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Common Response 15: Air Quality and Greenhouse Gases

Overview

This Common Response addresses the common themes and topics raised in public comments on Chapter 23, *Air Quality and Greenhouse Gases*. These themes include the following.

- Information regarding air district rules and permits related to construction and operation.
- The California Department of Water Resources' (DWR) disclosure of air quality impacts and supporting information.
- Claims that the technical methods used to quantify criteria pollutants and greenhouse gases (GHGs) mischaracterize emissions and associated impacts.
- The California Environmental Quality Act's (CEQA) requirements for analyzing lifecycle, including embodied GHG emissions.
- Commenter preferences for control strategies to reduce criteria pollutant and GHG emissions.

Given the themes identified above, this Common Response discusses the Delta Conveyance Project's (project) compliance with air quality regulations, disclosure of supporting air quality documentation, technical methods for the estimation of criteria pollutants and GHGs, consideration of embodied GHG emissions, and air quality environmental commitments and mitigation.

Compliance with Air Quality Regulations and Permits

Comments identified air district rules and permits that may apply to construction and operation of the project. The project would comply with all applicable local air quality rules, regulations, and permit obligations. The Chapter 1, *Introduction*, table titled Summary of Potential Agencies and Review, Approval, or Other Responsibilities, in Addition to Those under CEQA lists some agencies and associated compliance considerations for the project. Permits required to construct and operate from regional air pollution control districts are specifically identified. Compliance with San Joaquin Valley Air Pollution Control District (SJVAPCD) Indirect Source Review (Rule 9510) is also listed. This table is not an exhaustive presentation of all air district rules and permit obligations for the project. This table in Chapter 1 has been revised to clarify that the listed regulatory considerations (e.g., SJVAPCD Rule 9510) are provided as examples. DWR has been actively engaged with the Sacramento Metropolitan Air Quality Management District (SMAQMD), SJVAPCD, and Bay Area Air Quality Management District (BAAQMD) and will continue coordinating with them to secure all necessary permits for construction and operation of the project.

Disclosure of Supporting Air Quality Documentation

Some comments asserted that the Delta Conveyance Project Draft Environmental Impact Report (EIR) did not include adequate supporting documentation for the air quality and GHG impact analysis. The EIR contains all the necessary information to evaluate the adequacy of the technical methods used to quantify air quality and GHG emissions and health risks. Appendix 23A, *Mass Emissions Estimation Methodology*, identifies the emission sources included in the analysis and defines the equation(s) used to quantify associated emissions. All input variables are defined, and

emission factors are fully cited in the administrative record. Reduction efficacies applied to the base emission factors are likewise provided in Appendix 23A, alongside their full citations. Activity inputs (e.g., equipment operating hours) for every phase of construction are provided in Appendix 23B, *Air Quality and GHG Analysis Activity Data*.

The level of transparency and documentation provided by the Draft EIR is equivalent to, and in some cases exceeds, what is often provided for CEQA documents where models such as the California Emissions Estimator Model (CalEEMod) are exclusively used to quantify emissions. Typically, the CalEEMod model output, which does not include equations or default emission factors (unmitigated or mitigated), is appended to an environmental document. Default emission factors may be viewed in the CalEEMod User Guide or other source documentation for the model. The CalEEMod User Guide was directly cited in Appendix 23A with references to the specific tables or pages that were utilized to obtain emission factors or adjustments.

DWR made the air quality calculation workbooks, which include all emission factors, available upon request. Accordingly, the documentation available for public review during the public review and comment period for the Draft EIR provided full disclosure and transparency of the air quality technical methods, inputs, and assumptions.

Technical Methods for the Estimation of Criteria Pollutants

Comments challenged the accuracy of the Draft EIR criteria pollutant emissions inventory. The comments express concerns with the underlying emission quantification models or methods. Principally, the comments challenged (1) the version of CalEEMod used in the analysis; (2) the Tier 4 off-road emission factors obtained from CalEEMod and used to quantify equipment emissions; and (3) the association of horsepower-specific emission factors to project equipment. Responses to these concerns are provided in the following sections. Revisions made to the air quality analysis for the Final EIR in response to these comments and resulting from other technical refinements are summarized below. The responses and revisions confirm that the criteria pollutant inventory presented in the Draft EIR provides a comprehensive and reasonable representation of air conditions during and after project construction, and that analysis contained in Chapter 23 and supporting appendices meets the CEQA requirement to make a good-faith effort at full disclosure of potential air quality impacts of the project. All revisions are contained in Chapter 23 of the Final EIR and, as described in this Common Response, the revisions do not result in a new significant environmental impact, substantial increase in the severity of an environmental impact, or require additional mitigation measures than those disclosed in the EIR to which DWR is unwilling to commit.

