SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

Draft Recommended Guidance for Land Use Emission Reductions

Version 5.0

(for Operational Emissions)

January 2023

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Introduction

As the "local agency within the boundaries of the Sacramento district with the primary responsibility for the development, implementation, monitoring, and enforcement of air pollution control strategies, clean fuels programs, and motor vehicle use reduction measures,"[1] the Sacramento Metropolitan Air Quality Management District (Sac Metro Air District) has created a guidance to ensure that development within the Land Use sector will not impede regional attainment of our air quality and climate goals. A companion to our *Guide to Air Quality Assessment in Sacramento County* (CEQA guide), the *Recommended Guidance for Land Use Emission Reductions* creates a common platform of information and tools so developers, communities and lead agencies can disclose air emissions and select appropriate design features, conditions of approval, and mitigation to reduce those emissions.

A project proponent should create an Operational Air Quality Mitigation Plan (AQMP) for a project that generates a significant impact for ozone precursors and particulates, and should document measures required to meet the Sac Metro Air District's greenhouse gases (GHG) Best Management Practices (BMPs) in a Greenhouse Gas Reduction Plan (GHGRP) for a project that generates a significant GHG impact. Both plans consist of feasible measures that reduce operational emissions associated with the project and are incorporated as mitigation into the project's environmental document. Implementation is enforced by the lead agency. While the AQMP or GHGRP can be a standalone document or incorporated into a project's environmental document, the plans must be referenced in the project's mitigation monitoring and reporting plan.

In December 2021 the California Air Pollution Control Officers Association (CAPCOA) released the *Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity* (Handbook)[2]. The Handbook is a comprehensive update to CAPCOA's 2010 *Quantifying Greenhouse Gas Mitigation Measures* document and includes both quantifiable and non-quantifiable measures based on current research. The measures have been incorporated into CalEEMod version 2022. To ensure that lead agencies make the best effort to use the best data and modeling tools available, the Sac Metro Air District recommends utilizing the most recent version of the California Emissions Estimator Model (CalEEMod) to determine the operational emissions of a project as well as the efficacy of mitigation.

Because the updated Handbook and CalEEMod tool incorporates information related to disadvantaged communities, health, environmental burdens, and climate risk, project proponents and jurisdiction planners have the opportunity to review proposed projects holistically. Measures should be selected that both reduce criteria pollutants and GHG emissions and also have other co-benefits such as energy savings, improved public health, enhanced food security and social equity. This integrated planning approach can result in projects being designed and built to contribute positively to the surrounding community. More detailed discussion of integrated planning to support health, equity and climate resilience can be found in the Handbook.

[1] CA Health & Safety Code § 40961

[2] CAPCOA's CalEEMod website including Handbook: https://www.caleemod.com/handbook/index.html

When developing AQMPs and GHGRPs, plans must include a narrative demonstrating how each reduction measure selected is being met, as well as an enforceable mechanism to ensure each measure is implemented for the life of the project. If a proponent would like to utilize reduction measures not quantified in CalEEMod or the Handbook, the proponent should contact the Sac Metro Air District to discuss substantial evidence of efficacy as well as implementation requirements.

It is recommended that proponents also consult Sac Metro Air District's *Guide to Air Quality Assessment in Sacramento County,* the *CalEEMod User Guide*, and the CAPCOA Handbook to create a successful AQMP or GHGRP. Any questions about this guide should be directed to Sac Metro Air District Land Use and Transportation Staff.

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Protocol for Ozone Precursors and Particulates

Projects that are anticipated to emit 65 pounds or more of oxides of nitrogen (NO_x) per day, 65 pounds or more of reactive organic gases (ROG) per day, 80 pounds or more of particulate matter that is 10 microns in diameter or smaller (PM_{10}) per day or 82 pounds or more of particulate matter that is 2.5 microns in diameter or smaller ($PM_{2.5}$) per day[3] are considered operationally significant for CEQA purposes and should apply feasible mitigation.

