

***Technical Methodology to Estimate Greenhouse Gas  
Emissions for the 2024-2045 RTP/SCS from the  
Butte County Association of Governments***



***September 2023***

## **INTRODUCTION**

### **Purpose**

As required by the Sustainable Communities and Climate Protection Act of 2008, and in accordance with Government Code 65080(b)(2)(J)(i), BCAG has prepared this document describing the technical methodology it will use in estimating greenhouse gas emissions from its 2024 Regional Transportation Plan (RTP) and (SCS) Sustainable Communities Strategy. This is intended to be a working document as BCAG, in coordination with the California Air Resources Board (ARB), navigates the development and final acceptance of the 2024 RTP/SCS quantification of greenhouse gas emissions.

### **Applicable Targets**

In 2011, ARB set GHG targets for the BCAG region from passenger vehicles as a 1% increase from 2005 emissions levels by 2020 and a 1% increase from 2005 emissions levels by 2035. BCAG's 2012 RTP/SCS achieved a 2% reduction in per capita GHG emissions for the years 2020 and 2035. Subsequently, BCAG's 2016 RTP/SCS achieved a 6% reduction in per capita GHG emissions for the year 2020 and 7% reduction for 2035.

In 2018, ARB updated the BCAG targets as a 6% decrease from 2005 emissions levels by 2020 and 7% decrease from 2005 emissions levels by 2035. BCAG's 2020 RTP/SCS demonstrated a 14% reduction in per capita GHG emissions for the year 2020 and an 8% reduction for 2035. However, the 2020 RTP/SCS did not receive final approval from ARB. These targets apply to the BCAG region for passenger vehicle emissions, and not to individual cities or sub-regions. The metric used for reporting will be GHG emissions per capita.

### **Analysis Years**

The following table includes the proposed analysis years for BCAG's 2024 RTP/SCS.

Year	Purpose
2005*	Base Year for SB 375 GHG emission reduction Target Setting
2022	Base Year for BCAG 2024 RTP/SCS
2035	SB 375 GHG Emission Reduction Target
2045	BCAG 2024 RTP/SCS Horizon Year

\*Note – 2005 baseline information carried over from 2020 RTP/SCS

### **Schedule**

The schedule for the 2024 RTP/SCS, including estimates for the public outreach process, is shown in Attachment A.

## **OVERVIEW OF EXISTING CONDITIONS**

Since the adoption of the last RTP/SCS in December of 2020, the BCAG region has seen a significant loss in population following the 2018 Camp Fire, which has been exacerbated by the 2020 North Complex fire and the COVID-19 Pandemic. In late 2020, the region experienced a second significant wildfire with the 2020 North Complex Fire which destroyed ~1,500 housing units in the unincorporated foothills of eastern Butte County. The COVID-19 Pandemic further disrupted the region's population with the closure of in-person classes at Chico State University and Butte Community College. Chico State University enrollment fell from over 16,000 full-time students in 2019 to less than 13,000 in 2022, a 20% decrease. Overall, the region's population declined from 226,000 in 2018 to a low of 202,000 in 2022. Despite this loss in population, housing growth has remained strong since 2019 in the City of Chico and Town of Paradise with over 700 units a year being produced in each. The ratio of multi-family development has also increased to 44% from 2018-2022.

The decline in transit ridership was worsened with the COVID-19 pandemic but since has been slowly recovering. Recovery from the Camp Fire has been slower than initially anticipated and the updated growth forecasts are reflective of this. The loss of an additional 1,500 housing units associated with the 2020 North Complex fire has added to the regional housing shortage. Work from home increased with the COVID-19 pandemic and seems to have tapered off but remains at greater levels than before.

### **Regional and Local Planning Context**

A summary of recent regional and local land use and transportation planning activities are included below.

