Residential Very Low Density	Tehachapi Frazier Park
Derby Acres		1.1 State or Federal Land	Fed/St	Federal/State	West Kern
Derby Acres		3.1 Public or Private Recreation Areas	PU	Public Use	West Kern
Derby Acres		5.4 Maximum 4 Units/Net Acre	RL	Residential Low Density	West Kern
Derby Acres		5.45 Maximum 2 Units/Net Acre	RVL	Residential Very Low Density	West Kern
Derby Acres		5.5 Maximum 1 Unit/Net Acre	RVL	Residential Very Low Density	West Kern
Derby Acres		5.6 Minimum 2.5 Gross Acres/Unit	RVL	Residential Very Low Density	West Kern
Derby Acres		6.2 General Commercial	REM	Retail/Medium	West Kern
Derby Acres		7.15 Transportation Industrial	BP	Basic Production	West Kern

Derby Acres	8.4	Mineral and Petroleum (Min. 5 Acre Parcel Size)	RSC	Resources	West Kern
Derby Acres	8.5	Resource Management (Min. 20 Acre Parcel Size)	RSC	Resources	West Kern
Desert Lake	1.1	State or Federal Land	Fed/St	Federal/State	Southeast Kern
Desert Lake	3.1	Public or Private Recreation Areas	PU	Public Use	Southeast Kern
Desert Lake	3.2	Educational Facilities	PU	Public Use	Southeast Kern
Desert Lake	5.3	Maximum 10 Units/Net Acre	RL	Residential Low Density	Southeast Kern
Desert Lake	5.4	Maximum 4 Units/Net Acre	RL	Residential Low Density	Southeast Kern
Desert Lake	6.2	General Commercial	REM	Retail/Medium	Southeast Kern
Desert Lake	6.3	Highway Commercial	REH	Retail/Heavy	Southeast Kern
Desert Lake	7.1	Light Industrial	BP	Basic Production	Southeast Kern
Desert Lake	8.5	Resource Management (Min. 20 Acre Parcel Size)	RSC	Resources	Southeast Kern
Dustin Acres	3.1	Public or Private Recreation Areas	PU	Public Use	West Kern
Dustin Acres	5.5	Maximum 1 Unit/Net Acre	RVL	Residential Very Low Density	West Kern
Dustin Acres	7.2	Service Industrial	SW	Service/Warehouse	West Kern
Dustin Acres	7.4	Agricultural Industrial	RSC	Resources	West Kern
Dustin Acres	8.1	Intensive Agriculture (Min. 20 Acre Parcel Size)	RSC	Resources	West Kern
Fellows	5.2	Maximum 16 Units/Net Acre	RM	Residential Medium Density	West Kern
Fellows	5.3	Maximum 10 Units/Net Acre	RL	Residential Low Density	West Kern
Fellows	5.6	Minimum 2.5 Gross Acres/Unit	RVL	Residential Very Low Density	West Kern
Fellows	6.2	General Commercial	REM	Retail/Medium	West Kern
Fellows	8.4	Mineral and Petroleum (Min. 5 Acre Parcel Size)	RSC	Resources	West Kern
Frazier Park/Lebec	1.1	State or Federal Land	Fed/St	Federal/State	Tehachapi Frazier Park
Frazier Park/Lebec	3.1	Public or Private Recreation Areas	PU	Public Use	Tehachapi Frazier Park
Frazier Park/Lebec	3.2	Educational Facilities	PU	Public Use	Tehachapi Frazier Park
Frazier Park/Lebec	3.3	Other Facilities	PU	Public Use	Tehachapi Frazier Park
Frazier Park/Lebec	3.4	Solid Waste Facilities	PU	Public Use	Tehachapi Frazier Park
Frazier Park/Lebec	5.2	Maximum 16 Units/Net Acre	RM	Residential Medium Density	Tehachapi Frazier Park
Frazier Park/Lebec	5.3	Maximum 10 Units/Net Acre	RL	Residential Low Density	Tehachapi Frazier Park
Frazier Park/Lebec	5.4	Maximum 4 Units/Net Acre	RL	Residential Low Density	Tehachapi Frazier Park
Frazier Park/Lebec	5.5	Maximum 1 Unit/Net Acre	RVL	Residential Very Low Density	Tehachapi Frazier Park
Frazier Park/Lebec	5.6	Minimum 2.5 Gross Acres/Unit	RVL	Residential Very Low Density	Tehachapi Frazier Park
Frazier Park/Lebec	5.7	Minimum 5 Gross Acres/Unit	RVL	Residential Very Low Density	Tehachapi Frazier Park
Frazier Park/Lebec	5.8	Minimum 20 Gross Acres/Unit	RVL	Residential Very Low Density	Tehachapi Frazier Park
Frazier Park/Lebec	6.1	Major Commercial	REH	Retail/Heavy	Tehachapi Frazier Park
Frazier Park/Lebec	6.2	General Commercial	REM	Retail/Medium	Tehachapi Frazier Park
Frazier Park/Lebec	7.1	Light Industrial	BP	Basic Production	Tehachapi Frazier Park
Frazier Park/Lebec	7.2	Service Industrial	SW	Service/Warehouse	Tehachapi Frazier Park
Frazier Park/Lebec	8.3	Extensive Agriculture (Min. 20 Acre Parcel Size)	RSC	Resources	Tehachapi Frazier Park
Frazier Park/Lebec	8.4	Mineral and Petroleum (Min. 5 Acre Parcel Size)	RSC	Resources	Tehachapi Frazier Park
Frazier Park/Lebec	8.5	Resource Management (Min. 20 Acre Parcel Size)	RSC	Resources	Tehachapi Frazier Park
Freemont	5.4	Maximum 4 Units/Net Acre	RL	Residential Low Density	Southeast Kern
Freemont	5.6	Minimum 2.5 Gross Acres/Unit	RVL	Residential Very Low Density	Southeast Kern
Freemont	5.8	Minimum 20 Gross Acres/Unit	RVL	Residential Very Low Density	Southeast Kern
Glennville	1.1	State or Federal Land	Fed/St	Federal/State	Lake Isabella
Glennville	3.1	Public or Private Recreation Areas	PU	Public Use	Lake Isabella
Glennville	3.2	Educational Facilities	PU	Public Use	Lake Isabella
Glennville	3.3	Other Facilities	PU	Public Use	Lake Isabella

Glennville		5.4	Maximum 4 Units/Net Acre	RL	Residential Low Density	Lake Isabella
Glennville		5.5	Maximum 1 Unit/Net Acre	RVL	Residential Very Low Density	Lake Isabella
Glennville		5.6	Minimum 2.5 Gross Acres/Unit	RVL	Residential Very Low Density	Lake Isabella
Glennville		5.7	Minimum 5 Gross Acres/Unit	RVL	Residential Very Low Density	Lake Isabella
Glennville		6.2	General Commercial	REM	Retail/Medium	Lake Isabella
Glennville		8.3	Extensive Agriculture (Min. 20 Acre Parcel Size)	RSC	Resources	Lake Isabella
Glennville		8.5	Resource Management (Min. 20 Acre Parcel Size)	RSC	Resources	Lake Isabella
Greater Tehachapi Area		1.1	State or Federal Land	Fed/St	Federal/State	Tehachapi Frazier Park
Greater Tehachapi Area		3.1	Public or Private Recreation Areas	PU	Public Use	Tehachapi Frazier Park
Greater Tehachapi Area		3.2	Educational Facilities	PU	Public Use	Tehachapi Frazier Park
Greater Tehachapi Area		3.3	Other Facilities	PU	Public Use	Tehachapi Frazier Park
Greater Tehachapi Area		5.1	Maximum 29 Units/Net Acre	RH	Residential High Density	Tehachapi Frazier Park
Greater Tehachapi Area		5.2	Maximum 16 Units/Net Acre	RM	Residential Medium Density	Tehachapi Frazier Park
Greater Tehachapi Area		5.3	Maximum 10 Units/Net Acre	RL	Residential Low Density	Tehachapi Frazier Park
Greater Tehachapi Area		5.4	Maximum 4 Units/Net Acre	RL	Residential Low Density	Tehachapi Frazier Park
Greater Tehachapi Area		5.45	Maximum 2 Units/Net Acre	RVL	Residential Very Low Density	Tehachapi Frazier Park
Greater Tehachapi Area		5.5	Maximum 1 Unit/Net Acre	RVL	Residential Very Low Density	Tehachapi Frazier Park
Greater Tehachapi Area	5.5.1		Maximum 1 Unit/Net Acre - Cluster Requirement	RVL	Residential Very Low Density	Tehachapi Frazier Park
Greater Tehachapi Area		5.6	Minimum 2.5 Gross Acres/Unit	RVL	Residential Very Low Density	Tehachapi Frazier Park
Greater Tehachapi Area	5.6.1		Minimum 2.5 Gross Acres/Unit - Cluster Option	RVL	Residential Very Low Density	Tehachapi Frazier Park
Greater Tehachapi Area		5.7	Minimum 5 Gross Acres/Unit	RVL	Residential Very Low Density	Tehachapi Frazier Park
Greater Tehachapi Area		5.75	Minimum 10 Gross Acres/Unit	RVL	Residential Very Low Density	Tehachapi Frazier Park
Greater Tehachapi Area		5.8	Minimum 20 Gross Acres/Unit	RVL	Residential Very Low Density	Tehachapi Frazier Park
Greater Tehachapi Area		6.1	Major Commercial	REH	Retail/Heavy	Tehachapi Frazier Park
Greater Tehachapi Area		6.2	General Commercial	REM	Retail/Medium	Tehachapi Frazier Park
Greater Tehachapi Area		6.3	Highway Commercial	REH	Retail/Heavy	Tehachapi Frazier Park
Greater Tehachapi Area		7.1	Light Industrial	BP	Basic Production	Tehachapi Frazier Park
Greater Tehachapi Area		7.2	Service Industrial	SW	Service/Warehouse	Tehachapi Frazier Park
Greater Tehachapi Area		7.3	Heavy Industrial	BP	Basic/Production	Tehachapi Frazier Park
Greater Tehachapi Area		8.1	Intensive Agriculture (Min. 20 Acre Parcel Size)	RSC	Resources	Tehachapi Frazier Park
Greater Tehachapi Area		8.2	Resource Reserve (Min. 20 Acre Parcel Size)	RSC	Resources	Tehachapi Frazier Park
Greater Tehachapi Area		8.3	Extensive Agriculture (Min. 20 Acre Parcel Size)	RSC	Resources	Tehachapi Frazier Park
Greater Tehachapi Area		8.4	Mineral and Petroleum (Min. 5 Acre Parcel Size)	RSC	Resources	Tehachapi Frazier Park
Greater Tehachapi Area		8.5	Resource Management (Min. 20 Acre Parcel Size)	RSC	Resources	Tehachapi Frazier Park
Havilah		1.1	State or Federal Land	Fed/St	Federal/State	Lake Isabella
Havilah		3.3	Other Facilities	PU	Public Use	Lake Isabella
Havilah		5.4	Maximum 4 Units/Net Acre	RL	Residential Low Density	Lake Isabella
Havilah		5.5	Maximum 1 Unit/Net Acre	RVL	Residential Very Low Density	Lake Isabella
Havilah		5.6	Minimum 2.5 Gross Acres/Unit	RVL	Residential Very Low Density	Lake Isabella
Havilah		6.2	General Commercial	REM	Retail/Medium	Lake Isabella
Havilah		6.3	Highway Commercial	REH	Retail/Heavy	Lake Isabella
Havilah		8.5	Resource Management (Min. 20 Acre Parcel Size)	RSC	Resources	Lake Isabella
I-5 and Hwy. 58		1.1	State or Federal Land	Fed/St	Federal/State	Metro Bakersfield Area
I-5 and Hwy. 58		3.1	Public or Private Recreation Areas	PU	Public Use	Metro Bakersfield Area
I-5 and Hwy. 58		3.2	Educational Facilities	PU	Public Use	Metro Bakersfield Area
I-5 and Hwy. 58		3.3	Other Facilities	PU	Public Use	Metro Bakersfield Area
I-5 and Hwy. 58		5.2	Maximum 16 Units/Net Acre	RM	Residential Medium Density	Metro Bakersfield Area

I-5 and Hwy. 58	5.3	Maximum 10 Units/Net Acre	RL	Residential Low Density	Metro Bakersfield Area
I-5 and Hwy. 58	5.4	Maximum 4 Units/Net Acre	RL	Residential Low Density	Metro Bakersfield Area
I-5 and Hwy. 58	6.3	Highway Commercial	REH	Retail/Heavy	Metro Bakersfield Area
I-5 and Hwy. 58	7.1	Light Industrial	BP	Basic Production	Metro Bakersfield Area
I-5 and Hwy. 58	8.1	Intensive Agriculture (Min. 20 Acre Parcel Size)	RSC	Resources	Metro Bakersfield Area
I-5 and Hwy. 58	8.5	Resource Management (Min. 20 Acre Parcel Size)	RSC	Resources	Metro Bakersfield Area
Inyokern	1.1	State or Federal Land	Fed/St	Federal/State	Indian Wells
Inyokern	3.1	Public or Private Recreation Areas	PU	Public Use	Indian Wells
Inyokern	3.2	Educational Facilities	PU	Public Use	Indian Wells
Inyokern	3.3	Other Facilities	PU	Public Use	Indian Wells
Inyokern	5.2	Maximum 16 Units/Net Acre	RM	Residential Medium Density	Indian Wells
Inyokern	5.3	Maximum 10 Units/Net Acre	RL	Residential Low Density	Indian Wells
Inyokern	5.5	Maximum 1 Unit/Net Acre	RVL	Residential Very Low Density	Indian Wells
Inyokern	5.6	Minimum 2.5 Gross Acres/Unit	RVL	Residential Very Low Density	Indian Wells
Inyokern	6.2	General Commercial	REM	Retail/Medium	Indian Wells
Inyokern	7.1	Light Industrial	BP	Basic Production	Indian Wells
Inyokern	7.2	Service Industrial	SW	Service/Warehouse	Indian Wells
Inyokern	7.3	Heavy Industrial	BP	Basic/Production	Indian Wells
Jawbone Canyon	5.6	Minimum 2.5 Gross Acres/Unit	RVL	Residential Very Low Density	Southeast Kern
Jawbone Canyon	5.7	Minimum 5 Gross Acres/Unit	RVL	Residential Very Low Density	Southeast Kern
Jawbone Canyon	5.8	Minimum 20 Gross Acres/Unit	RVL	Residential Very Low Density	Lake Isabella
Jawbone Canyon	5.8	Minimum 20 Gross Acres/Unit	RVL	Residential Very Low Density	Southeast Kern
Jawbone Canyon	5.8	Minimum 20 Gross Acres/Unit	RVL	Residential Very Low Density	Tehachapi Frazier Park
Keene Ranch	3.1	Public or Private Recreation Areas	PU	Public Use	Tehachapi Frazier Park
Keene Ranch	3.2	Educational Facilities	PU	Public Use	Tehachapi Frazier Park
Keene Ranch	3.3	Other Facilities	PU	Public Use	Tehachapi Frazier Park
Keene Ranch	5.35	Maximum 7 Units/Net Acre	RL	Residential Low Density	Tehachapi Frazier Park
Keene Ranch	5.4	Maximum 4 Units/Net Acre	RL	Residential Low Density	Tehachapi Frazier Park
Keene Ranch	5.45	Maximum 2 Units/Net Acre	RVL	Residential Very Low Density	Tehachapi Frazier Park
Keene Ranch	5.5	Maximum 1 Unit/Net Acre	RVL	Residential Very Low Density	Tehachapi Frazier Park
Keene Ranch	5.6	Minimum 2.5 Gross Acres/Unit	RVL	Residential Very Low Density	Tehachapi Frazier Park
Keene Ranch	5.7	Minimum 5 Gross Acres/Unit	RVL	Residential Very Low Density	Tehachapi Frazier Park
Keene Ranch	6.2	General Commercial	REM	Retail/Medium	Tehachapi Frazier Park
Keene Ranch	8.5	Resource Management (Min. 20 Acre Parcel Size)	RSC	Resources	Tehachapi Frazier Park
Keene Rural Community	1.1	State or Federal Land	Fed/St	Federal/State	Tehachapi Frazier Park
Keene Rural Community	3.3	Other Facilities	PU	Public Use	Tehachapi Frazier Park
Keene Rural Community	5.3	Maximum 10 Units/Net Acre	RL	Residential Low Density	Tehachapi Frazier Park
Keene Rural Community	5.6	Minimum 2.5 Gross Acres/Unit	RVL	Residential Very Low Density	Tehachapi Frazier Park
Keene Rural Community	8.2	Resource Reserve (Min. 20 Acre Parcel Size)	RSC	Resources	Tehachapi Frazier Park
Kelso Creek at Rocky Point	1.1	State or Federal Land	Fed/St	Federal/State	Lake Isabella
Kelso Creek at Rocky Point	5.6	Minimum 2.5 Gross Acres/Unit	RVL	Residential Very Low Density	Lake Isabella
Kelso Creek at Rocky Point	5.7	Minimum 5 Gross Acres/Unit	RVL	Residential Very Low Density	Lake Isabella
Kelso Creek at Rocky Point	5.8	Minimum 20 Gross Acres/Unit	RVL	Residential Very Low Density	Lake Isabella
Kelso Creek at Rocky Point	8.5	Resource Management (Min. 20 Acre Parcel Size)	RSC	Resources	Lake Isabella
Kelso Valley	3.3	Other Facilities	PU	Public Use	Lake Isabella
Kelso Valley	5.45	Maximum 2 Units/Net Acre	RVL	Residential Very Low Density	Lake Isabella
Kelso Valley	5.5	Maximum 1 Unit/Net Acre	RVL	Residential Very Low Density	Lake Isabella

Kelso Valley		8.5 Resource Management (Min. 20 Acre Parcel Size)	RSC	Resources	Lake Isabella
Lost Hills	Agricultural	Agricultural	RSC	Resources	Wasco
Lost Hills	Commercial	Commercial	REH	Retail/Heavy	Wasco
Lost Hills	High Density Residential	High Density Residential	RH	Residential High Density	Wasco
Lost Hills	Industrial	Industrial	BP	Basic/Production	Wasco
Lost Hills	Low Density Residential	Low Density Residential - 7 D.U./Acre Max	RL	Residential Low Density	Wasco
Lost Hills	Medium Density Residential	Medium Density Residential	RM	Residential Medium Density	Wasco
Lost Hills	Public Facilities	Public Facilities	PU	Public Use	Wasco
Lost Hills	Recreational	Recreational	PU	Public Use	Wasco
Lost Hills	Reserve	Reserve	RSC	Resources	Wasco
Lost Hills	Special Use	Special Use	MU	Mixed Use	Wasco
Lost Hills	Tourist Commercial	Tourist Commercial	REM	Retail/Medium	Wasco
McKittrick		1.1 State or Federal Land	Fed/St	Federal/State	West Kern
McKittrick		3.1 Public or Private Recreation Areas	PU	Public Use	West Kern
McKittrick		3.2 Educational Facilities	PU	Public Use	West Kern
McKittrick		3.3 Other Facilities	PU	Public Use	West Kern
McKittrick		3.4 solid waste facilities	PU	Public Use	West Kern
McKittrick		5.3 Maximum 10 Units/Net Acre	RL	Residential Low Density	West Kern
McKittrick		5.4 Maximum 4 Units/Net Acre	RL	Residential Low Density	West Kern
McKittrick		5.7 Minimum 5 Gross Acres/Unit	RVL	Residential Very Low Density	West Kern
McKittrick		6.2 General Commercial	REM	Retail/Medium	West Kern
McKittrick		7.1 Light Industrial	BP	Basic Production	West Kern
McKittrick		7.15 Transportation Industrial	BP	Basic Production	West Kern
McKittrick		8.4 Mineral and Petroleum (Min. 5 Acre Parcel Size)	RSC	Resources	West Kern
McKittrick		8.5 Resource Management (Min. 20 Acre Parcel Size)	RSC	Resources	West Kern
Mettler		5.3 Maximum 10 Units/Net Acre	RL	Residential Low Density	West Kern
Mettler		6.2 General Commercial	REM	Retail/Medium	West Kern
Mettler		6.3 Highway Commercial	REH	Retail/Heavy	West Kern
Mettler		8.1 Intensive Agriculture (Min. 20 Acre Parcel Size)	RSC	Resources	Metro Bakersfield Area
Mettler		8.1 Intensive Agriculture (Min. 20 Acre Parcel Size)	RSC	Resources	Tehachapi Frazier Park
Mettler		8.1 Intensive Agriculture (Min. 20 Acre Parcel Size)	RSC	Resources	West Kern
Mil Potrero	Commercial Precise Development	Commercial Precise Development	REH	Retail/Heavy	Tehachapi Frazier Park
Mil Potrero	Individual Single Family Dwelling Uni*	Mil Potrero	RL	Residential Low Density	Tehachapi Frazier Park
Mil Potrero	Limited Multiple Family Dwelling Zone*	Mil Potrero	RH	Residential High Density	Tehachapi Frazier Park
Mil Potrero	Mobilehome Subdivision Zoned Lots	Mobilehome Subdivision Zoned Lots	RL	Residential Low Density	Tehachapi Frazier Park
Mil Potrero	Open Space	Open Space	RSC	Resources	Tehachapi Frazier Park
Mojave		1.1 State or Federal Land	Fed/St	Federal/State	Southeast Kern
Mojave		1.1 State or Federal Land	Fed/St	Federal/State	Tehachapi Frazier Park
Mojave		3.1 Public or Private Recreation Areas	PU	Public Use	Southeast Kern
Mojave		3.2 Educational Facilities	PU	Public Use	Southeast Kern
Mojave		3.3 Other Facilities	PU	Public Use	Southeast Kern
Mojave		3.4 Solid Waste Facilities	PU	Public Use	Southeast Kern
Mojave		5.1 Maximum 29 Units/Net Acre	RH	Residential High Density	Southeast Kern
Mojave		5.2 Maximum 16 Units/Net Acre	RM	Residential Medium Density	Southeast Kern
Mojave		5.3 Maximum 10 Units/Net Acre	RL	Residential Low Density	Southeast Kern
Mojave		5.4 Maximum 4 Units/Net Acre	RL	Residential Low Density	Southeast Kern
Mojave		5.5 Maximum 1 Unit/Net Acre	RVL	Residential Very Low Density	Southeast Kern