For projects that are consistent with the land use assumptions included in the current State Implementation Plan (SIP, a plan to attain federal air quality standards) , the Sac Metro Air District recommends a 15 percent reduction of ozone precursor mobile source emissions. For projects not considered in the SIP, the Sac Metro Air District recommends a 35 percent reduction of ozone precursor mobile source emissions. These levels of reduction are considered feasible mitigation and should be included in an AQMP. If a project is partially included in the SIP, proponents should contact Sac Metro Air District staff to discuss the appropriate mitigation percent reduction to apply to the project. Additional discussion is available in Section 4.4 of Chapter 4 of the Sac Metro Air District's *Guide to Air Quality Assessment in Sacramento County*. Lead agencies and project proponents should work with the Sac Metro Air District and the Sacramento Area Council of Governments (SACOG) to determine if the project is included in the SIP.

For projects that are operationally significant for particulate matter (PM_{10} or $PM_{2.5}$), no specific percent reduction has been established as feasible mitigation. The focus of an AQMP for particulate matter will be to implement all feasible mitigation for projects on a case-by-case basis using CalEEMod and off-model measures if applicable.

There was a significant change in CalEEMod data in version 2022. For Sacramento County, previous versions of CalEEMod utilized average default vehicle trip lengths provided by SACOG for two location scenarios, rural and urban,. CalEEMod version 2022 includes vehicle trip lengths by traffic analysis zones (TAZ) as default information. TAZ are geographically smaller and more representative of a project's location. TAZ trip length data are available in CalEEMod version 2022 from both the 2015 California State Travel Demand Model[4] and SACOG via its work with the Replica[5]model. Additionally, trip purpose percentages for residential and non-residential trips are different for each TAZ, creating a wider variability in analysis of vehicle miles traveled and therefore emissions than the previous versions of CalEEMod

[3] Sac Metro Air District's PM thresholds of significance are zero unless best available control technology/best management practices (BACT/BMPs) are implemented for a project. The inclusion of BACT/BMPs allows the use of the 80/82 lbs./day thresholds for PM_{10} and $PM_{2.5}$ respectively. If the project is conducting an AQMP for PM, it is assumed that BACT/BMPs are included.

[4] Caltrans Statewide Travel Demand Model website: https://dot.ca.gov/programs/transportation-planning/division-of-transportation-planning/data-analytics-services/statewide-modeling/california-statewide-travel-demand-model

[5] SACOG website https://www.sacog.org/post/big-data-pilot-project-transportation-planning-replica (9/21/22 meeting with SACOG)

These model changes are expected to result in a more accurate analysis of vehicle emissions from a development project in Sacramento County. However, the new version of CalEEMod calculates emission reductions due to project locational efficiency as part of the unmitigated project, not the mitigated project (as it was in previous version of CalEEMod). Since most local jurisdictions in the Sac Metro Air District have policies that require a 15 percent reduction of ozone precursor emissions compared to an unmitigated project when a project exceeds significance thresholds, and locational efficiency has historically been considered mitigation when these policies were adopted, we have created a recommended methodology to create a "business as usual" project with which to set a reduction target and then compare the proposed project's mitigated emissions.

The following sections describe how to determine if a project requires an AQMP, how to create a "business as usual" project, and how to set a project's emissions reduction target for preparing a mitigation plan. The proposed project's emissions including mitigation measures are then compared to the "business as usual" emissions to determine if the mitigation target is achieved.

Determining if a proposed project requires an Operational Air Quality Mitigation Plan

To determine if a proposed project exceeds Sac Metro Air District ozone precursor or particulate matter thresholds and thus requires an AQMP, enter the proposed project location, characteristics, and land uses into CalEEMod. On the Operations, Mobile Sources, Vehicle Data page, select "Generate Default VMT and Trips" and then select the MPO/RTPA button to use SACOG trip lengths and trip purpose percentages for the TAZ the project is located in. If a traffic study was conducted for the project, you may enter vehicle miles traveled and trip information instead. Run a report to check the estimated total daily emissions (lbs/day) for NOx, ROG, PM_{10} and $PM_{2.5}$ in the full build-out year for both winter and summer seasons6. If any of the values meet or exceed the pollutant significance thresholds, the project is considered operationally significant, and an AQMP should be prepared. Development of an AQMP for ozone precursors is described below. AQMPs for particulate matter should focus on all feasible mitigation to reduce particulate matter emissions below the thresholds of significance if possible.

