Appendix 9:
Regional Land Use Allocation Model and 2024 SCS Scenario Modeling Results

Butte County Association of Governments

Regional Land Use Allocation Model

Technical Methodology for Preparing 2024 Regional Transportation Plan / Sustainable Communities Strategy Land Use Allocations

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INTRODUCTION

In 2012, BCAG, in coordination with local agency members, California State University-Chico, and the University of California at Davis, developed the Butte County region's first land use allocation model for the purpose of preparing the forecasted development pattern included in BCAG's 2012 Regional Transportation Plan (RTP) and Sustainable Communities Strategy (SCS). The model was used by BCAG in developing land use scenarios to be analyzed as part of the 2012 RTP/SCS development process and in preparing the final preferred land use scenario and allocation.

The 2016 RTP/SCS update of the land use allocation model included the addition of five (5) new job categories, new K-12 school enrollment forecasts, an occupancy adjustment of residential and non-residential land uses, and a process of normalizing the data to state sources. In 2020, the model was updated to include an adjustment to account for the loss and rebuilding of housing units and non-residential structures associated with the Camp Fire and a new base year of 2018.

In preparing the 2024 RTP/SCS, the land use allocation model has been migrated to the CommunityViz platform. The base year has been updated to 2022 and includes the latest regional growth forecasts, local general plan information, and planned projects. In addition, the local jurisdiction's latest housing elements sites inventory has been incorporated. Outputs from the land use allocation model are used to evaluate the vehicle miles traveled (VMT) and associated greenhouse gas (GHG) emissions from single-occupancy vehicles in each scenario. Table 1 shows the GHG reductions associated with each land use scenario evaluated for the 2024 SCS:

Table 1 - Forecasted 2035 Emissions Reductions (% reduction from 2005 Base Year Emissions) by Scenario				
	Scenario 1 2020 RTP/SCS	Scenario 2 2020 RTP/SCS Updated	Scenario 3 Latest Trends and Transit Oriented Development	Preferred Scenario Latest Trends and Transit Oriented Development
Forecasted GHG Emissions Reductions	-0.35%	-3.58%	-4.44%	-6.59%

The following sections of the document provide an overview of the modeling process as well as details regarding specific inputs and assumptions associated with the land use allocations.

BASE YEAR DEVELOPMENT (2022)

The base year (2022) land use file was prepared using the latest available existing regional land use and school datasets. The regional existing land use dataset is updated annually as part BCAG's data maintenance program and contains the most up-to-date information regarding existing residential and non-residential land uses. School data is updated every four years and includes the latest enrollments for K-12, Chico State University, and Butte Community College.

Prior to finalizing the base year land uses, the dataset was normalized to the California Department of Finance (DOF) housing estimates and California Employment Development Department (EDD) labor force data.

Table 2 provides a summary of the base year assumptions for population, housing, and jobs.

Table 2 - Base Year (2022) Assumptions	
Population[1]	201,608
Household Population[1]	197,020
Housing Units[1]	91,549
Households[1]	91,107
Jobs[2] (Non-Farm)	77,000
Jobs/Housing Unit	0.84

BACK-CAST YEAR (2005)

In consultation with the California Air Resources Board (ARB), BCAG has decided to utilize the 2005 back-cast year from the 2016 RTP/SCS. This is the same back-cast utilized in the most recent round of Senate Bill 375 (SB 375) target setting. Therefore, there was no need to prepare a new land use dataset, as there will be no travel model runs of the dataset. For reference, Table 3 provides a summary of the 2005 back-cast year assumptions for population, housing, and jobs.

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[1] State of California, Department of Finance, E-5 Population and Housing Estimates for Cities, Counties, and the State — January 1, 2021-2022. Sacramento, California, May 2022.
[2] California Employment Development Department, Industry Employment & Labor Force - by Annual Average, March 2021 Benchmark, for Butte County (Chico MSA).

Table 3 - Back-Cast Year (2005) Assumptions	
Population[3]	214,582
Household Population[3]	208,322
Housing Units[3]	91,666
Households[3]	85,478
Jobs (Non-Farm)[2]	73,400
Jobs/Housing Unit	0.80

DEVELOPMENT OF FORECASTS

Land use allocations have been prepared according to scenarios developed by BCAG. Each allocation takes into consideration future jobs and housing based on BCAG's Long-Term Regional Growth Forecasts 2022-2045, apart from Scenario #1 which relies on the 2020 RTP/SCS preferred scenario. Appendix A contains a summary of each scenario and allocation of jobs and housing by Growth Area (Appendix B).

The process for allocating land uses has been largely unchanged from that used in preparing the 2020 RTP/SCS. Two new datasets, housing element sites and accessory dwelling units, have been incorporated into the allocation process.

Basic Allocation Steps

1. Land Use Mask - areas identified to receive no future growth are identified and "masked".
2. Available Capacity - data is prepared using the latest general plans, planned projects inventory, housing element sites inventory, accessory dwelling unit history, and destroyed structures inventory.
3. Allocations - jobs and housing are allocated for each individual scenario using the available capacity.

LAND USE MASK

A land use "mask" is identified for areas which are currently developed or where new growth is not permitted or reasonably foreseeable not to occur. Areas such as public parks and protected lands are examples of areas where future growth is not permitted.

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[3] State of California, Department of Finance, E-5 Population and Housing Estimates for Cities, Counties and the State, 2001-2010, with 2000 Benchmark. Sacramento, California, May 2010.

In preparing the model for the 2024 RTP/SCS, staff reviewed and updated the latest available datasets to be applied to the mask. This ensured that locations newly designated for non-development or which have been developed within the past four years were accounted for.

Table 4 lists the data layers used in preparing the land use mask.

Table 4 - Mask Layers	
Public Park Lands	Areas of Slope > 25%
Existing Protected Lands	Public Lands
Existing Developed Lands	Federal Lands
Lakes	Utility Lands
Rivers	State Lands
Existing Right of Ways	Union Pacific Lands

Appendix C is included and illustrates the areas which make up the "mask" layer within the region.

