

Attachment 1 - Detailed List of CARB Questions, Concerns, Suggested Remedies, and Comments

SCAG 2024 RTP/SCS SB 375 GHG Emissions August 2023 Draft Technical Methodology (TM)

Topics of significant concern

1. Travel modeling and data

1.1. Auto operating costs

The draft TM notes auto operating costs of 24.276 cents/mile and describes the assumptions for deriving auto operating costs. However, the draft TM does not provide all details on non-fuel related costs, fuel efficiency, and does not indicate whether rebound effects of fuel efficiency are addressed in the calculations.

Additionally, for non-fuel related costs, SCAG used AAA data for non-fuel related costs (building regression model based on available data to predict the future and then calculating annual growth rate and adjusting growth rate to 50% after 2031). It is unclear why the 50% growth rate is used.

For fuel efficiency, the draft TM shows fuel economy for electric vehicles is 130 Miles Per Gallon of Gasoline equivalent (MPGe) based on the U.S. Department of Energy. However, based on EMFAC 2021, the MPGe for PhEV is 111.59 and for ZEV is 87.30.

The draft TM also notes that calculated composite fuel economy is weighted by vehicles miles traveled (VMT). In the draft TM, it is unclear how VMT is being calculated for different fuel types. Please use the fleet mix from the EMFAC ACCII model from 2026 onwards as provided to SCAG in an email dated June 6, 2023.

For the total auto operating cost, the draft TM mentions that AOC is calculated by applying the following formula: $AOC = (FP/FE) + NF\ Cost$. The draft TM needs to clarify how fuel price and fuel efficiency rebound effects are reflected in the formula.

Suggested Remedy: Please revise the draft TM to include all data sources and calculation steps prior to the draft 2024 RTP/SCS public release. Also, the draft TM needs to explain the use of the 50% growth rate and 130MPGe. Further, please use the VMT for different fuel types with an ACCII fleet mix.

Additionally, CARB staff recommends adding a spreadsheet to the final TM or final plan documentation for full transparency and clarity.

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1.2. Estimating impacts of telemedicine and online shopping

In the 2020 SCS evaluation, CARB staff expressed concerns about telemedicine and online shopping as baseline adjustments that were not well supported by local data. The draft TM notes that telemedicine and online shopping are now assumptions in a new sub-model of SCAG’s activity-based travel model rather than a baseline adjustment as applied in the 2020 SCS. CARB staff appreciates this change and model enhancement. However, documentation is still needed to understand what the assumptions are and how they are supported by data. The TM needs to document data sources used for calibrating and validating the telemedicine and online shopping sub-model. Further, it needs to document any assumptions made, the model's sensitivity to these activities, and the impact on GHG emission reduction.

Suggested Remedy: Please revise the draft TM to provide the assumptions used in the model for telemedicine and online shopping and any supporting documentation. Please provide this information to CARB before the draft 2024 RTP/SCS public release.

Additionally, consistent with CARB’s [2019 SCS Program and Evaluation Guidelines](#) (SCS evaluation guidelines) SCAG will need to provide a sensitivity analysis of the model for these variables to CARB as part of the draft 2024 RTP/SCS plan documentation.

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1.3. Baseline adjustments

In the 2020 SCS evaluation, CARB staff expressed concern with baseline adjustments that were not supported by data. In response to this, the draft TM notes that SCAG worked with UC Davis to conduct a survey regarding travel activity patterns before/after the COVID-19 pandemic. The draft TM says that this data will be used as a basis for baseline adjustment and that SCAG will also check other local data for the analysis of baseline adjustment, such as the California Health Interview Survey.

However, the draft TM does not say what baseline adjustments are being considered now that telemedicine and online shopping are no longer baseline adjustments.

Suggested Remedy: Please revise the draft TM to document what baseline adjustments are being used in the modeling and the supporting data from the UC Davis survey. Please provide this information to CARB prior to the draft 2024 RTP/SCS public release.

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1.4. Autonomous vehicles

In the 2020 SCS evaluation, CARB staff recommended that the model incorporate autonomous vehicles as part of the mode choice model of the activity-based model (ABM). The draft TM notes that SCAG plans to develop a new add-on component to the ABM for autonomous vehicles. The TM also notes that SCAG has been working with the University of California, Los Angeles (UCLA) to understand the impact of new mobility technologies and services (e.g., automated vehicle technologies and sharing services) using travel data and demand modeling. However, the TM does not provide any additional detail about the add-on component of the model, the work with UCLA, or whether autonomous vehicles are assumed in the modeling of the 2024 RTP/SCS.

Suggested Remedy: Please revise the draft TM to provide clarity on what assumptions are made about autonomous vehicles in the plan and provide more detail on how the new add-on component works with the model to represent this. Please provide any supporting data, evidence, or documentation for any assumptions made. Please provide this information to CARB before the draft 2024 RTP/SCS public release.