Model Version for Air Quality Analysis

Some comments contended that the version of CalEEMod (version 2016.3.2) used in the Draft EIR air quality analysis has been superseded and that the analysis should have relied on the most recent version of the model (version 2022.1).

CalEEMod version 2016.3.2 was the current version of CalEEMod when the Draft EIR air quality analysis began in 2020. CalEEMod version 2020.4.0 was released in May 2021 (Trinity Consultants 2021:0). CalEEMod version 2022.1.0.0 was published in soft release on May 27, 2022 (California Air Pollution Control Officers Association 2023), only two months prior to publication of the Draft EIR. CalEEMod 2022.1.1.3 was not approved for full launch until December 22, 2022 (California Air

Pollution Control Officers Association 2023), which was after the close of the public review and comment period for the Draft EIR.

CEQA does not require lead agencies to update analyses just because new models or tools are released during environmental review, provided that the EIR, when looked at as a whole, provides a reasonable, good-faith disclosure and analysis of the project's environmental impacts and the approach relied upon by the lead agency provides for an accurate and reasoned analysis of project impacts. Moreover, an EIR need not follow the analytical methods recommended by regulatory agencies or other interested agencies, as long as the method of analysis employed is supported by substantial evidence. As explained in the *Evaluation of Construction Activities* section of Chapter 23, project construction emissions were evaluated using "a combination of emissions factors and methodologies" from CalEEMod version 2016.3.2 and other industry-standard tools and guidance. Components of the analysis informed by CalEEMod version 2016.3.2 include (1) heavy equipment off-road emission factors, (2) assumptions for roadway silt load and average vehicle weight, (3) emission factors and calculation methodology for pavement striping and paving, (4) assumptions for material moisture content and calculation methodology for demolition, (5) calculation methodologies for scraping and bulldozing, and (6) emission factors for wastewater treatment.

CalEEMod version 2020.4.0 did not change any of the emission factors or methods from CalEEMod version 2016.3.2 for the six project analysis components referenced above (California Air Pollution Control Officers Association n.d.). Accordingly, use of CalEEMod 2020.4.0 would not change any of the air quality impact conclusions reached in the Draft EIR.

Compared to CalEEMod version 2016.3.2, CalEEMod version 2022.1.1.3 changed the emission factors for (1) off-road equipment and (6) wastewater treatment (ICF 2022a:H-9/H-13). Specifically, some of the Tier 4 Final emission factors have increased relative to the factors included in CalEEMod version 2016.3.2. There have also been changes to the annual equipment exhaust emission factors and default load factors (ICF 2022a:H-9). With respect to wastewater treatment, CalEEMod version 2022.1.1.3 includes an emission factor for nitrous oxide (N₂O) emissions.

Although CalEEMod version 2022.1.1.3 was not officially released until after the close of the public comment period for the Draft EIR, DWR has elected to revise the air quality analysis in the Final EIR to confirm that use of CalEEMod version 2022.1.1.3 would not change any of the air quality impact conclusions reached in the Draft EIR. As noted above, the material updates to CalEEMod relevant to the Draft EIR air quality analysis are updates to the off-road equipment emission factors and assumptions and the addition of a N₂O wastewater treatment emission factor. These updates have been incorporated into the Final EIR and are summarized under *Summary of Final EIR Criteria Pollutant Revisions*. Citations to CalEEMod have been updated to reference version 2022.1.1.5 (current version as of the writing of this Common Response) throughout Chapter 23 and Appendix 23A.

Tier 4 Off-Road Equipment Emission Factors

Some comments asserted that the Draft EIR air quality analysis underestimates emissions because it uses off-road equipment emission factors from CalEEMod, which do not include adjustments for engine deterioration. Commenters claim that the Draft EIR air quality analysis should have adjusted the CalEEMod emission factors according to California Air Resources Board's (CARB) 2017 Carl Moyer Guidelines, which account for engine deterioration.

CalEEMod was developed by the California Air Pollution Control Officers Association (CAPCOA) to estimate emissions from construction and operation of new projects in California. CalEEMod uses “widely accepted methodologies for estimating emissions” and those “emission estimates are suitable for quantifying air quality and climate change impacts as part of the preparation of CEQA documents” (Trinity Consultants 2017a:1; ICF 2022b:2). CalEEMod (or identified as its predecessor, URBEMIS) is recommended by all four plan area air districts for generating emissions inventories to support project-specific impact analyses and conclusions under CEQA (Sacramento Metropolitan Air Quality Management District 2020:3-5; San Joaquin Valley Air Pollution Control District 2015:56; Yolo-Solano Air Quality Management District 2007:17; Bay Area Air Quality Management District 2017:8-1).

