These guidelines are nonbinding recommendations, intended to assist lead agencies with navigating the CEQA process. They may be updated as needed in the future, and any updates will likewise be nonbinding and advisory.

6 PROJECT-LEVEL CLIMATE IMPACTS

This chapter provides practitioners with guidance on applying the Air District's California Environmental Quality Act (CEQA) thresholds of significance for climate impacts from greenhouse gas (GHG) emissions to projects. Guidance on applying the plan-level climate impact threshold is presented in Chapter 7. Guidance on developing community-scale GHG reduction strategies, or plans, that are aligned with the State CEQA Guidelines Section for streamlining for new projects is addressed in Appendix C. This chapter is organized by land use projects and stationary source projects and aims to provide insight on answering the State CEQA Guidelines Appendix G Environmental Checklist questions for GHG emissions (California Code of Regulations Section 15000 et seq.).

CEQA Guidelines Appendix G Environmental Checklist Questions: VIII. GREENHOUSE GAS EMISSIONS.

Would the project:

a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

6.1 OVERVIEW OF GHG EMISSIONS

Global climate change is caused primarily by an increase in levels of GHG emissions in the atmosphere. The major GHGs are the so-called "Kyoto Six" gases—carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), sulfur hexafluoride (SF_6), hydrofluorocarbons (HFCs), and perfluorocarbons (PFCs)—as well as black carbon.[1] These GHGs absorb longwave radiant energy (heat) reflected by the earth, which warms the atmosphere in a phenomenon known as the "greenhouse effect." The potential effects of global climate

[1] Black carbon is not a gas but is made up of solid particulates or aerosols. It is included in the discussion of GHG emissions because, like true GHGs, it is an important contributor to global climate change.

change include, among other things, rising surface temperatures, loss in snowpack, sea level rise, ocean acidification, an increase in the number of extreme heat days per year, increased occurrence and severity of wildfires and an increase in the number of drought years.

Increases in the combustion of fossil fuels (e.g., gasoline, diesel, coal) since the beginning of the industrial revolution have resulted in a substantial increase in atmospheric levels of GHGs. CO_2 levels have increased from long-term historical levels of around 280 parts per million (ppm) before the mid-18th century to more than 400 ppm today. This increase in GHGs has already caused noticeable changes in the climate. The average global temperature has risen by approximately 2.14°F (1.19°C) since the preindustrial period (1880–1900), and 10 of the warmest years on record have occurred since 2005, according to the National Oceanic and Atmospheric Administration.

Global climate change caused by GHG emissions is the quintessential cumulative environmental impact. The GHG emissions from an individual project are not likely to have any detectable impact on the global climate, but they will contribute to what is a significant cumulative problem—a problem caused by millions of projects all around the world emitting GHGs that together create a significant cumulative climate impact. Proposed projects are therefore significant for purposes of CEQA if they will be making a cumulatively considerable contribution to the significant cumulative climate impact resulting from GHG emissions globally. As the California Supreme Court has observed:

> *With respect to climate change, an individual project's emissions will most likely not have any appreciable impact on the global problem by themselves, but they will contribute to the significant cumulative impact caused by GHG emissions from other sources around the globe. The question therefore becomes whether the project's incremental addition of GHGs is "cumulatively considerable" in light of the global problem, and thus significant.*[2]

The Air District recommends that lead agencies use a "fair share" approach for determining whether an individual project's GHG emissions would be cumulatively considerable. If the project is doing its "fair share" to implement California's plans to address the cumulative problem, its contribution can be treated as less than cumulatively considerable. The California Legislature has established climate goals, and State agencies are establishing and refining plans to achieve these goals. These plans include specific measures and initiatives that various sectors of the economy across the state will need to implement to achieve California's climate goals set forth in Senate Bill (SB) 32, Executive Order (EO) B-55-18, and EO S-03-05.[3] These measures and initiatives, as outlined in *California's 2017 Climate Change Scoping Plan*, constitute a "fair share" of the solution for each economic sector. If a project would contribute its "fair share" of what will be required to achieve those long-term climate goals, then a reviewing agency can find that the impact would not be significant, because the project would help to solve the problem of global climate change. This method of analysis, which was approved by the California Supreme Court in *Center for Biological Diversity v. Department of Fish & Wildlife* (2015) 62 Cal.4th 204, provides an appropriate approach to ensuring that individual land use projects will be part of the solution to the problem of global

[2] See Cleveland Nat'l Forest Foundation v. San Diego Ass'n of Governments (2017) 3 Cal.5th 497, 512 (internal quotes omitted).