AVAILABLE CAPACITY

Preparation of the available capacity follows the same overall process that was used with the 2020 RTP/SCS. The latest general plans are updated and are cross walked into the model classifications. Planned projects inventory is updated and reviewed by jurisdiction staff. Housing element inventories are updated based on the latest approved housing elements. An accessory dwelling unit (ADU) inventory is developed based on recent activity. The destroyed structures inventory is updated based on recent wildfire activity.

General Plans

A standard list of general plan classification code values were developed for use in the model as part of the 2012 RTP/SCS. Each of the jurisdiction's general plan land use classes were cross walked into one of twenty standard modeling classifications (Appendix D). This process addresses any variations in general plans across the county and allows for the implementation of a single regional general plan classification system. The purpose of the general plan modeling classifications is to restrict the type and location of new growth to designated areas when preparing the forecasted allocations. For the 2024 RTP/SCS the same twenty standard land use classifications were utilized, and the latest local general plans were applied.

Planned Projects

The inventory of planned projects are reviewed and updated by local jurisdictions with each update of the RTP/SCS. This includes the assumed number of housing units (single-family and multi-family), square footage of non-residential uses, and approximate year of construction. The planned projects layer also includes the specific/master plan areas. Appendix E illustrates the location of the planned project sites.

Housing Elements

The housing elements layer was developed by importing the local jurisdictions latest available housing elements sites inventory. For modeling, low-income unit sites are utilized as multi-family units and moderate to above income units are designated as single-family units. Appendix F illustrates the location of the housing element inventory sites.

Accessory Dwelling Units

Data from the California Department of Housing and Urban Development was reviewed for the 2019-2022 period. Based on the available data, primarily in the City of Chico, areas were designated as locations for future ADU allocation. Currently, there is very little information available on the siting of existing ADU units as well as the future capacity. For planning purposes, a minimal number (less than 350) of ADUs were designated for allocation capacity in the City of Chico based on current building activity. The current travel demand model does not have a housing designation for ADUs therefore, these units have been designated as multi-family based on travel characteristics. Appendix G illustrates the location of the traffic analysis zones identified to accept ADUs.

Destroyed Structures

Following the 2018 Camp Fire, BCAG developed a destroyed structures dataset to monitor housing units and non-residential structures lost to wildfire. This dataset was updated with information from the 2020 North Complex Fire for use in the 2024 RTP/SCS. Future capacity is based on an equal number of units or square footage destroyed, unless otherwise updated with new information from the applicable general plan.

ALLOCATING FUTURE LAND USES

Following the preparation of the mask and available capacity datasets, units are allocated to each jurisdiction based on scenario information provided in Appendix A. Population, housing, and jobs were applied to each jurisdiction using a spreadsheet tool which allocates growth within specific defined growth areas. The tool allocates future development utilizing the available capacity in the general plan, planned projects, housing element inventory, accessory dwelling units, and destroyed structures datasets. Each of these datasets is parsed by planning area and growth area to control for units and population included in the regional growth forecasts and by scenario.

Planning Areas

As with the 2020 RTP/SCS model, growth has been modeled individually at the jurisdiction level for each of the forecast years. This approach allows for each jurisdiction to retain individual land use assumptions. BCAG member jurisdictions include Biggs, Chico, Gridley, Oroville, Paradise, and the remaining unincorporated area of Butte County.

The unincorporated area of Butte County is further broken into areas adjacent to the three largest jurisdictions (Chico, Oroville, and Paradise), including the unincorporated area of Magalia.

Planning areas were adapted from a combination of jurisdiction city limits, Local Agency Formation Commission (LAFCo) spheres of influence, general plan and special planning area considerations. Planning areas do not overlap with one another and together they encompass the entirety of Butte County (Appendix H).

Growth Areas

As with past RTP/SCS's, each planning area was further broken down into Growth Areas. Planning areas were split into five Growth Areas; Center, Established, New,

Rural, and Agricultural. Center growth areas are downtown and central business areas where higher densities of commercial LU's are present or planned. Established growth areas are within the current built environment and represent areas where infill and redevelopment opportunities are present. New growth areas are where new development is planned to occur outside of the currently established built environment. Rural and agricultural growth areas are only present in the unincorporated county and represent areas for growth that are separated from any incorporated area in the county. Appendix B illustrates the locations of Growth Areas.

Allocation Process

Allocations are prepared by planning area based on the regional growth forecasts and scenario descriptions. Housing units are allocated by type (single-family and multi-family) and jobs allocated by use (retail, office, industrial, etc.) based on the amount of available capacity and existing uses. A hierarchy of the datasets is established for allocation purposes as follows: 1) housing elements sites inventory 2) planned projects 3) general plan 4) accessory dwelling units 5) destroyed structures. In some cases, based on available capacity, the hierarchy must be adjusted to meet the regional control total.

The results of each scenario's forecast allocation is then combined at the region level by TAZ for incorporation in the regional travel demand model. Table 5 provides a summary of the assumptions for population, housing, and jobs accommodated by the final allocations, as well as distribution by land use category for each scenario.