The CalEEMod version 2016.3.2 User Guide, Appendix D, (Trinity Consultants 2017b:Table 3.5) and CalEEMod version 2022.1.1.5 User Guide, Appendix G, (ICF 2022c:Table G-13) provide off-road equipment emission factors for Tier 4 Final compliant engines. These emission factors are applied by the models to quantify criteria pollutant emissions from Tier 4 Final engines when identified by a user as part of a project-specific equipment inventory. As outlined in Appendix A of the CalEEMod version 2016.3.2 User Guide, off-road equipment emissions are quantified according to the following equation (Trinity Consultants 2017c:A-7).

$$\text{Emission Factor} * \text{Number of Pieces of Equipment} * \text{Horsepower} \\ * \text{Load Factor} * \text{Hours of Equipment Operation}$$

The same equation is given in Appendix C of the CalEEMod version 2022.1.1.5 User Guide (ICF 2022d:C-9). When the user identifies a specific equipment tier (e.g., Tier 4 Final) for an equipment piece, “CalEEMod will use the emission standard of the selected tier for the emissions calculation” (Trinity Consultants 2017c:A-62). The model does not make any explicit adjustments for engine deterioration. Consistent with CalEEMod, the Draft EIR air quality analysis likewise uses the Tier 4 Final emission factors presented in the CalEEMod User Guide, without adjustment, to quantify off-road equipment emissions.

The suggestion that the Draft EIR should deviate from using CalEEMod to quantify off-road equipment emissions is inconsistent with CAPCOA and local air district guidance for the analysis of air quality impacts under CEQA. Moreover, the recommended source cited in comments for adjusting the CalEEMod off-road emission factors—CARB’s Carl Moyer Guidelines—is used for the analysis of emission reductions proposed for funding through the Carl Moyer Program, not for the estimation of project emissions undergoing environmental review. The Carl Moyer Program funds clean air projects, such as those that replace older vehicles with newer models or repower existing engines to a higher standard (California Air Resources Board 2017:1-3). Projects must meet stringent criteria to be eligible for grant funding under Carl Moyer. The project is neither seeking grant funding through the Carl Moyer Program nor does it meet any of the required criteria of the Carl Moyer Program for a funded clean air project. Accordingly, there is no requirement for the Draft EIR to use the Carl Moyer Guidelines to quantify project air quality emissions from off-road equipment.

The Draft EIR’s quantification of criteria pollutant emissions is consistent with industry-standard models and guidance recommended by local air districts. The resulting emissions estimates provide a reasonable representation of expected air quality impacts, consistent with the level of information available for environmental review and expected by CEQA. The commenter’s requested adjustments are sourced from guidance for project evaluations seeking grant funding at the implementation

stage and are therefore inapplicable and unnecessary for projects undergoing environmental review, such as the Delta Conveyance Project. No revision is necessary.

Association of Horsepower-Specific Emission Factors

Comments asserted the Draft EIR did not correctly correlate off-road equipment emission factors to the project equipment inventory. As noted above, off-road equipment emission factors were obtained from CalEEMod. The emission factors are given in terms of grams of emissions generated per equipment horsepower-hour for specific horsepower ranges. For example, 4.1 grams of carbon monoxide (CO) per horsepower-hour for equipment engines between 25 and 49 horsepower. The Draft EIR air quality analysis assigned these emission factors to project equipment based on the nearest horsepower bin rating using the CalEEMod identified max horsepower for the range. For example, a 22-horsepower welder was modeled in the 15 to 25 horsepower emission factor bin range. On rare occasion, correlating the equipment horsepower with the nearest default max horsepower resulted in some equipment being modeled in a lower default bin. For example, a 760 horsepower crane was modeled in the 500 to 750 horsepower emission factor bin range, instead of the 751 to 9999 horsepower range. The air quality modeling has been revised to correct those entries for which a lower horsepower emission factor range was applied. These updates have been incorporated into the Final EIR and are summarized below in the next section of this Common Response, *Summary of Final EIR Criteria Pollutant Revisions*. The revisions do not result in a new potentially significant environmental impact, substantial increase in the severity of air quality impacts evaluated in the EIR, or require additional mitigation measures than were disclosed in the EIR to which DWR is unwilling to commit.