- SCS Progress Report – To better inform the development of the 2024 RTP/SCS, BCAG prepared an [SCS Progress Report](#)<sup>1</sup> which looked at several indicators for objectives included in the 2020 RTP/SCS, the progress made to date, and related trends over the past 4 years.
- [Transit and Non-Motorized Plan](#)<sup>2</sup> and [B-Line Routing Study](#)<sup>3</sup> – Following the Camp Fire, BCAG prepared an update to the Transit and Non-Motorized Plan to better identify the needs, following the impacts from the fire, of transit, bike, and pedestrian modes of travel. The B-Line Routing Study was completed in July 2023 and provides detailed changes related to transit service to be implemented over the next 10 years.

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<sup>1</sup> *Sustainable Communities Strategy Progress Report*, Butte County Association of Governments, July 2023 - <http://www.bcag.org/documents/planning/RTP%20SCS/2024%20RTP%20SCS%20Update/BCAG-2022-23-SCS-Progress-Report-final.pdf>

<sup>2</sup> *2021 Transit and Non-Motorized Plan*, Butte County Association of Governments, April 2021 - <http://www.bcag.org/documents/Camp%20Fire/Post-Camp-Fire-Study-Appendix-B.pdf>

<sup>3</sup> *B-Line Routing Study*, Butte County Association of Governments, July 2023 - <http://www.blinetransit.com/documents/Routing%20Study/B-Line-Routing-Study-Final-COMPRESSED-NO-APPENDICES.pdf>

- North Valley Passenger Rail Strategic Plan – BCAG is developing a strategic plan to study expanding passenger rail service northward from the Natomas area in Sacramento to the City of Chico in Butte County, with stops in Plumas Lake, Marysville-Yuba City and Gridley. This service would connect north state residents with the rest of the state rail system including the Early Operating Segment of California High Speed Rail in Merced.
- [Regional Travel Survey](#)<sup>4</sup> – The report was developed to inform the development of the 2024 RTP/SCS update, following the impacts of the 2020 North Complex Fire and COVID-19 Pandemic. This report combines demographic and anonymized cellular location data along with survey data from the community and local employers.
- REAP 2.0 – BCAG is working with the local jurisdictions and the California Department of Housing and Community Development to implement projects for the Regional Early Action Planning (REAP) grants for 2021. The funding will be used to reduce VMT, accelerate infill housing, and affirmatively further fair housing in all six of BCAG’s member jurisdictions.
- Local Planning
  - General Plan Updates – The County of Butte recently completed a minor update of the general plan which included the new Upper Ridge Community Plan in Magalia. The City of Oroville has initiated an update of the General Plan which is expected to be completed over the next several years.
  - Annexations - Several areas of existing development adjacent and within the cities of Oroville and Chico have been annexed out of the County.
  - Housing Elements – Local jurisdictions are currently in the process of finalizing their 6<sup>th</sup> cycle housing elements.
  - Specific Plans – The City of Chico is preparing the Barber Yard Specific Plan for a proposed mixed-use development at the site of the former Diamond Match Company location within the city. The Valley’s Edge Specific Plan, prepared in 2022, will be placed on the ballot for public approval later in 2023.
  - ADU’s – Between 2019 and 2022 the region has issued 147 certificates of occupancy for accessory dwelling units, with 100+ of these units in the City of Chico.
  - Multi-Family Residential Development - Multi-family and affordable housing development has increased significantly in the past few years, especially in the Chico and Oroville areas.
  - Wildfire Recovery Efforts - The Town of Paradise has continued with its rebuilding efforts following the Camp Fire in 2018. They are currently seeing ~700 units of new housing per year over the past several years

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<sup>4</sup> *Butte County Regional Travel Survey*, Butte County Association of Governments, June 2023 - [http://www.bcag.org/documents/planning/RTP%20SCS/2024%20RTP%20SCS%20Update/BCAG\\_Travel\\_Survey\\_Report\\_Final\\_June\\_2023.pdf](http://www.bcag.org/documents/planning/RTP%20SCS/2024%20RTP%20SCS%20Update/BCAG_Travel_Survey_Report_Final_June_2023.pdf)

and expect this trend to continue. The town is also exploring sewer service to the downtown and core areas which would allow increased densities.