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1.5. Induced travel demand calculations and assumptions

The draft TM says that SCAG will use the NCST California Induced Travel Calculator to estimate the longer-term elasticity and apply it to the lane mileage changes in the SCAG region. In the 2020 SCS, SCAG used the hybrid approach. Per CARB’s SCS

evaluation guidelines, further documentation on the methodology, assumptions, and datasets used for this analysis is needed. This is important because forecasts of VMT and GHG emissions in the 2024 SCS must adequately represent the effects of induced travel from new roadway expansion projects to accurately estimate GHG emission reduction.

In the 2020 SCS evaluation, CARB staff recommended that SCAG continue to explore methods that can analyze the long-term induced travel demands of road expansion more thoroughly in future SCSs, using an integrated land use and travel demand model that captures the change in transportation investments or neighborhood changes (residential and employment locations). In response, the draft TM notes that SCAG will continue to explore studies/research to assess the long-term effect of induced travel and that SCAG has been coordinating with Caltrans on the assessment of elasticities relative to transportation improvement projects. CARB staff acknowledges this progress and recommends that SCAG also continue to explore integrated land use and travel demand models.

Suggested Remedy: Please revise the draft TM to document the steps to quantify induced VMT and how it will be factored into the ultimate GHG quantification. Please work with CARB staff on correcting this before the draft 2024 RTP/SCS is released for public review.

Additionally, as part of the draft 2024 RTP/SCS, SCAG should also provide a comprehensive mapping and tabulated list of all projects that will add lane miles by functional classification with the number of lanes added, specifying lane types such as general purpose, HOV, HOT/Express, tolled, and auxiliary lanes. This information will be needed for CARB to evaluate SCAG's final GHG emission reduction determination.

If CARB cannot evaluate and/or accept (1) the quantification of GHG emission reduction estimates and/or (2) that the region is on track to achieve the GHG emission reduction target with demonstrated progress on implementing the strategies, then CARB will not be able to accept SCAG's final GHG emission reduction determination.

2. Calculations and emissions factors for off-model strategies

In the 2020 SCS evaluation, CARB staff noted concerns about the potential overestimation of GHG emission reductions from some of the off-model strategies. In the evaluation, CARB recommended SCAG provide the detailed VMT and GHG reductions for individual strategies and document its estimation process, assumptions, and current participation rate for each off-model strategy in the 2024 SCS. In the draft TM, the quantification methods provided for the off-model strategies end at the calculation for vehicle miles traveled (VMT) reduction. Although the TM seems to imply that the GHG emission reduction resulting from each strategy will be calculated using the VMT reduction, the final step of the calculation needs to be provided.

Further, the draft TM notes that EMFAC 2014 will be used for emissions factors in all off-model strategies. In accordance with CARB’s SCS evaluation guidelines, SCAG must use the latest EMFAC model with updated emissions factors to estimate GHG emission reductions from off-model strategies. This applies to all off-model strategies, even if they were previously quantified with an older version of EMFAC. Using the latest EMFAC model improves emissions estimation accuracy by reflecting the latest vehicle fleet mix in the region.

Suggested Remedy: Please revise the draft TM to show the complete off-model quantification steps that include the GHG quantification step and use EMFAC2021 emission factors when calculating GHG emission reductions from all off-model strategies in the 2024 SCS. Please work with CARB staff on correcting this before the draft 2024 RTP/SCS is released for public review.

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3. 2024 SCS strategies for per capita GHG emission reduction credit

Per the SCS evaluation guidelines, CARB staff will conduct a series of policy analyses which to evaluate whether the strategies, key actions and investments from the RTP/SCS, and implementation progress support the stated GHG emission reductions in order to determine whether the implemented SCS would achieve the applicable GHG emission reduction targets. However, the precursor to this evaluation is an evaluation and acceptance of the technical methodology and quantification that underpin the SCS’s GHG emission reductions. The SCS evaluation guidelines appendices provide guidance to MPOs on technical issues, model sensitivity tests, and data needs for the technical methodology and SCS.

Additionally, Appendix E of the SCS evaluation guidelines offers detailed information on calculating the benefits of RTP/SCS strategies not captured in the travel demand model. As noted in Appendix E of the SCS evaluation guidelines, MPOs need to provide a description of the off-model strategy and how it would reduce GHG emissions, trip and emissions data needed to quantify GHG emission reductions, the quantification steps and assumptions, and how the MPO plans to track whether the strategy is working. This level of detail is necessary for CARB staff to verify that the associated GHG emission reduction benefits will occur in the appropriate timeframe and are truly additional to GHG emission reductions already quantified through the MPO’s travel demand modeling, or surplus to existing state programs. Please see Appendix E, pages 45-51 for more details on the information CARB staff needs to assess off-model strategies.

In addition, for both on- and off-model components, the guidelines outline that CARB will review whether a region is falling behind on implementation and, if so, are measures being taken to correct course, such as a change to the RTP/SCS strategy and/or the addition of measures to accelerate implementation.