Table 5 – Land Use Allocation Summary					
	S1 (2035)	S2 (2035)	S3 (2035)	S4 (2035)	S4 (2045)
Population	258,113[1]	241,939[2]	241,939[2]	241,939[2]	249,169[2]
Household Population	251,863[3]	236,433[4]	236,433[4]	236,433[4]	243,499[4]
Housing Units	113,339[1]	110,000[2]	110,000[2]	110,000[2]	113,277[2]
Households	103,545[5]	101,118[6]	101,118[6]	101,118[6]	104,131[6]
Jobs (Non-Farm)	89,071[1]	92,400[2]	92,400[2]	92,400[2]	92,887[2]
Jobs/Housing Unit	0.80[1]	0.84[2]	0.84[2]	0.84[2]	0.82[2]
Residential (Households)					
Single Family	64,200	60,262	59,293	58,911	60,523
Multi-Family	27,925	30,724	32,055	32,441	33,823
Mobile/Manufactured Home	11,420	10,140	9,812	9,812	9,844
Non-Residential (Jobs)					
Retail	27,892	28,774	26,458	25,458	25,458
Industrial	15,146	17,364	17,477	17,447	17,477
Office	23,840	24,311	26,336	26,554	26,699
Medical Office	7,462	7,603	7,712	7,871	7,872
Public	3,997	4,312	4,312	4,421	4,521
Hospitals	3,419	3,070	3,070	3,070	3,086
Hotels	980	1,120	1,120	1,120	1,126
University	2,102	1,737	1,737	2,010	2,122
Butte College	1,331	1,327	1,327	1,579	1,587
K-12 Schools	2,864	2,736	2,736	2,736	2,750
Casino	124	108	108	108	109

Sources:
[1] BCAG Long-Term Regional Growth Forecasts 2018-2040 (medium scenario)
[2] BCAG Long-Term Regional Growth Forecasts 2022-2045 (medium scenario)
[3] Household population based on the 2018 ratio of group quarters population to overall population
[4] Household population based on the 2022 ratio of group quarters population to overall population
[5] Persons Per Household – State of California, Department of Finance, E-5 Population and Housing Estimates for Cities, Counties, and the State — January 1, 2010-2019. Sacramento, California, May 2019
[6] Persons Per Household - State of California, Department of Finance, E-5 Population and Housing Estimates for Cities, Counties, and the State — January 1, 2021-2022. Sacramento, California, May 2022

MODEL UPDATES AND IMPROVEMENTS

Below are the general updates and improvements made to the BCAG land use allocation model for the 2024 RTP/SCS.

UPDATES

Existing Land Use

The 2024 RTP/SCS includes an updated base year representative of January 1, 2022. As such, the existing land use for year 2022 was updated with BCAG's annually updated Geographic Information System (GIS) database which is compiled from local jurisdiction building report data. In addition, school enrollment is updated at the K-12, Community College, and University levels based on district and state reported data.

General Plan

BCAG maintains an annually updated local general plan GIS dataset. Annually, local jurisdictions are asked to report general plan land use updates. Typically, these are minor changes effecting one or two parcels. BCAG then adjusts the regional general plan dataset.

Planned Projects

Prior to preparing forecasts, BCAG reviews and requests updates to the planned projects dataset from each local jurisdiction. This often includes the addition or removal of planned projects based on planning department input.

Land Use Masks

Prior to preparing the capacity datasets, BCAG reviews the mask layer (areas not available for future development) and updates as necessary. This includes the updating of existing development, public and protected lands, undevelopable lands, etc.

IMPROVEMENTS

Accessory dwelling units and housing element sites inventories were incorporated into the 2024 RTP/SCS land use allocation model.

Accessory Dwelling Units

BCAG was able to obtain accessory dwelling unit (ADU) information from the California Department of Housing and Community Development for the period 2018-2022. This information showed accessor parcel numbers and certificate of occupancy dates for ADU's in the region. The City of Chico showed the completed construction of 152

ADU's over that 4-year period. With this information, BCAG developed an inventory of existing ADU's designated by associated traffic analysis zones (TAZ) to allow for future allocation of units to TAZ's.

Housing Element Sites Inventory

Housing element sites inventories were collected from the latest available housing elements published by the local jurisdictions. This information contained associated assessor parcel numbers which were mapped by BCAG. Low-income units were designated as future available capacity for multi-family units. Moderate and above moderate – income units were designated as future available capacity for single-family units.
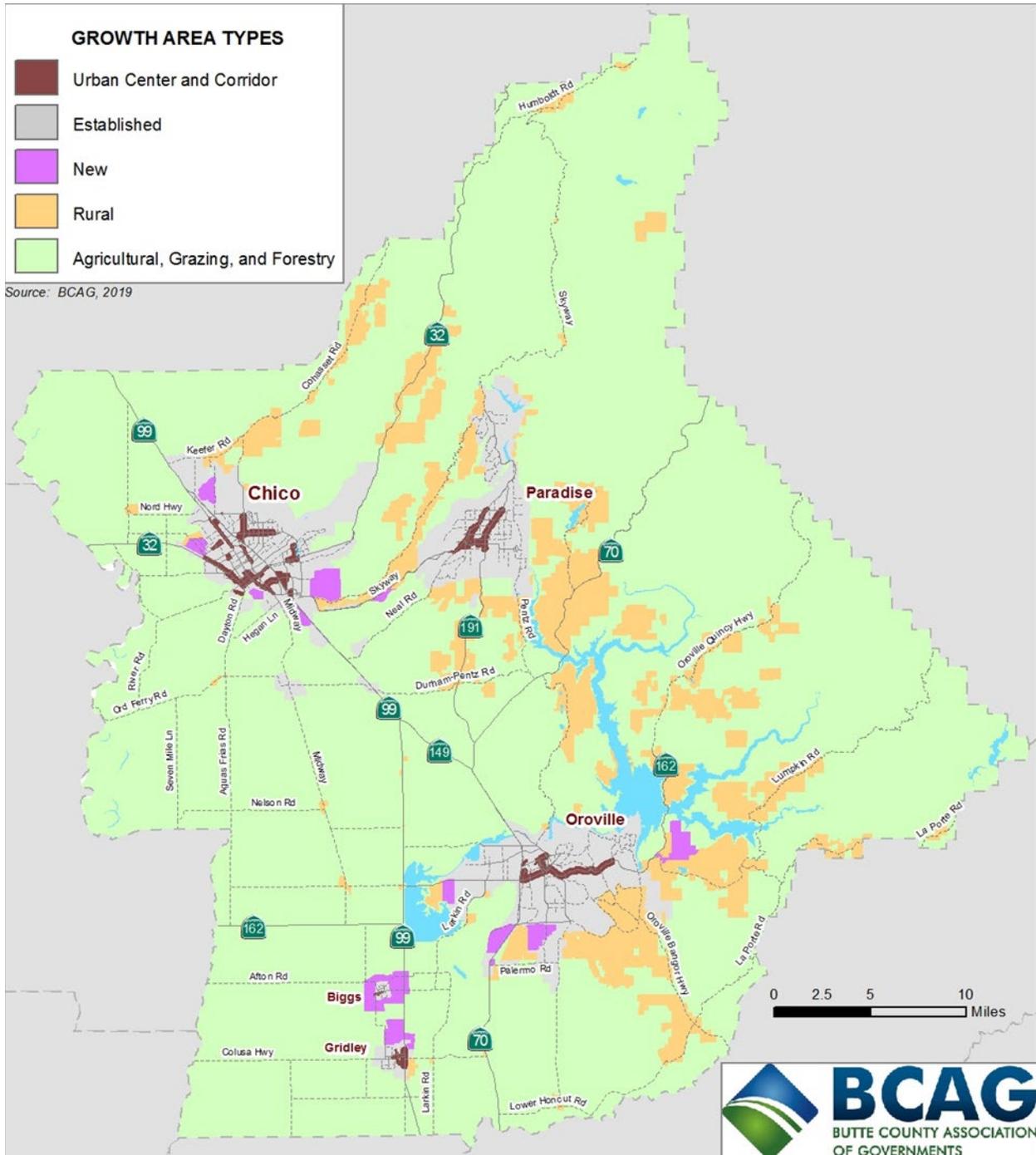
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APPENDIX A