Summary of Final EIR Criteria Pollutant Revisions

Targeted refinements have been made to the air quality mass emissions analysis presented in Chapter 23. The refinements address the following comments received on the Draft EIR: (1) use of CalEEMod version 2022.1.1.5 off-road equipment emission factors and default assumptions (see subsection above titled *Model Version for Air Quality Analysis*); (2) corrected association of equipment emission factors by horsepower, where needed (see subsection above titled *Association of Horsepower-Specific Emission Factors*); and (3) revised environmental commitments (see subsection below titled *Feasibility or Effectiveness of Air Quality Environmental Commitments and Mitigation*). Where appropriate, specific modeling assumptions have also been updated to account for the most recent engineering data and ensure alignment of the air quality analysis with the project description contained in Chapter 3, *Description of the Proposed Project and Alternatives*. For example, Manitowoc has discontinued production of several cranes assumed in the Draft EIR analysis and replaced them with more efficient models. For this reason, the cranes have been replaced by more efficient models in Appendix 23B and the air quality analysis (Delta Conveyance Design and Construction Authority 2023a, 2023b).

The refined criteria pollutant inventory is presented in Chapter 23 of the Final EIR, Impact AQ-1: *Result in Impacts on Regional Air Quality within the Sacramento Metropolitan Air Quality Management District* through Impact AQ-4: *Result in Impacts on Air Quality within the Yolo-Solano Air Quality Management District*, and in the section titled *Cumulative Impacts of the Project on Air Quality*, table titled Summary of Highest Annual and Daily Emissions from Construction of Any of the Project Alternatives. When compared to the chapter tables in the Draft EIR, the revisions resulted in decreased daily and annual emissions during most years of construction in the SMAQMD, BAAQMD, and SJVAPCD. There were no changes in emissions reported in the Yolo-Solano Air Quality

Management District (Impact AQ-4). Where increases in certain pollutants are expected, they are minor and do not create any exceedances of air district thresholds, relative to what was disclosed in the Draft EIR. Impacts AQ-1 through AQ-3 remain less than significant with mitigation. Moreover, when comparing the refined results for the highest daily construction emissions of all project alternatives to those presented in the Draft EIR, the largest single increase of any pollutant for which there is an air district threshold is 81 pounds of nitrogen oxides (NO_x) under Alternative 3 (see the Chapter 23 section titled *Cumulative Impacts of the Project on Air Quality*), which is below SMAQMD's threshold of 85 pounds per day. Accordingly, none of the revisions to the criteria pollutant analysis resulted in a change to the conclusions of Impacts AQ-1 through AQ-4, or required additional mitigation measures to which DWR was unwilling to commit.

Technical Methods for the Estimation of Greenhouse Gas Emissions from Electricity Use

Comments challenged the accuracy of the Draft EIR GHG emissions inventory from project electricity consumption. Many of the comments expressed concerns with the underlying emission quantification models or methods. Principally, the comments refuted (1) the version of the Emissions & Generation Resource Integrated Database (eGRID) used in the analysis; (2) the emission factors obtained from eGRID and used to quantify electricity emissions; and (3) the accounting of transmission and distribution (T&D) losses. Responses to these concerns are provided in the following sections. Revisions made to the electricity GHG analysis for the Final EIR in response to these comments and resulting from other technical refinements are likewise summarized below. The responses and revisions confirm that the electricity GHG inventory presented in the Draft EIR provides a comprehensive and reasonable representation of GHG conditions during and after project construction, and that analysis contained in Chapter 23 and supporting appendices meets the CEQA requirement to make a good-faith effort at full disclosure of potential GHG impacts of the project. All revisions are contained in Chapter 23 of the Final EIR and, as described in this Common Response, the revisions do not result in a new potentially significant environmental impact, substantial increase in the severity of an environmental impact, or require additional mitigation measures than were disclosed in the EIR to which DWR is unwilling to commit.

Model Version for Greenhouse Gas Analysis

Some comments contended that the version of eGRID (version 2019) used in the Draft EIR electricity GHG analysis has been superseded and that the analysis should have relied on the most recent version of the model (now version 2021).

The U.S. Environmental Protection Agency (EPA) updates eGRID annually. eGRID2019 was released on February 23, 2021, and was the current version of the database when the electricity GHG analysis for the Draft EIR began (U.S. Environmental Protection Agency 2023a). eGRID2020 was released on January 27, 2022. An even newer version of eGRID has been released since the close of the public comment period for the Draft EIR—eGRID2021 was published by EPA (2023a) on January 30, 2023.