Mojave	5.6	Minimum 2.5 Gross Acres/Unit	RVL	Residential Very Low Density	Southeast Kern
Mojave	6.1	Major Commercial	REH	Retail/Heavy	Southeast Kern
Mojave	6.2	General Commercial	REM	Retail/Medium	Southeast Kern
Mojave	6.3	Highway Commercial	REH	Retail/Heavy	Southeast Kern
Mojave	7.1	Light Industrial	BP	Basic Production	Southeast Kern
Mojave	7.2	Service Industrial	SW	Service/Warehouse	Southeast Kern
Mojave	7.3	Heavy Industrial	BP	Basic/Production	Southeast Kern
Mojave	8.2	Resource Agriculture (Min. 20 Acre Parcel Size)	RSC	Resources	Southeast Kern
Mojave	8.2	Resource Agriculture (Min. 20 Acre Parcel Size)	RSC	Resources	Tehachapi Frazier Park
Mojave	8.4	Mineral and Petroleum (Min. 5 Acre Parcel Size)	RSC	Resources	Southeast Kern
Mojave	8.4	Mineral and Petroleum (Min. 5 Acre Parcel Size)	RSC	Resources	Tehachapi Frazier Park
Mojave	8.5	Resource Management (Min. 20 Acre Parcel Size)	RSC	Resources	Southeast Kern
Mojave	8.5	Resource Management (Min. 20 Acre Parcel Size)	RSC	Resources	Tehachapi Frazier Park
North Edwards	3.1	Public or Private Recreation Areas	PU	Public Use	Southeast Kern
North Edwards	3.2	Educational Facilities	PU	Public Use	Southeast Kern
North Edwards	3.3	Other Facilities	PU	Public Use	Southeast Kern
North Edwards	5.2	Maximum 16 Units/Net Acre	RM	Residential Medium Density	Southeast Kern
North Edwards	5.3	Maximum 10 Units/Net Acre	RL	Residential Low Density	Southeast Kern
North Edwards	5.4	Maximum 4 Units/Net Acre	RL	Residential Low Density	Southeast Kern
North Edwards	5.6	Minimum 2.5 Gross Acres/Unit	RVL	Residential Very Low Density	Southeast Kern
North Edwards	6.2	General Commercial	REM	Retail/Medium	Southeast Kern
North Edwards	6.3	Highway Commercial	REH	Retail/Heavy	Southeast Kern
North Edwards	7.1	Light Industrial	BP	Basic Production	Southeast Kern
North Edwards	8.2	Resource Reserve (Min. 20 Acre Parcel Size)	RSC	Resources	Southeast Kern
North Edwards	8.5	Resource Management (Min. 20 Acre Parcel Size)	RSC	Resources	Southeast Kern
Oglesby	3.3	Other Facilities	PU	Public Use	Metro Bakersfield Area
Oglesby	5.3	Maximum 10 Units/Net Acre	RL	Residential Low Density	Metro Bakersfield Area
Oglesby	6.2	General Commercial	REM	Retail/Medium	Metro Bakersfield Area
Oglesby	6.3	Highway Commercial	REH	Retail/Heavy	Metro Bakersfield Area
O'Neil Canyon	1.1	State or Federal Land	Fed/St	Federal/State	Tehachapi Frazier Park
O'Neil Canyon	3.1	Public or Private Recreation Areas	PU	Public Use	Tehachapi Frazier Park
O'Neil Canyon	3.2	Educational Facilities	PU	Public Use	Tehachapi Frazier Park
O'Neil Canyon	5.4	Maximum 4 Units/Net Acre	RL	Residential Low Density	Tehachapi Frazier Park
O'Neil Canyon	5.45	Maximum 2 Units/Net Acre	RVL	Residential Very Low Density	Tehachapi Frazier Park
O'Neil Canyon	5.5	Maximum 1 Unit/Net Acre	RVL	Residential Very Low Density	Tehachapi Frazier Park
O'Neil Canyon	5.6	Minimum 2.5 Gross Acres/Unit	RVL	Residential Very Low Density	Tehachapi Frazier Park
O'Neil Canyon	5.75	Minimum 10 Gross Acres/Unit	RVL	Residential Very Low Density	Tehachapi Frazier Park
O'Neil Canyon	6.3	Highway Commercial	REH	Retail/Heavy	Tehachapi Frazier Park
O'Neil Canyon	7.3	Heavy Industrial	BP	Basic/Production	Tehachapi Frazier Park
O'Neil Canyon	8.5	Resource Management (Min. 20 Acre Parcel Size)	RSC	Resources	Tehachapi Frazier Park
Paris - Loraine	5.7	Minimum 5 Gross Acres/Unit	RVL	Residential Very Low Density	Tehachapi Frazier Park
Paris - Loraine	8.1	Intensive Agriculture (Min. 20 Acre Parcel Size)	RSC	Resources	Tehachapi Frazier Park
Pines of Havilah	1.1	State or Federal Land	Fed/St	Federal/State	Lake Isabella
Pines of Havilah	5.3	Maximum 10 Units/Net Acre	RL	Residential Low Density	Lake Isabella
Pines of Havilah	5.5	Maximum 1 Unit/Net Acre	RVL	Residential Very Low Density	Lake Isabella
Pines of Havilah	5.6	Minimum 2.5 Gross Acres/Unit	RVL	Residential Very Low Density	Lake Isabella
Pines of Havilah	5.7	Minimum 5 Gross Acres/Unit	RVL	Residential Very Low Density	Lake Isabella

Pines of Havilah		6.2	General Commercial	REM	Retail/Medium	Lake Isabella
Pines of Havilah		6.3	Highway Commercial	REH	Retail/Heavy	Lake Isabella
Pines of Havilah		8.5	Resource Management (Min. 20 Acre Parcel Size)	RSC	Resources	Lake Isabella
Pond		8.1	Intensive Agriculture (Min. 20 Acre Parcel Size)	RSC	Resources	Wasco
Randsburg - Johannesburg		5.2	Maximum 16 Units/Net Acre	RM	Residential Medium Density	Southeast Kern
Randsburg - Johannesburg		5.3	Maximum 10 Units/Net Acre	RL	Residential Low Density	Southeast Kern
Randsburg - Johannesburg		6.2	General Commercial	REM	Retail/Medium	Southeast Kern
Randsburg - Johannesburg		7.1	Light Industrial	BP	Basic Production	Southeast Kern
Randsburg - Johannesburg		7.2	Service Industrial	SW	Service/Warehouse	Southeast Kern
Randsburg - Johannesburg		8.2	Resource Reserve (Min. 20 Acre Parcel Size)	RSC	Resources	Southeast Kern
Randsburg - Johannesburg		8.4	Mineral and Petroleum (Min. 5 Acre Parcel Size)	RSC	Resources	Southeast Kern
Ridgecrest Ranchos		5.5	Maximum 1 Unit/Net Acre	RVL	Residential Very Low Density	Indian Wells
Rosamond		1.1	State or Federal Land	Fed/St	Federal/State	Southeast Kern
Rosamond		3.1	Public or Private Recreation Areas	PU	Public Use	Southeast Kern
Rosamond		3.2	Educational Facilities	PU	Public Use	Southeast Kern
Rosamond	3.2/3.1		Educational Facilities/Public or Private Recreation Areas	PU	Public Use	Southeast Kern
Rosamond		3.3	Other Facilities	PU	Public Use	Southeast Kern
Rosamond		5.1	Maximum 29 Units/Net Acre	RH	Residential High Density	Southeast Kern
Rosamond		5.2	Maximum 16 Units/Net Acre	RM	Residential Medium Density	Southeast Kern
Rosamond		5.3	Maximum 10 Units/Net Acre	RL	Residential Low Density	Southeast Kern
Rosamond		5.4	Maximum 4 Units/Net Acre	RL	Residential Low Density	Southeast Kern
Rosamond		5.45	Maximum 2 Units/Net Acre	RVL	Residential Very Low Density	Southeast Kern
Rosamond		5.5	Maximum 1 Unit/Net Acre	RVL	Residential Very Low Density	Southeast Kern
Rosamond		5.6	Minimum 2.5 Gross Acres/Unit	RVL	Residential Very Low Density	Southeast Kern
Rosamond		6.1	Major Commercial	REH	Retail/Heavy	Southeast Kern
Rosamond		6.2	General Commercial	REM	Retail/Medium	Southeast Kern
Rosamond		6.3	Highway Commercial	REH	Retail/Heavy	Southeast Kern
Rosamond		7.1	Light Industrial	BP	Basic Production	Southeast Kern
Rosamond		7.2	Service Industrial	SW	Service/Warehouse	Southeast Kern
Rosamond		7.3	Heavy Industrial	BP	Basic/Production	Southeast Kern
Rosamond		8.1	intensive agriculture (min 20 acre parcel size)	RSC	Resources	Southeast Kern
Rosamond		8.5	Resource Management (Min. 20 Acre Parcel Size)	RSC	Resources	Southeast Kern
San Emidio		3.1	Public or Private Recreation Areas	PU	Public Use	Tehachapi Frazier Park
San Emidio		3.2	Educational Facilities	PU	Public Use	Tehachapi Frazier Park
San Emidio		3.3	Other Facilities	PU	Public Use	Tehachapi Frazier Park
San Emidio		5.1	Maximum 29 Units/Net Acre	RH	Residential High Density	Tehachapi Frazier Park
San Emidio		5.2	Maximum 16 Units/Net Acre	RM	Residential Medium Density	Tehachapi Frazier Park
San Emidio		5.3	Maximum 10 Units/Net Acre	RL	Residential Low Density	Tehachapi Frazier Park
San Emidio		6.1	Major Commercial	REH	Retail/Heavy	Tehachapi Frazier Park
San Emidio		6.2	General Commercial	REM	Retail/Medium	Tehachapi Frazier Park
San Emidio		6.3	Highway Commercial	REH	Retail/Heavy	Tehachapi Frazier Park
San Emidio		7.1	Light Industrial	BP	Basic Production	Tehachapi Frazier Park
San Emidio		7.2	Service Industrial	SW	Service/Warehouse	Tehachapi Frazier Park
San Emidio		8.3	Extensive Agriculture (Min. 20 Acre Parcel Size)	RSC	Resources	Tehachapi Frazier Park
San Emidio		8.5	Resource Management (Min. 20 Acre Parcel Size)	RSC	Resources	Tehachapi Frazier Park
Sand Canyon		3.1	Public or Private Recreation Areas	PU	Public Use	Tehachapi Frazier Park
Sand Canyon		5.6	Minimum 2.5 Gross Acres/Unit	RVL	Residential Very Low Density	Tehachapi Frazier Park

Sand Canyon		5.7	Minimum 5 Gross Acres/Unit	RVL	Residential Very Low Density	Tehachapi Frazier Park
Sand Canyon		5.75	Minimum 10 Gross Acres/Unit	RVL	Residential Very Low Density	Tehachapi Frazier Park
Sand Canyon		5.8	Minimum 20 Gross Acres/Unit	RVL	Residential Very Low Density	Tehachapi Frazier Park
Sand Canyon		6.2	General Commercial	REM	Retail/Medium	Tehachapi Frazier Park
Sand Canyon		8.5	Resource Management (Min. 20 Acre Parcel Size)	RSC	Resources	Tehachapi Frazier Park
Soledad Mtn. - Elephant Butte	Greenbelt		Greenbelt	RSC	Resources	Southeast Kern
Soledad Mtn. - Elephant Butte	Low Density Residen*		Soledad Mtn. - Elephant Butte	RL	Residential Low Density	Southeast Kern
Soledad Mtn. - Elephant Butte	Medium Density Resi*		Soledad Mtn. - Elephant Butte	RM	Residential Medium Density	Southeast Kern
Soledad Mtn. - Elephant Butte	Mineral Extraction *		Soledad Mtn. - Elephant Butte	RSC	Resources	Southeast Kern
Soledad Mtn. - Elephant Butte	Public Lands		Public Lands	PU	Public Use	Southeast Kern
Soledad Mtn. - Elephant Butte	Tourist Oriented		Tourist Oriented	REM	Retail/Medium	Southeast Kern
South Inyokern	Low Density Residential		Low Density Residential	RL	Residential Low Density	Indian Wells
South Inyokern	Open Space		Open Space	RSC	Resources	Indian Wells
South Inyokern	Recreation		Recreation	PU	Public Use	Indian Wells
South Kern Industrial Center		3.3	Other Facilities	PU	Public Use	West Kern
South Kern Industrial Center		7.3	Heavy Industrial	BP	Basic/Production	West Kern
South Lake Isabella	Agriculture		Agriculture	RSC	Resources	Lake Isabella
South Lake Isabella	General Commercial		General Commercial	REH	Retail/Heavy	Lake Isabella
South Lake Isabella	High Density Residential		High Density Residential	RH	Residential High Density	Lake Isabella
South Lake Isabella	Light Industrial		Light Industrial	BP	Basic/Production	Lake Isabella
South Lake Isabella	Low Density Residential		Low Density Residential	RL	Residential Low Density	Lake Isabella
South Lake Isabella	Medium Density Residential		Medium Density Residential	RM	Residential Medium Density	Lake Isabella
South Lake Isabella	Open Space		Open Space	RSC	Resources	Lake Isabella
South Lake Isabella	Rural Residential		Rural Residential	RVL	Residential Very Low Density	Lake Isabella
South Lake Isabella	State or Federal Land		State or Federal Land	Fed/St	Federal/State Land	Lake Isabella
South Lake Isabella	Tourist Services		Tourist Services	REM	Retail/Medium	Lake Isabella
Tejon Industrial Complex East	GI		General Industrial	BP	Basic/Production	Metro Bakersfield Area
Tejon Industrial Complex East	GI		General Industrial	BP	Basic/Production	Tehachapi Frazier Park
Tejon Mountain Village		3.3		PU	Public Use	Tehachapi Frazier Park
Tejon Mountain Village	5.1/6.3/3.3/3.1			MU	Mixed Use	Tehachapi Frazier Park
Tejon Mountain Village		5.3		RL	Residential Low Density	Tehachapi Frazier Park
Tejon Mountain Village	5.3/6.2/3.1			MU	Mixed Use	Tehachapi Frazier Park
Tejon Mountain Village		5.4		RL	Residential Low Density	Tehachapi Frazier Park
Tejon Mountain Village		5.45		RL	Residential Low Density	Tehachapi Frazier Park
Tejon Mountain Village		5.5		RVL	Residential Very Low Density	Tehachapi Frazier Park
Tejon Mountain Village		5.6	Minimum 2.5 Gross Acres/Unit	RVL	Residential Very Low Density	Tehachapi Frazier Park
Tejon Mountain Village		5.7	Minimum 5 Gross Acres/Unit	RVL	Residential Very Low Density	Tehachapi Frazier Park
Tejon Mountain Village		8.5		RSC	Resources	Tehachapi Frazier Park
Tupman		3.1	Public or Private Recreation Areas	PU	Public Use	West Kern
Tupman		3.2	Educational Facilities	PU	Public Use	West Kern
Tupman		5.3	Maximum 10 Units/Net Acre	RL	Residential Low Density	West Kern
Tupman		5.6	Minimum 2.5 Gross Acres/Unit	RVL	Residential Very Low Density	West Kern
Tupman		6.2	General Commercial	REM	Retail/Medium	West Kern
Tupman		7.1	Light Industrial	BP	Basic Production	West Kern
Tupman		8.4	Mineral and Petroleum (Min. 5 Acre Parcel Size)	RSC	Resources	West Kern
Twin Oaks		5.6	Minimum 2.5 Gross Acres/Unit	RVL	Residential Very Low Density	Tehachapi Frazier Park
Twin Oaks		6.2	General Commercial	REM	Retail/Medium	Tehachapi Frazier Park

Twin Oaks		8.3	Extensive Agriculture (Min. 20 Acre Parcel Size)	RSC	Resources	Tehachapi Frazier Park
Twin Oaks		8.5	Interim Rural Community Plan	RSC	Resources	Tehachapi Frazier Park
Valley Acres		3.1	Public or Private Recreation Areas	PU	Public Use	West Kern
Valley Acres		5.45	Maximum 2 Units/Net Acre	RVL	Residential Very Low Density	West Kern
Valley Acres		5.5	Maximum 1 Unit/Net Acre	RVL	Residential Very Low Density	West Kern
Valley Acres		5.6	Minimum 2.5 Gross Acres/Unit	RVL	Residential Very Low Density	West Kern
Valley Acres		6.2	General Commercial	REM	Retail/Medium	West Kern
Valley Acres		7.1	Light Industrial	BP	Basic Production	West Kern
Valley Acres		8.1	Intensive Agriculture (Min. 20 Acre Parcel Size)	RSC	Resources	West Kern
Valley Acres		8.4	Mineral and Petroleum (Min. 5 Acre Parcel Size)	RSC	Resources	West Kern
Ventura Westlake		5.3	Maximum 10 Units/Net Acre	RL	Residential Low Density	Southeast Kern
West Edwards Road Settlement		1.1	State or Federal Land	Fed/St	Federal/State	Southeast Kern
West Edwards Road Settlement		5.6	Minimum 2.5 Gross Acres/Unit	RVL	Residential Very Low Density	Southeast Kern
West Edwards Road Settlement		6.2	General Commercial	REM	Retail/Medium	Southeast Kern
West Edwards Road Settlement		8.5	Resource Management (Min. 20 Acre Parcel Size)	RSC	Resources	Southeast Kern
Western Rosedale	ER		Estate Residential	RVL	Residential Very Low Density	Metro Bakersfield Area
Western Rosedale	HI		Heavy Industrial	BP	Basic/Production	Metro Bakersfield Area
Western Rosedale	R-IA		Intensive Agriculture	RSC	Resources	Metro Bakersfield Area
Western Rosedale	SI		Service Industrial	SW	Service/Warehouse	Metro Bakersfield Area
Willow Springs		1.1	State or Federal Land	Fed/St	Federal/State	Southeast Kern
Willow Springs	1.1/3.4		State or Federal Land/Solid Waste Facilities	Fed/St	Federal/State	Southeast Kern
Willow Springs		3.1	Public or Private Recreation Areas	PU	Public Use	Southeast Kern
Willow Springs		3.2	Educational Facilities	PU	Public Use	Southeast Kern
Willow Springs		3.3	Other Facilities	PU	Public Use	Southeast Kern
Willow Springs		4.2	Rural Community	MU	Mixed Use	Southeast Kern
Willow Springs		5.1	Maximum 29 Units/Net Acre	RH	Residential High Density	Southeast Kern
Willow Springs		5.3	Maximum 10 Units/Net Acre	RL	Residential Low Density	Southeast Kern
Willow Springs	5.3/4.4		Maximum 10 Units/Net Acre/Comprehensive Plan Area	RL	Residential Low Density	Southeast Kern
Willow Springs		5.4	Maximum 4 Units/Net Acre	RL	Residential Low Density	Southeast Kern
Willow Springs	5.4/4.4		Maximum 4 Units/Net Acre/Comprehensive Plan Area	RL	Residential Low Density	Southeast Kern
Willow Springs		5.45	Maximum 2 Units/Net Acre	RVL	Residential Very Low Density	Southeast Kern
Willow Springs		5.5	Maximum 1 Unit/Net Acre	RVL	Residential Very Low Density	Southeast Kern
Willow Springs	5.5/4.4		Maximum 1 Unit/Net Acre/Comprehensive Plan Area	RVL	Residential Very Low Density	Southeast Kern
Willow Springs		5.6	Minimum 2.5 Gross Acres/Unit	RVL	Residential Very Low Density	Southeast Kern
Willow Springs		5.7	Minimum 5 Gross Acres/Unit	RVL	Residential Very Low Density	Southeast Kern
Willow Springs		5.75	Minimum 10 Gross Acres/Unit	RVL	Residential Very Low Density	Southeast Kern
Willow Springs		5.8	Minimum 20 Gross Acres/Unit	RVL	Residential Very Low Density	Southeast Kern
Willow Springs		6.2	General Commercial	REM	Retail/Medium	Southeast Kern
Willow Springs	6.2/4.4		General Commercial/Comprehensive Plan Area	REM	Retail/Medium	Southeast Kern
Willow Springs		6.3	Highway Commercial	REH	Retail/Heavy	Southeast Kern
Willow Springs		7.1	Light Industrial	BP	Basic Production	Southeast Kern
Willow Springs	7.1/4.4		Light Industrial/Comprehensive Plan Area	BP	Basic Production	Southeast Kern
Willow Springs		7.2	Service Industrial	SW	Service/Warehouse	Southeast Kern
Willow Springs	7.2/4.4		Service Industrial/Comprehensive Plan Area	SW	Service/Warehouse	Southeast Kern
Willow Springs		8.1	Intensive Agriculture (Min. 20 Acre Parcel Size)	RSC	Resources	Southeast Kern
Willow Springs		8.2	Resource Reserve (Min. 20 Acre Parcel Size)	RSC	Resources	Southeast Kern
Willow Springs		8.3	Extensive Agriculture (Min. 20 Acre Parcel Size)	RSC	Resources	Southeast Kern

Willow Springs	8.4	Mineral and Petroleum (Min. 5 Acre Parcel Size)	RSC	Resources	Southeast Kern
Willow Springs	8.5	Resource Management (Min. 20 Acre Parcel Size)	RSC	Resources	Southeast Kern
Woody	3.1	Public or Private Recreation Areas	PU	Public Use	Lake Isabella
Woody	3.3	Other Facilities	PU	Public Use	Lake Isabella
Woody	5.4	Maximum 4 Units/Net Acre	RL	Residential Low Density	Lake Isabella
Woody	5.5	Maximum 1 Unit/Net Acre	RVL	Residential Very Low Density	Lake Isabella
Woody	5.6	Minimum 2.5 Gross Acres/Unit	RVL	Residential Very Low Density	Lake Isabella
Woody	5.7	Minimum 5 Gross Acres/Unit	RVL	Residential Very Low Density	Lake Isabella
Woody	6.2	General Commercial	REM	Retail/Medium	Lake Isabella
Woody	8.3	Extensive Agriculture (Min. 20 Acre Parcel Size)	RSC	Resources	Lake Isabella
Woody	8.5	Resource Management (Min. 20 Acre Parcel Size)	RSC	Resources	Lake Isabella

Jurisdiction	General Plan	General Plan Description	Uplan Code	Uplan Description	SUBREGION
Aerial Acres	3.1	Specific Plan Required	PU	Public Use	Southeast Kern
Aerial Acres	3.3	Specific Plan Required	PU	Public Use	Southeast Kern
Aerial Acres	5.5	Specific Plan Required	RVL	Residential Very Low Density	Southeast Kern
Aerial Acres	5.6	Specific Plan Required	RVL	Residential Very Low Density	Southeast Kern
Aerial Acres	8.3	Specific Plan Required	RSC	Resources	Southeast Kern
Alpine Forest Park	3.1	Specific Plan Required	PU	Public Use	Tehachapi Frazier Park
Alpine Forest Park	3.2	Specific Plan Required	PU	Public Use	Tehachapi Frazier Park
Alpine Forest Park	3.3	Specific Plan Required	PU	Public Use	Tehachapi Frazier Park
Alpine Forest Park	5.4	Specific Plan Required	RL	Residential Low Density	Tehachapi Frazier Park
Alpine Forest Park	5.5	Specific Plan Required	RVL	Residential Very Low Density	Tehachapi Frazier Park
Alpine Forest Park	6.2	Specific Plan Required	REM	Retail/Medium	Tehachapi Frazier Park
Alpine Forest Park	8.2	Specific Plan Required	RSC	Resources	Tehachapi Frazier Park
Ancient Valley	3.1	Specific Plan Required	PU	Public Use	Southeast Kern
Ancient Valley	3.2	Specific Plan Required	PU	Public Use	Southeast Kern
Ancient Valley	3.3	Specific Plan Required	PU	Public Use	Southeast Kern
Ancient Valley	5.4	Specific Plan Required	RL	Residential Low Density	Southeast Kern
Ancient Valley	5.5	Specific Plan Required	RVL	Residential Very Low Density	Southeast Kern
Ancient Valley	6.2	Specific Plan Required	REM	Retail/Medium	Southeast Kern
Ancient Valley	7.1	Specific Plan Required	BP	Basic Production	Southeast Kern
Ancient Valley	7.2	Specific Plan Required	SW	Service/Warehouse	Southeast Kern
Ancient Valley	8.5	Specific Plan Required	RSC	Resources	Southeast Kern
Bear Trap	3.1	Specific Plan Required	PU	Public Use	Tehachapi Frazier Park
Bear Trap	5.3	Specific Plan Required	RL	Residential Low Density	Tehachapi Frazier Park
Bear Trap	8.2	Specific Plan Required	RSC	Resources	Tehachapi Frazier Park
Bella Vista Hills	3.1	Specific Plan Required	PU	Public Use	Lake Isabella
Bella Vista Hills	3.3	Specific Plan Required	PU	Public Use	Lake Isabella
Bella Vista Hills	5.2	Specific Plan Required	RM	Residential Medium Density	Lake Isabella
Bella Vista Hills	5.3	Specific Plan Required	RL	Residential Low Density	Lake Isabella
Bella Vista Hills	5.4	Specific Plan Required	RL	Residential Low Density	Lake Isabella
Bella Vista Hills	5.5	Specific Plan Required	RL	Residential Low Density	Lake Isabella
Bella Vista Hills	5.6	Specific Plan Required	RVL	Residential Very Low Density	Lake Isabella
Bella Vista Hills	5.7	Specific Plan Required	RVL	Residential Very Low Density	Lake Isabella
Bella Vista Hills	6.2	Specific Plan Required	REM	Retail/Medium	Lake Isabella
Bella Vista Hills	8.5	Specific Plan Required	RSC	Resources	Lake Isabella