3.1. Electric vehicle strategy

The draft TM describes a quantification methodology to estimate GHG emission reductions for electric vehicle incentives. It is crucial for any EV strategy to appropriately identify GHG credits for ZEV provisions that are above and beyond State and federal regulations and incentives, to account for improved ZEV and PHEV technology and updated projections in ZEV incremental costs above conventional vehicles, and to avoid double-counting between credits provided for infrastructure and vehicle incentives. The SCS evaluation guidelines Appendix E section “Quantifying Greenhouse Gas Emission Reductions from Off-Model Strategies” provides two sample quantification methods for MPOs to estimate GHG emission reductions credit for (a) funding the installation of workplace chargers to charge plug-in hybrid electric vehicles (PHEVs) for the return commute and (b) providing incentives for new ZEV purchases to close the cost differential with conventional vehicles. The latter is being utilized by SCAG in the draft TM to calculate the electric vehicle incentive strategy. The draft TM does not appear to fully reflect the policy and ZEV market changes that have occurred since the prior SCSs were adopted. The quantification methodology should account for the ZEV regulation requirement of increasing sales up to 100% in 2035;¹ other incentive credits including the Federal Inflation Reduction Act (IRA) tax incentives for ZEV up to \$7,500;² and market observations, including CARB technology assessments in ACCII showing Battery Electric Vehicle (BEV) cost declines (staff ISOR Appendix G)³ and cost parity for some vehicle types beginning in 2031. In particular, SCAG indicated that this program will be implemented for six years (2030-2035), but the cost parity will be achieved by 2031.

Suggested Remedy: Please revise the draft TM to reflect changes in ZEV regulations and the ZEV market as described above in the GHG emission quantification method for the ZEV incentive strategy. As such, among other factors, SCAG should consider the following in developing an off-model ZEV incentive strategy and quantification method:

- Existing or currently planned incentives such as the federal IRA tax incentives, California’s Clean Vehicle Rebate Project, and the California Clean Fuel Reward

¹ For more information, see <https://ww2.arb.ca.gov/our-work/programs/advanced-clean-cars-program/advanced-clean-cars-ii>

² For more information, see <https://www.irs.gov/credits-deductions/credits-for-new-clean-vehicles-purchased-in-2023-or-after>

³ For more information, see <https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/accii/appg.pdf>

- Number of ZEV and PHEV required under state and federal regulations
- Cost differential between ZEV and non-ZEV and impending cost parity in 2031
- Emission factor from EMFAC2021

Please work with CARB staff on correcting this before the draft 2024 RTP/SCS is released for public review.

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3.2. Congestion pricing strategy

The draft TM briefly mentions congestion pricing as an on-model strategy. In the 2020 SCS evaluation, CARB staff expressed concern about the ability to implement this strategy by 2035 because it requires state legislation and local support. The 2020 SCS evaluation also noted that CARB expects SCAG to identify further progress on the implementation of pricing strategies in its next SCS in order to continue receiving credit for the full GHG emission reductions estimated in the 2020 SCS. The draft TM notes that SCAG is collaborating with Caltrans, SACOG, and SANDAG to develop a research framework for piloting the effects of integrating mobility payment systems with demand management approaches. This framework is essential, but there is no detailed information about it or the implementation steps and timeline so it is not clear what progress has been made. Beyond this, no additional implementation actions were noted that could bring about congestion pricing. This framework alone is not enough to consider this a strategy for GHG emissions reduction by 2035.

Suggested Remedy: Please revise the draft TM to include more information on the research framework and any additional information that demonstrates progress being made on this strategy. Specifically, CARB staff needs to understand any recent investments, significant actions, or data, beyond planning studies, that help to implement or advance this strategy. Please work with CARB staff on correcting this before the draft 2024 RTP/SCS is released for public review.

Additionally, the draft 2024 RTP/SCS plan needs to provide all data, assumptions, and clear, actionable next steps, milestones, and a timeline that shows what is planned to be implemented by 2035. Because several other SCS strategies rely on revenues from pricing, the draft plan needs to include information about what revenues are assumed by when.

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emission reduction target with demonstrated progress on implementing the strategies, then CARB will not be able to accept SCAG’s final GHG emission reduction determination.

3.3. Mileage-based user fee strategy

The draft TM briefly mentions a mileage-based user fee as an on-model pricing strategy. In the 2020 SCS evaluation, CARB staff expressed concern about the ability to implement this strategy by 2035 because of the state and local action required. The 2020 SCS evaluation also noted that CARB expects SCAG to identify further progress on implementation of pricing strategies in its next SCS in order to continue receiving credit for the full GHG emission reductions assumed in the 2020 SCS. The draft TM notes that SCAG is collaborating with Caltrans, SACOG, and SANDAG to develop a research framework for piloting the effects of integrating mobility payment systems with demand management approaches. This framework is important, but there is no detailed information about it or the implementation timeline so it is not clear what progress has been made. Beyond this, no additional actions were noted that could be implemented to bring about mileage-based user fee pricing by 2035. This framework alone is not enough to consider this a strategy for GHG emissions reduction by 2035.