Summary of Land Use Allocation by Scenario

New Housing Units					
Growth Area	**Scenario #1 (2035)**	**Scenario #2 (2035)**	**Scenario #3 (2035)**	**Scenario #4 (2035)**	**Scenario #4 (2045)**
Center	6%	6%	20%	20%	20%
Established	56%	56%	60%	66%	66%
New	30%	30%	17%	11%	11%
Rural	6%	6%	2%	2%	2%
Ag	2%	2%	1%	1%	1%
	100%	100%	100%	100%	100%
New Housing Mix					
Housing Type	**Scenario #1 (2035)**	**Scenario #2 (2035)**	**Scenario #3 (2035)**	**Scenario #4 (2035)**	**Scenario #4 (2045)**
Single Family[1]	68%	68%	61%	58%	58%
Multi-Family	32%	32%	39%	42%	42%
	100%	100%	100%	100%	100%
New Jobs					
Growth Area	**Scenario #1 (2035)**	**Scenario #2 (2035)**	**Scenario #3 (2035)**	**Scenario #4 (2035)**	**Scenario #4 (2045)**
Center	26%	26%	31%	31%	31%
Established	60%	60%	58%	59%	59%
New	11%	11%	9%	8%	8%
Rural	3%	3%	2%	2%	2%
Ag	1%	1%	1%	1%	1%
	100%	100%	100%	100%	100%
Jobs - Housing Ratio					
Sub-Region	**Base Year (2022)[2]**	**Scenario #2 (2035)**	**Scenario #3 (2035)**	**Scenario #4 (2035)**	**Scenario #4 (2045)**
Biggs/Gridley	1.25	1.24	1.19	1.19	1.15
Chico/Chico Co	0.97	0.94	0.95	0.95	0.93
Oroville/Oroville Co	0.88	0.93	0.89	0.89	0.86
Paradise/Paradise Co/Magalia Co	0.65	0.74	0.68	0.65	0.64
Remaining Uninc	0.36	0.36	0.37	0.38	0.36
Total	0.84	0.84	0.84	0.84	0.82

[1] Single family units include mobile/manufactured homes

[2] Jobs-housing ratio is not available for Scenario #1 (2020 RTP/SCS) dataset. Base year 2022 information provided.