Castac	3.1	Specific Plan Required	PU	Public Use	Tehachapi Frazier Park
Castac	3.2	Specific Plan Required	PU	Public Use	Tehachapi Frazier Park
Castac	3.3	Specific Plan Required	PU	Public Use	Tehachapi Frazier Park
Castac	5.3	Specific Plan Required	RL	Residential Low Density	Tehachapi Frazier Park
Castac	6.2	Specific Plan Required	REM	Retail/Medium	Tehachapi Frazier Park
Castac	8.3	Specific Plan Required	RSC	Resources	Tehachapi Frazier Park
Commanche	3.1	Specific Plan Required	PU	Public Use	Tehachapi Frazier Park
Commanche	3.2	Specific Plan Required	PU	Public Use	Tehachapi Frazier Park
Commanche	5.3	Specific Plan Required	RL	Residential Low Density	Tehachapi Frazier Park
Commanche	6.2	Specific Plan Required	REM	Retail/Medium	Tehachapi Frazier Park
Commanche	8.3	Specific Plan Required	RSC	Resources	Tehachapi Frazier Park
Cottonwood	3.1	Specific Plan Required	PU	Public Use	Tehachapi Frazier Park
Cottonwood	3.2	Specific Plan Required	PU	Public Use	Tehachapi Frazier Park
Cottonwood	5.3	Specific Plan Required	RL	Residential Low Density	Tehachapi Frazier Park
Cottonwood	6.2	Specific Plan Required	REM	Retail/Medium	Tehachapi Frazier Park
Cottonwood	8.2	Specific Plan Required	RSC	Resources	Tehachapi Frazier Park
Cummings Peak	5.8	Specific Plan Required	RVL	Residential Very Low Density	Tehachapi Frazier Park
Cummings Peak	8.1	Specific Plan Required	RSC	Resources	Tehachapi Frazier Park
Cummings Ranch	8.5	Specific Plan Required	RSC	Resources	Tehachapi Frazier Park
Dutch Flat	3.1	Specific Plan Required	PU	Public Use	Lake Isabella
Dutch Flat	5.5	Specific Plan Required	RVL	Residential Very Low Density	Lake Isabella
Dutch Flat	5.6	Specific Plan Required	RVL	Residential Very Low Density	Lake Isabella
Dutch Flat	5.7	Specific Plan Required	RVL	Residential Very Low Density	Lake Isabella
Dutch Flat	5.8	Specific Plan Required	RVL	Residential Very Low Density	Lake Isabella
Dutch Flat	6.2	Specific Plan Required	REM	Retail/Medium	Lake Isabella
Dutch Flat	8.1	Specific Plan Required	RSC	Resources	Lake Isabella
Grapevine Commercial	6.2	Specific Plan Required	REM	Retail/Medium	Tehachapi Frazier Park
Grapevine Commercial	8.1	Specific Plan Required	RSC	Resources	Tehachapi Frazier Park
Hot Springs Valley	3.1	Specific Plan Required	PU	Public Use	Lake Isabella
Hot Springs Valley	3.2	Specific Plan Required	PU	Public Use	Lake Isabella
Hot Springs Valley	5.4	Specific Plan Required	RL	Residential Low Density	Lake Isabella
Hot Springs Valley	6.2	Specific Plan Required	REM	Retail/Medium	Lake Isabella
Hot Springs Valley	8.1	Specific Plan Required	RSC	Resources	Lake Isabella
Hudson Ranch	5.5	Specific Plan Required	RVL	Residential Very Low Density	Tehachapi Frazier Park
Joshua Heights	3.1	Specific Plan Required	PU	Public Use	Southeast Kern

Joshua Heights	3.2	Specific Plan Required	PU	Public Use	Southeast Kern
Joshua Heights	3.3	Specific Plan Required	PU	Public Use	Southeast Kern
Joshua Heights	5.6	Specific Plan Required	RVL	Residential Very Low Density	Southeast Kern
Joshua Heights	5.6	Specific Plan Required	RVL	Residential Very Low Density	Tehachapi Frazier Park
Joshua Heights	6.2	Specific Plan Required	REM	Retail/Medium	Southeast Kern
Joshua Heights	8.1	Specific Plan Required	RSC	Resources	Southeast Kern
Lebec	6.1	Specific Plan Required	REH	Retail/Heavy	Tehachapi Frazier Park
Lebec	6.3	Specific Plan Required	REH	Retail/Heavy	Tehachapi Frazier Park
Los Alamos	5.7	Specific Plan Required	RVL	Residential Very Low Density	Tehachapi Frazier Park
Los Alamos	8.3	Specific Plan Required	RSC	Resources	Tehachapi Frazier Park
Mackenzie	3.1	Specific Plan Required	PU	Public Use	Tehachapi Frazier Park
Mackenzie	5.5	Specific Plan Required	RVL	Residential Very Low Density	Tehachapi Frazier Park
Mackenzie	8.5	Specific Plan Required	RSC	Resources	Tehachapi Frazier Park
Natcha Mesa	3.1	Specific Plan Required	PU	Public Use	Tehachapi Frazier Park
Natcha Mesa	3.2	Specific Plan Required	PU	Public Use	Tehachapi Frazier Park
Natcha Mesa	5.3	Specific Plan Required	RL	Residential Low Density	Tehachapi Frazier Park
Natcha Mesa	6.2	Specific Plan Required	REM	Retail/Medium	Tehachapi Frazier Park
Natcha Mesa	8.3	Specific Plan Required	RSC	Resources	Tehachapi Frazier Park
Neumarkel	5.5	Specific Plan Required	RVL	Residential Very Low Density	Metro Bakersfield Area
Neumarkel	6.3	Specific Plan Required	REH	Retail/Heavy	Metro Bakersfield Area
Neumarkel	6.3	Specific Plan Required	REH	Retail/Heavy	Tehachapi Frazier Park
Neumarkel	8.1	Specific Plan Required	RSC	Resources	Metro Bakersfield Area
Neumarkel	8.1	Specific Plan Required	RSC	Resources	Tehachapi Frazier Park
Oso Canyon	3.1	Specific Plan Required	PU	Public Use	Tehachapi Frazier Park
Oso Canyon	3.2	Specific Plan Required	PU	Public Use	Tehachapi Frazier Park
Oso Canyon	5.3	Specific Plan Required	RL	Residential Low Density	Tehachapi Frazier Park
Oso Canyon	6.2	Specific Plan Required	REM	Retail/Medium	Tehachapi Frazier Park
Oso Canyon	8.3	Extensive Agriculture- minimum 80-acre parcel size for lands under "Williamson Act" contract; 20-acre minimum, lands not under contract	RSC	Resources	Tehachapi Frazier Park
Rattlesnake Springs	3.1	Specific Plan Required	PU	Public Use	Lake Isabella
Rattlesnake Springs	3.2	Specific Plan Required	PU	Public Use	Lake Isabella
Rattlesnake Springs	3.3	Specific Plan Required	PU	Public Use	Lake Isabella
Rattlesnake Springs	5.1	Specific Plan Required	RH	Residential High Density	Lake Isabella
Rattlesnake Springs	5.2	Specific Plan Required	RM	Residential Medium Density	Lake Isabella

Rattlesnake Springs	5.3	Specific Plan Required	RL	Residential Low Density	Lake Isabella
Rattlesnake Springs	5.4	Specific Plan Required	RL	Residential Low Density	Lake Isabella
Rattlesnake Springs	5.5	Specific Plan Required	RVL	Residential Very Low Density	Lake Isabella
Rattlesnake Springs	5.8	Specific Plan Required	RVL	Residential Very Low Density	Lake Isabella
Rattlesnake Springs	6.1	Specific Plan Required	REH	Retail/Heavy	Lake Isabella
Rattlesnake Springs	6.2	Specific Plan Required	REM	Retail/Medium	Lake Isabella
Rattlesnake Springs	8.5	Specific Plan Required	RSC	Resources	Lake Isabella
Saltdale	3.1	Specific Plan Required	PU	Public Use	Southeast Kern
Saltdale	5.6	Specific Plan Required	RVL	Residential Very Low Density	Southeast Kern
Saltdale	6.3	Specific Plan Required	REH	Retail/Heavy	Southeast Kern
Saltdale	7.2	Specific Plan Required	SW	Service/Warehouse	Southeast Kern
Saltdale	8.1	Specific Plan Required	RSC	Resources	Southeast Kern
Sorrell Peak	3.3	Specific Plan Required	PU	Public Use	Lake Isabella
Sorrell Peak	5.7	Specific Plan Required	RVL	Residential Very Low Density	Lake Isabella
Sorrell Peak	6.3	Specific Plan Required	REH	Retail/Heavy	Lake Isabella
Sorrell Peak	8.3	Specific Plan Required	RSC	Resources	Lake Isabella
Stallion Springs (Phase III)	3.1	Specific Plan Required	PU	Public Use	Tehachapi Frazier Park
Stallion Springs (Phase III)	3.2	Specific Plan Required	PU	Public Use	Tehachapi Frazier Park
Stallion Springs (Phase III)	3.3	Specific Plan Required	PU	Public Use	Tehachapi Frazier Park
Stallion Springs (Phase III)	3.4	Specific Plan Required	PU	Public Use	Tehachapi Frazier Park
Stallion Springs (Phase III)	5.5	Specific Plan Required	RVL	Residential Very Low Density	Tehachapi Frazier Park
Stallion Springs (Phase III)	8.3	Specific Plan Required	RSC	Resources	Tehachapi Frazier Park
Tejon Canyon North	3.1	Specific Plan Required	PU	Public Use	Tehachapi Frazier Park
Tejon Canyon North	3.2	Specific Plan Required	PU	Public Use	Tehachapi Frazier Park
Tejon Canyon North	5.3	Specific Plan Required	RL	Residential Low Density	Tehachapi Frazier Park
Tejon Canyon North	8.3	Specific Plan Required	RSC	Resources	Tehachapi Frazier Park
Tejon Canyon Resort	6.2	Specific Plan Required	REM	Retail/Medium	Tehachapi Frazier Park
Tejon Canyon Resort	8.1	Specific Plan Required	RSC	Resources	Tehachapi Frazier Park
Tejon Canyon South	3.1	Specific Plan Required	PU	Public Use	Tehachapi Frazier Park
Tejon Canyon South	3.2	Specific Plan Required	PU	Public Use	Tehachapi Frazier Park
Tejon Canyon South	5.3	Specific Plan Required	RL	Residential Low Density	Tehachapi Frazier Park
Tejon Canyon South	6.2	Specific Plan Required	REM	Retail/Medium	Tehachapi Frazier Park
Tejon Canyon South	8.3	Specific Plan Required	RSC	Resources	Tehachapi Frazier Park
Tejon Creek No. 1	3.1	Specific Plan Required	PU	Public Use	Tehachapi Frazier Park
Tejon Creek No. 1	3.2	Specific Plan Required	PU	Public Use	Tehachapi Frazier Park

Tejon Creek No. 1	5.3	Specific Plan Required	RL	Residential Low Density	Tehachapi Frazier Park
Tejon Creek No. 1	6.2	Specific Plan Required	REM	Retail/Medium	Tehachapi Frazier Park
Tejon Creek No. 1	8.3	Specific Plan Required	RSC	Resources	Tehachapi Frazier Park
Tejon Creek No. 2	6.2	Specific Plan Required	REM	Retail/Medium	Tehachapi Frazier Park
Tejon Hills	3.1	Specific Plan Required	PU	Public Use	Tehachapi Frazier Park
Tejon Hills	5.7	Specific Plan Required	RVL	Residential Very Low Density	Tehachapi Frazier Park
Tejon Hills	8.2	Specific Plan Required	RSC	Resources	Tehachapi Frazier Park
Tunis Creek	3.1	Specific Plan Required	PU	Public Use	Tehachapi Frazier Park
Tunis Creek	3.2	Specific Plan Required	PU	Public Use	Tehachapi Frazier Park
Tunis Creek	5.3	Specific Plan Required	RL	Residential Low Density	Tehachapi Frazier Park
Tunis Creek	6.2	Specific Plan Required	REM	Retail/Medium	Tehachapi Frazier Park
Tunis Creek	8.1	Specific Plan Required	RSC	Resources	Tehachapi Frazier Park
Tunis Creek	8.3	Specific Plan Required	RSC	Resources	Tehachapi Frazier Park
Tunis Ridge	3.1	Specific Plan Required	PU	Public Use	Tehachapi Frazier Park
Tunis Ridge	3.2	Specific Plan Required	PU	Public Use	Tehachapi Frazier Park
Tunis Ridge	5.3	Specific Plan Required	RL	Residential Low Density	Tehachapi Frazier Park
Tunis Ridge	6.2	Specific Plan Required	REM	Retail/Medium	Tehachapi Frazier Park
Tunis Ridge	8.3	Specific Plan Required	RSC	Resources	Tehachapi Frazier Park
Vista Peak No. 1	3.1	Specific Plan Required	PU	Public Use	Tehachapi Frazier Park
Vista Peak No. 1	3.2	Specific Plan Required	PU	Public Use	Tehachapi Frazier Park
Vista Peak No. 1	5.3	Specific Plan Required	RL	Residential Low Density	Tehachapi Frazier Park
Vista Peak No. 1	8.3	Specific Plan Required	RSC	Resources	Tehachapi Frazier Park
Vista Peak No. 2	3.1	Specific Plan Required	PU	Public Use	Tehachapi Frazier Park
Vista Peak No. 2	3.2	Specific Plan Required	PU	Public Use	Tehachapi Frazier Park
Vista Peak No. 2	5.3	Specific Plan Required	RL	Residential Low Density	Tehachapi Frazier Park
Vista Peak No. 2	8.2	Specific Plan Required	RSC	Resources	Tehachapi Frazier Park
White Wolf	3.1	Specific Plan Required	PU	Public Use	Tehachapi Frazier Park
White Wolf	3.3	Specific Plan Required	PU	Public Use	Tehachapi Frazier Park
White Wolf	5.3	Specific Plan Required	RL	Residential Low Density	Tehachapi Frazier Park
White Wolf	6.1	Specific Plan Required	REH	Retail/Heavy	Tehachapi Frazier Park
White Wolf	6.2	Specific Plan Required	REM	Retail/Medium	Tehachapi Frazier Park
White Wolf	6.3	Specific Plan Required	REH	Retail/Heavy	Tehachapi Frazier Park
White Wolf	8.3	Specific Plan Required	RSC	Resources	Tehachapi Frazier Park
Winters Ridge	3.1	Specific Plan Required	PU	Public Use	Tehachapi Frazier Park
Winters Ridge	5.3	Specific Plan Required	RL	Residential Low Density	Tehachapi Frazier Park

Winters Ridge	6.2	Specific Plan Required	REM	Retail/Medium	Tehachapi Frazier Park
Winters Ridge	8.3	Specific Plan Required	RSC	Resources	Tehachapi Frazier Park

Jurisdiction	General P	General Plan Description	Uplan Code	Uplan Description	SUBREGION
Maricopa	A	Agriculture	RSC	Resources	West Kern
Maricopa	CH	Commercial highway	REH	Retail/Heavy	West Kern
Maricopa	CR	Commercial/Retail	REM	Retail/Medium	West Kern
Maricopa	FP	Flood Path	PU	Public Use	West Kern
Maricopa	I	Industrial	BP	Basic/Production	West Kern
Maricopa	OS	Open Space	RSC	Resources	West Kern
Maricopa	P	Park	PU	Public Use	West Kern
Maricopa	PUB	Public	PU	Public Use	West Kern
Maricopa	RLD	Residential Low Density	RL	Residential Low Density	West Kern
Maricopa	RMD	Residential Medium Density	RM	Residential Medium Density	West Kern
Maricopa	RR	Rural Residential	RL	Residential Low Density	West Kern

Jurisdiction	General P	General Plan Description	Uplan Code	Uplan Description	SUBREGION
McFarland	A	Agriculture	RSC	Resources	Delano McFarland
McFarland	C	Church	PU	Public Use	Delano McFarland
McFarland	CH	Church	PU	Public Use	Delano McFarland
McFarland	EP	Existing Park	PU	Public Use	Delano McFarland
McFarland	G	Government	PU	Public Use	Delano McFarland
McFarland	H	Heavy Commercial	REH	Retail/Heavy	Delano McFarland
McFarland	HD	High Density	RH	Residential High Density	Delano McFarland
McFarland	HS	Highway Service	REH	Retail/Heavy	Delano McFarland
McFarland	I	Government	PU	Public Use	Delano McFarland
McFarland	LD	Low Density	RL	Residential Low Density	Delano McFarland
McFarland	LI	Light Industrial	BP	Basic/Production	Delano McFarland
McFarland	M	Manufacturing	SW	Service/Warehouse	Delano McFarland
McFarland	MD	Medium Density	RM	Residential Medium Density	Delano McFarland
McFarland	MH	Medium High Density	RH	Residential High Density	Delano McFarland
McFarland	P	Existing Park	PU	Public Use	Delano McFarland
McFarland	PP	Proposed Park	PU	Public Use	Delano McFarland
McFarland	R	McFarland	RSC	Resources	Delano McFarland
McFarland	RR	Residential Reserve	RVL	Residential Very Low Density	Delano McFarland
McFarland	S	School	PU	Public Use	Delano McFarland
McFarland	SM	Shopping Mall	REM	Retail/Medium	Delano McFarland
McFarland	UR	Urban Reserve	MU	Mixed Use	Delano McFarland

Jurisdiction	General Plan Code	General Plan Description	Uplan Code	Uplan Description	SUBREGION
Ridgecrest	C	Commercial- min 20,000 sqft w/ 14.1-29 d.u./ gross acre	REH	Retail/Heavy	Indian Wells
Ridgecrest	CD	Commercial Downtown- 14.1-29 d.u./gross acre	REM	Retail/Medium	Indian Wells
Ridgecrest	CV	Commercial Village- min. 10,000 sqft w/ 14.1-29 d.u./gross acre	REM	Retail/Medium	Indian Wells
Ridgecrest	I	Industrial- min. 20,000 sqft	SW	Service/Warehouse	Indian Wells
Ridgecrest	IS	Institutional	PU	Public Use	Indian Wells
Ridgecrest	MIL	Military	Fed/St	Fed/St	Indian Wells
Ridgecrest	OS	Open Space- min 20,000 sqft w/ 1 unit/lot	RSC	Resources	Indian Wells
Ridgecrest	P	Parks	PU	Public Use	Indian Wells
Ridgecrest	RE	Residential Estate Density- min 20,000 sqft w/ 1.1-2.0 d.u./gross acre	RVL	Residential Very Low Density	Indian Wells
Ridgecrest	RL	Residential Low Density- min 6,000 sqft w/ 2.1-5.0 d.u./gross acre	RL	Residential Low Density	Indian Wells
Ridgecrest	RM	Residential Medium Density- min 3,000 sqft w/ 5.1-14.0 d.u./gross acre	RL	Residential Low Density	Indian Wells
Ridgecrest	RR	Residential Rural Density- min 40,000 sqft w/ 0-1 d.u./gross acre	RVL	Residential Very Low Density	Indian Wells
Ridgecrest	RT	Residential Estate	RL	Residential Low Density	Indian Wells
Ridgecrest	RX	Residential Large Lot- min 2.5 acres w/ 0-.4 d.u./gross acre	RVL	Residential Very Low Density	Indian Wells

Jurisdiction	General Plan Code	General Plan Description	Uplan Code	Uplan Description	SUBREGION
Shafter	AOS	Agriculture/Open Space	RSC	Resources	Metro Bakersfield Area
Shafter	AOS	Agriculture/Open Space	RSC	Resources	Wasco
Shafter	BP	Business Park	SW	Service/Warehouse	Metro Bakersfield Area
Shafter	Canal	Canal/Right of Way	PU	Public Use	Metro Bakersfield Area
Shafter	CF	Community Facilities	PU	Public Use	Metro Bakersfield Area
Shafter	CPO	Commercial/Professional Office	SO	Service/Office	Metro Bakersfield Area
Shafter	I	Industrial	SW	Service/Warehouse	Metro Bakersfield Area
Shafter	LDR	Low Density Residential- 5d.u/ac	RL	Residential Low Density	Metro Bakersfield Area
Shafter	LDR	Low Density Residential- 5d.u/ac	RL	Residential Low Density	Wasco
Shafter	MHR	Medium High Density Residential- 20 d.u/ac	RM	Residential Medium Density	Metro Bakersfield Area
Shafter	MR	Medium Density Residential- 10d.u/ac	RL	Residential Low Density	Metro Bakersfield Area
Shafter	OS	Recreation/Open Space	PU	Public Use	Metro Bakersfield Area
Shafter	PS	Parks and Schools	PU	Public Use	Metro Bakersfield Area
Shafter	RC	Rural Community- 1 d.u./ac	RVL	Residential Very Low Density	Metro Bakersfield Area
Shafter	Right-of-Way	Canal/Right of Way	PU	Public Use	Metro Bakersfield Area
Shafter	RM	Resource Management	RSC	Resources	Metro Bakersfield Area
Shafter	RR	Rural Residential- .4 d.u/ac	RVL	Residential Very Low Density	Metro Bakersfield Area
Shafter	Specific Plan	Specific Planning Areas	MU	Mixed Use	Metro Bakersfield Area
Shafter	VLR	Very Low Density Residential- 3.5 d.u/ac	RVL	Residential Very Low Density	Metro Bakersfield Area
Coberly West	C	Commercial: Typical uses will include a supermarket, drugstore, restaurant, and other smaller retail and support services such as banks and video rental stores	SO	Service/Office	Metro Bakersfield Area
Coberly West	ER	Estate Residential: 2.5-4.0 du/ac	RL	Residential Low Density	Metro Bakersfield Area
Coberly West	HOA	Private Recreation	PU	Public Use	Metro Bakersfield Area
Coberly West	LDR	Low Density Residential: 4-7.5 du/ac	RL	Residential Low Density	Metro Bakersfield Area
Coberly West	MDR	Medium Density Residential: 7.5-9 du/ac	RL	Residential Low Density	Metro Bakersfield Area
Coberly West	P	Park	PU	Public Use	Metro Bakersfield Area
Coberly West	PS	Public Service: Typical uses in this area would include a range of public service facilities such as police and fire station, library, post office, clubs and lodges	PU	Public Use	Metro Bakersfield Area
Coberly West	RSC	Resources	RSC	Resources	Metro Bakersfield Area
Coberly West	S	School	PU	Public Use	Metro Bakersfield Area
Coberly West	TG	Trail/Greenbelt	PU	Public Use	Metro Bakersfield Area