Setting a reduction target for ozone precursor emissions using a business-as-usual project

Sac Metro Air District recommends the following steps to create a business-as-usual project to determine the ozone precursor emissions reduction target.

1. Enter the location, characteristics, and land use information.
2. On the Operations, Mobile Sources, Vehicle Data page, select "Generate Default VMT and Trips."
3. Using data from CalEEMod version 2022, User Guide, Appendix G, Table G-16, MPO/RTPA Trip Lengths and Purpose Splits by Trip Type (Aggregated to MPO/RTPA Jurisdictional Boundary)[7] override the residential and non-residential trip lengths and residential and non-residential trip purpose percentages in the model with SACOG's aggregated data (see table below). Enter justification for changes ("to create the business-as-usual project using SACOG aggregated data").

[6] Chapter 4 of the CEQA Guide to Air Quality Assessment discusses analysis expectations in more detail.

[7] CalEEMod User Guide website, Appendix G: https://www.caleemod.com/documents/user-guide/08_Appendix%20G.xlsx

	Residential			Nonresidential			Res Trip Purpose			NonRes Trip Purpose		
MPO	Home-Work	Home-Shop	Home-Other	Home-Work	Work-Other	Other-Other	Home-Work	Home-Shop	Home-Other	Home-Work	Work-Other	Other-Other
SACOG	14.3	9.4	10.7	14.3	8.8	8.7	29%*	27%	44%	38%*	28%	34%

*Trip purposes must add up to 100% for CalEEMod to generate results. Due to rounding, Table G-16 does not add up to 100%, so Sac Metro Air District recommends adding 1% to these two columns to generate the most conservative results.

4. Run a report to obtain the business-as-usual annual operational emissions (tons/year) for criteria pollutant emissions. This will be used to calculate the emission reduction target in the next step and also to compare to the mitigated project emissions to determine if the target is achieved.
5. To determine the amount of emissions a project should mitigate, calculate the annual mass emissions of ozone precursors released by the project's mobile sector. The reduction target will be a fixed percentage of the emissions (usually 15 percent or 35 percent, depending on the project's consideration in the SIP). For example, if a project's mobile sector releases 18 tons of NOx and 2 tons of ROG annually, and the project has a 15 percent reduction target, the project should reduce mass emissions by 2.7 tons/year of NOx and 0.3 tons/year of ROG.

Meeting the reduction target for ozone precursor emissions, comparing mitigated project to the business-as-usual project

The proponent should next apply the project mitigation to the proposed project CalEEMod run, calculate the annual emissions, and report the mitigated project's mass ozone precursors of ROG and NO_x.

Please note that while the reduction target is based on mobile sector emissions, the project may utilize mitigation from *any* sector to meet the target.

A plan is considered to meet the emission reduction target if both equations are true:

$$NOx\ Reduction\ Target \leq Business\ as\ Usual\ Project\ NOx\ Emissions - Mitigated\ Project\ NOx\ Emissions$$

$$ROG\ Reduction\ Target \leq Business\ as\ Usual\ Project\ ROG\ Emissions - Mitigated\ Project\ ROG\ Emissions$$

For example, if the reduction target is 2.7 tons/year of NO_x and 0.3 tons/year of ROG, the business as usual project's ozone precursor emissions are 20 tons/year of NO_x and 2 tons/year of ROG and the mitigated project's total ozone precursor emissions are 16 tons/year of NO_x and 1.5 tons/year of ROG, the calculations would be as follows:

$$2.7\frac{tons}{year}NO_x \leq 20\frac{tons}{year}NO_x - 16\frac{tons}{year}NO_x \qquad 0.3\frac{tons}{year}ROG \leq 2\frac{tons}{year}ROG - 1.5\frac{tons}{year}ROG$$

$$2.7\frac{tons}{year}NO_x \leq 4\frac{tons}{year}NO_x \qquad 0.3\frac{tons}{year}ROG \leq 0.5\frac{tons}{year}ROG$$

The above statements are true; the mitigated project meets the reduction targets.