APPENDIX B

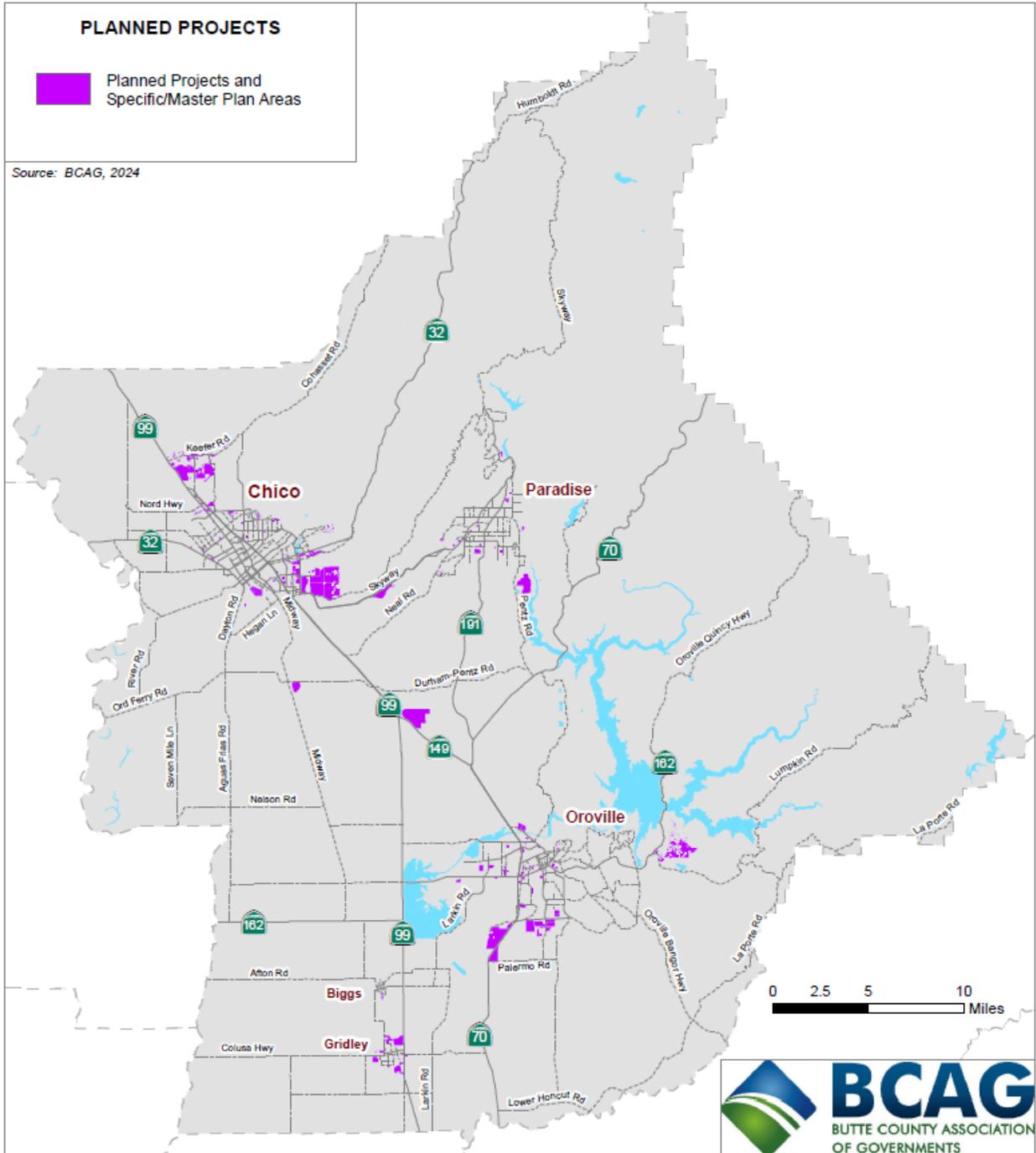**GROWTH AREA TYPES**
- Urban Center and Corridor
- Established
- New
- Rural
- Agricultural, Grazing, and Forestry

Source: BCAG, 2019

MASKED AREAS

Lands not Considered for Future Development or are Currently Developed
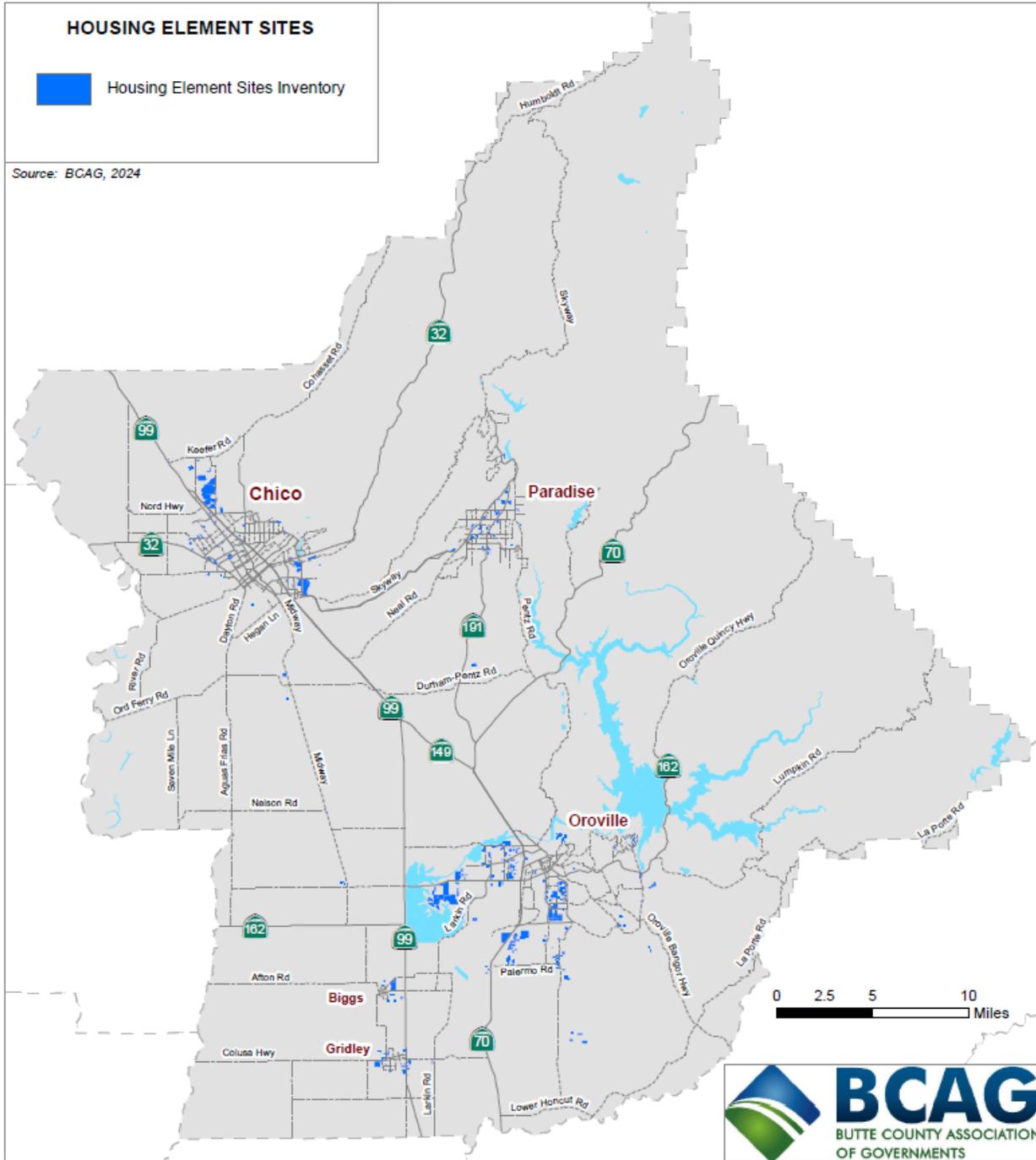
Source: BCAG, 2024