### Projected Revenues

Revenue estimates for the 2024 RTP/SCS update are under development. An early review of the data indicates the following:

- Many of the region's revenues are addressing a backlog of safety and operational needs. Caltrans will continue to be a major partner in addressing operations and maintenance of the state highway system in Butte County.
- Bicycle and pedestrian projects are anticipated to maintain at a higher level than previous RTPs, as the area looks to utilize regional funds to leverage grant funding opportunities. The region has a history of success with the state Active Transportation Program.
- Capacity increasing projects are not projected to significantly increase in the outer years of the RTP. Funds which typically contribute to capacity increasing types of projects are expected to continue to decline as the main revenue source (gas tax) is not keeping pace with VMT.
- BCAG anticipates pursuing increased mass-transit investments including passenger rail investments. This would be consistent with Governor Newsom's executive order to reduce greenhouse gas emissions and the direction by CalSTA with the Climate Action Plan for Transportation Infrastructure (CAPTI).

### CARB Recommendations

After completing the technical review of BCAG's 2020 RTP/SCS, CARB provided several recommendations for BCAG's consideration in developing the 2024 RTP/SCS.

- Consider how planning assumptions and policy adjustments could best address the population and transportation impacts resulting from the 2018 Camp Fire.
- Planning assumptions and policy adjustments should respond to observed data.
- RTP/SCS investments should support the plan's mode shift strategies.
- Forecasted RTP/SCS travel trends should explain how the plan achieves GHG/VMT reductions.

BCAG will be working to address each of these recommendations with the 2024 RTP/SCS. A consultant has been obtained to assist staff with the planning process and add additional expertise with identifying the appropriate policy and implementation actions. In addition, BCAG and the consultant completed a Regional Travel Survey in June 2023 to help inform this process.

## **REGIONAL GROWTH FORECASTS**

In March 2023, BCAG prepared the [Long-Term Regional Growth Forecasts \(2022-2045\)](#)<sup>5</sup>. The forecasts are an update of those developed for the 2021 Post Camp Fire Study.

Forecasts	2020 RTP (Year 2035)	2024 RTP (Year 2035)
Population	258,113	241,939
Household Population*	251,863	236,443
Households	103,545	101,118
Persons Per Household	2.43	2.33
Jobs	89,071	92,400
Jobs to Housing Unit Ratio	0.80	0.84

\*Note: For the purpose of modeling and meeting SB 375 targets, BCAG will be excluding group quarters from the population, as requested by ARB. CA Dept. of Finance estimates were utilized in determining the group quarters population for each analysis year.

In comparison to the regional forecast prepared by BCAG in 2019 for the 2020 RTP/SCS, the overall base year rates are down due to the loss of population following the 2018 Camp Fire and 2020 North Complex fires. In addition, the distribution of housing will be changed for the long-term. With the extensive loss of housing in the Paradise and Magalia areas, and the shift in population focused to Chico, the regional share of housing growth in Chico will increase compared with the 2020 RTP/SCS. The Town of Paradise will see a period of elevated growth in the near term, and then begin to trend downward toward pre-fire growth rates by 2035.

As requested by ARB, BCAG has removed group quarters from the overall regional population totals and developed a household population estimate for calculating the CO2 per capita metric. Household population estimates will be prepared for all future analysis years by applying the base year (2022) group quarters rate from the Department of Finance. The year 2005 rates were also pulled from existing Department of Finance data.

The regional growth forecasts provide the control totals for use in BCAG's regional land use allocation model. Each jurisdiction receives an allocation of population and housing for each analysis year. Jobs are controlled at the regional level and have some flexibility when being allocated to jurisdictions. Typically, jobs are distributed based on the existing ratio of specific job segments to population.