NOTE: A project must disclose ALL ozone precursors for the proposed project and proposed mitigated project. In addition, the initial significance determination is based on the emissions of all sectors of the proposed project, not just the mobile sector.

ROG reduction CEQA target

If a project is not able to achieve its CEQA reduction target for ROG, the project may choose to reduce additional NO_x on a ton-for-ton basis instead of ROG. This is due to the Sacramento Federal Ozone Non-attainment area being a NOx-limited regime, whereby NOx reductions can be more effective at reducing ozone on a tonnage basis.[8]

For example, if a project's reduction target is 10 tons/year of NO_x and 10 tons/year of ROG, the proponent could reduce 15 tons/year of NO_x and 5 tons/year of ROG to meet the reduction target. However, the reverse is not true: reducing 5 tons/year of NO_x and 15 tons/year of ROG would still result in a NO_x shortfall of 5 tons/year and would not meet the target.

Particulate matter emission reductions

For particulate matter, the project proponent will compare the business as usual project emissions to the proposed mitigated project emissions and document the emission reductions achieved.

Documenting emission reduction measures

Once the mitigated project meets the ozone precursor reduction targets and the particulate matter emission reductions are calculated, document the proposed reduction measures , provide a narrative demonstrating how each measure will be met, and describe the enforceable mechanisms that will be in place to ensure each measure will be implemented for the life of the project. To assist in documenting, quantifying, and monitoring the mitigation measures selected by the project proponent, the Sac Metro Air District has prescribed that the selected mitigation measures be explained in the context of an air quality mitigation plan (AQMP). The AQMP can be a standalone document or incorporated into the environmental document. During the environmental review process, and before certification of the CEQA environmental document by the lead agency, the Sac Metro Air District independently verifies the benefits of the selected measures in the AQMP with a confirmation letter of technical adequacy. The AQMP shall then be referenced in the CEQA document as an air quality mitigation measure, appended to the document, and referenced as a condition of approval by the lead agency.

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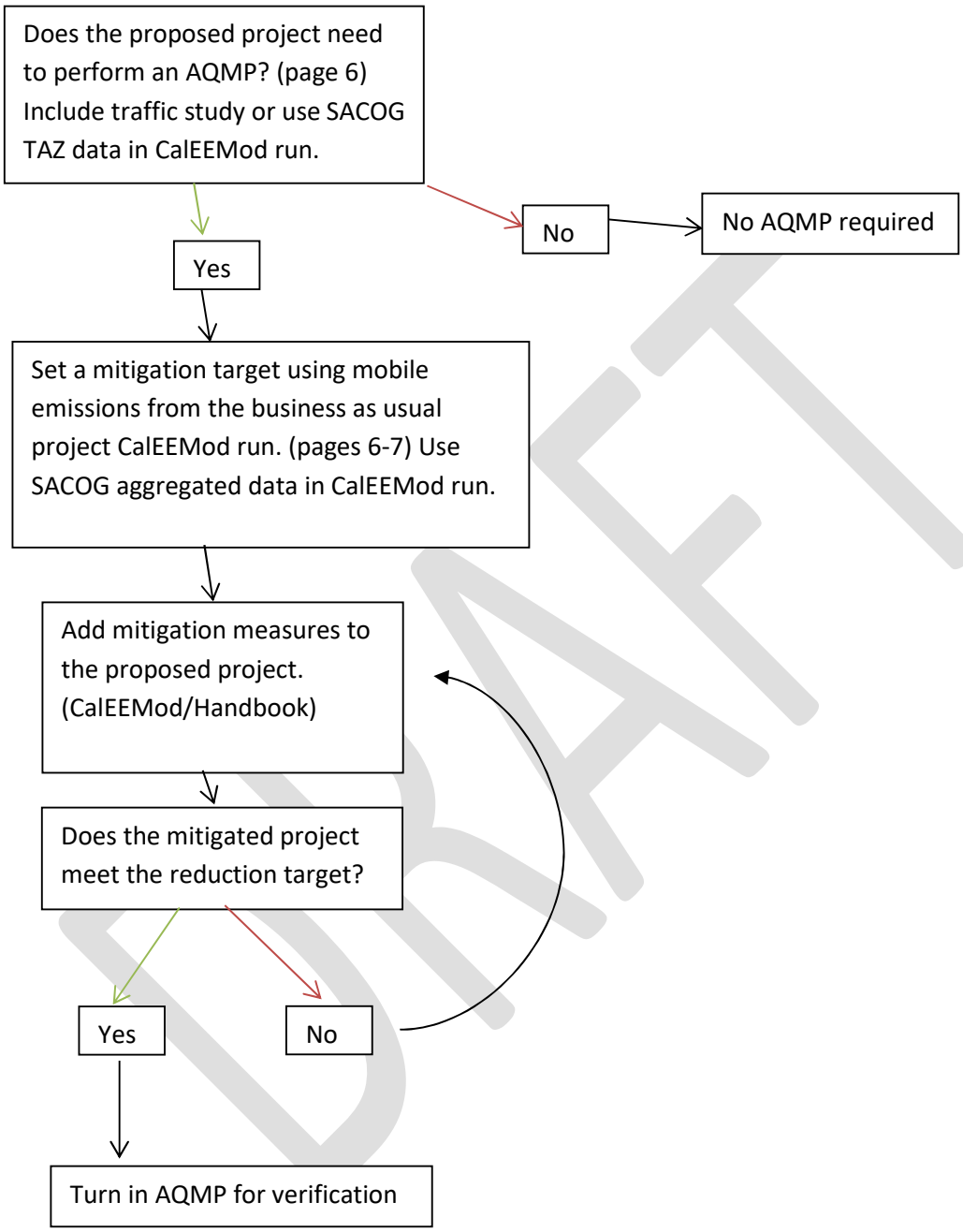
[8] *Sacramento Regional 2008 NAAQS 8-Hour Ozone Attainment and Reasonable Further Progress Plan*, July 24, 2017, Chapter 6, Air Quality Modeling Analysis, page 6-13: https://www.airquality.org/ProgramCoordination/Documents/Sac%20Regional%202008%20NAAQS%20Attainment%20and%20RFP%20Plan.pdf