[3] SB 32 set into law statewide GHG reductions to 40 percent below 1990 levels by 2030, EO B-55-18 established a goal of carbon neutrality as soon as possible and no later than 2045, and EO S-03-05 established the GHG reduction target of 80 percent below 1990 levels by 2050.

climate change. As the Supreme Court held on that case, "consistency with meeting [those] statewide goals [is] a permissible significance criterion for project emissions" (*id.* at p. 220), and an agency's "choice to use that criterion does not violate CEQA" (*id.* at p. 223). Some project contributions to the cumulative climate problem are directly under the control of the project developer and design, whereas others are less so. For example, compliance with the Renewables Portfolio Standard is an electricity provider requirement that a land use project is not in control of, whereas where a project is sited and the type of appliances and equipment installed in the project are under the direct control of the project developer.

6.2 LAND USE PROJECT OPERATIONAL GHG EMISSIONS

For a land use project to do its fair share to address the climate crisis and thus for its GHG emissions to be less than significant, a project cannot include sources that will "lock in" GHG emissions for decades into the future. A project that locks in GHG sources, without a clear path to reduce the emissions from those sources, prevents the State from achieving the climate goals.

For this reason, the climate impact thresholds of significance (See Chapter 3, Table 3-2) specify that certain design elements must be incorporated into the project (see Section 6.2.1 below), *or* the project must be consistent with a local GHG reduction strategy that meets the criteria under CEQA Guidelines Section 15183.5(b) (see Section 6.2.2. below).

The land use project threshold of significance should be applied to all GHG emissions of a project that do not require an Air District permit. For example, where a project has GHG emissions associated with natural gas appliances or vehicle miles traveled (VMT), the land use threshold would apply. However, if the project has GHG emissions from sources permitted by the Air District, such as generators, boilers, or other relevant equipment, the GHG emissions from permitted sources would not be subject to the land use threshold of significance but instead would be subject to the stationary source threshold discussed in Section 6.4 of this chapter. Many projects will require the use of both land use and stationary source thresholds.

6.2.1 Land Use Project Design Elements

For a project to have a less-than-significant impact related to operational GHG emissions, it must include, at a minimum, the following project design elements (See Chapter 3, Table 3-2) or be consistent with a local GHG reduction strategy that meets CEQA Guidelines Section 15183.5(b) requirements (see Section 6.2.2 below).

1) Buildings

    a. The project will not include natural gas appliances or natural gas plumbing (in both residential and nonresidential development).

    b. The project will not result in any wasteful, inefficient, or unnecessary energy use as determined by the analysis required under CEQA Section 21100(b)(3) and Section 15126.2(b) of the State CEQA Guidelines

2) Transportation

    a. The project will achieve a reduction in project-generated vehicle miles traveled (VMT) below the regional average consistent with the current version of the California Climate Change Scoping Plan

(currently 15 percent) or meet a locally adopted Senate Bill 743 VMT target that reflects the recommendations provided in the Governor's Office of Planning and Research's *Technical Advisory on Evaluating Transportation Impacts in CEQA*:

i. Residential projects: 15 percent below the existing VMT per capita

ii. Office projects: 15 percent below the existing VMT per employee

iii. Retail projects: no net increase in existing VMT

b. The project will achieve compliance with off-street electric vehicle requirements in the most recently adopted version of CALGreen Tier 2.

If the project includes, at a minimum, these design elements, there would be a less-than-significant climate impact related to GHG emissions, and the project would not be likely to conflict with applicable initiatives to reduce GHG emissions. The rationale, justification, and substantial evidence supporting this conclusion can be found in Appendix B, CEQA Thresholds for Evaluating the Significance of Climate Impacts From Land Use Projects and Plans (Justification Report, April 2022).

To assist in determining whether the proposed project is consistent with the design elements and to help answer the two CEQA Appendix G Environmental Checklist questions, the four questions below should be addressed in the assessment:

🔨 Does the project exclude natural gas use?

For the building sector to achieve carbon neutrality, natural gas usage will need to be phased out and replaced with electricity usage, and electrical generation will need to shift to 100-percent carbon-free sources. To support these shifts, new projects need to be built without natural gas and with no inefficient or wasteful energy usage. Retrofitting an existing building to replace natural gas infrastructure with electrical service is far more difficult and expensive than simply building a new all-electric building (CEC 2021; E3 2019). For California to successfully eliminate natural gas usage by 2045, it will need to focus available resources on retrofitting existing natural gas infrastructure. This task will become virtually impossible if we continue to build more natural gas infrastructure that will also need to be retrofit within the next few years. This need to eliminate natural gas in new projects in order to achieve carbon neutrality in buildings by 2045 is demonstrated by analyses conducted by the California Energy Commission (CEC) in its California Building Decarbonization Assessment (CEC 2021).