Additionally, the draft TM describes this strategy as replacing the existing federal and state gas taxes and eventually including a regional road fee on a county basis. For GHG emissions quantification purposes, these two uses of mileage-based pricing – replacing the gas tax and an additional regional road fee- need to be separated.

Finally, a TNC user fee was a component of this strategy in the 2020 SCS. In the 2020 SCS evaluation, CARB suggested SCAG work with local jurisdictions across the region to rapidly implement TNC user fees in order to meet the assumed 2021 implementation timeframe. The draft TM does not mention a TNC user fee or discuss progress made so it is unclear if this is a pricing strategy SCAG is considering in the 2024 RTP/SCS.

Suggested Remedy: Please revise the draft TM to include more information on the research framework and any additional information that demonstrates progress being made on this strategy. Specifically, CARB staff needs to understand any recent investments, significant actions, or data, beyond planning studies, that help to implement or advance this strategy. The draft TM also needs to be revised to clearly distinguish between a revenue-neutral State road pricing strategy and any regional pricing strategy and demonstrate how mileage-based user fees would result in GHG emission reductions. Also, please clarify whether the TNC user fee that was assumed in the 2020 SCS is no longer a strategy or is a component of this strategy (as it is not indicated in the draft TM) and how that impacts the strategy assumptions. Please work

with CARB staff on correcting this before the draft 2024 RTP/SCS is released for public review.

Additionally, the draft 2024 RTP/SCS plan needs to provide all data and assumptions, and actionable next steps, milestones, and a timeline that show what is planned to be implemented by 2035. Because several other SCS strategies rely on revenues from pricing, the draft plan needs to also include information about what revenues are assumed by when.

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3.4. On- and off-model strategies that assume revenues from pricing as the primary funding source for implementation

The draft TM includes on- and off-model strategies that rely on revenues from pricing as the primary funding source to implement the strategy. These strategies include parking deregulation, electric vehicle incentives, co-working, and potentially some on-model strategies including multimodal lanes. However, there is no information about what actions will be undertaken and when those might result in the assumed revenues being available for these strategies. Second, there is no plan, agreement, or mechanism in place to ensure that revenues from pricing are dedicated to these strategies. For these reasons, CARB staff is concerned that any strategies that rely primarily on pricing as the funding source will not be viable strategies for reducing GHG emissions by 2035.

Suggested Remedy: Please revise the draft TM to demonstrate that the pricing revenues will be available by the dates they are needed for each strategy relying on these funds. This should include how much revenue is assumed by when and the implementation timeline of each impacted strategy. Please also modify the draft TM to show alternative revenue sources for the implementation of the impacted strategies. In addition to providing this for off-model strategies, the draft TM also needs to be clear about which on-model strategies rely on pricing as a primary funding source. Please work with CARB staff on correcting these items before the draft 2024 RTP/SCS is released for public review.

Additionally, the draft 2024 RTP/SCS need to include documentation demonstrating these funds will be available for these uses, what agencies are responsible, and how progress will be monitored.

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3.5. Co-working at strategic locations strategy

The draft TM includes an off-model strategy that assumes a VMT reduction from outreach, policy, and financial support of the strategic development of co-working spaces in the region that would offer long-distance commuters in certain industries co-working sites that are closer alternatives to their workplaces. The assumption is that a limited set of co-working space users (20%) will substitute one day a week of fixed location workplace with co-working. The TM states that the goal participation rate of this strategy is 31 regional co-working sites across the region with a combined capacity of 6,900 co-workers. It is unclear how SCAG identified these 31 regional co-working sites, where these sites are located, and if they are the same sites that were identified in the previous plan or if some have been added or removed. CARB staff is concerned about the viability of this strategy, which appears to rely on significant public-private partnerships and \$1 billion from mileage-based user fees and local pricing to build 31 co-working facilities and have this subset of workers change their work locations to these co-working locations by 2035.

Suggested Remedy: Please revise the draft TM to demonstrate that this strategy does not double count emission reductions from the teleworking assumptions in the model. The revised TM should also include the locations of the 31 sites, how the number of co-workers were determined, and how these were identified. Please describe the implementation steps and timeline and how this relates to funding availability for implementation. Please work with CARB staff on correcting or clarifying these items before the draft 2024 RTP/SCS is released for public review.

Additionally, the draft 2024 RTP/SCS needs to include any additional information that demonstrates progress being made on this strategy since the last plan.

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3.6. Mobility hubs strategy

The TM includes a new strategy, mobility hubs, which combines the following strategies: micro transit, car share, and bike share/micro mobility. CARB staff have

several concerns about this strategy. First is that this strategy combines on-model and off-model quantification and that could result in double counting the benefits. The draft TM notes that the bike share component of this strategy is accounted for on-model while car share and microtransit are being quantified off-model. The draft TM is unclear on how SCAG will account for the GHG benefits of the on-model strategy combined with other off-model strategies.