General Plan Class to Model Class Crosswalk

Model Code	Model Classification	TransCAD Classification	City of Chico 2030 GP (Final)	Town of Paradise 1994 GP	City of Gridley GP 2030 (Final)	City of Biggs GP 2030 (Pending)	City of Oroville GP 2030 (Final)	Butte County GP 2030 (Final)
0	Unclassified	N/A			Right of Way (ROW), Right of Way Railroad (ROWR), Right of Way Water (ROWW)	Right of Way (ROW), Railroad ROW (RR)	Right of Way (ROW)	Right of Way (ROW), Sports and Entertainment (SE)
1	Agriculture	N/A			Agriculture (AG)	Agriculture (A)		Agriculture (AG)
2	Industry	IND_KSF	Manufacturing and Warehouse (MW)			Agriculture Industrial (AI), Heavy Industrial (HI)	Industrial (IND)	Industrial (I)
4	Agriculture	N/A				Agriculture Commercial (AC)		
5	Office Commercial	OFF_KSF					Office (OFC)	
6.1	Mixed Use Retail	RET_KSF & OFF_KSF	Neighborhood Commercial (NC)	Neighborhood Commercial (NC)	Downtown Mixed Use (DMU)	Commercial (C)	Mixed Use Commercial (MUC)	Mixed Use (MU)
6.2	Mixed Use Retail	RET_KSF & OFF_KSF & MF_DU	Commercial Mixed Use (CMU)	Central Commercial (CC)	Neighborhood Center Mixed Use (MU)	Downtown Mixed Use (DMU)	Retail and Business Services (RBS)	Retail and Office (RTL)
6.3	Mixed Use Retail	RET_KSF & OFF_KSF & MF_DU	Commercial Mixed Use (CMU) with Downtown or Corridor Overlays (OS-3, 7, 9, 13, 14, 15)	Town Commercial (TC)	Commercial (C)	Mixed Use (MU)	Airport Business Park (ABP)	Industrial (I) and Rural Residential (RR) with Retail Overlay (Retail)
6.4	Mixed Use Retail	RET_KSF & OFF_KSF & IND_KSF	Commercial Services (CS)	Business Park (BP)				Recreation Commercial (REC)
6.5	Mixed Use Retail	RET_KSF & OFF_KSF & MF_DU	Regional Commercial (RC)	Community Service (CS)				Research and Business (RBP)
6.6	Mixed Use Office	RET_KSF & OFF_KSF & MF_DU	Office Mixed Use (OMU)					
6.7	Mixed Use Office	RET_KSF & OFF_KSF & MF_DU	Office Mixed Use (CMU) with Downtown or Corridor Overlays (OS-3, 7, 9, 13, 14, 15)					
7	Mixed Use Industrial	IND_KSF & OFF_KSF	Industrial Office Mixed Use (IOMU)	Light Industrial (LI)	Industrial (M), Agriculture Industrial (AI)	Light Industrial (LI)		Agriculture Services (AS)
8.1	Mixed Use Residential	MF_DU & RET_KSF & OFF_KSF	Residential Mixed Use (RMU)					
8.2	Mixed Use Residential	MF_DU & RET_KSF & OFF_KSF	Residential Mixed Use (RMU) with Downtown and Corridor Overlays (OS-3, 7, 9, 13, 14, 15)					
9	High Density Residential	MF_DU	High Density Residential (HDR)		Residential High Density 2 (RHD 2)	High Density Residential (HDR)	High Density Residential (HDR)	High Density Residential (HDR)
10	Medium-High Density Residential	MF_DU	Medium-High Density Residential (MHDR)	Multi-Family Residential (MR)			Medium High Density Residential (MHDR)	Medium High Density Residential (MHDR)
11	Medium Density Residential	SF_DU	Medium Density Residential (MDR)		Residential High Density 1 (RHD 1)	Medium Residential (MDR)	Medium Density Residential (MDR)	Medium Density Residential (MDR)
12	Low Density Residential	SF_DU	Low Density Residential (LDR)	Rural Residential (RR) and Town Residential (TR)	Residential Medium Density (RMD), Residential Low Density (RLD)	Low Density Residential (LDR)	Medium Low Density Residential (MLDR)	Medium Density Residential (MDR)
13	Very Low Density Residential	SF_DU	Very Low Density Residential (VLDR)	Agricultural Residential (AR)	Residential Very Low Density (RS)		Low Density Residential (LDR)	Very Low Density Residential (VLDR), Low Density Residential (LDR)
14	Rural Residential	SF_DU						Foothill Residential (FR), Rural Residential (RR)
15	Planned Development	N/A	Special Mixed Use (SMU)					Planned Unit Development (PUD)
16	Public Lands & Open Space	N/A	Primary Open Space (POS), Secondary Open Space (SOS)	Recreational (R), Open Space/Agricultural (OS/AG)	Park (PARK), Open Space (OS)		Park (PARK), Environmental Conservation/Safety (ECS), Resource Management (RM)	Resource Conservation (RC)
17	Water Bodies	N/A					State Water Project (SWP)	
18	Urban Reserve	N/A			Urban Reserve (UR)			
19	Timber	N/A		Timber Production (TP)				Timber Mountain (TM)
20	Public Facilities	N/A	Public Facilities and Services (PFS)	Public Institutional (PI)	School (S), Public (PUB)	Public (P)	Public (PUB)	Public (P)

APPENDIX E

PLANNED PROJECTS

Planned Projects and Specific/Master Plan Areas

Source: BCAG, 2024

APPENDIX F

HOUSING ELEMENT SITES

Housing Element Sites Inventory

Source: BCAG, 2024

APPENDIX G

ACCESSORY DWELLING UNIT
Traffic Analysis Zones (TAZ)