Heritage Ranch	C	Commercial: 24-acre commercial complex, neighborhood commercial center (commercial/services, offices) is intended to the specific plan area and adjacent areas	SO	Service/Office	Metro Bakersfield Area
Heritage Ranch	LDR	Low Density Residential: max 3.7 du/ac	RL	Residential Low Density	Metro Bakersfield Area
Heritage Ranch	OS	Recreation/Open Space	RSC	Resources	Metro Bakersfield Area
Heritage Ranch	S	School	PU	Public Use	Metro Bakersfield Area
Heritage Ranch	T	Multi-Use Trails/Paseo	RSC	Resources	Metro Bakersfield Area
Mission Lake	C	Commercial	REH	Retail/Heavy	Metro Bakersfield Area
Mission Lake	Canal	Canal	PU	Public Use	Metro Bakersfield Area
Mission Lake	HOA	Private Recreation	PU	Public Use	Metro Bakersfield Area
Mission Lake	L	Lake	RSC	Resources	Metro Bakersfield Area
Mission Lake	LDR	Low Density Residential 4-7.4 du/ac	RL	Residential Low Density	Metro Bakersfield Area
Mission Lake	MDR	Medium Density Residential 7.5-14 du/ac	RL	Residential Low Density	Metro Bakersfield Area
Mission Lake	MHDR	Medum High Density Residential 18-24 du/ac	RM	Residential Medium Density	Metro Bakersfield Area
Mission Lake	PP	Public Park	PU	Public Use	Metro Bakersfield Area
Mission Lake	S	School	PU	Public Use	Metro Bakersfield Area
Orchard Park	DR	Detached Residential: 3.5 du/ac	RL	Residential Low Density	Metro Bakersfield Area
Orchard Park	OG	Oil/Gas Overlay	RSC	Resources	Metro Bakersfield Area
Orchard Park	P	Public Park	PU	Public Use	Metro Bakersfield Area

Jurisdiction	General P	General Plan Description	Uplan Code	Uplan Description	SUBREGION
Taft	A	Agriculture	RSC	Resources	West Kern
Taft	GC	General Commercial	REH	Retail/Heavy	West Kern
Taft	HDR	High Density Residential	RH	Residential High Density	West Kern
Taft	IND	Industrial	SW	Service/Warehouse	West Kern
Taft	LDR	Low Density Residential	RL	Residential Low Density	West Kern
Taft	MDR	Medium Density Residential	RM	Residential Medium Density	West Kern
Taft	MU	Mixed Use	MU	Mixed Use	West Kern
Taft	NR	Natural Resources	RSC	Resources	West Kern
Taft	OS	Open Space	RSC	Resouces	West Kern
Taft	PF	Public Facilities	PU	Public Use	West Kern
Taft	RE	Residential Estate	RVL	Residential Very Low Density	West Kern
Taft	RR	Rural Residential	RVL	Residential Very Low Density	West Kern

Jurisdiction	General Plan Code	General Plan Description	Uplan Code	Uplan Description	SUBREGION
Tehachapi	AG	Agricultural/Rural	RSC	Resources	Tehachapi Frazier Park
Tehachapi	AIRPORT	Airport	PU	Public Use	Tehachapi Frazier Park
Tehachapi	CC	Community Commercial	REH	Retail/Heavy	Tehachapi Frazier Park
Tehachapi	CV	Village Commercial	REH	Retail/Heavy	Tehachapi Frazier Park
Tehachapi	DRAIN	Drain	RSC	Resources	Tehachapi Frazier Park
Tehachapi	HDR	High Density Residential- up to 18 d.u./gross acre	RH	Residential High Density	Tehachapi Frazier Park
Tehachapi	HI	Heavy Industrial	BP	Basic/Production	Tehachapi Frazier Park
Tehachapi	LI	Light Industrial	BP	Basic/Production	Tehachapi Frazier Park
Tehachapi	MDR	Medium Density Residential- up to 12 d.u./gross acre	RM	Residential Medium Density	Tehachapi Frazier Park
Tehachapi	NR	Neighborhood Residential- up to 4.5 d.u/acre	RL	Residential Low Density	Tehachapi Frazier Park
Tehachapi	OS	Open Space	RSC	Resources	Tehachapi Frazier Park
Tehachapi	RE	Residential Estate	RVL	Residential Very Low Density	Tehachapi Frazier Park
Tehachapi	SCHOOL	School	PU	Public Use	Tehachapi Frazier Park
Tehachapi	SPA	Specific Planning Areas	MU	Mixed Use	Tehachapi Frazier Park

Jurisdiction	General Plan Code	General Plan Description	Uplan Code	Uplan Description	SUBREGION
Wasco	AE	Exclusive Agriculture	RSC	Resources	Delano McFarland
Wasco	AE	Exclusive Agriculture	RSC	Resources	Metro Bakersfield Area
Wasco	AE	Exclusive Agriculture	RSC	Resources	Wasco
Wasco	CBD	Central Business District Commercial	RES	Retail/Service	Wasco
Wasco	CR	Community Retail Commercial- 10 acres or larger	REH	Retail/Heavy	Wasco
Wasco	ER	Estate Residential- 2-4.5 d.u/gross acre	RL	Residential Low Density	Wasco
Wasco	H		REH	Retail/Heavy	Wasco
Wasco	HC	Highway Commercial	REH	Retail/Heavy	Delano McFarland
Wasco	HC	Highway Commercial	REH	Retail/Heavy	Metro Bakersfield Area
Wasco	HC	Highway Commercial	REH	Retail/Heavy	Wasco
Wasco	HDR	High Density Residential- 15.1-24 d.u/gross acre	RH	Residential High Density	Wasco
Wasco	HI	Heavy Industrial	BP	Basic/Production	Delano McFarland
Wasco	HI	Heavy Industrial	BP	Basic/Production	Metro Bakersfield Area
Wasco	HI	Heavy Industrial	BP	Basic/Production	Wasco
Wasco	LDR	Low Density Residential- 3.5-7.5 d.u/gross acre	RL	Residential Low Density	Wasco
Wasco	LI	Light Industrial	BP	Basic/Production	Wasco
Wasco	MDR	Medium Density Residential- 7.6-15 d.u/gross acre	RM	Residential Medium Density	Wasco
Wasco	NC	Neighborhood Commercial- 5-10 acre	REH	Retail/Heavy	Wasco
Wasco	OS	Parks and Open Space	RSC	Resources	Wasco
Wasco	PF	Public Buildings and Grounds	PU	Public Use	Wasco
Wasco	PO	Professional Office	SO	Service/Office	Wasco
Wasco	RR	Rural Residential- 0-2d.u/gross acre	RVL	Residential Very Low Density	Delano McFarland
Wasco	RR	Rural Residential- 0-2d.u/gross acre	RVL	Residential Very Low Density	Wasco
Wasco	S	Schools	PU	Public Use	Wasco
Wasco	SC	Service Commercial	REH	Retail/Heavy	Metro Bakersfield Area
Wasco	SC	Service Commercial	REH	Retail/Heavy	Wasco



**Kern Council
of Governments**

October 19, 2011

TO: Kern Regional Transportation Modeling Committee

FROM: RONALD E. BRUMMETT
EXECUTIVE DIRECTOR

BY: Rob Ball, Director of Planning
Troy Hightower, Planner II *TJH*

SUBJECT: KRTMC Agenda Item: VII
Draft Land Use Model Sample Project Level Model Run

DESCRIPTION:

As part of the Land Use Model evaluation, Kern COG has prepared a sample Project Level model to help evaluate one possible method for calculating specific projects Greenhouse Gas emissions from passenger vehicles.

DISCUSSION:

Background

Kern COG staff first presented the Land Use modeling methodology and Input (attraction) Layers at the September 29, 2009 meeting of the Climate Change Task Force, which has become the Transportation Modeling Committee (TMC). The methodology was largely derived from the UPlan GIS-based modeling process used to develop the Kern Regional Blueprint. The UPlan program has been upgraded to version 2.66. The input layers and parameters were updated as well. The process of updating the model is on-going.

The SCS will require the development of a number of different models for the Base year (2008/2010), 2020, 2035 and various scenarios. The scenarios could model the vehicle trips (VMT) exemptions ARB has identified as well as scenarios a MPO may propose to revise the SB 375 targets in 2012.

During the development of the land use model in 09/10 a method for assisting local developments calculate their offsite passenger vehicle greenhouse gas emissions was discussed. Kern COG staff has prepared a Project Level model example that could be used to model growth for a specific project or area. This method is one of several that staff plans on exploring.

Recent Activity

On June 22, 2011, and August 3, 2011 Kern COG staff presented an overview of the latest Land Use model (Run D06) to the newly formed Regional Planning Advisory Committee. The comment period was extended to August 31, 2011.

On September 28, 2011 Kern COG staff announced at the RPAC meeting that a draft land use model (Run E02) was prepared based on the inputs received as of August 31, 2011 by member jurisdictions and stakeholders.

Kern COG staff has developed a methodology to model Project Level growth for a specific project or area based on TAZ (Traffic Analysis Zones) boundaries. The methodology is largely based on the same methodology used to develop the base land use model. See Attachment 1. The Project Level model uses the same input layers and parameters as the Base land use model.

Electronic versions of the latest model input layers, maps and documentation can be found on the Kern COG website at: <http://kerncog.org/cms/agendas-minutes/transportation-modeling>.

Next Steps

Kern COG plans to continue ongoing development of the land use models to assist in the preparation of the Sustainable Communities Strategy for the 2013/2014 RTP with the assistance and oversight of the Kern Regional Transportation Modeling Committee, Technical Transportation Advisory Committee, and the Regional Planning Advisory Committee. This will include reviewing the modeling methodology and development of the UPlan and CubeLand based Land Use models. This same process will be used to submit revised targets to ARB in late 2012 for their consideration.

With input from member agencies and the TMC Kern COG staff plans to continue development of the Project Level Model. In response to RPAC recommendations Kern COG staff will begin development of a Strategic Employment Center land use model. This new scenario will be developed using the same methodologies developed for the Base land use model and the Project Level model.

Attachments (copies of attachments and model data are available from the Kern COG website)

1. Project Level Model Methodology
2. Project Level Model Results Comparison Tables
3. Project Level Model Results Comparison Maps

Meeting Schedule

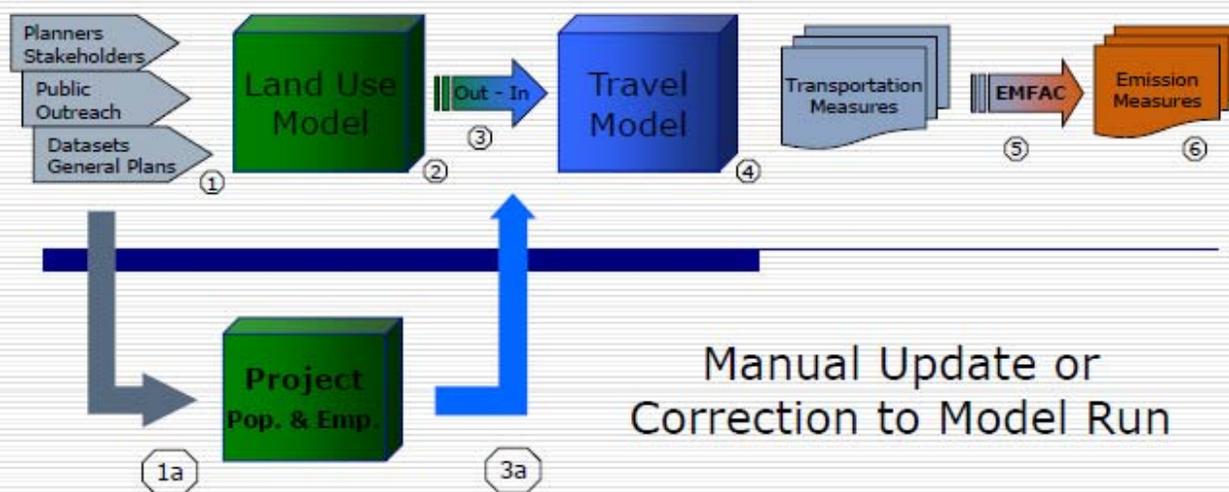
December 14, 2011 – TMC Review Draft Base Land Use Model
January 4, 2012 - RPAC Review Draft Base Land Use Model

ACTION: Information

Attachment 1

Project Level Model Methodology

KCOG SB 375 Project Specific Method- **DRAFT**



1. Inputs from Planners, Stakeholders, Public Outreach, Environmental Datasets, and current General Plans.
1a. Planners, and Stakeholders remove Project level Population and Employment from County Totals.
2. The Land Use Model **UPlan** allocates growth based on parameters, attractions like freeways, discouragements like public lands, and resources. It creates a GIS based conceptual growth map.
3. Uplan also outputs socioeconomic data by TAZ used as the input data for the Travel Model **Cube**.
3a. Project level Population and Employment added to Project specific TAZ data.
4. Cube generates LOS maps, VMT, and other Transportation measures.
5. Cube output data is also used in **EMFAC** to generate Emission measures.
6. **The measures generated are reviewed, and relative comparisons between scenarios can be made.**

10/31/08

2035 Vehicle Miles Traveled Per Person by RSA- Uplan New Base (F03)

County Division Regional Statistical Area	Household Population	Percent of County Population	Total Employment	Vehicle Miles Traveled (VMT)	Percent of County VMT	VMT Per HH Pop + Emp
Valley Air Basin	1,073,196	85.0%	379,268	30,351,392	75.7%	20.90
Metro Bakersfield	867,162	68.6%	236,007	20,496,787	51.1%	18.58
Greater Arvin	24,820	2.0%	34,252	1,901,333	4.7%	32.19
Greater Delano/McFarland	87,548	6.9%	33,090	1,824,063	4.6%	15.12
Greater Shafter	38,584	3.1%	41,470	2,867,650	7.2%	35.82
Greater Taft/Maricopa	24,491	1.9%	14,950	1,497,585	3.7%	37.97
Greater Wasco	30,591	2.4%	19,499	1,763,974	4.4%	35.22
Mountains	81,220	6.4%	26,686	4,211,438	10.5%	39.03
Greater Lake Isabella	20,541	1.6%	4,901	1,164,760	2.9%	45.78
Greater Frazier Park	10,229	0.8%	4,159	735,450	1.8%	51.12
Greater Tehachapi	50,450	4.0%	17,626	2,311,228	5.8%	33.95
Desert	108,867	8.6%	55,694	5,512,576	13.8%	33.50
Greater Ridgecrest	45,024	3.6%	19,033	1,007,954	2.5%	15.74
Greater Cal City/Mojave	25,867	2.0%	11,975	2,571,465	6.4%	67.95
Greater Rosamond	37,976	3.0%	24,686	1,933,157	4.8%	30.85
Kern County Total	1,263,283	100.0%	461,648	40,075,406	100.0%	23.23

*Population is the total household population; does not included group quarters and prisons

2035 Vehicle Miles Traveled Per Person by RSA - Uplan Project Level Sample (P02)

County Division Regional Statistical Area	Household Population	Percent of County Population	Total Employment	Vehicle Miles Traveled (VMT)	Percent of County VMT	VMT Per HH Pop + Emp
Valley Air Basin	1,075,272	85.1%	383,179	30,321,042	75.7%	20.79
Metro Bakersfield	871,345	68.9%	241,194	20,514,915	51.2%	18.44
Greater Arvin	24,757	2.0%	35,216	1,949,738	4.9%	32.51
Greater Delano/McFarland	86,983	6.9%	32,889	1,819,864	4.5%	15.18
Greater Shafter	37,322	3.0%	39,538	2,773,673	6.9%	36.09
Greater Taft/Maricopa	24,395	1.9%	14,886	1,497,585	3.7%	38.12
Greater Wasco	30,470	2.4%	19,456	1,765,267	4.4%	35.36
Mountains	80,721	6.4%	26,442	4,193,745	10.5%	39.13
Greater Lake Isabella	20,458	1.6%	4,839	1,173,753	2.9%	46.40
Greater Frazier Park	10,175	0.8%	4,134	721,368	1.8%	50.41
Greater Tehachapi	50,088	4.0%	17,469	2,298,624	5.7%	34.02
Desert	108,276	8.6%	55,379	5,560,483	13.9%	33.98
Greater Ridgecrest	44,844	3.5%	18,962	1,030,115	2.6%	16.14
Greater Cal City/Mojave	25,669	2.0%	11,702	2,576,921	6.4%	68.96
Greater Rosamond	37,763	3.0%	24,715	1,953,447	4.9%	31.27
Kern County Total	1,264,269	100.0%	465,000	40,075,270	100.0%	23.17

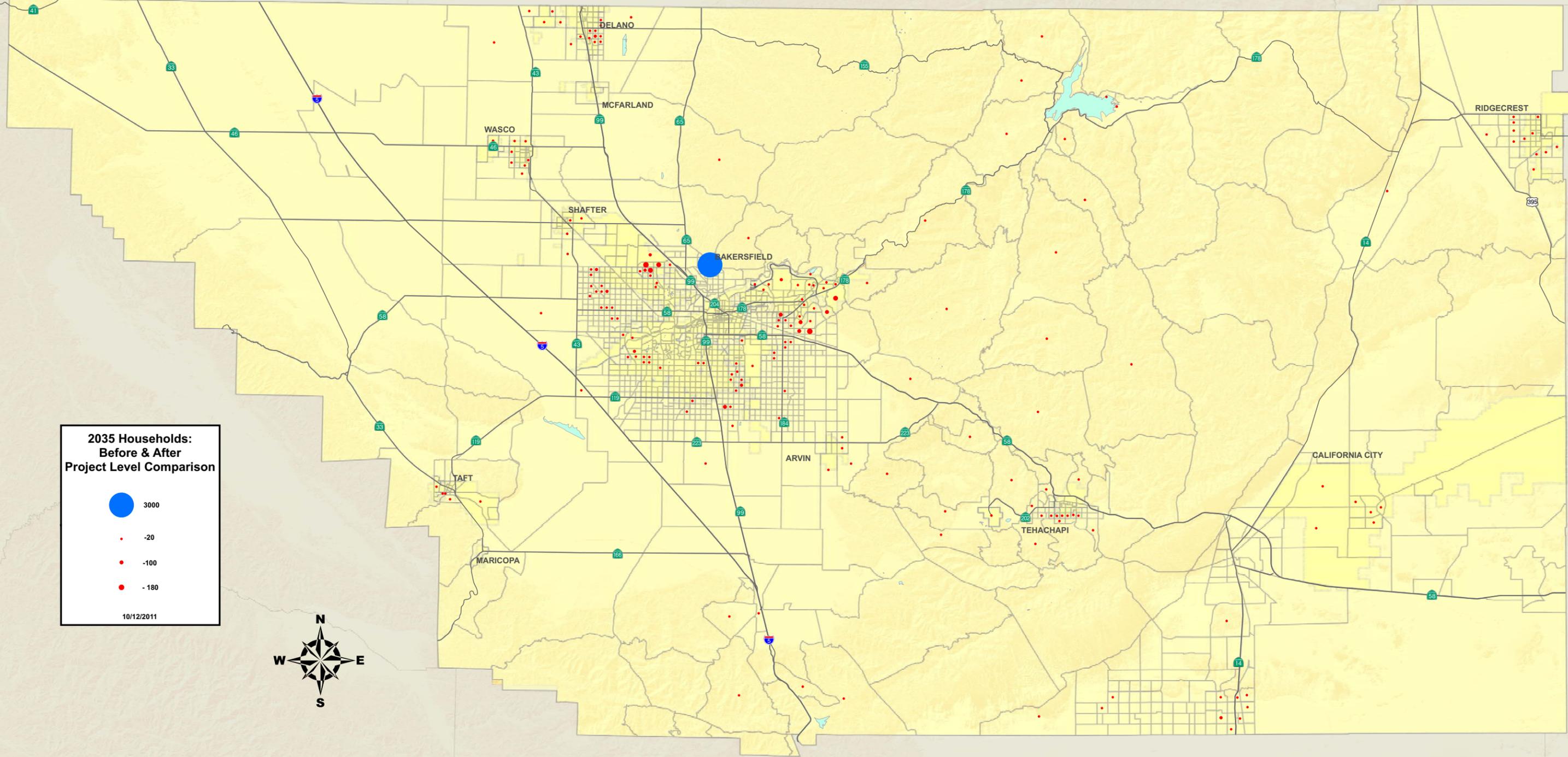
*Population is the total household population; does not include group quarters and prisons

2035 Households: Before & After Project Level Comparison

**2035 Households:
Before & After
Project Level Comparison**

- 3000
- -20
- -100
- -180

10/12/2011

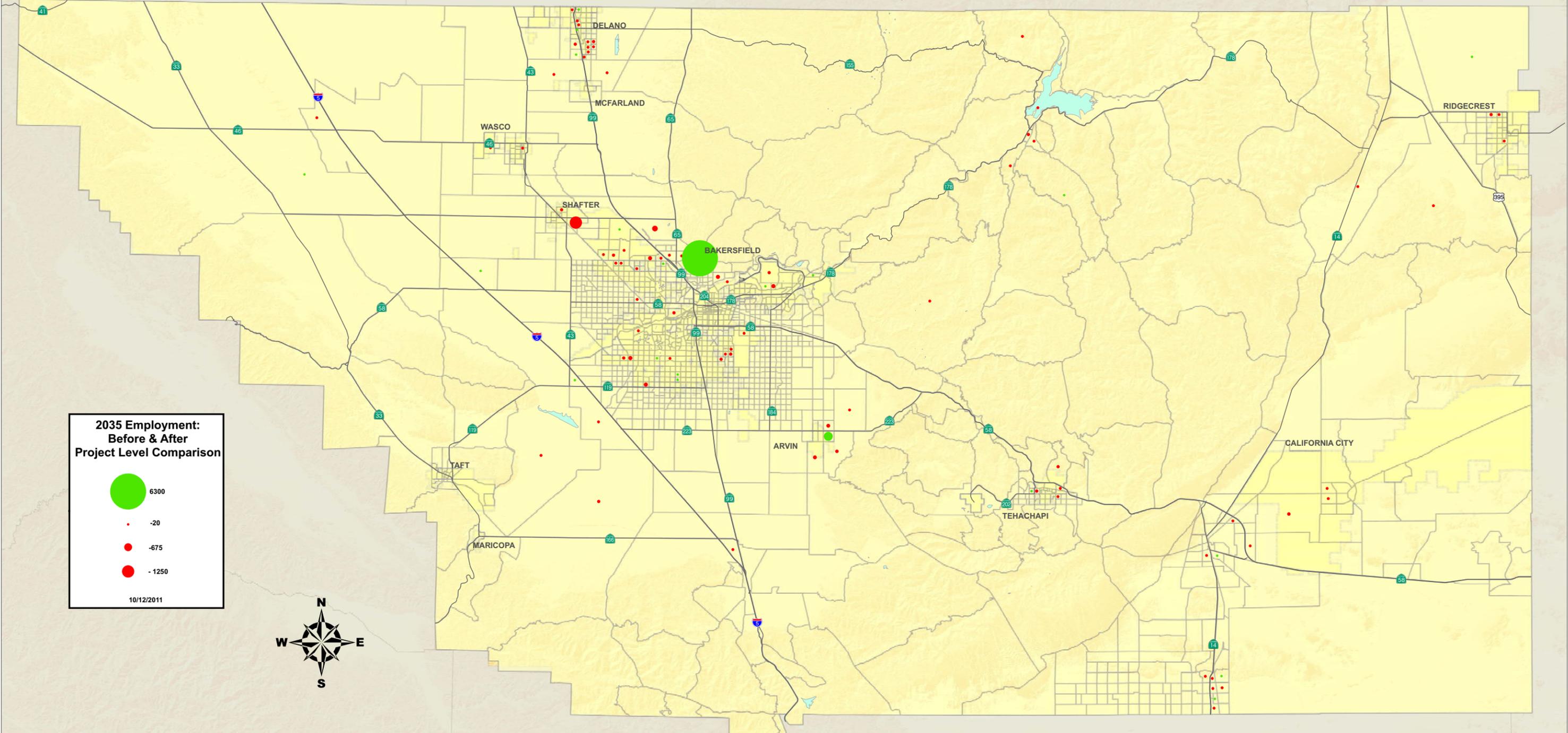


2035 Employment: Before & After Project Level Comparison

**2035 Employment:
Before & After
Project Level Comparison**

- 6300
- 20
- 675
- 1250

10/12/2011





October 14, 2011

TO: Transportation Modeling Committee

By: Rob Ball, Director of Planning
Rochelle Invina, Planner I

SUBJECT: TMC AGENDA ITEM: VIII
3rd Draft SCS Conceptual View Centers Map - UPDATE

DESCRIPTION:

The Kern COG TMC members were asked to submit comments of the Draft Sustainable Communities Strategy (SCS) Conceptual View Centers Maps by July 31, 2011. Staff has updated the maps with the received comments from the Cities of Tehachapi, Shafter, and Arvin and the comments from the August 24, 2011 TMC meeting. The Maps (*Attachments 2 and 3*) are available for review at <http://www.kerncog.org/cms/agendas-minutes/transportation-modeling> under the handouts section. The Maps are distinguished by phases; resources and other layers, existing, planned, and potential, and a map that combines all the phase layers.