Quick Reference Flow-Chart



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Protocol for Greenhouse Gases

The analysis of project level GHG is covered in Chapter 6 of the Sac Metro Air District's *Guide to Air Quality Assessment in Sacramento County*, while Chapter 9 provides information on larger plan areas such as specific, community, and general plans.

Jurisdictions with Existing GHG Strategies

Each jurisdiction determines GHG significance for proposed development projects independently. There are a few strategies in use to address GHG emissions within the boundaries of the Sac Metro Air District. Proponents with projects in these jurisdictions should utilize the following strategies when analyzing GHG emissions and determining significance.

- City of Citrus Heights – Climate Action Plan (CAP) with reduction targets and measures.[9] Note that Citrus Heights' CAP addresses emissions through 2020.
- City of Elk Grove – Climate Action Plan with reduction targets and measures.[10]
- City of Folsom – GHG Reduction Strategy with reduction targets and measures.[11]
- City of Galt – Climate Action Plan with reduction targets and measures.[12]
- City of Sacramento - Climate Action Plan with reduction targets and measures.[13]
- County of Sacramento – Incorporated the Sac Metro Air District's GHG thresholds in its General Plan, Air Quality Element, policy AQ-4.[14]

If a jurisdiction has a numerical threshold, the mitigated project GHG emissions should be reviewed to determine if the project emissions have met the established threshold. If a jurisdiction has an adopted Climate Action Plan or GHG Reduction Strategy, the project environmental document must describe all the reduction measures in the Climate Action Plan or GHG Reduction Strategy that apply to the project and demonstrate how the project will incorporate those reduction measures to show consistency with the Climate Action Plan or GHG Reduction Strategy. If a project cannot tier from, or is not consistent with, an applicable Climate Action Plan or GHG Reduction Strategy, then the project proponent should

[9] Adopted by the City of Citrus Heights on August 11, 2011. Accessible http://citrusheights.net/203/Greenhouse-Gas-Reduction-Plan

[10] Adopted by the City of Elk Grove on March 27, 2013, with an update on February 27, 2019. Accessible https://www.elkgrovecity.org/city-special-projects/climate-action-plan