ADU Allocation Area by TAZ

Source: BCAG, 2024

APPENDIX H

Modeling Parameters	Category	2005	2022 (Base Year)	2035 Scenario #1	2035 Scenario #2	2035 Scenario #3	2035 Scenario #4	2045 (Plan Horizon Year)	Data Source
Modeled Population [1]	Socioeconomic and Demographic Data	208,322	197,020	251,863	236,433	236,433	236,433	243,499	Travel Demand Model input
Vehicle Operating Costs ($/mile)	Socioeconomic and Demographic Data	not available	0.214	0.189	0.189	0.189	0.189	0.183	Travel Demand Model input
Average Toll Price ($/mile)	Socioeconomic and Demographic Data	not available	not available	not available	not available	not available	not available	not available	
Average Median Household Income ($/year) [2]	Socioeconomic and Demographic Data	not available	$50,661	$50,558	$50,589	$50,228	$50,146	$50,190	Travel Demand Model input
Total Number of Households [1]	Socioeconomic and Demographic Data	85,478	84,157	103,545	101,118	101,118	101,118	104,131	Travel Demand Model input
Total Number of Jobs [3]	Socioeconomic and Demographic Data	73,400	77,000	89,071	92,400	92,400	92,400	92,887	Travel Demand Model input
Total Developed Acres [4]	Land Use Data	not available	68,659	79,563	79,647	76,619	76,022	77,339	BCAG Land Use Allocation Model
Total Housing Units	Land Use Data	91,668	91,549	111,339	110,000	110,000	110,000	113,277	BCAG Land Use Allocation Model
Total Single-Family Housing Units (du)	Land Use Data	69,779	64,363	81,172	76,984	75,563	75,146	76,938	BCAG Land Use Allocation Model
Total Multi-Family Housing Units (du)	Land Use Data	21,889	27,187	30,167	33,009	34,439	34,854	36,339	BCAG Land Use Allocation Model
Net Residential Density (dwelling units/acre) Regional Total	Land Use Data	not available	1.33	1.40	1.38	1.44	1.45	1.46	BCAG Land Use Allocation Model
Net Residential Density (dwelling units/acre) Urban Center and Corridor	Land Use Data	not available	3.03	2.74	3.12	3.64	3.73	3.88	BCAG Land Use Allocation Model
Net Residential Density (dwelling units/acre) Established	Land Use Data	not available	2.08	2.11	2.12	2.16	2.19	2.19	BCAG Land Use Allocation Model
Net Residential Density (dwelling units/acre) New	Land Use Data	not available	0.48	1.68	1.79	1.47	1.30	1.36	BCAG Land Use Allocation Model
Net Residential Density (dwelling units/acre) Rural	Land Use Data	not available	0.48	0.49	0.48	0.47	0.47	0.48	BCAG Land Use Allocation Model
Net Residential Density (dwelling units/acre) Agricultural, Grazing, and Forestry	Land Use Data	not available	0.36	0.40	0.35	0.35	0.35	0.35	BCAG Land Use Allocation Model
Households Within ½ Mile of a High-Quality Transit Station or Corridor [5]	Land Use Data	not available	0%	4%	23%	24%	24%	24%	BCAG Land Use Allocation Model
Jobs Within ½ Mile of a High-Quality Transit Station or Corridor [5]	Land Use Data	not available	0%	13%	37%	37%	37%	37%	BCAG Land Use Allocation Model
Freeway and General Purpose Lanes - Mixed Flow, auxiliary, etc. (lane miles)	Transportation Network Data	not available	88	89	89	88	88	88	Travel Demand Model input
Freeway Tolled Lanes (lane miles)	Transportation Network Data	not available	0	0	0	0	0	0	Travel Demand Model input
Freeway HOV Lanes (lane miles)	Transportation Network Data	not available	0	0	0	0	0	0	Travel Demand Model input
Arterial/Expressway (lane miles)	Transportation Network Data	not available	763	779	779	778	772	780	Travel Demand Model input
Collector (lane miles)	Transportation Network Data	not available	872	878	878	879	878	880	Travel Demand Model input
Average Transit Headway (minutes)	Transportation Network Data	not available	55.8	51.8	46.8	46.8	35.9	35.9	Travel Demand Model input
Annual Transit Vehicle Revenue Miles	Transportation Network Data	not available	986,322	1,238,889	1,195,906	1,195,906	1,494,883	1,494,883	Travel Demand Model input
Annual Transit Vehicle Revenue Hours	Transportation Network Data	not available	66,064	82,981	80,102	80,102	100,128	100,128	Travel Demand Model input
Bike and Pedestrian Lane (Class I, II, & IV) Miles	Transportation Network Data	not available	109	166	166	181	197	201	Travel Demand Model input
Household Vehicle Ownership	Plan Performance Indicators	not available	1.7	1.66	1.64	1.62	1.58	1.58	Travel Demand Model output
Average Auto Trip Length (miles)[6]	Plan Performance Indicators	not available	7.13	7.76	7.21	7.22	7.24	7.29	Travel Demand Model output
Average Auto Travel Time (minutes)[6]	Plan Performance Indicators	not available	10.47	11.37	10.67	10.55	10.54	10.59	Travel Demand Model output
Percent Passenger Travel Model Share	Mode Share (%)								Travel Demand Model output
Auto	Mode Share (%)	not available	91.66%	89.32%	89.51%	89.20%	87.63%	87.36%	Travel Demand Model output
SOV	Mode Share (%)	not available	48.26%	47.85%	46.25%	45.93%	44.97%	44.78%	Travel Demand Model output
HOV	Mode Share (%)	not available	43.40%	41.48%	43.26%	43.27%	42.66%	42.58%	Travel Demand Model output
All Other (transit & non-motorized)	Mode Share (%)	not available	8.34%	10.68%	10.49%	10.80%	12.37%	12.64%	Travel Demand Model output
Public Transit (Fixed Route Bus)	Mode Share (%)	not available	1.71%	3.92%	3.40%	3.53%	4.71%	4.85%	Travel Demand Model output
Non-Motorized (Bike and Walk)	Mode Share (%)	not available	6.35%	6.45%	6.80%	6.98%	7.38%	7.51%	Travel Demand Model output
Other (i.e. School Bus)	Mode Share (%)	not available	0.27%	0.30%	0.29%	0.28%	0.28%	0.28%	Travel Demand Model output
Transit Ridership (daily trips) [7]	Mode Share (%)	not available	3,513	5,424	4,662	4,806	11,127	11,694	Travel Demand Model output
Total VMT per weekday (all vehicle class) (miles) [8]	VMT Data	4,728	4,621	5,777	5,236	5,198	5,095	5,234	Travel Demand Model output
Total SB375 VMT per weekday for passenger vehicles (CARB vehicle classes LDA, LDT1, LDT2, and MDV)	VMT Data	3,982	3,858	4,945	4,473	4,440	4,350	4,468	Travel Demand Model output
Total II + IX/XI VMT per weekday (all vehicle classes) (miles)	VMT Data	4,573	4,533	5,668	5,127	5,089	4,987	5,110	Travel Demand Model output
Total XX VMT per weekday (all vehicle classes) (miles)	VMT Data	155	87	108	108	108	108	125	Travel Demand Model output