Additionally, there is insufficient information about the mobility hub locations and place types in the draft TM. The draft TM notes that six mobility hub types were designated based on land use characteristics for the 346 prioritized mobility hub locations. While a definition of the six mobility hub types is included in the draft TM, the methodology is insufficient. SCAG needs to provide more detail on how they were created, what quantitative parameters were used to define the various types of mobility hubs, and where they are located throughout the region.

For the carsharing component of the mobility hub strategy, the draft TM notes the participation rate goal for car share is 14% of individuals aged 21 to 40 in each mobility hub identified as having sufficient residential densities (>10 du/acre). But it is not clear if this strategy is applied to mobility hubs (quarter mile by quarter mile grid) or to the entire TAZ, if it contains a mobility hub. It is also unclear if car share is being applied to all mobility hub types. SCAG should clarify whether the region used for quantification of GHG emission reductions associated with car sharing strategy is mobility hubs or TAZs. Next, SCAG should demonstrate how empirical data source cited for using 14% participation rate is reflective of the local conditions. Additionally, in the draft TM, fuel efficiency is applied to the VMT of car share vehicles instead of being applied to GHG emission rates of car share vehicles. As stated in our SCS evaluation guidance, SCAG should apply car share fuel efficiency to the GHG emission rates of car share vehicles in the GHG emission calculation.

Within the mobility hubs strategy, for the micro transit component, the draft TM notes that micro transit service areas would be a 2-mile buffer around 311 Mobility Hubs identified as having Institutional, Equity, and Emerging Urban typologies. It is unclear why just these mobility hubs and types are targeted with this strategy and whether this presents any overlap with the other mobility hub strategies. As per table 13 of SCS guidelines, please clearly describe and document the specific geographic areas of each strategy and demonstrate how these strategies are avoiding double counting of GHG emission reductions.

Lastly, the draft TM does not include any information on the bike share component of the mobility hub strategy. Table 6 of the draft TM does not list bike share as an on-model strategy. It is not clear if the bike share component of this strategy is the same as improved bike infrastructure listed in Table 6. Without this, it is unclear whether this component of the strategy is double counting emissions reductions from the car share or microtransit component of this multimodal strategy and/or from the separate

improved bike infrastructure on-model strategy. As per SCS guidelines, please provide details on bike share on-model strategy and demonstrate how this strategy is avoiding double-counting emission reductions from the other off-model strategies.

Suggested Remedy: Please revise the draft TM to explain how the reductions from the on-model bike share component do not overlap with the off-model components and calculations of car share and microtransit. The draft TM also needs more detail on the location of the mobility hubs by type, the geographic area covered, and how the types of mobility hubs applied to each part of the strategy. The draft TM also needs to be revised to correct the car sharing strategy quantification to demonstrate more efficient cars are assumed in the GHG quantification. Please work with CARB staff on correcting these items before the draft 2024 RTP/SCS is released for public review.

Additionally, the draft 2024 RTP/SCS needs to include any additional information that demonstrates progress being made on this strategy since the last plan.

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3.7. Parking deregulation strategy

The draft TM includes an off-model strategy that assumes VMT reduction from outreach, policy, and financial support for parking deregulation. For this strategy, SCAG will support local jurisdictions in eliminating parking minimums for proposed new multifamily households within half a mile of high-quality transit stops that are not part of Transit Priority Areas (TPAs) between 2030 and 2035.

CARB staff has a few concerns about the viability and quantification of this strategy. First, the draft TM notes that there are 106 jurisdictions with a TPA and assumes all these jurisdictions will have parking deregulation ordinances by 2050, with some much sooner. Because the strategy targets areas well served by transit, outside of TPAs, the draft TM needs to clarify how it accounts for parking deregulation ordinances for transit stops not part of TPAs. Specifically, please clarify how many jurisdictions and multifamily households outside of TPAs are included in this strategy and where they are located.

In this TM, SCAG uses an updated methodology for parking deregulation using assumptions from a newer study, which demonstrates VMT reductions among households in areas with scarce parking by four neighborhood types. These include

urban core, urban district, urban neighborhood, and suburban neighborhood.⁴ The draft TM needs to provide information on the number of HQTAs that are not in TPAs and by place type (urban core, urban district, urban neighborhood, and suburban neighborhood). Please provide more details on the criteria used to define the four place types, based on the study cited.

Finally, the draft TM notes that implementing this strategy could be challenging because of local opposition to removing parking minimums and that even in locations where relaxed parking requirements are implemented, developers may not take full advantage of it. Please adjust the quantification calculation in the draft TM or clarify how the current calculation method has incorporated these risks to avoid overestimating the GHG reduction from this strategy.

Suggested Remedy: Please revise the draft TM to provide more information on the locations being targeted and the place types. Please work with CARB staff on correcting or clarifying the items noted above before the draft 2024 RTP/SCS is released for public review.