As discussed above under *Technical Methods for the Estimation of Criteria Pollutants, Model Version for Air Quality Analysis*, CEQA does not require lead agencies to update analyses just because updated models or tools are released during environmental review, provided that the EIR when looked at as a whole, provides a reasonable, good faith disclosure and analysis of the project's environmental impacts and the approach relied upon by the lead agency provides for an accurate

and reasoned analysis of project impacts. Moreover, an EIR need not follow the analytical methods recommended by regulatory agencies or other interested agencies as long as the method of analysis employed is supported by substantial evidence. Emission factors included in eGRID2021 are slightly greater than those provided by EPA in eGRID2019 and used in the Draft EIR electricity GHG analysis. For example, the annual carbon dioxide total output emission rate from eGRID2019 and used in the Draft EIR analysis is 453.209 pounds per megawatt-hour (lb/MWh) (U.S. Environmental Protection Agency 2021:Table SRL12), compared to 531.678 lb/MWh, as reported in eGRID2021 (U.S. Environmental Protection Agency 2023b:Table SRL12). The difference between the two emission factors is 78.469 lb/MWh.

While eGRID2021 was not released until after the close of the public review and comment period for the Draft EIR, DWR has elected to revise the electricity GHG analysis to confirm use of eGRID2021 would not result in a new potentially significant environmental impact or a substantial increase in the severity of an environmental impact or require additional mitigation measures than were disclosed in the Draft EIR to which DWR is unwilling to commit. These updates have been incorporated into the Final EIR and are summarized under the section below titled *Summary of Final EIR Revisions to GHG Emissions*. The Appendix 23A section titled *Electricity Consumption* has been revised to reference eGRID2021.

eGRID Emission Factors

Some comments asserted that the Draft EIR electricity GHG analysis underestimates emissions because it uses state-level instead of subregion-level emission factors from eGRID. The comments are incorrect in their assertion that the Draft EIR relied on state-level electricity emission factors. Nowhere in the Draft EIR are state-level GHG emission factors for electricity consumption cited. Consistent with EPA (2023c:21) guidance for GHG inventorying, the Draft EIR electricity GHG analysis used subregion-level emission factors for the California/Mexico portion of the Western Electricity Coordinating Council (CAMX). Accordingly, the Draft EIR does not use an improper eGRID aggregation level or underestimate emissions, as claimed by the commenters. Specific reference to use of emission factors for the CAMX region has been added to the *Electricity Consumption* section of Appendix 23A to avoid confusion.

Transmission and Distribution Losses

Comments asserted that the Draft EIR electricity GHG analysis underestimates emissions because it did not account for T&D losses in the quantification of operational and construction energy demand.

Contrary to the commenters' claim, the energy values used in the operational GHG analysis account for T&D losses. Specifically, the post-processing tools referenced in the Appendix 23A section titled *Operational SWP Pumping and Displaced Purchases of CVP Electricity* and the State Water Project (SWP) power model compute energy consumption at both the generation plant and load center, which enables application of loss factors specific to each generation and pumping facility. These T&D loss factors range from 1% to 6%, depending on the facility and location. Specific reference to T&D losses has been added to the *Operational SWP Pumping and Displaced Purchases of CVP Electricity* section of Appendix 23A to avoid confusion.

The energy values used in the construction GHG analysis in the Draft EIR were based on direct equipment power consumption and did not specifically account for T&D losses. Equation 23A-12 in the Appendix 23A section titled *Electricity Consumption* of the Final EIR has been revised to account

for T&D losses during construction to ensure consistency with the operational GHG analysis. The T&D loss factor was calculated from EPA's (2023c:66) technical support guide for eGRID2021.

Summary of Final EIR Revisions to GHG Emissions

Targeted refinements have been made to the GHG analysis presented in Chapter 23, Impact AQ-9: *Result in Impacts on Global Climate Change from Construction and O&M*. The refinements address the following comments received on the Draft EIR: (1) use of eGRID2021 emissions factors (see subsection above titled *Model Version for Greenhouse Gas Analysis*); (2) accounting of T&D losses during construction (see subsection above *Transmission and Distribution Losses*); (3) those described above relating to the air quality analysis (see subsection above *Technical Methods for the Estimation of Criteria Pollutants*), and (4) revised environmental commitments (see subsection below *Feasibility or Effectiveness of Air Quality Environmental Commitments and Mitigation*). Where appropriate, specific modeling assumptions have also been updated to account for (1) refined operational pumping data (see Chapter 22, *Energy*), (2) the most recent engineering data and to ensure alignment of the GHG analysis with the project description (as discussed above in *Technical Methods for the Estimation of Criteria Pollutants*), and (3) recently adopted legislation. For example, Senate Bill 1020 was signed on September 16, 2022 (after release of the Draft EIR) and sets new interim targets for the state's Renewables Portfolio Standard. Senate Bill 1020 also mandated all electricity procured to serve state agencies be composed of zero-carbon resources by 2035. The additional strengthening of the Renewables Portfolio Standard pursuant to Senate Bill 1020 is discussed in Appendix 23A, in the section titled *Electricity Consumption*, of the Final EIR.