The "no natural gas" design element applies to all building types (i.e., residential and nonresidential). If the project includes appliances or equipment on-site that combust natural gas supplied by natural gas infrastructure, then the GHG emissions from the project would cause a significant and unavoidable impact. This design element is specific to natural gas being supplied by piped infrastructure, as extending the natural gas infrastructure for such projects "locks in" GHG emissions for decades to come and is therefore inconsistent with achieving carbon neutrality. This design element does allow for tanked gas, such as propane, to serve some specialized on-site uses.

Does the project result in any wasteful, inefficient, or unnecessary energy use?

California has committed to achieving 100 percent carbon-free electricity by 2045 through SB 100, the 100 Percent Clean Energy Act of 2018. In order to plan for carbon neutrality by 2045, buildings constructed today will need to be able to support the transition from fossil fuels to carbon-free energy. This transition will include reducing or eliminating natural gas use, increasing use of carbon-free electricity, and ensuring enough energy capacity to support rapid growth in electric vehicle (EV) charging. Minimizing wasteful, inefficient or unnecessary energy use will facilitate this transition. Maximizing energy efficiency will also support other parts of the energy systems of buildings, including use of solar power and microgrids. Given the wide range of building types and their energy needs, what constitutes wasteful, inefficient or unnecessary energy use should be determined on a case-by-case basis.

CEQA already requires lead agencies to evaluate a project's potential for wasteful, inefficient, or unnecessary energy usage under CEQA Section 21100(b)(3) and Section 15126.2(b) of the State CEQA Guidelines, along with State CEQA Guidelines Appendix F and Appendix G, Section VI. The Air District recommends using the results of this analysis to determine whether the project will implement its "fair share" with respect to supporting the implementation of SB 100. If the energy analysis required under CEQA Section 21100(b)(3) shows that a project will not result in any wasteful, inefficient, or unnecessary electrical usage, then it will be consistent with implementing SB 100 and will not make a cumulatively considerable climate impact with respect to building electrical usage. If the project is found to involve wasteful, inefficient, or unnecessary electrical usage, then the lead agency should conclude that it will make a cumulatively considerable impact and treat it as significant in this regard.

Are VMT per capita (residential projects) or per employee (nonresidential projects) at least 15 percent below existing development or the lead agency's VMT targets pursuant to SB 743?

Senate Bill 743 (Steinberg, 2013), required changes to the State CEQA Guidelines regarding the analysis of transportation impacts, requiring analysis to be based on reduction of environmental impacts (including air pollution and GHG emissions), rather than addressing automobile delay, or "level of service." In response, OPR changed the CEQA Guidelines to identify vehicle miles traveled (VMT) as the most appropriate metric to evaluate transportation impacts from new development. After extensive research, OPR recommends that a per capita or per employee VMT that is fifteen percent below that of existing development may be a reasonable threshold.[4] If the project does not at least abide by the SB 743 VMT target specified in the California Governor's Office of Planning and Research's (OPR's) Technical Advisory (OPR 2018) or the SB 743 target adopted by the lead agency, the GHG emissions from the project would cause a significant and unavoidable impact.

"Existing development" can be measured as regional VMT per capita or as city VMT per capita. As discussed in OPR's Technical Advisory, proposed projects using city VMT per capita rather than regional VMT per capita should not cumulatively exceed the number of units specified in the Sustainable Community Strategy (SCS) for the Bay Area (MTC and ABAG 2021) and should be consistent with the SCS. "Regional" can refer to the entire Bay Area, a county, or other subregional geography. For example, in nonresidential projects where the region is larger than the geography over which employees would be expected to live, it may be appropriate to refer to a smaller geography. This geography would presumably include an area in which

[4] OPR Technical Advisory in evaluating Transportation Impacts in CEQA (https://opr.ca.gov/docs/20190122-743_Technical_Advisory.pdf)

most if not all workers would be expected to live. If a municipality has not adopted its own SB 743 target, the lead agency should contact the relevant congestion management agency or county transportation authority for information on the SB 743 target or data on existing VMT per capita.

It should be noted, that OPR's Technical Advisory provides guidance on how lead agencies may screen out VMT impacts for select project types using project size, maps, transit availability, and provision of affordable housing.