## **QUANTIFYING STRATEGIES**

For the 2024 RTP/SCS, BCAG will be utilizing the same strategies included in the previous SCS which focus on land use, housing, and alternative modes of transportation (transit, bike, and walk). In addition, BCAG will be exploring additional strategies such as micro-mobility, micro-transit, parking management, and employer-

<sup>5</sup> *Long-Term Regional Growth Forecasts 2022-2045*, Butte County Association of Governments, March 2023, [http://www.bcacg.org/documents/demographics/pop\\_emp\\_projections/Growth\\_Forecasts\\_2022-2045\\_Draft.pdf](http://www.bcacg.org/documents/demographics/pop_emp_projections/Growth_Forecasts_2022-2045_Draft.pdf)

based trip reduction strategies focused around telecommuting and increased access to remote work.

The table below contains the preliminary strategies and quantification methods which will be reviewed as part of the 2024 RTP/SCS development process. Any strategies identified as part of scenario development, and noted as off-model, will include the specific assumptions and methods used (Attachment C), once approved by ARB.

2024 RTP/SCS Strategy - Preliminary	Quantification Method
<b>Land Use &amp; Housing</b> <ul style="list-style-type: none"> <li>redistribute future housing and jobs among growth areas to increase diversity, density, and accessibility.</li> <li>improve jobs-housing balance within urban areas</li> </ul>	Travel Demand Model
<b>Transit</b> <ul style="list-style-type: none"> <li>increase fixed-route service in high demand areas</li> <li>replace fixed-route service in low demand areas with micro-transit</li> <li>reduced fares</li> </ul>	Travel Demand Model
<b>Shuttles</b> <ul style="list-style-type: none"> <li>increase availability of student transit/shuttle service</li> <li>implement shuttle service in northwest Chico to serve employees, patients, and visitors of area medical facilities.</li> <li>implement commuter shuttle serving Oroville Airport from the Oroville Transit Center and other key stops in Oroville.</li> </ul>	Travel Demand Model / Off-Model
<b>Active Transportation</b> <ul style="list-style-type: none"> <li>bike and pedestrian network improvements</li> </ul>	Travel Demand Model / Off-Model
<b>Micro-mobility</b> <ul style="list-style-type: none"> <li>bike and e-scooter share systems</li> </ul>	Off-Model
<b>Parking Management</b> <ul style="list-style-type: none"> <li>downtown, university, and community college parking pricing</li> </ul>	Off-Model
<b>Telecommuting/Remote Work</b> <ul style="list-style-type: none"> <li>telecommuting, telemedicine, increased access to remote work</li> </ul>	Off-Model

### Interregional Travel

For the purpose of preparing the GHG emissions analysis for 2024 RTP/SCS, BCAG will subtract all emissions from through trips (X-X trips). In addition, the portion of VMT from trips that either begin or end within the region but travel to/from neighboring regions (X-I, I-X trips) will be included for all portions of the trip within the BCAG region, this is consistent with the method used in preparing BCAG’s recommendation to ARB

for targets which were approved in 2010 and those applied to the 2012 RTP/SCS, as well as the method used for the 2016 and 2020 RTP/SCS and updated targets approved by ARB in 2018.

The percentage of VMT by through trip type (X-X) will be calculated for the 2035 target year.

Interregional trip distributions and purpose determinations will utilize data from the California household travel survey, Location-based Services (LBS)/Connected Vehicles (CV), and the California statewide travel model.

## EMFAC

BCAG will utilize ARB's 2014 emissions factor model (EMFAC), as it did with the 2020 RTP/SCS. EMFAC will be used to calculate the carbon dioxide (CO<sub>2</sub>) emissions output based on the provided VMT and speed bin classification from the travel model. BCAG utilizes the annual option for CO<sub>2</sub> output as suggested by the 2010 Regional Targets Advisory Committee report.

Once all vehicle trips are processed in EMFAC, BCAG extracts the total VMT and CO<sub>2</sub> emissions for LDA, LDT1, LDT2, and MDV vehicle types. This ensures that only passenger vehicle (cars and light trucks) types are included in the emissions analysis.

BCAG expects to apply the prescribed adjustment included in *Methodology to Calculate CO<sub>2</sub> Adjustment to EMFAC Output for SB 375*, provided by ARB, as modified by BCAG for the 2020 RTP/SCS (Attachment B). This will be updated to reflect updated information from the 2024 RTP/SCS.