DISCUSSION:

The purpose of these Maps is to provide a high level conceptual view at some of the strategies that may be modeled as part of the SCS or Alternative Planning Scenario/Strategy (APS) if one is needed. The Maps have been developed based on the adopted 2008 Kern Regional Blueprint Conceptual View maps. Strategies must be financially constrained to be included in the final SCS.

Attachment 1 is a SCS Centers Map Summary Sheet describing the transit priority centers, strategic employment centers, transit service, and resource and other layers. The Maps also include City spheres of influence, intensive (irrigated) agricultural areas outside the spheres of influence from the County General Plan, the transportation model network, and the major transit routes from the Draft Metropolitan Bakersfield Long Range Transit Plan.

These maps are for conceptual purposes only. The RTP/SCS is updated every 4 years, and local General Plans can be updated quarterly. For more detailed information on the latest planning assumptions, please refer to the locally latest adopted General Plan for each community. Local General Plan updates will be incorporated into the next 4 years RTP/SCS.

ACTION:
Review

ATTACHMENTS:

1. Conceptual View – DRAFT SCS Centers Map Summary Sheet
2. Conceptual View – Arvin, Bakersfield and Shafter DRAFT SCS Centers Map series
3. Conceptual View – Kern County DRAFT SCS Centers Map series

Conceptual View – DRAFT SCS Centers Map Summary Sheet

TRANSIT PRIORITY CENTERS

Metropolitan Center

- A metropolitan center has a population greater than 50,000
- The regions primary business, civic, commercial, and cultural center
- Mid to high density residential, office and commercial development
- High levels of employment
- Draws activity throughout the region
- Served by numerous transportation services

Future enhancements

- Mid to high rise story mix-use (residential, office, and commercial) buildings
- Walkable design, improved public transit service, tourism
- High speed rail station

Community Center

- A community center has a population of 15,000 to 50,000 population
- Sub-regional business, civic, commercial, and cultural centers
- Mid to low density residential, office and commercial development
- Medium levels of employment
- Draws activity from sub-regional areas

Future enhancements

- Multi story mix-use (residential, office, and commercial) buildings
- Walkable design, improved transit service, tourism

Town Center

- A town center has a population of 5,000 to 15,000 population
- Town center for business activity, may include civic and cultural activities areas
- Mid to low density residential, office and commercial development
- Low levels of employment
- Draws activity from the town and immediate areas

Future enhancements

- 2-story mix-use (residential, office, and commercial) buildings
- Walkable design, improved public transit service, tourism

Village Center

- A village center has a population of 50 to 5,000 population
- Village center for business activity and essential local services
- Low density residential, office and commercial development
- Low levels of employment draws activity from the immediate area
- Provides essential services to surrounding rural areas

Future enhancements

- Mix-use (residential, office, and commercial) buildings
- Walkable design, improved public transit service, tourism

Education Center – education centers represent existing and planned college campuses

High School – existing and planned high school campuses

STRATEGIC EMPLOYMENT CENTERS

Strategic Employment Centers are based on employee average within an area and there are three levels: less than 2,000; 2,000-7,000; and more than 7,500. These strategic employment centers are based on locations of workplaces and input received from city staff.

TRANSIT SERVICE

Passenger Rail Stations – existing, planned, and potential passenger rail stations that include Amtrak stations and high speed rail stations.

Bus Transit Centers – existing, planned, and potential bus transit centers within Metro Bakersfield

Passenger/Commuter Rails – existing, planned, and potential passenger/commuter rail routes that include Amtrak and high speed rail

Feeder Bus Routes – existing, planned, and potential feeder bus routes within Metro Bakersfield and Kern County

Express Bus Routes – existing, planned, and potential express bus routes within Metro Bakersfield

BRT Routes- planned and existing BRT routes within Metro Bakersfield

High Speed Rail Alignments – planned high speed rail alignments

RESOURCE AND OTHER LAYERS

Urban, Built Up, Sphere of Influence – existing, planned and potential urban areas that include the existing built up area and sphere of influence.

Irrigated Farmland

Public Resources

Federal Lands

Community Center Areas – existing and planned community areas in Metro Bakersfield. The community areas illustrate major community attractions such as shopping areas.

Major Routes – existing and planned major routes

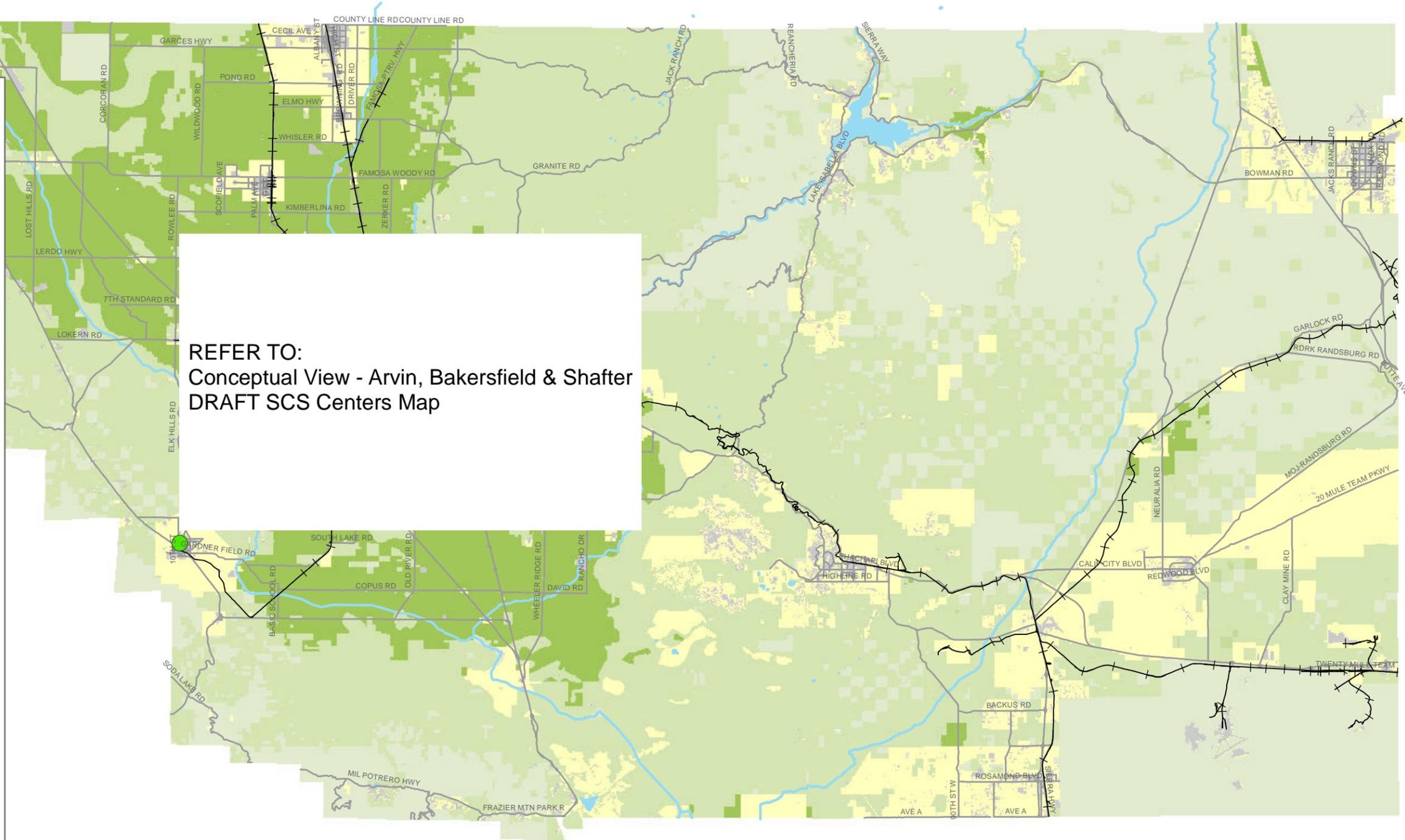
Rail Service – existing rail service

DISCLAIMER:
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Conceptual View - Kern County DRAFT SCS Centers Map

RESOURCE AND OTHER LAYERS

PLACE TYPES		
Existing	Planned	Potential
Transit Priority Centers		
Village (Neighborhood) - 50 to 5,000 population		
Town (Grocery) - 5,000 to 15,000 population		
Community (Major Retail) - 15,000 to 50,000 population		
Education Center		
High School		
Strategic Employment Centers		
<2,000 Employees		
2,000-7,500 Employees		
>7,500 Employees		
Transit Service		
Passenger Rail Stations		
Bus Transit Center		
Passenger/Commuter Rail		
Feeder Bus		
Express Bus		
BRT Route		
High Speed Rail Alignments		
Resource and Other Layers		
Urban, Built Up, Sphere of Influence		
Irrigated Farmland		
Public/Resources		
Federal Lands		
Community Center Areas		
Major Routes		
Rail Service		



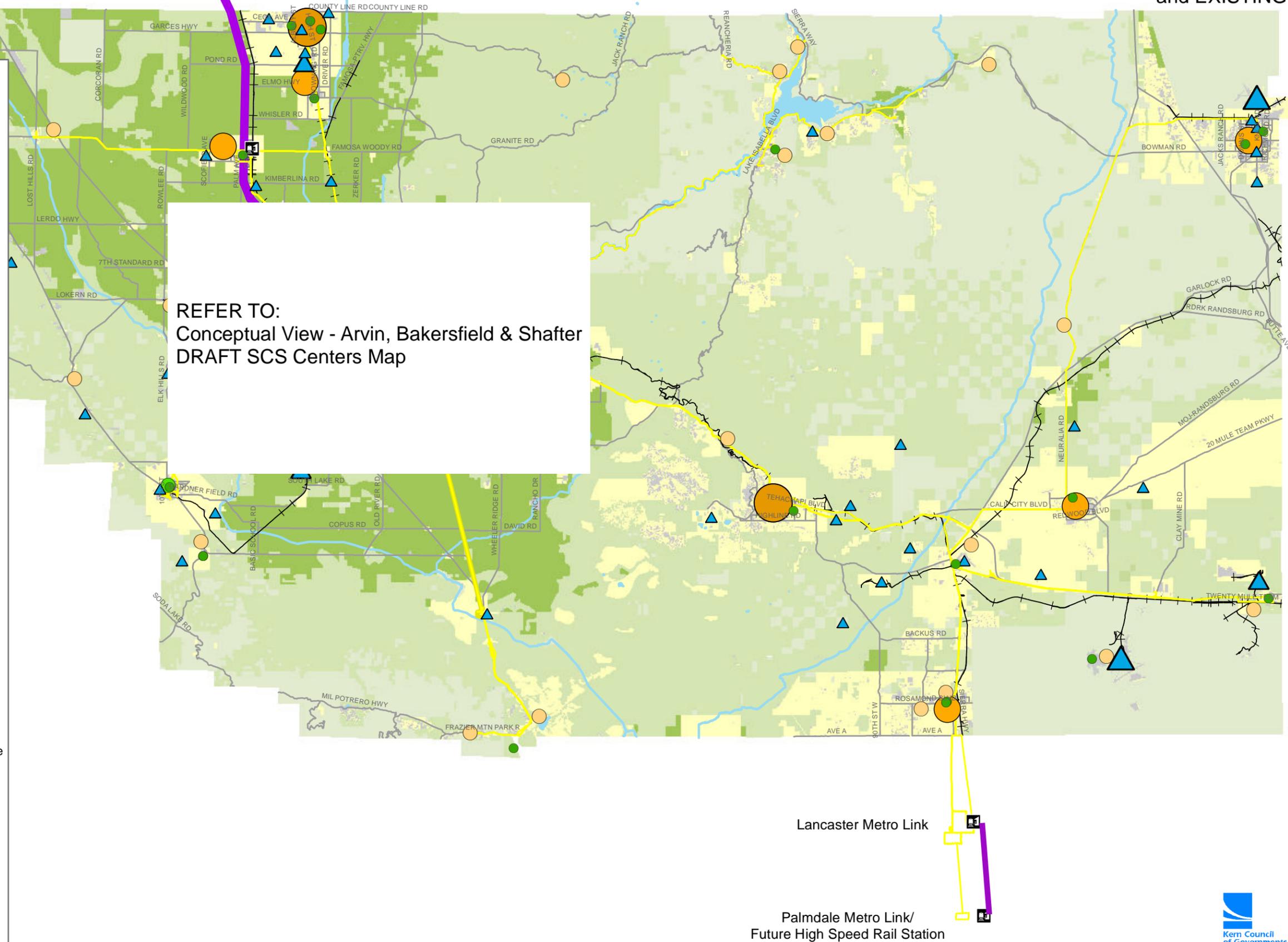
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Conceptual View - Kern County DRAFT SCS Centers Map

RESOURCE AND OTHER LAYERS
 and EXISTING

PLACE TYPES		
Existing	Planned	Potential
Transit Priority Centers		
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Lancaster Metro Link

Palmdale Metro Link/
 Future High Speed Rail Station

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Conceptual View - Kern County DRAFT SCS Centers Map

RESOURCE AND OTHER LAYERS
 and PLANNED

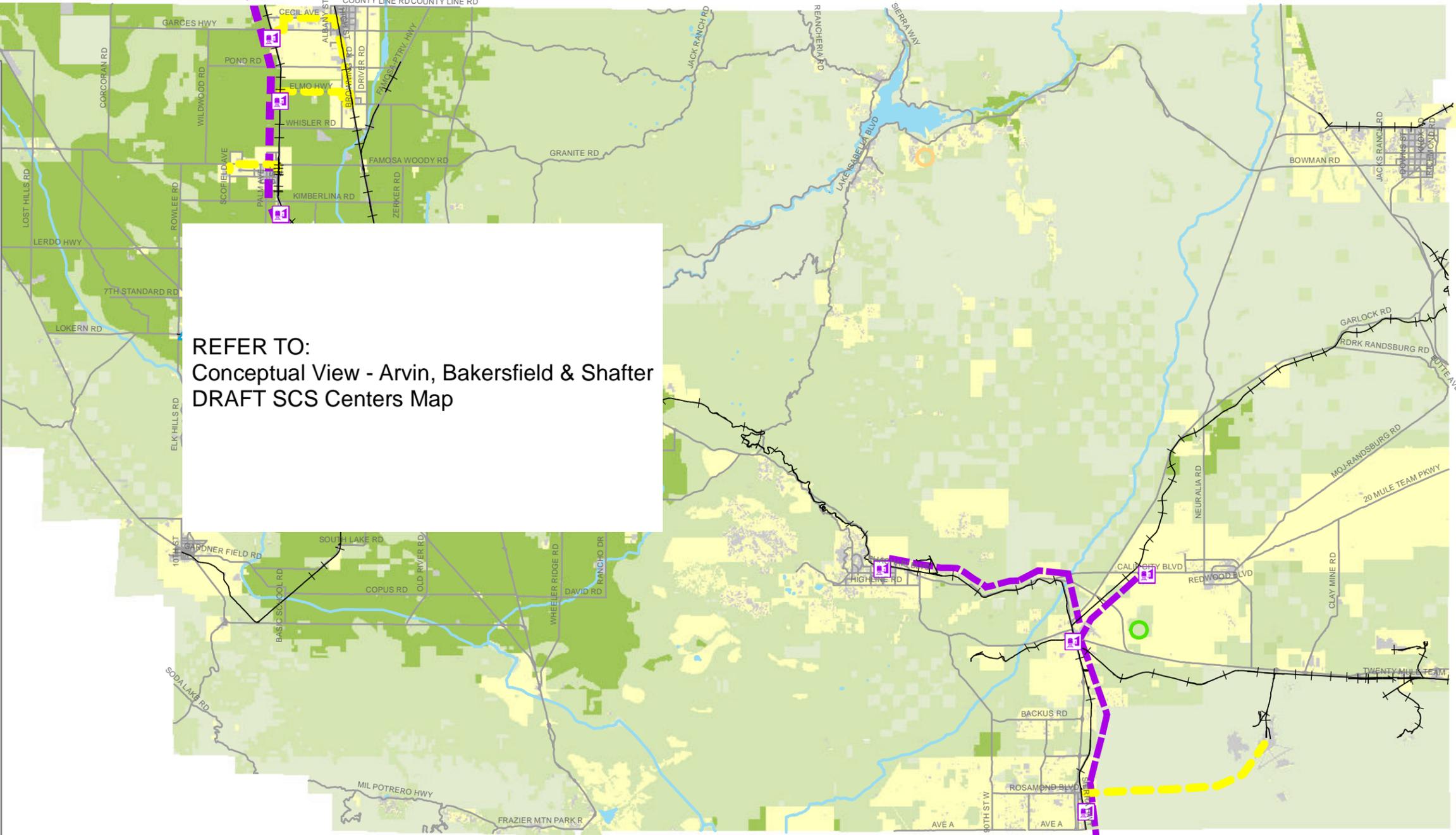
PLACE TYPES		
Existing	Planned	Potential

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Conceptual View - Kern County DRAFT SCS Centers Map

RESOURCE AND OTHER LAYERS
 and POTENTIAL

PLACE TYPES		
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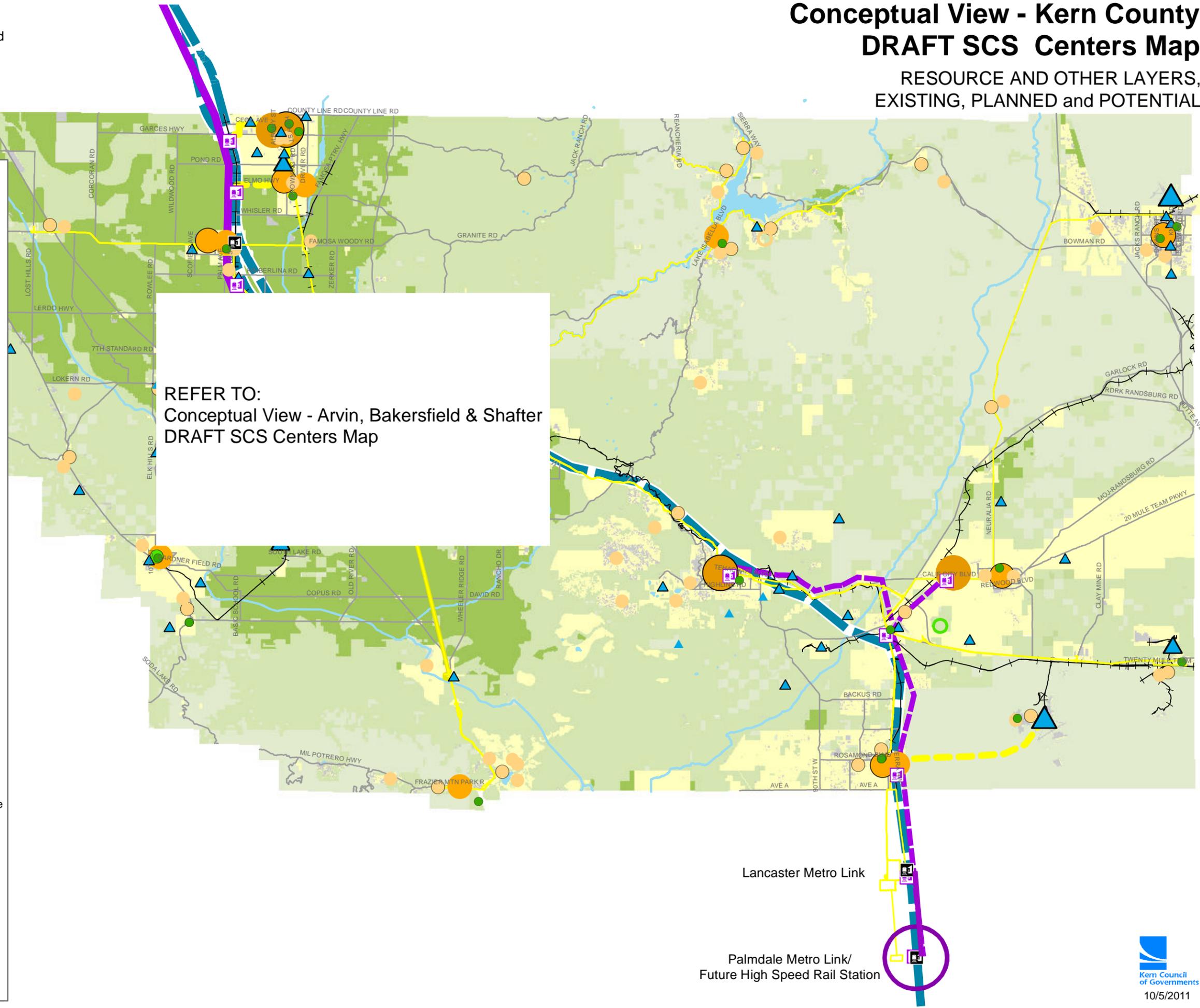
Palmdale Metro Link/
 Future High Speed Rail Station

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Conceptual View - Kern County DRAFT SCS Centers Map

RESOURCE AND OTHER LAYERS,
 EXISTING, PLANNED and POTENTIAL

PLACE TYPES		
Existing	Planned	Potential
Transit Priority Centers		
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		Rail Service