[11] Adopted by the City of Folsom on August 28, 2018. Appendix A and GHG Reduction Checklist. Accessible https://www.folsom.ca.us/government/community-development/planning-services/general-plan

[12] Adopted by the City of Galt on March 3, 2020. CAP Consistency Checklist. Accessible. https://www.cityofgalt.org/home/showpublisheddocument/32883/637750669487870000

[13] Adopted by the City of Sacramento on February 14, 2012, and revised as part of the General Plan Update March 3, 2015. Appendix B. Accessible http://www.cityofsacramento.org/Community-Development/Resources/Online-Library/2035--General-Plan. NOTE the City of Sacramento is working on a Climate Action Plan update in conjunction with the 2040 General Plan update. Accessible http://www.cityofsacramento.org/Community-Development/Planning/Major-Projects/General-Plan/About-The-Project/Climate_Change

[14] Adopted by the County of Sacramento on December 16, 2020. Accessible https://planning.saccounty.net/PlansandProjectsIn-Progress/Documents/Air%20Quality%20Element%20-%20Amended%2012-16-20.pdf

consult with the jurisdiction to determine if the Sac Metro Air District's GHG thresholds would be an appropriate alternative to evaluate project significance.

The Sac Metro Air District provides a GHG thresholds/Best Management Practices Applicability flow chart to assist a jurisdiction in determining how to address GHG emissions for CEQA.

Air District GHG Thresholds of Significance

To assist with projects located in jurisdictions without adopted GHG thresholds, GHG Reduction Strategies, and/or Climate Action Plans, the Sac Metro Air District's Board of Directors adopted the following recommended GHG thresholds[15].

- Construction phase of a project – 1,100 metric tons CO_2e per year.
- Stationary source project – 10,000 metric tons CO_2e per year direct emissions.
- Operational phase of land development projects – consistency with the 2017 Climate Change Scoping Plan by implementing a series of Best Management Practices or equivalent on-site or off-site measures.

The following guidance only applies to operational emissions and the development of a GHGRP, not construction or stationary source emissions.

Analysis Expectations

For land use jurisdictions without GHG analysis guidance, the Sac Metro Air District recommends disclosing the project's total annual GHG emissions per the recommendations contained in Chapter 6 of the Sac Metro Air District's *Guide to Air Quality Assessment in Sacramento County*. Depending on the size of the project and level of emissions, Sac Metro Air District recommends two tiers of Best Management Practices be applied to the project to demonstrate consistency with the 2017 Climate Change Scoping Plan.

All projects must implement tier 1 Best Management Practices to demonstrate consistency with the Climate Change Scoping Plan. After implementation of tier 1 Best Management Practices, project emissions are compared to the operational land use screening levels table (equivalent to 1,100 metric tons of CO2e per year). If a project's operational emissions are less than or equal to 1,100 metric tons of CO2e per year after implementation of tier 1 Best Management Practices, the project will result in a less than cumulatively considerable contribution and has no further action. Tier 1 Best Management Practices (fully described in *Greenhouse Gas Thresholds for Sacramento County*) include:

- BMP 1 – no natural gas: projects shall be designed and constructed without natural gas infrastructure.

[15] Adopted on October 23, 2014. Sac Metro Air District's Board Resolution highlighting the rationale for adoption of the thresholds is accessible http://www.airquality.org/LandUseTransportation/Documents/2020-009GreenhouseGasThresholdsUpdateBoardResolution4-23-2020.pdf. An update to the operational thresholds was adopted on April 23, 2020. The justification document for the update is accessible http://www.airquality.org/LandUseTransportation/Documents/SMAQMDGHGThresholds2020-03-04v2.pdf.

- BMP 2 – electric vehicle (EV) ready: projects shall meet the current CalGreen Tier 2 standards, except all EV capable spaces shall be instead EV ready.

Projects that do not implement the tier 1 Best Management Practices must conduct additional calculations to determine excess emissions and provide measures either on-site or off-site to provide equivalent mitigation. These equivalent mitigation measures must be documented in a project specific GHGRP.