## **LAND USE AND TRAVEL DEMAND MODELING**

BCAG will be utilizing a land use allocation model and a travel demand forecasting model in preparing the 2024 RTP/SCS.

### Land Use Allocation Model

In preparing the 2024 RTP/SCS, the land use allocation model base year will be updated to 2022, to coincide with the latest validated travel model and existing land use datasets. Land use allocations will then be developed for the years 2035 and 2045. The forecasted allocation years of 2035 and 2045 will be based on a preferred scenario identified through a public process.

BCAG is currently in the process of transitioning the model from UPlan to Community-Viz software platform. In addition, land use assumptions are being updated to reflect changes to local land use plans and existing uses.



## Travel Demand Model

The BCAG Regional Travel Demand Model is a traditional four-step model and is used to forecast travel activity based on inputs of the forecasted allocation of housing and non-residential land uses from the land use allocation model and forecasts of the regional transportation network. Inputs will be prepared for the model base year (2022), the GHG target year of 2035, and the 2024 RTP horizon year of 2045.

The model is currently being updated for the 2024 RTP/SCS. Revisions to the model include the following:

### New Features

- Traffic Analysis Zone (TAZ) System: Add more zonal detail in Chico and Oroville areas to reflect recent land use development projects.
- Trip Generation: Update to reflect post-pandemic trip rates and add new rate for on-campus college housing.

### Updated Features

- Trip Distribution: Modify friction factors to better reflect shorter post-pandemic trip lengths.
- Interregional Travel: Re-estimate trip purpose splits for internal-external and external-internal travel.
- Through Travel: Values for trips traveling through the region will be updated for passenger vehicles and trucks.
- Multimodal Network: Update network to match new TAZ level of detail and modifications since last calibration. Transit network update to reflect 2022 service.
- Travel Cost: Update auto operating costs per ARB recommendations.
- Mode Choice: Update built environment inputs.
- Land Use Inputs: Update base year 2018 data to represent base year 2022. Update future forecasts to account for the Camp Fire, North Complex Fire, and revised housing, student, and job totals.
- Transportation Projects: The transportation project list was updated to reflect the currently planned and programmed projects.

As discussed with ARB, the previous induced vehicle travel tests confirmed the model's sensitivity to short-term effects. To represent long-term induced vehicle travel effects, the travel model documentation will explain the need for separate land use forecasts for no build and build scenarios or use of an off-model adjustment. The off-model adjustments will include a potential hybrid method for using the model and research-based elasticities or a calculation tool such as the NCST California Induced Travel Calculator. Attachment D includes a placeholder for the induced travel demand off-model adjustment, when approved by ARB.

## **EXOGENOUS VARIABLES**

Included in the table below are a listing of independent (exogenous) variables to be utilized in the model for scenario analysis.

Category	Variable Specification	Assumption (Year 2035)	Source
Demographics	Population, employment, and housing	Household Population = 236,443 Employment = 92,400 Households = 101,118	BCAG Long-Term Regional Growth Forecasts 2022-2045
Auto operating costs	Fuel and non-fuel related costs (maintenance, repair, and tire wear)	18.9 cents/mile	California Air Resources Board spreadsheet tool, 2020
Vehicle fleet efficiency	EMFAC 2014 model	36.01 MPG	EMFAC 2014
Household income	Distribution	Baseline (2022)	BCAG Regional Travel Demand Model
Commercial vehicle activity	Share of commercial vehicle VMT	To-be-determined upon completion of validation and calibration process (Fall 2023)	BCAG Regional Travel Demand Model
Interregional travel	Share of external interregional VMT	To-be-determined upon completion of validation and calibration process (Fall 2023)	BCAG Regional Travel Demand Model

As described earlier in the document, population, employment, and housing information was developed as part of BCAG's Long-Term Regional Growth Forecasts (2022-2045). At the request of ARB staff, group quarters populations have been removed for modeling purposes and are based on California Department of Finance (DOF) estimates for the year 2022 and carried forward at the same percentage for all subsequent analysis years.