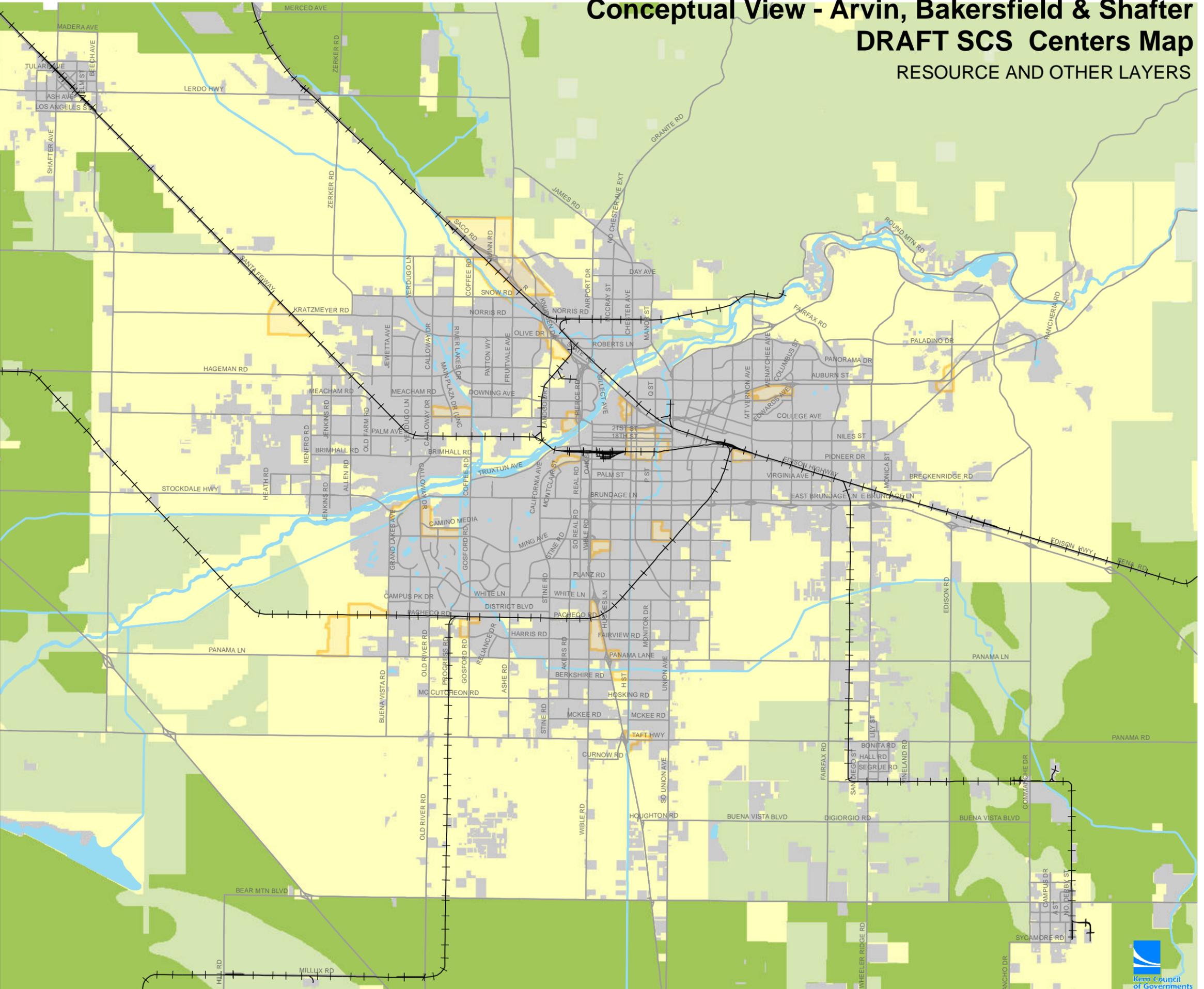
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Conceptual View - Arvin, Bakersfield & Shafter

DRAFT SCS Centers Map

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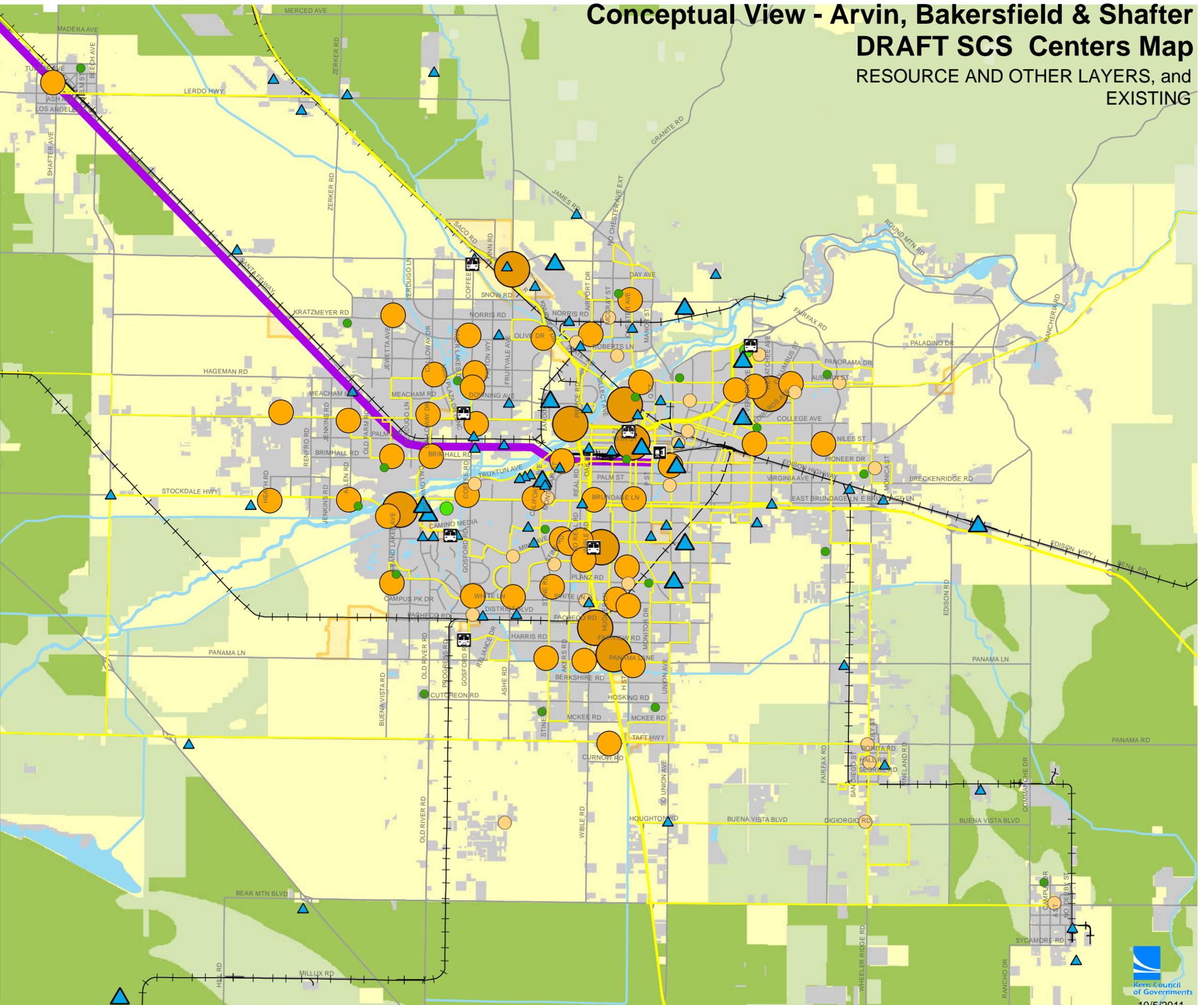
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Conceptual View - Arvin, Bakersfield & Shafter

DRAFT SCS Centers Map

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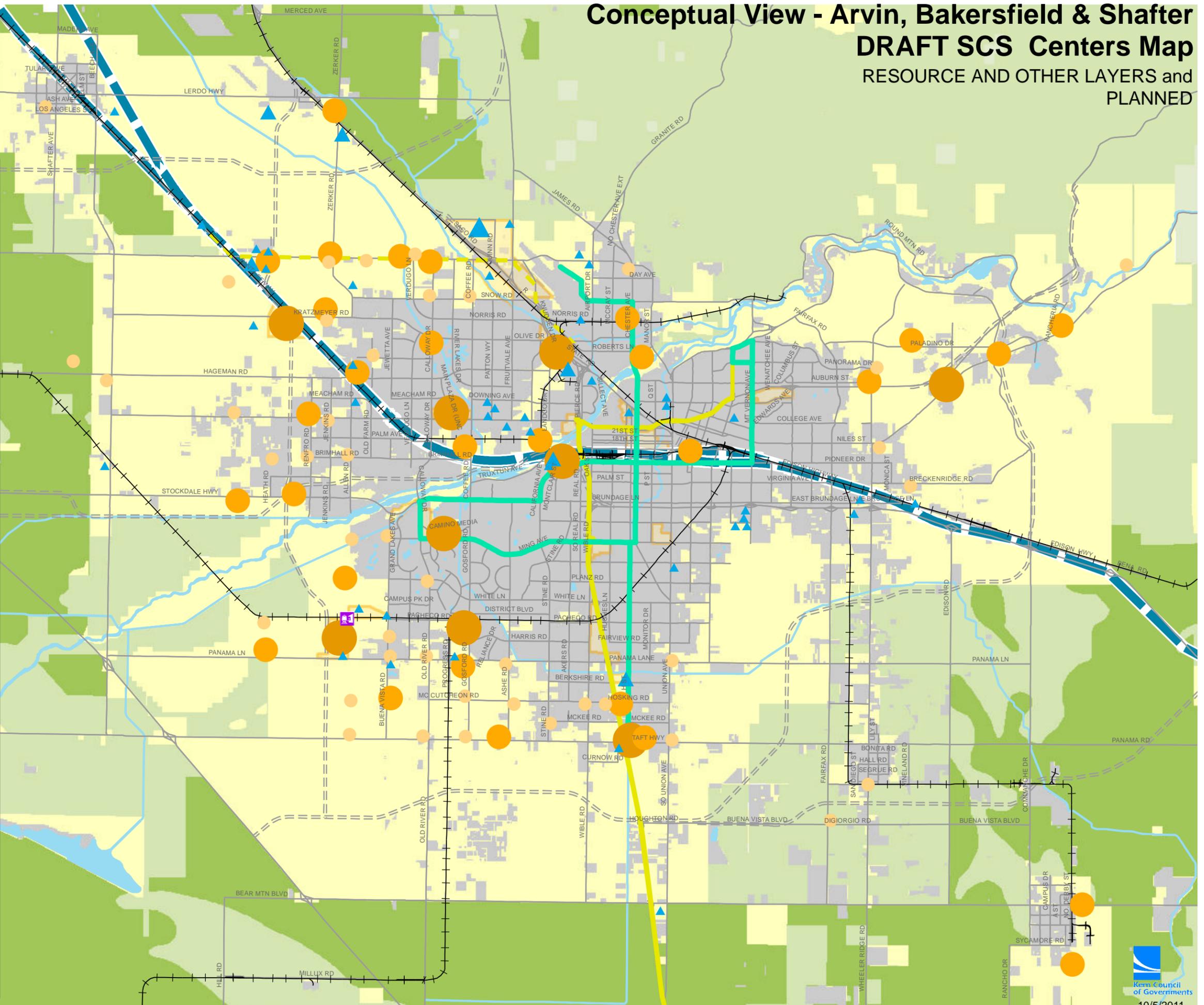
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Conceptual View - Arvin, Bakersfield & Shafter

DRAFT SCS Centers Map

RESOURCE AND OTHER LAYERS and PLANNED

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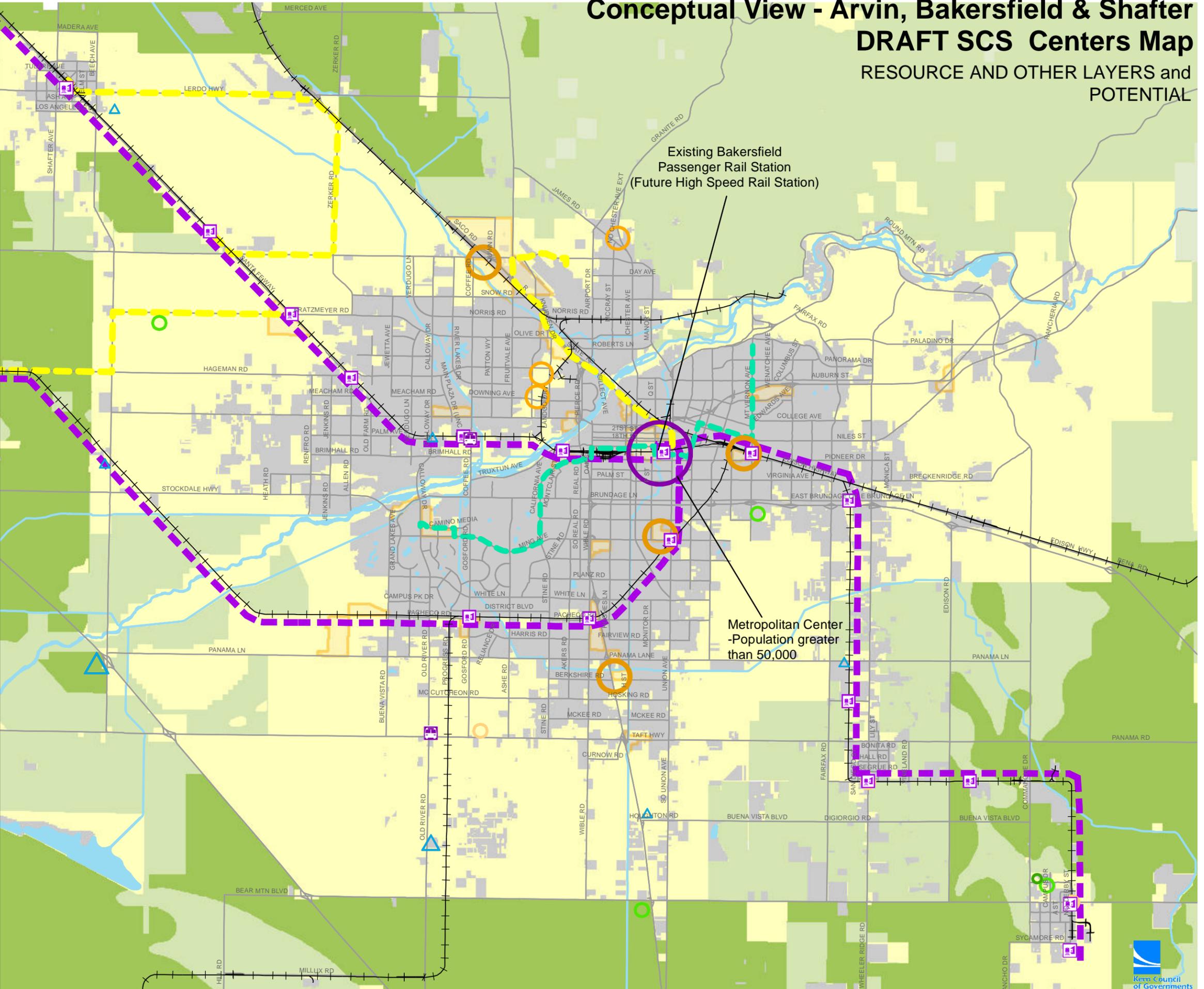
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Conceptual View - Arvin, Bakersfield & Shafter

DRAFT SCS Centers Map

RESOURCE AND OTHER LAYERS and POTENTIAL

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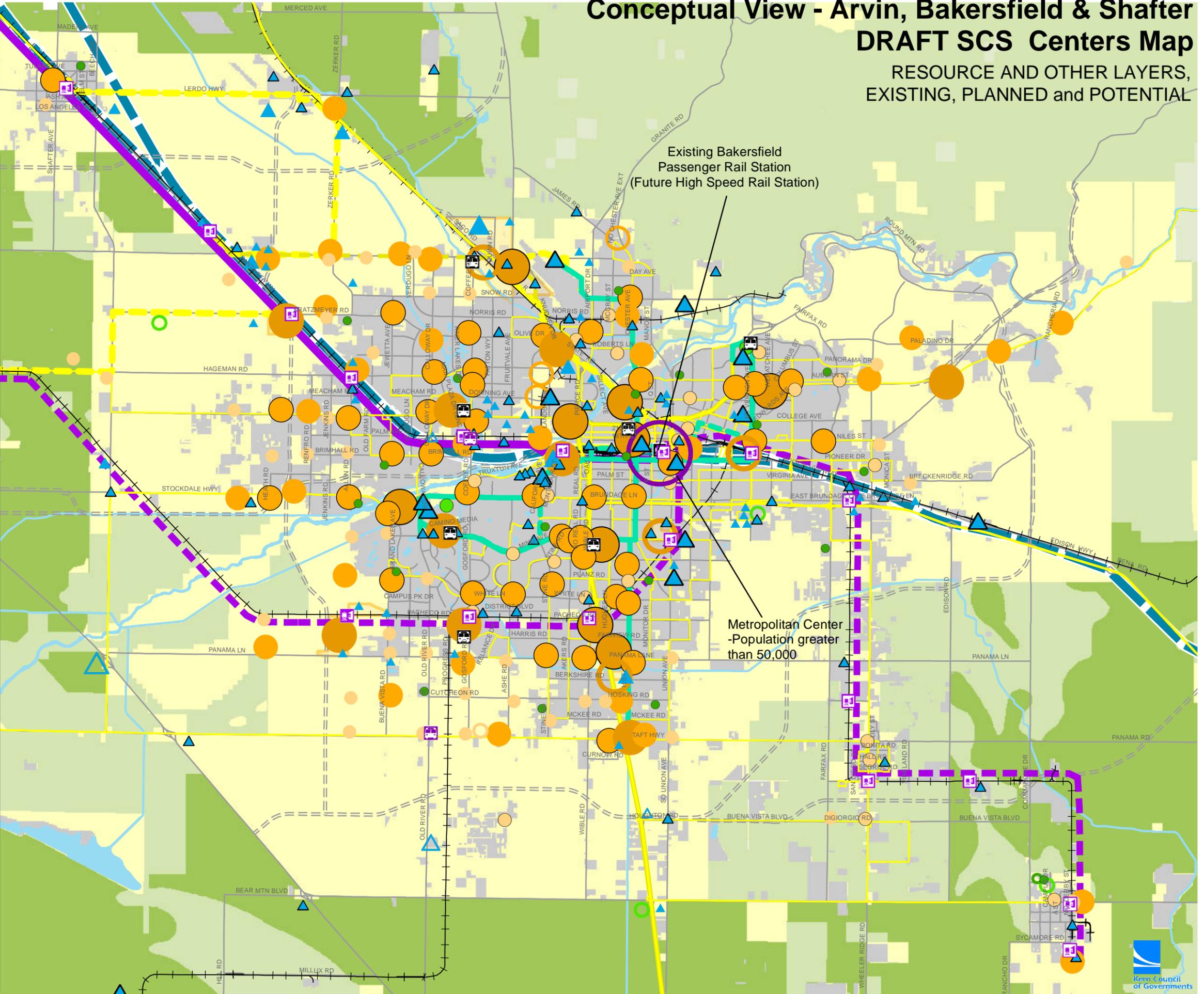
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Conceptual View - Arvin, Bakersfield & Shafter

DRAFT SCS Centers Map

RESOURCE AND OTHER LAYERS,
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October 19, 2011

TO: Kern Regional Transportation Modeling Committee

FROM: RONALD E. BRUMMETT
EXECUTIVE DIRECTOR

BY: Rob Ball, Director of Planning
Troy Hightower, Planner II

SUBJECT: Eight MPO Model Improvement Program Update

DESCRIPTION:

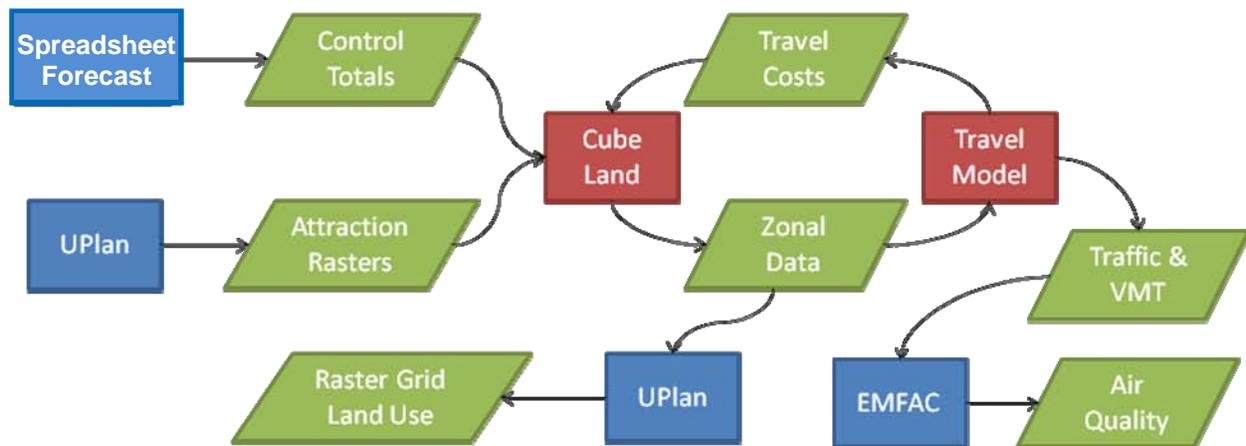
The eight San Joaquin Valley Metropolitan Planning Organizations (MPOs) have received a Proposition 84 Grant to update and all eight MPOs' travel demand models.

DISCUSSION:

On September 30, 2010, the California Air Resource Board (ARB) set a provisional target for the eight MPOs that contain the San Joaquin Valley. In addition, the board provided an opportunity to the eight MPOs to provide improved modeling for potential reconsideration of the provisional target by the end of 2012.

The MIP Scope of Work is considerably different for Kern COG than the other eight MPOs because of Kern's unique characteristics. Kern COG is a pilot project for a new modeling tool that incorporates real estate values using Cube Land into the future allocation of growth and incorporates a feedback loop between the land use model and the transportation model. The following chart illustrates the relationships:

Figure 1 – Kern Pilot Project: New Integrated Transportation/Land Use Model



Source: Fehr & Peers, 8-MPO MIP Scope of Work, 10-26-10

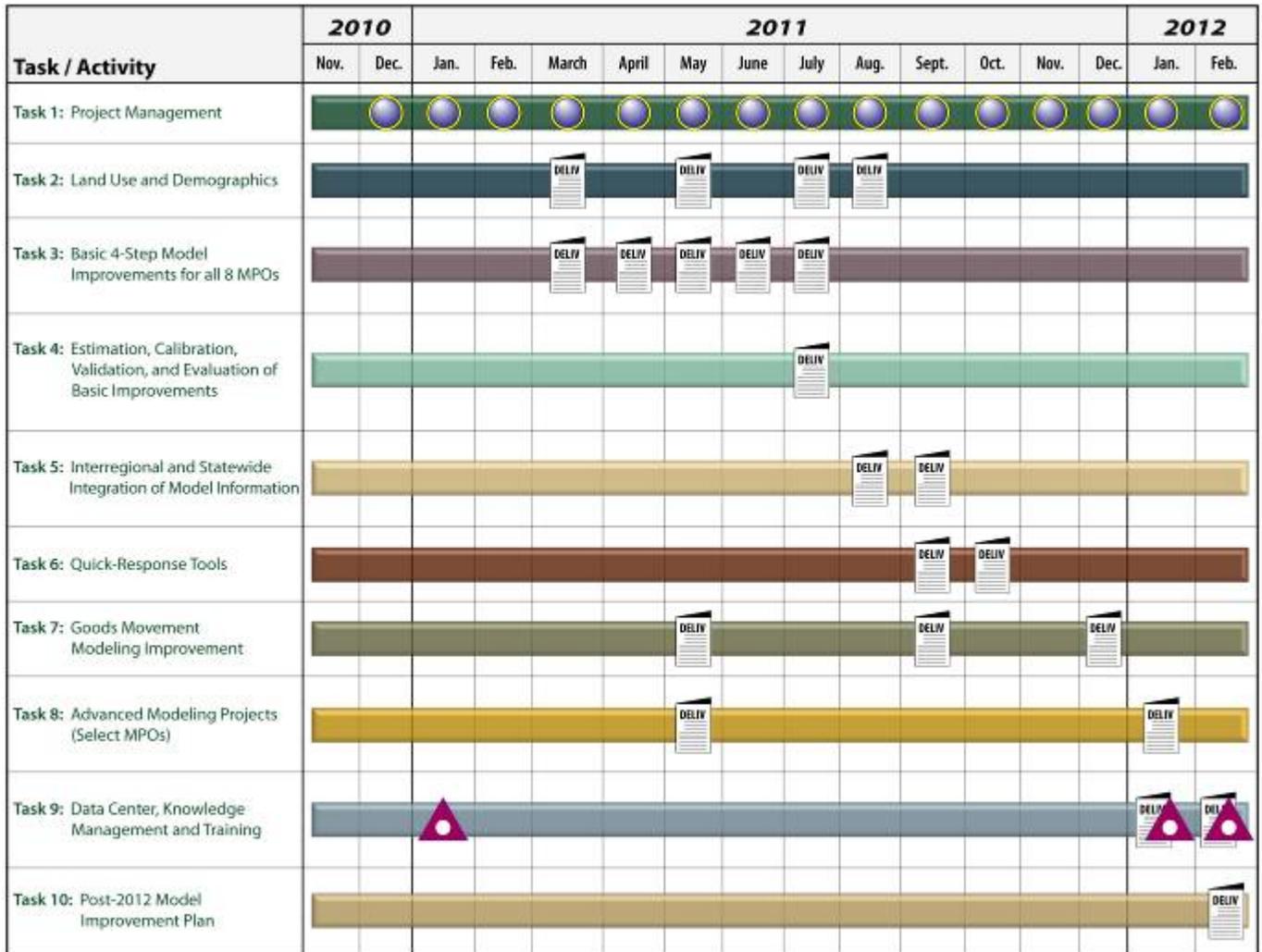
Improvements to Existing Transportation Models

The 8-MPO Model Improvement Program is updating and standardizing the capabilities of all 8 existing travel demand models in the San Joaquin Valley. Kern COG has one of the more sophisticated models

so the bulk of the change to Kern COG's model will focus on standardization of the input variables. For example, the Kern COG Travel Demand Model currently uses 1 household type and 6 employment types as inputs to the model. The new model will have 10 household types (i.e. SF-detached, SF-attached, MH, MF-duplex, MF-triplex,...) and 21 employment types. These additional types will allow the fine tuning of trip attraction and generation rates used by the travel model.