If project emissions exceed the land use screening levels table (equivalent to 1,100 metric tons of CO2e per year) after implementation of tier 1 Best Management Practices, the project is required to implement tier 2 Best Management Practices (fully described in *Greenhouse Gas Thresholds for Sacramento County*). Tier 2 Best Management Practices consists of BMP 3 – reductions in vehicle miles traveled (VMT) that meet the following requirements (or equivalent local agency's adopted SB 743 targets):

- Residential projects must achieve a 15% reduction in VMT per resident compared to existing average VMT per capita in the county.
- Office projects must achieve a 15% reduction in VMT per worker compared to existing average VMT per capita for the county.
- Retail projects must achieve no net increase in total VMT.

If the project meets the de minimis criteria for VMT in the Office of Planning and Research's SB 743 Technical Advisory on Evaluating Transportation Impacts in CEQA, document the qualifying criteria to satisfy the BMP 3 requirement.

Projects that do not meet tier 2 Best Management Practices (BMP 3) are required to implement additional measures to further reduce VMT to achieve the target. Measures selected to further reduce project VMT must be documented in a project specific GHGRP.

Lead agencies and project proponents can also research and develop additional measures, in consultation with the Sac Metro Air District, that have reductions that are both quantifiable and substantiated. Potential alternative measures include use of natural refrigerants, sequestration, installation of vehicle charging stations, solar water heaters (to reduce electricity use), or offsite mitigation, including offsets, if on-site reduction measures are not sufficient to meet reduction targets. Offsite mitigation measures are required to demonstrate with substantial evidence that the project, credit, or registry being used provides GHG offsets that are real, permanent, quantifiable, verifiable, enforceable, and additional. Alternative measures are discussed further in Section 5 of the Sac Metro Air District's *Greenhouse Gas Thresholds for Sacramento County*. Check the Handbook and CalEEMod for potential quantification methods.

To assist in documenting, quantifying, and monitoring the mitigation measures selected by the project proponent, the Sac Metro Air District has prescribed that the selected GHG mitigation measures be explained in the context of a project-specific greenhouse gas reduction plan (GHGRP). The GHGRP can be a standalone document or incorporated into the environmental document. During the environmental review process, and before certification of the CEQA environmental document by the lead agency, the Sac Metro Air District independently verifies the benefits of the selected measures in the GHGRP with a

letter confirming technical adequacy. The GHGRP shall then be referenced in the CEQA document as a GHG mitigation measure, appended to the document, and referenced as a condition of approval by the lead agency.

Lead agencies should keep in mind California's climate change goals when disclosing project emissions and determining significance[16]. For purposes of evaluating a project's consistency with the 2045 statewide carbon neutrality goal, a project would need to eliminate natural gas completely (BMP 1) or require all pre-wiring necessary so that the buildings are ready for a future retrofit to all-electric. Additionally, for a project located in an area with relatively high VMT per resident or per worker, the project would need to provide sufficient electrical capacity that 100% of project vehicles have the potential to be zero emission vehicles. These measures should be documented in a project specific GHGRP.

Reviewing Larger Plan Areas

General plans, community plans and specific plans cover large areas of land with development occurring over a longer period (i.e., 20 years) than a single development project. Chapter 9 of the Sac Metro Air District's *Guide to Air Quality Assessment in Sacramento County* provides a discussion on how to handle large plan areas and include all feasible mitigation measures into those planning documents. The Handbook and CalEEMod also include measures that are suitable for plan/community projects. A Climate Action Plan or Greenhouse Gas Reduction Strategy is often the preferred mechanism for a General Plan to identify and mitigate GHG emissions.

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[16] Executive Order S-3-05 sets forth the ultimate climate change goal of reducing emissions by 80% below 1990 levels by 2050, SB32 sets forth an interim climate change goal of reducing emissions by 40% below 1990 levels by 2030, and SB100 set the Carbon Neutrality by 2045 goal (http://www.energy.ca.gov/sb100).

Reduction Measures

Available reduction measures are included in the Handbook and incorporated into CalEEMod. Each reduction measure in the Handbook has a factsheet describing the measure and highlighting important considerations (i.e., reduction potential, cost, implementation requirements) followed by quantification methods. Although the Handbook focuses on GHG reduction measures, co-benefits of many measures include criteria pollutant emission reductions. The CalEEMod User Guide, Appendix C, Table C-11 includes a listing of each reduction measure and the applicable quantified pollutants and co-benefits.