The refined GHG inventory is presented in Chapter 23 of the Final EIR, Impact AQ-9. When compared to the chapter tables in the Draft EIR, the revisions resulted in decreased annual emissions from construction and displaced purchases of CVP electricity between the start of construction and 2045. The net change in operation and maintenance (O&M) and pumping emissions quantified under 2020 conditions would increase slightly, relative to what was presented in the Draft EIR (see the Chapter 23 table titled *GHG Emissions from O&M, Increased SWP Pumping, and Displaced Purchases of CVP Electricity under 2020 Conditions*). This minor change does not constitute a substantial increase in the severity of the GHG emission impact disclosed in the Draft EIR. Moreover, as noted in Impact AQ-9, the 2020 emissions analysis does not account for the future expected carbon intensity of the economy when the project is fully operational in 2040. The refined analysis of project emissions at full operation yields an overall reduction in GHG emissions intensity, compared to the Draft EIR. Accordingly, none of the revisions to the GHG analysis resulted in new or more severe impacts relative to the impact conclusion for Impact AQ-9, or required additional mitigation measures to which DWR was unwilling to commit.

Consideration of Lifecycle and Embodied Emissions

Some comments alleged the Draft EIR underrepresents construction GHG impacts because it does not include lifecycle emissions, specifically embodied emissions from steel and cement manufacturing, in the impact conclusion. Lifecycle emissions analyses evaluate emissions from raw materials extraction, manufacturing or processing, transportation, use, and end-of-life management of a good or service. Embodied emissions generally refer to those generated by the lifecycle of a material or product (e.g., cement), and thus are a component of a traditional lifecycle analysis. This response addresses both lifecycle and embodied emissions analyses as they related to the EIR GHG analysis.

Lifecycle GHG accounting is not currently recommended by any of the study area air districts in their CEQA Guidelines. As noted in Chapter 23, Impact AQ-9, the origin of most raw materials that will be consumed by the project is not known, precluding accurate quantification of lifecycle emissions, which vary by product origin, production techniques, shipping method, and other considerations. However, the EIR acknowledges that there are recognized and consistent methodologies for estimating embodied cement emissions. The EIR therefore estimates and discloses embodied cement emissions based on generalized emissions intensities for the required compression strengths of the various project infrastructure. There is considerably more uncertainty in embodied emissions intensities for steel, with a recent literature review concluding that “results for steel can differ significantly depending on the underlying methodologies and assumptions” (Suer et al. 2022:6). Accordingly, estimating embodied emissions from steel would require DWR to speculate on specific details. If an agency finds that a particular impact is too speculative for evaluation, the agency should note its conclusion and terminate discussion of the impact (CEQA Guidelines § 15145).

While Chapter 23 discloses embodied cement emissions, the emissions results are not included in the impact assessment or conclusion.¹ Chapter 23 analyzes the significance of project-generated GHG emissions against a threshold of carbon neutrality by 2045 (or earlier), which is consistent with the state’s long-term climate change goal (Assembly Bill 1279) and emissions reduction trajectory. The California Supreme Court has recognized that statewide reduction goals are an appropriate basis for project-level significance criteria under CEQA.² California’s reduction goals are assessed based on statewide inventories of GHG emissions, which do “not use a life-cycle approach” (California Air Resources Board 2022:60). Accordingly, as recognized by the Association of Environmental Professionals (AEP) (2017:1–7), “if a project-level inventory were to include additional upstream embedded emissions ... or downstream transportation emissions, outside of the state, it would no longer be comparable to the state inventory and a threshold based on state reduction targets could not be used to evaluate the project’s GHG emissions.” AEP (2017:1–7) further concludes that “there is no logical rationale to include GHG emissions in a CEQA project inventory if they are not included in the state’s GHG inventory, nor to use methodologies to account for emissions different from those employed in the state’s GHG inventory.” Thus, the exclusion of embodied emissions from the Chapter 23 impact analysis does not constitute an underreporting of GHG impact. Rather, it is consistent with statewide accounting standards and professional and agency guidance.