Additionally, the draft 2024 RTP/SCS needs to include any additional information that demonstrates progress being made on this strategy since the last plan. Additionally, with the final SCS submittal, to evaluate the reasonableness of this strategy, CARB staff will need to see the new multi-family units assumed by transit area by place type as well as additional documentation that supports the assumption that all new multi-family housing in these high-quality transit areas would likely have reduced parking.

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3.8. Multimodal dedicated lanes strategy

The draft TM notes multimodal dedicated lanes in the City of Los Angeles as an on-model strategy. This was an off-model strategy in the 2020 SCS. The draft TM does not provide detail about the strategy or progress on the implementation of this strategy since the last plan.

Suggested Remedy: Please revise the draft TM to include the assumed implementation timing and funding source. Please work with CARB staff on providing this information before the draft 2024 RTP/SCS is released for public review.

⁴ Currans, K.M., Abou-Zeid, G., McCahill, C., et al, 2022. "Households with constrained off-street parking drive fewer miles." *Transportation* (2022). <https://doi.org/10.1007/s11116-022-10306-8>

Additionally, the draft 2024 RTP/SCs needs to document specific project details, including location, timeline, funding source, demonstrated implementation progress since the last plan, and model sensitivity tests for this strategy.

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3.9. Job center parking strategy

The draft TM includes an on-model job center parking strategy that assumes an increase in parking costs for all vehicles parking to access 21 job centers throughout the region. The draft TM notes that the parking rates will increase starting in fiscal year 2025. The draft TM does not provide any other detail about this strategy, including where the job centers are located, how they were identified, what the cost of parking is and will be, and what actions will be implemented or the progress made towards implementing it since the last plan.

Suggested Remedy: Please revise the draft TM to include the locations of the 21 job centers, what amount of parking fee increase is assumed, what data supports the parking fee increase in 2025, and what actions will be implemented. Please work with CARB staff on correcting or clarifying these items before the draft 2024 RTP/SCS is released for public review.

Additionally, the draft plan needs to include any additional information that demonstrates progress being made on this strategy since the last plan.

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3.10. Improved pedestrian infrastructure strategy

The draft TM includes an off-model strategy that assumes a VMT reduction from outreach, policy, and financial support of improved pedestrian infrastructure. This strategy is intended to improve pedestrian safety, access, and comfort to promote active transportation trips and reducing VMT. This strategy was used in the 2020 RTP/SCS; however, a new component of urban greening is being added to the strategy in this update. For this strategy, the draft TM cites studies that provide elasticity values related to urban greening. It is unclear whether these elasticity values

are for greenery alone and do not account for other factors, such as sidewalk length and sidewalk coverage. Additionally, in the 2020 SCS evaluation, CARB recommended that all strategies use assumptions supported by evidence through local data. CARB is concerned that the urban greening studies and elasticity values are from other countries.

Suggested Remedy: In the draft TM, please outline a calculation method that prevents the elasticity values for urban greening from double counting with other factors such as sidewalk length or coverage that are being credited in the other aspect of this strategy. It is important to ensure that the addition of the urban greening component of the strategy is not double counting benefits from the sidewalk infrastructure component of the strategy. In addition, please revise the draft TM to include local or state data to support the urban greening component of the strategy. Please work with CARB staff on correcting or clarifying these items before the draft 2024 RTP/SCS is released for public review.

Additionally, the draft plan needs to include any additional information that demonstrates progress being made on this strategy since the last plan.

If CARB cannot evaluate and/or accept (1) the quantification of GHG emission reduction estimates and/or (2) that the region is on track to achieve the GHG emission reduction target with demonstrated progress on implementing the strategies, then CARB will not be able to accept SCAG's final GHG emission reduction determination.

3.11. Safe routes to school (SRTS) strategy

The draft TM includes an off-model strategy that assumes a VMT reduction from outreach, policy, and financial support of the strategic development of safe routes to school strategies. This strategy focuses on SRTS encouragement programs, in which participating students will change their travel mode to/from school from vehicle to transit, walking, or biking, thereby resulting in reduced VMT. The draft TM notes that in the most recent Active Transportation Program (ATP) Cycle 6, the SCAG region received \$706 million in funding for 99 projects. However, it is unclear how much of this funding is for SRTS projects, specifically for encouragement programs.

Additionally, for step 1 of the quantification method in the draft TM, it is not clear how the student population participating in SRTS will be identified and how students that already walk, bike, or take transit are accounted for. Also, in the draft TM, step 4 of the quantification steps calculates VMT reduction for chauffeurs who no longer will conduct a "Pure Escort" trip, but it is unclear how or what parameters are used to get this model output.

In the previous SCS, CARB staff recommended that SCAG monitor implementation of all the SCS strategies. In this draft TM, SCAG notes that they have identified that 49

percent of local jurisdictions have developed or are developing SRTS plans. This is useful to understand as SCAG aims for all jurisdictions within the region to have an SRTS plan. If SCAG also has an estimate of the time it took for the existing 49 jurisdictions to implement an SRTS program, it could help justify or inform the time needed for the remaining jurisdictions and if it is feasible by 2035.