Land use scale and locational context impact the reduction measures available for an emissions analysis in CalEEMod. There are two types of land use scale: project/site and plan/community. Land use scale must be selected in CalEEMod for a project when setting up an analysis. There are three types of locational context: urban, suburban and rural. Locational context is preselected in CalEEMod by the project's location. Handbook factsheets include the applicable land use scale and locational context for each reduction measure.

The transportation chapter of the Handbook provides guidance for selecting measures and combining reductions from measures in each sector and across subsectors as well as emission reduction maximums/caps.

Note that if a Traffic Study is incorporated into a CalEEMod analysis, reduction measures assumed in the traffic study should not also be selected as reduction measures in CalEEMod to ensure reductions are not double counted.

The energy chapter of the Handbook provides guidance for combining reductions from measures.

CalEEMod has been programmed to recognize measures that are not applicable to project lagnd use types and project scales. CalEEMod User Guide Appendix G, Tables G-45 and G-46 provide measure applicability information. A measure can also be exclusive, therefore preventing other measures from being selected, or dependent on other measures that must be selected first.

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Summary of Changes to Guidance

Changes made from Version 4.3 to Version 5.0

- Included discussion about CalEEMod 2022 and changes to baseline data used to calculate vehicle miles traveled.
- Included reference to the 2021 CAPCOA Handbook.
- Included guidance for creating a business as usual project that will be used to set an emissions reduction target and compare to mitigated project emissions.
- Updated links to climate action plans and greenhouse gas reduction strategies.
- Removed listing of measures and direct users to the CAPCOA Handbook and CalEEMod.

Changes made from Version 4.2 to Version 4.3

- Removed guidance allowing conversion of ozone precursors for interpollutant mitigation.
- Updated information regarding Sacramento County's GHG thresholds.

Changes made from Version 4.1 to Version 4.2

- Provided specific information on transportation demand measures a transportation management association could implement to support emissions reductions claimed by a proponent selecting measure TRT 1 & 2.

Changes made from Version 4.0 to Version 4.1

- Incorporated the Sac Metro Air District's newly adopted greenhouse gas land development operational thresholds and best management practices.
- Updated status of Jurisdictions with GHG Strategies section.
- Incorporated gated community requirement for use of SDT-1.

Changes made from Version 3.3 to Version 4.0

- Updated the Setting a Reduction Target for Ozone Precursor Emissions section to utilize annual tons.
- Eliminated the use of NOXe.
- Updated the conversion rate of ozone precursors to be consistent with the most current SIP.
- Removed old CalEEMod screenshots.

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- Updated page numbering in the main table of contents and the measures table of contents.
- The pounds per day standard has been annualized to account for seasonal variation in mitigation applicability/efficacy.

Changes made from Version 3.2 to Version 3.3 include the following items:

- Revised the Protocol for Greenhouse Gases section to remove the No Action Taken analysis and 21.7 percent reduction guidance.
- Added a discussion of particulates and AQMP development to the Protocol for Ozone Precursors and Particulates section.
- Added the correct page number reference on page 35 to BE-1 in the off-model measures section.
- Revised the VOC ratio to NOx formula, which is now seven to one.
- Removed specific references to SMUD renewable energy programs in AE-1.

Changes made from Version 3.1 to Version 3.2 include the following items:

- Clarification was made to set the reduction target from the mobile sector emission.
- AE-1 amended to allow for participation in renewable energy programs.
- BE-1 added as off-model measure.
- Added Prerequisites, removed meta-measures.
- The Sac Metro Air District's GHG Thresholds and the City of Citrus Height's Climate Action Plan were added.

Changes made from Version 3.0 to Version 3.1 include the following items:

- Revised the Protocol for Greenhouse Gases section to reflect the most current thresholds available and adopted climate action plans in the Sac Metro Air District.
- Altered off-model measure numbering.
- Added TS - Traffic Study meta-measure.
- Updated title page, table of contents and footers to reflect the new version and date.
- Created the Summary of Changes section to document changes made in the Guidance from one version to the next.

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