Assumptions and data sources associated with auto operating costs, household income, commercial vehicle activity, and interregional travel will be detailed in the travel model documentation, once available (expected Fall 2023). Vehicle fleet efficiency for the region is presented as the EMFAC 2014 default.

## **PRIOR RTP/SCS ANALYSIS**

BCAG intends to analyze the 2022 RTP/SCS land use and transportation network as an additional scenario. As such, the exogenous variables listed above will be utilized as part of that analysis, except for the demographic category. It should be noted, BCAG is not subject to the incremental progress analysis included in ARB's (November 2019) evaluation guidelines, based on CARB staff recommendations outlined in the *Updated Final Staff Report: Proposed Update to the SB 375 Greenhouse Gas Emission Reduction Targets*.

## **UPDATES TO THIS DOCUMENT**

As previously stated, this is intended to be a working document as BCAG and CARB coordinate on the technical aspects of quantifying the 2024 RTP/SCS.

## ATTACHMENT A

### BUTTE COUNTY ASSOCIATION OF GOVERNMENTS - 2024 SUSTAINABLE COMMUNITIES STRATEGY (SCS)

2024 SCS Work Plan	2022												2023												2024												2025				
	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M
<b>Regional Target Setting</b>																																									
Coordinate with ARB Staff to Revise Targets as Necessary																																									
<b>SCS Progress Report</b>																																									
Prepare and Present to BCAG Committees and Board																																									
<b>BCAG Regional Growth Forecasts</b>																																									
Prepare Regional Forecasts																																									
Public Meeting (BCAG Board)																																									
<b>Technical Methodology</b>																																									
Prepare Draft Report																																									
Submit to CARB for Review																																									
Revise as Needed																																									
<b>Prepare Sustainable Communities Strategy</b>																																									
Gather/Develop Required Data to Consider																																									
Develop Strategies & Scenarios (Land Use, Housing, and Transportation)																																									
Identify Policies and Implementation Actions for Preferred Scenario																																									
Quantify Results																																									
<b>Finalize Sustainable Communities Strategy</b>																																									
Draft Document																																									
Prepare Final SCS																																									
Submit Final SCS to CARB																																									
<b>Public Outreach</b>																																									
SCS Public Outreach and Coordination																																									

#### SCS Related Tasks

<b>Modeling Updates</b>																																									
Land Use Allocation Model Improvements																																									
Update Traffic Counts																																									
Update GIS Datasets (Land Use, Road Network, Growth Areas)																																									
Update Travel Model																																									
Prepare Land Use & Transportation Scenarios																																									

Date: August 2023



Board of Director's Meetings



Public Workshop / Hearing



Anticipated Adoption of 2024 RTP/SCS (Public Hearing)

## ATTACHMENT B

### **BCAG Modification of ARB EMFAC Methodology to Calculate CO2 Adjustment to EMFAC Output for SB 375 Target Demonstrations**

In 2015, ARB developed a methodology to assist metropolitan planning organizations (MPOs), such as BCAG, in adjusting the calculation of percent reduction in per capita CO2 emissions used to meet established targets when using EMFAC2011 or EMFAC2014 for their second round RTP/SCS. ARB's methodology is intended to allow for the direct comparison of reductions achieved in the first rounds of RTP/SCSs to those attained in the second and third rounds while holding each MPO to the same level of stringency in achieving the target.

A key assumption of the ARB methodology is that the 2005 baseline travel estimates developed with the first round RTP/SCS travel demand model will be identical to those produced with the updated models used to estimate travel with the second/third round RTP/SCS. However, in the case of BCAG's second round updated travel model, changes to land use data and the trip generation sub-model caused the model to generate greater estimates of per capita travel for the base year and the 2005 back-cast years in comparison to the first round RTP/SCS model. The changes in base year per capita VMT then effect the forecast years since future land uses are added to the base to develop the forecasts.