Kern COG has received draft version of the transportation network master file, a more detail TAZ structure map, and the 2008 base year socio-economic data. We are providing comments on the review of that data and when issues are addressed we will forward to the TMC for review.

Figure 2 – Eight MPO MIP Schedule



Attachment

1. SJV MIP Modeling Standards white paper also available on line at: <http://kerncog.org/cms/agendas-minutes/transportation-modeling>

ACTION: Information

Attachment 1 – SJV MIP Modeling Standards White Paper

**DRAFT MODELING STANDARDS WHITE PAPER
BASED ON FINAL WORK SCOPE
MARCH 10, 2011**

This document provides guidance on the model specifications and standards to be used in developing the components for the San Joaquin Valley Model Improvement Plan. The objectives of this document are standardizing development, implementation, and documentation for all eight individual models and to maximize compatibility with the three-county activity based model, the Fresno County activity based model, and the Cube Land implementation.

These objectives will be achieved by:

- Utilizing common data files, attributes, variables, and default values. Additional variables and calibration for local needs/conditions to increase transferability and to allow for comparisons between models.
- Developing a standard script that references input files data and parameter files rather than having the parameters embedded within the script.
- Implementing the model in Voyager Version 6.0 utilizing Cube Application\Scenario Manager.
- Documenting each step of the process as a deliverable that will be incorporated into a Technical Model Development Report consisting of memos, presentations, and other detailed technical information.
- Developing an Executive Model Development Report, which will focus on visualization and clearly conveying information at a high level, with references to the Technical Model Development Report as needed.

TASK 2 – LAND USE AND DEMOGRAPHICS

Approach

- Land use and demographics from the MPOs current RTP will be the starting point for this project.
- The goal is to expand the number of categories that will allow compatibility with Statewide modeling efforts and regional planning projects and tools such as I-places and UPLAN, but NOT to reallocate or revise land uses from their current RTP “starting-point” models unless the MPO undertakes such a revision/reallocation. We will create an all-inclusive list covering both current and recommended future land use categories. The MPOs do not need to change land use categories in this round of model improvements, but can (and should) change for the next model update when 2010 census and travel survey data are available.
- **Standardization of Category Names:** We will devise standard land use categories of the 8 MPOs. For example, the term “Medium Density Residential” should refer to the same density ranges in all 8 MPOs. If an MPO cannot disaggregate to this level, then there should be a unique category such as “Medium Density Residential Kern.” Similarly, terms such as “Service Employment” should refer to the same groupings of NAICS/SIC codes for all MPOs.

Deliverables

- Draft Land Use and Demographic/Employment Specifications Memo to be prepared by Nate Roth, Mike McCoy and Fehr & Peers by March 2011
- Final Land Use and Demographic/Employment Specifications Memo to be prepared by Nate Roth, Mike McCoy and Fehr & Peers by May 2011
 - a. This will be an identification of appropriate datasets and a procedural guide to combining diverse aggregate and disaggregate datasets into usable TAZ summaries for the diverse models being developed.
- Corrected GIS data files for each MPO including land use and employment data to be prepared by Nate Roth, Mike McCoy and Fehr & Peers by July 2011

March 10, 2011

- b. We will deliver the best available land use data for each county. There is neither time nor budget for this team to invest in improving the data beyond what is currently available or in process for other projects. Future updates and maintenance of the data to meet the specifications outlined in deliverable 2 (Final Land Use and Demographic/Employment Specifications Memo) will become the responsibility of the MPOs.
- Relational database files and online training session on use of the databases to be prepared by Nate Roth, Mike McCoy and Fehr & Peers by August 2011
 - c. This deliverable will describe the use of both aggregate and disaggregate data sets covering land use and employment to generate summaries at a TAZ level for each of the attributes defined in second deliverable (Final Land Use and Demographic/Employment Specification). This description will include the appropriate methods and application of spatial queries and aggregation tools to create repeatable, updatable and maintainable datasets covering the land use and demographics present in each TAZ. (Note: this refers to the consolidated dataset specified in a uniform set of categories for all MPOs that will be developed beyond this study). A formal implementation of this method with user interface and fault tolerance is outside of our scope on this project, but the description will be written such that a GIS user with database skills can build a usable database.

TASK 3 – BASIC FOUR-STEP MODEL IMPROVEMENTS FOR ALL EIGHT MPOs

Task 3.1 – Transportation Analysis Zones

Easy to update TAZ detail for smart growth/non-auto/new areas

- Refinements to TAZ structure is to be based on input from MPO and local staff based on information about future development. In general the more TAZ's the better esp. in **growth areas** and where walking is a viable mode. TAZ geography for growth areas will be based on available mapping, at the density specified above. The goal is to provide more detail in TODs, mixed-use areas, and areas of existing and potential future non-auto use. A rule of thumb for adding TAZ detail for these areas is a maximum average population of 300 per zone for smart growth areas, and 500 per zone for other growth areas. Number of TAZs should be based on future population.

March 10, 2011

- TAZ numbers should be grouped alphabetically by jurisdiction sphere of influence beginning with cities and ending with the County, allowing for gaps in numbering between each jurisdiction. Within jurisdictions, grouping by established districts or neighborhoods, or within census tracts should be implemented. Multiple attributes such as correspondence to previous TAZ number, jurisdiction, school district, neighborhood, zip code, and census tract should be included.
- TAZs with current or future development should be split to minimize the combination of urbanized and rural areas and should align with parcel boundaries. Where possible, future roadway and/or development plans should be used in determining size and shape of TAZs.
- The TAZs will be renumbered using a structure that is easy to organize and update/add to in future.
- External stations will be at the boundary of the model, and post-processing methods will be used to determine travel distance to regions outside of the individual MPO model and the eight counties. For consistency, gateway numbering will be provided by Fehr & Peers using the following general numbering scheme (See **Attachment 3.1-A** for maps and tables of external zone numbering).
 - 1-60 gateways external to all 8 counties
 - 61-100 gateways external to individual counties
 - 101-10,000 internal zones
 - 10,001+ Nodes
- Develop standard external gateway station screen lines in models to allow consistent distribution of trips by purpose between models within and outside the valley. This is particularly relevant in some counties such as San Joaquin and Kern.
- The geography for roadways and TAZs should have correct topology. Meaning, the roadway intersections should connect with the roadway legs at their end points, no duplicate lines, no over or under-shoots, and freeway interchanges should be corrected to reflect real-world operation. TAZ boundaries should match perfectly with the neighboring TAZ polygons. There should be no slivers, gaps, or duplicates.

Deliverable

Updated TAZ system and GIS mapping for each MPO and for the three-county model area.

March 10, 2011

CS: Stanislaus TAZ GIS based files. Three-county combined TAZ GIS based files incorporating information from Fehr & Peers

Dowling: Fresno, Kings, Madera, and Tulare TAZ GIS based files

Fehr & Peers: San Joaquin, Merced, and Kern TAZ GIS based files

Task 3.2 – Land Use Inputs

Easy to organize and update/add land use categories and zones in future

- Coordinate with MPO staff on developing equivalency file between current land use categories and expanded categories recommended by McCoy and Roth. This may result in a one-to-one correspondence in the short term since disaggregation of land use is not included in this phase.
- Coordinate with MPO staff and utilize aerial and other sources to disaggregate existing and future land use data into updated TAZ structure and land use categories.

TABLE 3.2-1: LAND USE VARIABLES		
Attribute	Description	Units
Residential		
CLASS_X ¹	Residential Development Density	Dwelling Units
UNITTYPE_X ²	Units in structure	Dwelling Units
ANNINCOME_X ³	Annual Household Income (2009 Dollars)	Households
MEDINCOME	Median Household Income (2009 Dollars)	Dollars
HHSIZEAGE_X ⁴	Household Size by Age of Householder	Dwelling Units
AAGE_X ⁵	Population by age range	People
HHSIZEAVG	Average Household Size	People
HHPOP	Total Household Population	People
Non-Residential ⁶		
TOTEMP	Total employees	Employees
AG	Agriculture, Forestry, Fishing and Hunting (11)	Employees
MINING	Mining, Quarrying, Oil and Gas Extraction (21)	Employees
UTIL	Utilities (22)	Employees
CONSTRUCT	Construction (23)	Employees
MANUFACTURE	Manufacturing (31-33)	Employees
WHLS	Wholesale Trade (42)	Employees
RETAIL	Retail Trade (44-45)	Employees

TABLE 3.2-1: LAND USE VARIABLES		
Attribute	Description	Units
WAREHOUSE	Transportation and Warehousing (48-49)	Employees
INFO	Information (51)	Employees
FINANCE	Finance and Insurance (52)	Employees
REALESTATE	Real Estate, Rental and Leasing (53)	Employees
TECH	Professional, Scientific, and Technical Services (54)	Employees
MANAGEMENT	Management of Companies and Enterprises (55)	Employees
WASTE	Administrative/Support, Waste Management & Remediation (56)	Employees
EDU	Educational Services (61)	Employees
HEALTH	Health Care and Social Assistance (62)	Employees
ARTS	Arts, Entertainment and Recreation (71)	Employees
ACCOM	Accommodation (721)	Employees
FOOD	Food Services (722)	Employees
OTHER	Other Services Except Public Administration (81)	Employees
PUBLIC	Public Administration (92)	Employees
ELEM	Elementary and middle school enrollment	Student Enrollment
HS	High school enrollment	Student Enrollment
COLLEGE	College enrollment	Student Enrollment

Notes:

1. See Tables 3.2-2 for residential development density categories.
2. See Tables 3.2-3 for unit type categories.
3. See Tables 3.2-4 for annual household income categories.
4. See Tables 3.2-5 for household size by age of householder.
5. See Tables 3.2-6 for population distribution by age range.
6. Non-residential description contains NAICS sector number(s).

Source:

TABLE 3.2-2: RESIDENTIAL DEVELOPMENT DENSITY			
Category	Name	Density Range (Gross)	Description
HDR	High Density Residential	>20 du/acre	Largely apartments and condominiums
MDR	Medium Density Residential	10-20 du/acre	Duplexes, triplexes, zero-lot line development, or very dense single family dwellings (mostly older neighborhoods, or possibly New Urbanist, or neo-traditional developments)
LDR	Low Density Residential	10-2 du/acre	The common single family detached subdivision density range

TABLE 3.2-2: RESIDENTIAL DEVELOPMENT DENSITY			
Category	Name	Density Range (Gross)	Description
EG	Exurban Growth	2-1 du/acre	Large lot residential, generally found near the urban edge or in large lot subdivisions
RE	Rural Estates	< 1 du/acre	Individual residential houses on large lots, frequently classified as agricultural.
Source:			

TABLE 3.2-3: RESIDENTIAL UNIT TYPES	
Category	Description
RU1	1, detached
RU2	1, attached
RU3	2
RU4	3 or 4
RU5	5 to 9
RU6	10 to 19
RU7	20 to 49
RU8	50 or more
RU9	Mobile home
RU10	Boat, RV, van, etc.
Source:	

TABLE 3.2-4: AVERAGE HOUSEHOLD INCOME	
Category	Description
INC1	Less than \$19,999
INC2	\$20,000 to \$39,999
INC3	\$40,000 to \$59,999
INC4	\$60,000 to \$99,999
INC5	\$100,000 or more
Source:	

TABLE 3.2-5: HOUSEHOLD SIZE BY AGE OF HOUSEHOLDER	
Category	Description
Age1554	Householder 15 to 54 years
Age5564	Householder 55 to 64 years
Age6574	Householder 65 to 74 years
Age75	Householder 75 years and over
Source:	

TABLE 3.2-6: POPULATION BY AGE RANGE	
Category	Description
POP0513	People 5 to 13 years
POP1417	People 14 to 17 years
POP1824	People 18 to 24 years
POP2554	People 25 to 54 years
POP5564	People 55 to 64 years
POP6574	People 65 to 74 years
POP75	People 75 years and over
Source:	

Within the timeframe of the SJV MIP it may not be possible to obtain base data in the detailed categories above or future land use forecasts in the categories may be difficult. Although the detailed categories will be provided in the modeling process, each MPO model can aggregate land use categories to an appropriate level of detail for their data. Table 3.2-7 provides a sample aggregation structure used by the California Statewide Travel Demand Model (CSTDm). If other sources or methods for future forecasts are not available, the base year data for detailed household attributes from sources such as the Census can be used, with the ability to manually change the values for specific zones.

TABLE 3.2-7: POTENTIAL LAND USE CATEGORY AGGREGATION STRUCTURE	
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NAICS	SJV MIP Category	CTPP Aggregation	CSTDM Activity
11	Agriculture, Forestry, Fishing and Hunting	Ag_Mining	Primary and Secondary
21	Mining, Quarrying, and Oil and Gas Extraction		
23	Manufacturing	Construction	
31-33	Construction	Manufacturing	
42	Wholesale Trade	Wholesale	Wholesale
22	Utilities	Trans / Util.	Trans / Util.
48-49	Transportation and Warehousing		
44-45	Retail Trade	Retail	Retail
51	Information	Information	Office
52	Finance and Insurance	FIRE	
53	Real Estate and Rental and Leasing		
54	Professional, Scientific, and Technical Services	Prof Sci, Admin	
55	Management of Companies and Enterprises		
56	Administrative and Support and Waste Management and Remediation Services		
92	Public Administration	Government	
61	Educational Services	Edu / Health	Education and health
62	Health Care and Social Assistance		
71	Arts, Entertainment, and Recreation	Arts/Rec/Accom/Food	Leisure and hospitality
721	Accommodation		
722	Food Services		
81	Other Services (except Public Administration)	Other Service	Other Service
xx	<i>Military employment, all industries</i>	<i>Armed Forces</i>	<i>Military</i>
Source:			

Deliverable:

Updated land use DBF files with subdivided TAZs for each MPO into the template provided by McCoy/Roth.

CS: Stanislaus and Three-county combined, incorporating information from Fehr & Peers

Dowling: Fresno, Kings, Madera, and Tulare

Fehr & Peers: San Joaquin, Merced, and Kern

Task 3.3 – Transportation Network Inputs

Single County Networks

- Build on lessons learned from past modeling efforts
- A master network system will be developed for each MPO model. The use of the master network may vary by MPO.
- A standard list of required attribute names and default values will be used for all MPO models. Additional attributes requested by individual MPOs may be retained.
- Non-auto network will be developed for Fresno, Kern, San Joaquin and Stanislaus, primarily in smart growth or non-motorized focused areas or near TODs.
- Based on GIS centerline preferred, geocoded at a minimum to be in the Nad 83 coordinate system.
- All networks will to undergo basic checking for coding errors using a standard symbology and verification methods to be provided by Fehr & Peers.
- Capacities will represent the upper limit of LOS E rather than the “practical capacity” used in many earlier generation models (speed-flow curves will be adjusted as needed). Capacities will be set based on facility type, area type and terrain. Capacity values for similar roads in the 8 MPOs should be similar.
- Speeds will be coded individually for each road rather than based on a lookup table system.
- Road types should distinguish between urban and rural facilities. Rural roads should additionally have different characteristics for two-lane versus multi-lane and by terrain.

TABLE 3.3-1: STANDARD MASTER HIGHWAY NETWORK VARIABLES	
Attribute	Description
Nodes	
X	X-coordinate of node in Nad 83
Y	Y-coordinate of node in Nad 83
N	Node number
TAZ	Traffic Analysis Zone Number
DISTRICT	Super district number used for aggregation
SOI	Sphere of influence used to number TAZs alphabetically
STDID	Study location number used to record turning movements when non-zero
COUNTY	County where node is located
JURISDICTION	Political jurisdiction where node is located
COMMUNITY	Community/district name
Links	
A	A node
B	B node
DISTANCE	Distance in miles
NAME	Local street name
ROUTE	Numerical state route number
TERRAIN	Terrain (F=Flat , R=Rolling, M=Mountain)
JURISDICTION	Political jurisdiction where link is located location
SCREENLINE	Screenline by direction (See Figures 3-1.1 through 3.1.10)
XXXX_PRJID ¹	RTP Project ID number
XXXX_PRJYR ¹	RTP Project Opening Year
XXXX_FACTYP ¹	Facility type by year ²
XXXX_AREATYP ¹	Area type by year ²
XXXX_LANES ¹	Number of directional through travel lanes by year ²
XXXX_AUX ¹	Auxiliary lane (0=no, 1=yes)
XXXX_SPEED ¹	Free-flow speed in miles-per hour by year ³
XXXX_CAPCLASS ¹	Capacity class by year (derived from Terrain, Facility type, and Area Type) ²
XXXX_CAPACITY ¹	Vehicle per hour (calculated based on Lanes and CapClass) ⁴
XXXX_USE ¹	Identifies vehicle prohibitions by year ⁵
XXXX_TOLL ¹	Code used for cost on toll facilities by year ³
CNTID_YR	Count location ID number by year
CNTAMPKHR_YR	Vehicle AM peak hour directional count volume by year
CNTPMPKHR_YR	Vehicle PM peak hour directional count volume by year
CNTAMPK_YR	Vehicle AM peak period directional count volume by year
CNTPMPK_YR	Vehicle PM peak period directional count volume by year

TABLE 3.3-1: STANDARD MASTER HIGHWAY NETWORK VARIABLES	
Attribute	Description
CNTMDOP_YR	Vehicle Mid-day off-peak period directional count volume by year
CNTMNOP_YR	Vehicle Mid-night off-peak period directional count volume by year
CNTDY_YR	Vehicle Daily directional count volume by year
TRKAMPKHR_YR	Truck AM peak hour directional count volume by year
TRKPMPKHR_YR	Truck PM peak hour directional count volume by year
TRKAMPK_YR	Truck AM peak period directional count volume by year
TRKPMPK_YR	Truck PM peak period directional count volume by year
TRKMDOP_YR	Truck Mid-day off-peak period directional count volume by year
TRKMNOP_YR	Truck Mid-night off-peak period directional count volume by year
TRKDY_YR	Truck Daily directional count volume by year
Notes:	
<ol style="list-style-type: none"> 1. XXXX represents BASE (calibration/validation year), IMP1 (status after first improvement), and IMP2 (status after second improvement). In addition to calibration/validation year which varies by MPO, required years to be covered by improvement are 05, 20, 35, and 40. 2. See Tables 3.3-2 for details on CapClass by Terrain, Facility Type, and Area Type. 3. See Tables 3.3-3 for Speed ranges by Terrain, Facility Type, and Area Type. 4. See Tables 3.3-4 for details on Capacity by Terrain, Facility Type, and Area Type. 5. 0=facility open to all ("general purpose") ; 1=Carpool 2; 2=Carpool 3+; 3=Combination trucks prohibited 	
Source:	

TABLE 3.3-2: CAPACITY CLASS BY TERRAIN, FACILITY TYPE, AND AREA TYPE					
Facility Type	Area Type				
	Rural (R)	Suburban (SU)	Urban (U)	Fringe (F)	Central Business District (CBD)
Flat					
1. Freeway	1	11	21	31	41
2. Highway	2	12	22	32	42
3. Expressway	3	13	23	33	43
4. Arterial	4	14	24	34	44
5. Collector	5	15	25	35	45
6. Local	6	16	26	36	46
7. Ramp: Freeway-Freeway	7	17	27	37	47
8. Ramp: Slip	8	18	28	38	48
9. Ramp: Loop	9	19	29	39	49
10. Connector: Dist. ≤ 0.25	10	N/A	N/A	N/A	N/A

**TABLE 3.3-2:
CAPACITY CLASS BY TERRAIN, FACILITY TYPE, AND AREA TYPE**

Facility Type	Area Type				
	Rural (R)	Suburban (SU)	Urban (U)	Fringe (F)	Central Business District (CBD)
11. Connector: Dist. > 0.25	20	N/A	N/A	N/A	N/A
Rolling					
1. Freeway	51	61	71	81	91
2. Highway	52	62	72	82	92
3. Expressway	53	63	73	83	93
4. Arterial	54	64	74	84	94
5. Collector	55	65	75	85	95
6. Local	56	66	76	86	96
7. Ramp: Freeway-Freeway	57	67	77	87	97
8. Ramp: Slip	58	68	78	88	98
9. Ramp: Loop	59	69	79	89	99
10. Connector: Dist. ≤ 0.25	60	N/A	N/A	N/A	N/A
11. Connector: Dist. > 0.25	70	N/A	N/A	N/A	N/A
Mountain					
1. Freeway	101	111	121	131	141
2. Highway	102	112	122	132	142
3. Expressway	103	113	123	133	143
4. Arterial	104	114	124	134	144
5. Collector	105	115	125	135	145
6. Local	106	116	126	136	146
7. Ramp: Freeway-Freeway	107	117	127	137	147
8. Ramp: Slip	108	118	128	138	148
9. Ramp: Loop	109	119	129	139	149
10. Connector: Dist. ≤ 0.25	110	N/A	N/A	N/A	N/A
11. Connector: Dist. > 0.25	120	N/A	N/A	N/A	N/A

Note: Area type based on Area Density using the following:

$$\text{Area Density} = (\text{Total Population} + 2.5 * \text{Total Employment}) / (\text{Residential Acres} + \text{Employment Acres})$$

1. Rural <6.0
2. Suburban 6.0 – 30.0
3. Urban 30.0 – 55.0
4. Fringe 55.0 – 100.0
5. CBD > 100.0

Source:

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TABLE 3.3-3: TYPICAL SPEED RANGES BY TERRAIN, FACILITY TYPE, AND AREA TYPE					
Facility Type	Area Type				
	Rural (R)	Suburban (SU)	Urban (U)	Fringe (F)	Central Business District (CBD)
Flat					
1. Freeway	70	65-70	55-65	55-65	55-65
2. Highway	40-45	40-45	40-45	40-45	40-45
3. Expressway	55	45-55	45-55	45-55	40-45
4. Arterial	40-45	30-45	25-45	30-45	25-45
5. Collector	50	50	35-40	35-40	35-40
6. Local	25-40	25-40	25-40	25-40	25-40
7. Ramp: Freeway-Freeway	50	50	50	50	50
8. Ramp: Slip	50	50	50	50	50
9. Ramp: Loop	45	45	45	45	45
10. Connector: Dist. \leq 0.25	35	35	35	35	35
11. Connector: Dist. $>$ 0.25	15	15	15	15	15
Rolling					
1. Freeway	65-70	65-70	65-70	65-70	65-70
2. Highway	40-45	40-45	40-45	40-45	40-45
3. Expressway	50-65	50-65	50-65	50-65	50-65
4. Arterial	30-45	30-45	30-45	30-45	30-45
5. Collector	50	50	50	50	50
6. Local	50	50	50	50	50
7. Ramp: Freeway-Freeway	50	50	50	50	50
8. Ramp: Slip	50	50	50	50	50
9. Ramp: Loop	45	45	45	45	45
10. Connector: Dist. \leq 0.25	35	35	35	35	35
11. Connector: Dist. $>$ 0.25	15	15	15	15	15
Mountain					
1. Freeway	65	65	65	65	65
2. Highway	40-45	40-45	40-45	40-45	40-45
3. Expressway	40-55	40-55	40-55	40-55	40-55
4. Arterial	30-45	30-45	30-45	30-45	30-45
5. Collector	25-40	25-40	25-40	25-40	25-40
6. Local	25-40	25-40	25-40	25-40	25-40
7. Ramp: Freeway-Freeway	50	50	50	50	50
8. Ramp: Slip	45	45	45	45	45
9. Ramp: Loop	35	35	35	35	35
10. Connector: Dist. \leq 0.25	15	15	15	15	15

TABLE 3.3-3: TYPICAL SPEED RANGES BY TERRAIN, FACILITY TYPE, AND AREA TYPE					
Facility Type	Area Type				
	Rural (R)	Suburban (SU)	Urban (U)	Fringe (F)	Central Business District (CBD)
11. Connector: Dist. > 0.25	25	25	25	25	25
Note: Speed shown as miles per hour (MPH)					
Source:					

TABLE 3.3-4: DEFAULT CAPACITY BY TERRAIN, FACILITY TYPE, AND AREA TYPE					
Facility Type	Area Type				
	Rural (R)	Suburban (SU)	Urban (U)	Fringe (F)	Central Business District (CBD)
Flat					
1. Freeway	2,000	2,000	1,800	1,750	1,750
2. Highway	1,800	1,800	1,600	1,500	1,300
3. Expressway	1,100	1,100	1,000	900	800
4. Arterial	900	900	900	800	750
5. Collector	700	700	800	800	700
6. Local	600	600	700	700	600
7. Ramp: Freeway-Freeway	1,800	1,800	1,800	1,800	1,800
8. Ramp: Slip	1,500	1,500	1,500	1,500	1,500
9. Ramp: Loop	1,250	1,250	1,250	1,250	1,250
10. Connector: Dist. ≤ 0.25	N/A	N/A	N/A	N/A	N/A
11. Connector: Dist. > 0.25	N/A	N/A	N/A	N/A	N/A
Rolling					
1. Freeway	1,800	1,800	1,620	1,580	1,580
2. Highway	1,460	1,460	1,300	1,220	1,060
3. Expressway	890	890	810	730	650
4. Arterial	730	730	730	650	610
5. Collector	570	570	650	650	570

TABLE 3.3-4: DEFAULT CAPACITY BY TERRAIN, FACILITY TYPE, AND AREA TYPE					
Facility Type	Area Type				
	Rural (R)	Suburban (SU)	Urban (U)	Fringe (F)	Central Business District (CBD)
6. Local	550	550	640	640	550
7. Ramp: Freeway-Freeway	1,800	1,800	1,800	1,800	1,800
8. Ramp: Slip	1,500	1,500	1,500	1,500	1,500
9. Ramp: Loop	1,250	1,250	1,250	1,250	1,250
10. Connector: Dist. ≤ 0.25	N/A	N/A	N/A	N/A	N/A
11. Connector: Dist. > 0.25	N/A	N/A	N/A	N/A	N/A
Mountain					
1. Freeway	1,500	1,500	1,350	1,310	1,310
2. Highway	790	790	700	660	570
3. Expressway	480	480	440	390	350
4. Arterial	390	390	390	350	330
5. Collector	310	310	350	350	310
6. Local	330	330	380	380	330
7. Ramp: Freeway-Freeway	1,800	1,800	1,800	1,800	1,800
8. Ramp: Slip	1,500	1,500	1,500	1,500	1,500
9. Ramp: Loop	1,250	1,250	1,250	1,250	1,250
10. Connector: Dist. ≤ 0.25	N/A	N/A	N/A	N/A	N/A
11. Connector: Dist. > 0.25	N/A	N/A	N/A	N/A	N/A
Note: Capacity shown as vehicles per hour per lane (VPHPL)					
Source:					

Transit Standards

An overview of the transit standards is below. For more detail, refer to the March 2011 Memorandum titled Transit Network and Mode Choice Model Development for San Joaquin Valley Travel Models.

Line data describes the attributes of transit lines, including the nodes the line traverses and attributes of those nodes. Required line attributes are listed in Table 3.3-5.

TABLE 3.3-5: STANDARD TRANSIT VARIABLES	
Attribute	Description
Transit Lines	

TABLE 3.3-5: STANDARD TRANSIT VARIABLES	
Attribute	Description
NAME	Unique and concise string identifier for a transit line.
LONGNAME	Unique common name for transit line.
MODE ¹	Integer indicating mode of the transit line.
HEADWAY	Interval, in minutes, between two vehicles on a line.
NODE	List of nodes that the transit line traverses.
Transit System	
MODE	Defines the transit and non-transit modes that the transit system uses
OPERATOR	Defines the operators in the transit system
WAITCRVDEF	Wait curve lookup for initial and transfer wait times at stop
VEHICLETYPE	Vehicle types used by the transit line
Notes:	
Source:	

It is recommended that the NAME include a short initial section identifying the operator, a second section for the line number or name, and a final section indicating the direction (for example, SJ_340_NB).

The MODE in transit coding is not the same as travel mode (i.e. drive alone, rideshare, biking, etc) or even the type of transit service (bus, light rail, etc. Instead, it is used to group services with the same fare structure. A recommended MODE structure is shown in Table 3.3-6.

TABLE 3.3-6: TRANSIT MODE VARIABLES	
Value	Description
Access Mode	
1	Walk access to transit
2	Drive access to transit
3	Transfer between transit
4	Walk access link to off-road station
5	Park-and-ride access link to off-road station
Transit Lines	
11	San Joaquin RTD Local
12	San Joaquin RTD Express
13	UNUSED
...	...

Value	Description
21	Bus Rapid Transit
22	High Speed Rail
Notes:	
Source:	

Fare systems define the cost of:

- Travel on lines
- Boarding the first line of a trip
- Boarding second and subsequent lines
- Transfers between lines with the same or different fare systems

Passengers use non-transit legs to:

- Access the transit system
- Egress from the transit system
- Transfer between lines

The components of a Transit journey can be classified within three broad areas:

- Time
 - Walk (non-transit)
 - Wait
 - In-vehicle
- Inconvenience
 - Boarding
 - Transfer
- Cost
 - Fare

Deliverables

Updated road and transit networks for the base validation year and 2020 and 2035 forecast years for each of the MPO models.

Congested skim matrix files.

Three County Networks

- Single-network created covering three northern counties for auto, transit, non-auto be based on the individual MPO models and calibrated for consistency.
- Based on GIS centerline preferred, geocoded to Nad 83 at a minimum
- Sufficient detail will be included such that the model could be used for individual counties if desired by MPO

Deliverables

Road and transit networks for the base validation year (2005/2006) and 2020 and 2035 forecast years for the three northern counties

Skim matrix files

Task 3.4 – Vehicle Availability

- Use best available survey data with land use and skim data of the same year
- Develop vehicle availability models utilizing publication from RSG
- Develop a simplified model for non-ABMs

Deliverables

Vehicle availability model for each MPO, additional demographic and accessibility TAZ values required for input to the vehicle availability model, validation summary.

Task 3.5 – Trip Generation

- Cross-classification person trip generation taking into account accessibility, and other components within a Voyager script.
- Trip generation will consider the same accessibility measures developed for the vehicle availability model.
- Expanded purposes from existing models to be internal-internal, internal-external/external-internal, and external-external (as appropriate) for:
 - d. Home-Work (HW)
 - e. Home-Shop (HS)
 - f. Home-K12 (HK)
 - g. Home-College (HC)

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- h. Home-Other (HO)
 - i. Work-Other (WO)
 - j. Other-Other (OO)
 - k. Highway Commercial (HY)
 - l. Trucks-Small (TS)
 - m. Truck-Medium (TM)
 - n. Truck-Heavy (TH)
- Truck trip purposes based on Kern
 - Table linking Statewide HH Survey and other survey data activity/purposes to model purposes

Deliverable:

Table of revised trip generation rates for each MPO, comparison of trips for base and future years

Task 3.6 – Trip Distribution

- The current gravity model trip distribution process and factors for each existing MPO model will be mostly maintained for consistency. Trip lengths by purpose data will be collected from the best available surveys for comparison against current models.

The required revisions are:

- Add friction factors for additional trip purposes
- Revise friction factors to be continuous and better match survey data
- Adjust impedance inputs to be based on a composite of person travel times by all modes as well as travel costs, instead of just travel time by auto

Deliverable

Updated trip distribution including additional trip purposes and consideration of multimodal times and costs

Task 3.7 – Mode Choice

The strategy for mode choice varies depending on the current status of the MPO model and the level of improvement required for the RTP guidelines.

MPOs which do not Require Mode Choice Model (Tulare, Kings, Madera, Merced)

Four of the MPOs are classified as Group B or C for the RTP Guidelines and do not require full mode choice models. However, these models still need sensitivity to land use and transportation scenarios which could reduce automobile use. A mode choice factoring process based on manual or GIS-based TAZ inputs will be implemented for these counties. A form of this process has been implemented for the Blueprint studies and in Tulare County. Alternately this process could reallocate vehicle trips to other modes based on a process using D-variables such as Density, Diversity and Design.

The factoring process will factor person trips into non-auto modes based on household survey data and the following criteria: Transit trips will be increased above current survey levels based on user-specified transit-oriented development areas and user-specified corridors with improved transit service

- Walk and bicycle trips will be estimated based on survey percentages by distance and trip purpose, so that land use scenarios which bring uses closer together will get higher bike and walk percentages

The user inputs will be a set of TAZ indicators that are input the same way as the land use inputs. The TAZ indicators can also be set using GIS procedures within Cube or ArcGIS.

MPOs which May Implement Mode Choice (San Joaquin, Stanislaus)

San Joaquin and Stanislaus counties are in Group D and are therefore expected to include sensitivity to modal options but not necessarily have a full mode choice model. The consultant team will work with the MPO staff at San Joaquin and Stanislaus counties to determine the best way to implement the mode choice process for each MPO:

- A mode choice factoring process described above for the Group B and C counties, with factors sensitive to proximity of transit service and availability of bike/walk connections, or
- A full mode choice model, based primarily on standard parameters and an existing functional multinomial mode choice model

The full mode choice model will include the following eight modes:

- Drive alone
- Drive alone – pay toll
- Shared ride 2-person
- Shared ride 3+ person
- Transit walk access (potential sub-modes for bus and rail)
- Transit drive access (potential sub-modes for bus and rail)

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- Bicycle
- Walk

No new parameter estimation is assumed to be necessary for this model update. Interregional transit will be based on the Statewide or other models, as appropriate.

Deliverable

Updated mode choice sensitivity for each MPO (enhanced mode choice models in two counties, new mode choice model(s) in up to three counties, and mode choice factoring process in remaining counties)

Task 3.8 – Pricing

Planned Improvements include:

- Adding network cost attributes for tolls and congestion pricing to all links for models all counties.
- Adding node cost attributes for parking pricing to all links for all models (pricing will initially be set to zero, except where a baseline cost is already established).
- Updating the models' calibration procedures for trip distribution and mode choice to be based on multimodal travel time and cost (including parking costs, tolls congestion pricing, and operating cost) rather than only auto travel time.
- The pricing algorithm will be developed by RSG/Bowman/Bradley team and will be incorporated into the vehicle availability model and trip distribution/mode choice/assignment components of the trip based models, in addition to the ABM.

Deliverables

CS, Dowling, and Fehr & Peers will include network cost attributes for the base validation year (2005/2006) and 2020 and 2035 forecast years for each county as described in Task 3.3

RSG/Bowman/Bradley will provide algorithms for implementing pricing sensitivity to Dowling for including in the standard script.

Task 3.9 – Trip Assignment

Trip assignment includes traffic assignments and transit assignments.

Traffic Assignment

The traffic assignment process in each model will be reviewed. If appropriate, additional iterations or methods will be recommended along with more stringent closure criteria.

Due to limitations of the current version of the software, traffic assignments will be combined to a multi-class assignment which separately evaluates and reports the following five vehicle types:

- Drive Alone
- Drive Alone Toll
- Shared Ride 2
- Shared Ride 3+
- Truck

Traffic assignment scripts will also be provided to assign vehicle trips by trip purpose. Existing scripts which compile regional traffic statistics and air quality analysis inputs will be modified to account for the five vehicle classifications.

Deliverables

Dowling will provide a revised assignment script

A transit assignment step will be added to the MPO models with new mode choice models. The Voyager PT module should be used for the transit assignment step. Consider developing both best-path and multi-path options.

3.10 – Feedback Loop

The feedback loop ensures the travel times used as input to trip distribution are consistent with the travel times on the final reported congested road network, as required for air quality conformity analysis.

Feedback loop and closure criteria used in many of the San Joaquin Valley models (Fresno, Kern, Kings, and Tulare) will be tested dynamically. Once determined to function properly, the same routines will be implemented in the remaining models. This loop uses congested travel times from the road network from the latest iteration to recalculate trip distribution (and mode choice if included) for the next iteration. The feedback loop will be adjusted to also provide congested travel times to the vehicle availability model. The oscillations between iterations are dampened using the Method of Successive Iterations. A set of closure criteria for origin-destination travel times and trips is used to determine the number of iterations.

TASK 4 – ESTIMATION, CALIBRATION, VALIDATION, AND EVALUATION OF BASIC MODEL IMPROVEMENTS

Task 4.1 – Model Estimation

- Utilize best available information that is readily available
- Model estimation to be performed in the software program most efficient
- Process documented for updating estimation once new data are available after the time frame of this project (i.e. post-2012)

Task 4.2 – Model Calibration

In this task, each component of the updated model, including the vehicle availability model, will be calibrated to ensure that it produces accurate forecasts. Calibration is an iterative process where model settings are adjusted so the output of the model matches observed travel patterns. Caltrans, TMIP, and other published documents will be referenced and documented.

Task 4.3 – Model Static Validation

- trip length frequency by purpose
- average travel times by purpose
- mode split by purpose
- roadway segment model-to-count ratios (where demand does not exceed capacity)
For congested segments verify that demand volumes exceed constrained counts
- screenline ratios
- model speed versus observed speed, where data are available
- traffic assignment routes
- transit system and screenline ridership

Task 4.4 – Model Dynamic Validation

Fehr & Peers will perform the following dynamic tests for all models:

- Dynamic validation will include the following household location, density, diversity, and other household attributes (income, size, age, auto ownership)
- employment location, density, diversity, and type
- roadway network
- transit service

- parking or other pricing programs travel demand programs

For the final three bulleted items, (and per 2010 RTP Guidelines, p.54), dynamic validation should include the following model sensitivity tests. Tests will be conducted as appropriate given the type of regional model and alternatives under evaluation.

- Add lanes to a link
- Add a link
- Delete a link
- Change link speeds
- Change link capacities
- Add 100 households to a TAZ
- Add 1,000 households to a TAZ
- Add 5,000 households to a TAZ
- Add 10,000 households to a TAZ
- Increase/Decrease toll rates
- Increase/Decrease transit fares
- Increase transit speeds

Review of the dynamic validation tests should indicate that changes to the model volumes occurred in the appropriate direction and magnitude.

Task 4.5 – Evaluation

- Document each of the steps above before and after improvements to identify potential areas of difference in results
- Coordinate with CAC to perform AQ analysis to evaluate and perform sensitivity testing and determine the conformity findings

Deliverables

Updated:

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- Models
- Converted existing travel demand model output post-processors (such as select zone assignment), and
- Model Development Reports and monthly discussions with MPO staff summarizing the work described in Task 3 and Task 4.

TASK 5 – INTERREGIONAL AND STATEWIDE INTEGRATION OF MODEL INFORMATION

Task 5.1 – Implement Interregional Trip Process

Each MPO model will use (with possible modifications through calibration and validations processes) the following inputs from the Statewide Model:

- Base year (2005 or later) and future years (2020 and 2035) through (XX) vehicle trips between each major county line crossing
- Base year (2005 or later) and future year (2020 and 2035) external-internal (XI) and internal-external (IX) vehicle trips by trip purpose and production/attraction orientation at each major county line crossing

For StanCOG, the Statewide Model results will be used to update through trip assumptions. However, an alternative process may be used for IX/XI trips. The origin-destination survey would be geoprocessed to obtain a specific matrix of observed trips between cordon points and TAZs within the StanCOG model area. This matrix would be used as the base year IX/XI trips. – Can we set a date by which the O/D survey process and locations will be determined, so that modeling for the three-county model and the individual SJCOG and MCAG models can take the results into account?

Forecast trips would be estimated by applying growth factors to the observed base year matrix. The growth factors could be set to be consistent with adjacent MPOs based on the Statewide Model, or could be based primarily on historical growth rates, or some combination. The preferred method will be determined based on the analysis of the various methods, and the same process will be used for all MPOs. Adjacent MPOs will have the same gateway volume for a given year.

Deliverable

Dowling will provide updated interregional information based on the Statewide Model for base and forecast years, subarea process for deriving interregional trips for each MPO.

Task 5.2 – Interim Update of Statewide Model

March 10, 2011

In order for any version of the Statewide Model to provide reliable county line traffic forecasts, it must include the latest assumptions for land use and networks in the San Joaquin Valley. The following tasks would provide improved interregional trip estimates from an available trip-based version of the Statewide Model until the new integrated statewide model has been validated and forecasts verified.

- Update TAZ correspondence between Statewide Model and all eight MPO models
- Update land use assumptions in the Statewide Model based on current inputs from MPOs
- Update the work done on the Statewide Model future road network for the San Joaquin Valley Goods Movement Study to current RTPs and to the desired forecast year(s)
- Run each updated land use scenario through the Statewide Model
- Revise gateway procedures of individual MPO travel models as needed to accept consistent inputs from Statewide Model, including inputs for truck trips
- Transfer the statewide travel model results for each scenario to the appropriate gateway and through trip inputs for each of the eight county models

Deliverable

Dowling will provide updated version of the trip-based Statewide Model for base and forecast years, subarea process for deriving through and external trips for each MPO

Task 5.3 – Northern Valley Origin-Destination Survey

CS and F&P met with staff from SJCOG, StanCOG, and MCAG to identifying the best approach for completing this task. Among the key decisions were:

- The data will be collected to cover all three regions in a manner that will benefit trip and activity models;
- Clearly identify what elements of interregional travel will be addressed, specifically the areas model development and model validation will be addressed under this task;
- Establish data collection locations;
- Determine how many surveys are required;
- Survey instrument will need to be developed;
- Specific data summaries and other analytic requirements needed for model development and model validation purposes;
- Determination to use a data collection firm to collect surveys; and
- Task schedule.

Specifically, multiple data sources will be used including:

- Cell phone data: volume and travel time data will be summarized to the TAZ system for the three counties and will include internal-internal, internal-external, external-internal, and external-external travel patterns by hour. Speed data will also be available for the major functional classes by hour. Home-work OD data will be provided based on the characteristics of a unique cellular device and the land use. These data will be collected for one month.
- Vehicle classifications and speed: to supplement the OD and validate the speed data obtained from the cell phone data, vehicle classification and speed counts will be conducted at the major gateways to or between the three counties. These data will be collected for two 24-hour periods.
- Roadside interviews: a survey instrument will be developed and administered at roadside rest areas/truck stops to supplement the vehicle classification and cell phone data. The survey will provide data on purpose, party size, and OD. These surveys will be the primary source of determining origins and destinations outside of the three-counties and will be used to calibrate or validate the statewide model.

Deliverables:

CS will provide:

- Roadside survey instrument
- Roadside surveys
- Geocoded summary of roadside survey

F&P will provide:

- Technical memorandum on the detailed final work plan
- Technical memorandum summarizing the data collection activities and results, including summary tables and charts for area policy makers
- Appropriate technical data to be included in the model systems and/or validation datasets for the three northern counties

TASK 7 – GOODS MOVEMENT MODELING IMPROVEMENTS

Task 7.1 – Valleywide Model

The data we will use to update input data sources for short-haul, local moves (non-ITMS) are the

- Quick Response Freight Manual updated in 2007
- Kern COG truck model

Once we have updated the various data sources in the goods movement model and expanded this to include freight rail, we will validate the model for 2007 using updated truck counts and we will check the reasonableness of truck speeds.

Deliverable

RSG will provide 2007 Valleywide Goods Movement Model

Task 7.2 – County Models

Once the Valleywide Goods Movement Model is updated, we will adapt this model for use in building county truck trip models. This will involve adapting the Valleywide Goods Movement Model, as follows:

- Adapt the short-haul, local truck trip rates to build a truck trip generation model for each county
- Apply trip distribution functions from the local trip distribution models
- Apply the time period factors from Valley model
- Export external/gateway truck trip tables from the updated Valleywide Goods Movement Model
- Integrate the truck trip tables into a multiclass assignment
- Validate each county model against county vehicle classification counts for trucks

Deliverable

RSG will provide 2007 Truck Trip Models for each County

Task 7.3 – Integration with Statewide Freight Model

The new statewide freight model is tentatively estimated to be completed by University of California at Irvine between January 2011 and December 2012 (two years). Thus, any integration that will need to occur with the San Joaquin Valley county models will not be possible within the scope and schedule of the present VMIP study, and should be included in the model improvements plan for 2012 and beyond.

Deliverable

RSG will provide integration plan for 2012 and beyond

TASK 8 – ADVANCED MODELING PROJECTS (SELECTED MPOs)

Task 8.1 – Cube Land and Geodatabase Integrated Land Use/Transportation Model

To enable to the multi-scale integrated model system proposed above, the following work would need to be completed by the project team members: -- Is there really a model system described above, or just upgrades to each of the 8 individual models?

- Completion of the CalSIM statewide PECAS-Cube Voyager model or other available sources to obtain countywide control totals. The same source will be used for base and future year.
- Refinement of the Kern COG Cube Land framework and generalization to other areas.
- Updated transportation model to utilize Cube Land data within a geodatabase framework.
- Land Use Model calibration application using parameters and values from auto availability and other ABM estimation
- Integrated land use and transportation planning model
- Geodatabase of relevant land use and transportation data
- The forecast land use will be validated compared to base year land use sources such as the base model land use file, Census, and non-residential data.

Task 8.2 – Activity-Based (AB) Models Using Parcels Data (FresnoCOG) and Zonal Data (SJCOG, StanCOG, MCAG)

- Maximize openness, transferability, and ease of updating
- Estimate DaySim model components for Fresno and 3-County model using pooled data to maximize the number of survey records
- Implement using DaySim software integrated within Cube Voyager
- Calibrate and validate activity-based models for using the same criteria as the trip-based models

Deliverables

- Integrated parcel-level AB model system for Fresno County, suitable for:
 - o. RTP forecasting
 - p. Air Quality Conformity analysis
 - q. Evaluation of SB 375 GHG reduction targets
- Integrated TAZ-level AB model system for the northern three-county region, suitable for:
 - r. RTP forecasting

March 10, 2011

- s. Air Quality Conformity analysis
- t. Evaluation of SB 375 GHG reduction targets
- Region-specific and overall model system Model Documentation

Documentation

Fehr & Peers will provide Word document and ArcMap templates for reports and graphics that will be used in the Technical and Executive reports.