Feasibility or Effectiveness of Air Quality Environmental Commitments and Mitigation

Some comments expressed concern with the formulation of air quality and GHG environmental commitments and mitigation measures. In developing feasible environmental commitments and mitigation to avoid or lessen air quality and GHG impacts, DWR considered all feasible measures. The general approach to mitigation was first to identify actions that could be taken onsite to eliminate or reduce emissions at the point of generation (see Appendix 3B, *Environmental*

¹ Note that the impact analysis accounts for all emissions directly and indirectly generated by concrete batching activities for which DWR has practical control and program responsibility. These include transport (i.e., read mix delivery to the project site and raw material delivery to the onsite batch plants) and operational (i.e., electricity consumption by the onsite batch plants) activities.

² *Center for Biological Diversity v. California Department of Fish and Wildlife* (2017) 17 Cal.App.5th 1245.

1 *Commitments and Best Management Practices, and Mitigation Measures AQ-5: Avoid Public Exposure*
2 *to Localized Particulate Matter and Nitrogen Dioxide Concentrations, AQ-6: Avoid Residential*
3 *Exposure to Localized Diesel Particulate Matter, and AQ-9: Develop and Implement a GHG Reduction*
4 *Plan to Reduce GHG Emissions from Construction and Net CVP Operational Pumping to Net Zero). If*
5 *after application of all feasible on-site mitigation emissions still resulted in an air quality impact,*
6 *available off-site measures, such as regional offsets, were pursued (see Mitigation Measures AQ-1:*
7 *Offset Construction-Generated Criteria Pollutants in the Sacramento Valley Air Basin, AQ-2: Offset*
8 *Construction-Generated Criteria Pollutants in the San Joaquin Valley Air Basin, AQ-3: Offset*
9 *Construction-Generated Criteria Pollutants in the San Francisco Bay Area Air Basin, and AQ-9).*

10 Comments also suggested that DWR consider additional air quality control strategies. Other
11 comments requested specific revisions to EIR environmental commitments or mitigation measures
12 to expand their effectiveness or enforceability. Lead agencies may consider many factors in
13 evaluating whether to accept a commenter's suggested changes. Notably, CEQA Guidelines Section
14 15364 defines *feasible* as "capable of being accomplished in a successful manner within a reasonable
15 period of time, taking into account economic, environmental, legal, social, and technological factors."
16 DWR has carefully evaluated the feasibility of proposed new control strategies or requested
17 revisions to existing air quality measures. Except for engine electrification, which is discussed below
18 because it was suggested in several comment letters, these evaluations are documented in
19 individual responses to comments. Each response either contains a reasoned analysis (consistent
20 with CEQA Guidelines Section 15088(c)) explaining why the commenter's suggestion is not feasible
21 or necessary, or explains how the requested strategy has been incorporated into the Final EIR.

22 Comments requested that DWR make additional commitments to use electric or zero-emissions
23 equipment and vehicles. Environmental Commitments EC-7: *Off-Road Heavy-Duty Engines* and EC-8:
24 *On-Road Haul Trucks* were written to support the state's electrification and zero-emissions goals,
25 including those expressed under Executive Order N-79-20. The commitments require DWR to
26 consider the feasibility and use of electric equipment and vehicles over their diesel counterparts.
27 Because Executive Order N-79-20 does not establish specific mandates for zero-emission vehicles,
28 their future market penetration of electric and zero-emission equipment and vehicles was less
29 certain at the time of publication of the Draft EIR than other technologies backed by regulatory
30 obligations (e.g., In-Use Off-Road Diesel-Fueled Fleets Regulation). Given this uncertainty,
31 Environmental Commitments EC-7 and EC-8 identified aggressive emissions controls for diesel
32 equipment and vehicles, while acknowledging the importance of electrification and outlining DWR's
33 commitment to use electric alternatives, where feasible.

34 Since the development of Environmental Commitments EC-7 and EC-8, the state's zero-emissions
35 strategy has matured with the adoption of the Advanced Clean Cars II (ACC II) regulations. The ACC
36 II regulations identify zero-emission vehicle (ZEV) sales requirements starting with the 2026 model
37 year through 2035, after which all new passenger cars, trucks, and utility vehicles sold in California
38 will be zero emissions. CARB is also developing ZEV requirements for medium- and heavy-duty
39 drayage, high-priority, and government fleets through the Advanced Clean Fleets (ACF) regulation,
40 which is still in draft form. While regulatory mandates for zero-emission construction equipment
41 have not yet been proposed, additional industry research has been published since the Draft EIR.
42 For example, an October 2022 assessment found that "off-road equipment electrification is
43 progressing rapidly" and that the "off-road segment has strong potential to transition to zero-
44 emission technologies" (CALSTART 2022:1, 28).