To address this change in the first and second round 2005 baseline outputs, BCAG modified the ARB methodology to incorporate an adjustment which compensates for this change in preparing the 2018 RTP/SCS. This modification is in line with the intent of the ARB methodology which seeks to neutralize the changes between the various versions of EMFAC while allowing for an "apples to apples" comparison of the first, second, and third round of RTP/SCSs. The modification was approved, along with the 2018 RTP/SCS, by ARB in 2019 as part of the SCS review.

Upon consultation with ARB in preparing the 2020 RTP/SCS, BCAG has not developed a specific "backcast" (2005), and instead will be utilizing the information from the past RTP/SCS. As such, and in accordance with the ARB's Final Sustainable Communities Strategy Program and Evaluation Guidelines (November 2019), BCAG has applied the same methodology and adjustment factors (Year 2020 = 3.81% and Year 2035 = 4.81%). It should be noted that due to the shift in removing group quarters from the population used in calculating the Per Capita CO2 (SB 375 metric) reductions, BCAG, in consultation with ARB, has normalized the population, VMT, and GHG data for the 2012 and 2020 RTPs prior to applying the adjustment.

The following table demonstrates the application of the BCAG Modified Adjustment Factor for EMFAC 2007 to EMFAC 2014, as approved for ARB for the 2012 RTP/SCS, with normalized data from the 2020 RTP/SCS.

## ATTACHMENT B

Table 1. BCAG Modified Adjustment Factor for EMFAC 2007 to EMFAC 2014		
Determine Year 2005 Adjustment Factor	Enter 2012 SCS Total VMT for Year 2005 ->	4,090,094
	Enter 2016/2020 SCS Total VMT for Year 2005 ->	4,573,188
	Adjustment Factor (2020 SCS VMT / 2012 SCS VMT)	1.118113178
2012 SCS (EMFAC 2007)	Year 2005 CO2 Per Capita (lbs.day) ->	16.50
	Year 2020 CO2 Per Capita (lbs.day) ->	16.17
	Year 2035 CO2 Per Capita (lbs.day) ->	16.18
Apply Adjustment Factor to 2012 SCS (EMFAC 2007)	Adjusted Year 2005 CO2 Per Capita (lbs.day) ->	18.45
	Adjusted Year 2020 CO2 Per Capita (lbs.day) ->	18.08
	Adjusted Year 2035 CO2 Per Capita (lbs.day) ->	18.09
Calculate Reductions in CO2 Per Capita	Year 2020 CO2 Per Capita Percent Reductions ->	-1.98%
	Year 2035 CO2 Per Capita Percent Reductions ->	-1.91%
2012 SCS (EMFAC 2014)	Year 2020 CO2 Per Capita (lbs.day) ->	15.54
	Year 2035 CO2 Per Capita (lbs.day) ->	15.39
Apply Adjustment Factor to 2012 SCS (EMFAC 2014)	Adjusted Year 2020 CO2 Per Capita (lbs.day) ->	17.38
	Adjusted Year 2035 CO2 Per Capita (lbs.day) ->	17.21
Calculate Reductions in CO2 Per Capita	Year 2020 CO2 Per Capita Percent Reductions ->	-5.80%
	Year 2035 CO2 Per Capita Percent Reductions ->	-6.72%
Determine EMFAC 2014 Adjustment %	Year 2020 EMFAC 2014 Adjustment ->	3.81%
	Year 2035 EMFAC 2014 Adjustment ->	4.81%
2020 SCS (EMFAC 2014)	Year 2020 CO2 Per Capita (lbs.day) ->	15.21
	Year 2035 CO2 Per Capita (lbs.day) ->	16.08
Calculate Reductions in CO2 Per Capita	Year 2020 CO2 Per Capita Percent Reductions ->	-17.53%
	Year 2035 CO2 Per Capita Percent Reductions ->	-12.82%
Apply EMFAC Adjustment	Adjusted Year 2020 EMFAC 2014 ->	-13.72%
	Adjusted Year 2035 EMFAC 2014 ->	-8.01%

ATTACHMENT C

2024 RTP/SCS Strategies  
Off-Model Adjustments

*(Placeholder)*

ATTACHMENT D

Induced Travel Demand Off-Model Adjustment

*(Placeholder)*