Suggested Remedy: Please revise the draft TM to indicate the share of funding allocated to SRTS projects, specifically for encouragement programs, how the student population is identified, and how schools with existing SRTS programs and/or students that already do not drive to school are accounted for in the quantification. Please work with CARB staff on correcting or clarifying these items before the draft 2024 RTP/SCS is released for public review. Without these corrections, it could result in CARB being unable to accept this strategy as part of the calculation used to support SCAG’s GHG emission reduction determination.

Additionally, the draft plan needs to include any additional information that demonstrates progress being made on this strategy since the last plan.

If CARB cannot evaluate and/or accept (1) the quantification of GHG emission reduction estimates and/or (2) that the region is on track to achieve the GHG emission reduction target with demonstrated progress on implementing the strategies, then CARB will not be able to accept SCAG’s final GHG emission reduction determination.

4. Complete documentation of data and calculations

Overall, the draft TM provides most of the formulas that will be used to calculate VMT estimates from the proposed off-model strategies. However, some assumptions are missing, and others include a caveat that they could be updated in the final 2024 RTP/SCS. Additionally, very little information is provided on the strategies that are being quantified on-model. It is important to note that CARB staff will not be able to verify whether the strategies and/or the resulting VMT and GHG emissions estimates are reasonable until we evaluate the assumptions that are used in the formulas and modeling as well as what actions specifically would be implemented.

Suggested Remedy: Please revise the draft TM to be as complete as possible, including addressing the “suggested remedies” prior to the release of the draft 2024 RTP/SCS as these are critical to GHG emission reduction quantification.

Additionally, CARB staff will need complete and final documentation of all strategies including all data and complete calculations in order to successfully evaluate SCAG’s determination that the GHG emission reduction target is achieved by 2035. Without complete documentation, CARB will not be able to accurately evaluate the final SCS. CARB staff understand that some of this information is not available until the draft plan is released and/or is subject to change because of public comment.

If CARB cannot evaluate and/or accept (1) the quantification of GHG emission reduction estimates and/or (2) that the region is on track to achieve the GHG emission reduction target with demonstrated progress on implementing the strategies, then CARB will not be able to accept SCAG’s final GHG emission reduction determination.

Topics of potential concern (needs further clarification)

5. Land use forecast, infill development strategy, and shorter trips through land use strategy

In the 2020 SCS evaluation, CARB recommended that SCAG help accelerate infill development by fully developing the Open Space and Natural Lands Mitigation Program and that SCAG should provide CARB staff with development by SCAG’s place types, not just by priority growth areas, to allow better comparison of planned and projected development in the region. The draft TM addresses this recommendation by providing updates on recent implementation efforts related to infill, providing an update on the Advanced Mitigation Program work, and committing to provide development by distinct place types in the final 2024 RTP/SCS. Additionally, the draft TM describes the local data exchange process and changes to the regional growth forecast methodology. However, it doesn’t provide details of the forecasted development pattern. CARB staff understand that more detailed information is likely unavailable until the draft 2024 RTP/SCS is released.

Comment: In the draft 2024 RTP/SCS, please include as much detail as possible about the type and location of growth at the jurisdiction level, within priority growth areas, transit priority areas, and any other lower-level geographies that will help CARB staff assess the land use strategies. Additionally, CARB staff will look for complete data, assumptions, and justification from SCAG on why future outcomes from these strategies are reasonable when reviewing the draft and final SCS. CARB staff will consider implementation progress, whether the assumptions are supported by actions, policies, or funding commitments in the plan, and whether the assumptions are consistent with other data sources.

If CARB cannot evaluate and/or accept (1) the quantification of GHG emission reduction estimates and/or (2) that the region is on track to achieve the GHG emission reduction target with demonstrated progress on implementing the strategies, then CARB will not be able to accept SCAG’s final GHG emission reduction determination.

6. Housing unit growth projections and RHNA alignment

The draft TM does not include housing unit projections. It does discuss the Regional Housing Needs Assessment (RHNA) and Housing Element Update work the region is going through. However, without a discussion on the housing units being projected in the 2024 RTP/SCS and how the forecast aligns with the RHNA projection (existing and projected need) and methodology, it is difficult to understand how the SCS and RHNA are aligned.

Comment: This information must be provided as part of the draft 2024 RTP/SCS to allow CARB staff to understand the region’s projected growth pattern.

If CARB cannot evaluate and/or accept (1) the quantification of GHG emission reduction estimates and/or (2) that the region is on track to achieve the GHG emission reduction target with demonstrated progress on implementing the strategies, then CARB will not be able to accept SCAG’s final GHG emission reduction determination.

7. Travel model documentation, validation, and sensitivity tests

CARB staff acknowledge SCAG’s continued efforts to enhance the regional travel model. The draft TM describes the travel demand model process, data inputs, assumptions for exogenous variables, a number of new sub-models and model enhancements, and the related sensitivity analyses completed. The draft TM notes that SCAG’s sensitivity tests covered a wide range of factors, with the objective of these tests being to analyze the impact of different inputs on key metrics like VMT, mode share, vehicle trips, and transit boarding. The draft TM does not include these sensitivity tests or a discussion of the results.