1 The recent regulatory drivers and market research provide additional certainty for market
2 readiness and increasing penetration of zero-emission equipment and vehicles. Accordingly, DWR
3 has revised Environmental Commitments EC-7 and EC-8 to include additional commitments for
4 zero-emission equipment and vehicles during and after construction. The revised environmental
5 commitments include performance standards for the use of these technologies, consistent with
6 current state goals, regulations, and priorities. Specifically, Environmental Commitment EC-7
7 establishes a goal of 10% zero-emission off-road equipment in all construction contracts beginning
8 in 2030 with 100% transition by 2035. The latter goal reflects the state's overall aspiration for the
9 off-road industry, as outlined under Executive Order N-79-20. While all off-road equipment is
10 eventually expected to move to zero-emission technology, large-scale deployment will require
11 additional research, funding, and regulatory mandates (CALSTART 2022:52). Accordingly,
12 Environmental Commitment EC-7 recognizes that attainment of the 2030 and 2035 performance
13 standards is only feasible if zero-emission equipment are commercially available, cost-effective, and
14 have earned a track-record for reliability in real-world construction conditions. These variables are
15 outside the control of DWR, but DWR will support contractor fleet transition through incentives for
16 compliance, as outlined in Environmental Commitment EC-7. In addition to the performance
17 standards, Environmental Commitment EC-7 has also been revised to prohibit use of fossil-fuel
18 powered axial fans, gantry cranes, light plants, and forklifts at the start of each construction
19 contract. Electric alternatives to these equipment types are readily available and can be feasibly
20 mandated now.

21 Environmental Commitment EC-8 has also been revised to include performance standards for use of
22 zero-emission on-road vehicles. The performance standards are consistent with or exceed the
23 statewide goals established by ACC II and the Advanced Clean Truck (ACT) regulation and proposed
24 by the ACF regulation. Specifically, Environmental Commitment EC-8 exceeds the ACC II regulation
25 by requiring all light-duty vehicles (e.g., automobiles, pickup trucks) used onsite for contractor
26 travel be zero-emissions at the start of each construction contract, where feasible. DWR recognizes
27 that technical barriers associated with the deployment of electric vehicle charging stations may
28 prevent 100% transition to light-duty ZEV for some of the initial construction contracts, particularly
29 smaller contracts for road widening and construction of park-and-ride lots in rural areas.

30 Environmental Commitment EC-8 also requires 50% medium- and heavy-duty on-site ZEV by 2030,
31 where feasible, and 75% by 2035. These compliance obligations extend the ACT regulation by
32 adopting the statewide sales goals (class 4 through 8 trucks) as fleetwide standards. Because the
33 ACT sales goals do not begin until 2024 and medium- and heavy-duty vehicles are often not replaced
34 for 10 to 12 years, attainment of the near-term (2030) performance standard will be more strongly
35 influenced by the rate of fleetwide retirement and transition to ZEV than the longer-term (2035)
36 performance standard. Finally, Environmental Commitment EC-8 establishes a goal of 50% ZEV for
37 off-site short-haul and drayage by 2035, consistent with the draft ACF regulation. Because explicit
38 regulations for draying and haul trucks have not yet been adopted, the market readiness of these
39 vehicles is less certain. Accordingly, similar to the 2030 and 2035 performance standards for off-
40 road equipment, Environmental Commitment EC-8 recognizes that attainment of the drayage and
41 haul truck goal hinges on variables outside of DWR's control. DWR will support contractor fleet
42 transition through incentives for compliance.

43 The revisions made to Environmental Commitments EC-7: *Off-Road Heavy-Duty Engines* and EC-8:
44 *On-Road Haul Trucks* reflect DWR's ongoing commitment to ensuring the project is constructed and
45 operated to minimize emissions and air quality impacts based on best available technologies and
46 practices. Off-road equipment emissions benefits from revisions to Environmental Commitment EC-

7 have been partially accounted for in the revised air quality analysis, as discussed further in Chapter 23 and Appendix 23A. Specifically, axial fans, gantry cranes, and light plants equipment types were modeled with electric engines, per Environmental Commitment EC-7. The commitment to use electric forklifts was made after completion of the emissions modeling and, as such, emissions benefits are not reflected in the analysis. Likewise, because attainment of the zero-emission equipment performance standards depend on future commercial availability and cost effectiveness of zero emissions equipment, the emissions modeling does not quantify or include the expected reductions. Consistent with the Draft EIR, emissions benefits of Environmental Commitment EC-8 remain unquantified. Because the modeling does not fully account for the ZEV commitments of Environmental Commitments EC-7 and EC-8, the emissions analysis provides a conservative assessment of project air quality and GHG impacts.

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