SB 375 VMT per capita	VMT Data	19.11	19.58	19.63	18.92	18.78	18.40	18.35	Calculated: SB375 VMT / population
Total CO_2 emissions per weekday (all vehicle class) (tons/day) [9]	GHG Emissions Data	2,281	2,401	2,092	2,144	2,150	2,012	1,988	EMFAC model output
Total SB375 CO_2 emissions per weekday for passenger vehicles (CARB vehicle classes LDA, LDT1, LDT2, and MDV) (tons/day)	GHG Emissions Data	1,921	1,772	2,205	2,000	1,983	1,941	1,989	EMFAC model output
Total II + IX/XI CO_2 emissions per weekday (all vehicles) (tons/day)	GHG Emissions Data	2,207	2,356	2,049	2,101	2,108	1,969	1,940	EMFAC model output
Total XX CO_2 emissions per weekday (all vehicles) (tons/day)	GHG Emissions Data	75	45	43	43	43	43	47	EMFAC model output
SB 375 CO_2 per capita (lbs./day)	GHG Emissions Data	18.45	17.99	17.51	16.91	16.78	16.42	16.34	Calculated: (II + IX/XI CO_2) / population / 2000 lbs./ton
SB 375 CO_2 per capita reduction from 2005 (on-model)		not available	-2.48%	-5.07%	-8.30%	-9.05%	-10.99%	-11.43%	Calculated
EMFAC Adjustment Factor [10]	GHG Emissions Data	not available	3.81%	4.81%	4.81%	4.81%	4.81%	not available	CARB Methodology for Estimating CO_2 Adjustment
RTP/SCS Off-Model Adjustment #1 - Long-Term Induced VMT	Off-Model CO2 Emissions Reductions (%)	not available	not available	0.25%	0.25%	0.14%	0.03%	not available	Off-Model Calculation
RTP/SCS Off-Model Adjustment #2 - Telecommute (Exogenous)	Off-Model CO2 Emissions Reductions (%)	not available	not available	-0.33%	-0.33%	-0.33%	-0.33%	not available	Off-Model Calculation
RTP/SCS Off-Model Adjustment #3 - Telemedicine (Exogenous)	Off-Model CO2 Emissions Reductions (%)	not available	not available	-0.01%	-0.01%	-0.01%	-0.01%	not available	Off-Model Calculation
RTP/SCS Off-Model Adjustment #4 - Workplace EV Charger Incentive Program (Strategy)	Off-Model CO2 Emissions Reductions (%)	not available	not available	not available	not available	not available	-0.09%	not available	Off-Model Calculation
RTP/SCS Off-Model Adjustment #5 - E-Bike Incentive Program (Strategy)	Off-Model CO2 Emissions Reductions (%)	not available	not available	not available	not available	not available	-0.02%	not available	Off-Model Calculation
SB 375 CO_2 per capita reduction from 2005 (total)	GHG Emissions Data	not available	**1.33%**	**-0.35%**	**-3.58%**	**-4.44%**	**-6.59%**	**-11.43%**	Calculated

Notes:

[1] 2005: State of California, Department of Finance, E-5 Population and Housing Estimates for Cities, Counties, and the State, 2001-2010, with 2000 Benchmark. Sacramento, California, May 2010. 2022: State of California, Department of Finance, E-5 Population and Housing Estimates for Cities,

[2] Average based on aggregate households by income range by TAZ not individual households

[3] 2005 and 2022 data sources: California Employment Development Department, Industry Employment & Labor Force - by Annual Average, March 2021 Benchmark, for Butte County (Chico MSA)

[4] Calculation based on dwelling units an acre (residential) and floor area ratio (non-residential) for each unit allocated by model classification by year.

[5] Calculation of jobs and housing units using land use allocation model and GIS to capture those units/jobs. High quality transit stations and corridors have been identified in BCAG's *2021 Transit and Non-Motorized Plan, B-Line Routing Study* , and *North Valley Passenger Rail Strategic Plan* and

[6] Compared to the base year 2022, the years 2035 and 2045 show a shift from auto modes to active transportation modes, including an increase in the share of transit trips, as well as bike and walk trips. However, the auto trips being shifted are primarily shorter trips that can be replaced with active

[7] Transit Ridership based on total person trips by purpose multiplied by transit mode share by purpose

[8] IX-XI VMT and CO2 were "split" at MPO boundary, per agreement with SACOG.

[9] CO2 emissions were prepared in EMFAC 2014 for the II + IX/XI row only. Total and XX rows are estimated based on the ratio of VMT to CO_2 for each analysis year

[10] 2022 EMFAC Adjustment Factor based on year 2020