The draft TM also mentions a UC Davis COVID-19 Mobility Study that SCAG commissioned to investigate changing activity patterns, travel choices, and individual attitudes toward mobility among various groups across the six-county SCAG region during the COVID-19 pandemic—including expectations for the future.

Comment: Please provide detailed information on the model inputs, validation, calibration, and sensitivity analyses for any new sub-models and new on-model strategies with the draft 2024 RTP/SCS.

If CARB cannot evaluate and/or accept (1) the quantification of GHG emission reduction estimates and/or (2) that the region is on track to achieve the GHG emission reduction target with demonstrated progress on implementing the strategies, then CARB will not be able to accept SCAG’s final GHG emission reduction determination.

8. Work-from-home assumptions

The draft TM notes that 23.33 percent of total workers are assumed to work from home and that this is an assumption that goes into the travel model. CARB staff notes that SCAG has integrated this into the model and that the TM notes the model accounts for some amount of rebound effect in the VMT from telework.

CARB staff will need to see additional documentation, including assumptions, research, model sensitivity tests, and any other information, that support the assumption of 23.33 percent of total workers working from home in 2035. Additionally, CARB staff continue to monitor ongoing research on the effects of teleworking. Some research has begun to raise questions, as it highlights the potential for VMT to increase and offset the reductions even with continued telework due to other trips made by work-from-home workers.⁵ As such, CARB staff requests more information about how the rebound effect is accounted for in SCAG’s travel demand model.

Comment: Please provide additional information on the assumptions used for teleworking, including how many days a week telework is assumed, what rebound effect is assumed, and any documentation that supports these assumptions, including data, research, and model sensitivity analysis, as part of the draft 2024 RTP/SCS.

If CARB cannot evaluate and/or accept (1) the quantification of GHG emission reduction estimates and/or (2) that the region is on track to achieve the GHG emission reduction target with demonstrated progress on implementing the strategies, then CARB will not be able to accept SCAG’s final GHG emission reduction determination.

9. Incremental progress analysis

The draft TM includes a table of the exogenous factors in this 2024 RTP/SCS modeling. However, the draft TM does not discuss how SCAG will estimate and report on incremental progress, as required by CARB’s SCS evaluation guidelines. For the incremental progress component, MPOs should conduct a scenario analysis using input datasets that allow for a normalized comparison, to the greatest degree feasible, of the previously submitted RTP/SCS to the proposed RTP/SCS. This would include applying current exogenous variables to the previous RTP/SCS.

⁵ See for example: Obeid, Hassan and Anderson, Michael L. and Bouzaghrane, Mohamed Amine and Walker, Joan L., Does Telecommuting Reduce Trip-Making? Evidence From a U.S. Panel During the COVID-19 Impact and Recovery Periods. Available at SSRN: <https://ssrn.com/abstract=4213516> or <http://dx.doi.org/10.2139/ssrn.4213516>

Comment: The final TM should be revised to include a description of how SCAG will complete the required incremental progress analysis. The completed analysis is required as part of the final SCS submittal to CARB.

If CARB cannot evaluate and/or accept (1) the quantification of GHG emission reduction estimates and/or (2) that the region is on track to achieve the GHG emission reduction target with demonstrated progress on implementing the strategies, then CARB will not be able to accept SCAG’s final GHG emission reduction determination.

Topics of potential future concern (need further clarification in the future)

10. Olympics preparations and considerations

The draft TM provides a comprehensive discussion of existing conditions and key factors influencing the 2024 RTP/SCS. Notably, a discussion of the 2028 Olympics is missing. While this doesn’t directly impact the long-range plan or the ability to achieve the 2035 GHG emission reduction target, there are land use and transportation projects, programs, and activities that will happen in the near-term timeframe of the plan related to this global event. This should be explained and discussed.

Comment: CARB staff recommends including a discussion of the Olympics and related regional projects that impact transportation or land use in the draft 2024 RTP/SCS or as part of final documentation submitted to CARB as part of the SCS submittal.

11. New transportation project selection process

In the 2020 SCS evaluation, CARB recommended that SCAG consider prioritizing transportation projects that are well-aligned with the SCS over projects that are not well-aligned and that SCAG should work with its members to deprogram capacity expansion projects. In response, the draft TM addresses this comment in several ways. First, it explains that SCAG’s RTP/SCS does prioritize projects that advance the SCS but that the plan also has other goals it must address, including safety and goods movement. Second, the draft TM provides examples of recent reconsideration and deprogramming of some pipeline capacity projects because of local planning processes. Finally, the draft TM notes that SCAG is currently in the process of developing a new project selection process with an emphasis on implementing Connect SoCal and achieving performance-based targets.

Comment: CARB staff suggest that SCAG staff share any additional information on the new project selection process with CARB staff as part of the documentation submitted with the final SCS submittal.