🔨 Does the project include off-street electric vehicle charging spaces and comply with equipment requirements pursuant to the current adopted version of CALGreen Tier 2?

The requirements for EV charging infrastructure in new land use development projects are governed by the CALGreen regulatory standards.[5] These standards are set forth in Title 24 of the California Code of Regulations, and they are regularly updated on a 3-year cycle. The CALGreen standards consist of a set of mandatory standards that are legally required for new development, as well as two more aggressive sets of voluntary standards known as Tier 1 and Tier 2. Although the Tier 1 and Tier 2 standards are voluntary, they often form the basis of future mandatory standards adopted in subsequent updates.

If the off-street electric vehicle charging requirements for specific building types are not at least consistent with the most recently adopted version of the California Green Building Standards Code (CALGreen) Tier 2, the GHG emissions from the project would cause a significant and unavoidable impact.

6.2.2 Consistency with a Local GHG Reduction Strategy

Incorporating all of these project design elements may not be necessary if a project is consistent with a local GHG reduction strategy that meets CEQA Guidelines Section 15183.5(b) requirements (and therefore would have a less-than-significant impact related to GHG emissions). This option provides flexibility in achieving less-than-significant GHG emissions. To demonstrate consistency, a project analysis should address the two questions below.

If the project is consistent with a local GHG reduction strategy that meets CEQA Guidelines Section 15183.5(b) requirements, it is not likely to conflict with applicable initiatives to reduce GHG emissions. The rationale, justification, and substantial evidence supporting this conclusion can be found Appendix B, CEQA Thresholds for Evaluating the Significance of Climate Impacts From Land Use Projects and Plans (Justification Report, April 2022). Detailed guidance on how local GHG reduction plans can meet the criteria in Section 15183.5(b) can be found in Appendix C, Guidance for GHG Reduction Strategies.

🔨 Does the CEQA analysis include an evaluation and discussion of the GHG emissions associated with the project through at least the time horizon specified in the GHG Reduction Strategy and through 2030 and 2045?

The CEQA document should evaluate and discuss the GHG emissions associated with the project through at least the timeframe specified in the GHG reduction strategy and through midcentury. This evaluation should include a projection of the project's GHG emissions through the year specified in the GHG reduction strategy

[5] See https://www.hcd.ca.gov/calgreen for most recently adopted version of CalGreen.

and years 2030 and 2045 (if those years are not already specified in the GHG reduction strategy), as well as a comparison of those projected GHG emissions to baseline GHG emissions. If the CEQA document does not include this evaluation, or if the project's emissions are inconsistent with the GHG targets in the GHG reduction strategy and State's 2030 and 2045 goals, then the project GHG emissions would likely be significant.

🔨 Does the project incorporate relevant GHG emission reduction measures specified in the GHG reduction strategy?

A GHG reduction strategy is designed for the whole community – new and existing development. Because this type of broad community-wide strategy relies on changes across the existing built environment as well as new development to achieve its GHG reduction targets, it may not need to require all of the design elements listed above for new development projects in order to meet the community-wide targets. However, if a project is claiming a less than significant climate impact by demonstrating consistency with a GHG reduction strategy, it must incorporate all elements of the GHG reduction strategy that are applicable to the project, whether those elements are required/mandatory or not. The GHG reduction strategy may have a checklist or other specific measures that apply to land use projects and plans. If the project incorporates all relevant measures indicated by the GHG reduction strategy, then the impacts from the project's GHG emissions may be less than significant. However, if the project does not incorporate the relevant measures, then the project is not consistent with the GHG reduction strategy, and its impacts from GHG emissions will be significant.

6.3 CONSTRUCTION-RELATED GHG EMISSIONS

Because construction emissions are temporary and variable, the Air District has not developed a quantitative threshold of significance for construction-related GHG emissions. However, the Lead Agency should quantify and disclose GHG emissions that would occur during construction. In its Discussion Draft Climate Change Advisory document, OPR encourages lead agencies to quantify a project's construction (as well as its operational) GHG emissions, using available data and tools, to determine the amount, types, and sources of GHG emissions resulting from the project. Even though the significance of construction-related GHG emissions is not determined, in order to minimize GHG emissions and emissions of other air quality pollutants, projects should incorporate the best management practices for reducing GHG emissions listed in Table 6-1 to reduce emissions from construction-related activities.

Table 6-1 Best Management Practices for Construction-Related GHG Emissions

Use zero-emission and hybrid-powered equipment to the greatest extent possible, particularly if emissions are occurring near sensitive receptors or located within a BAAQMD-designated Community Air Risk Evaluation (CARE) area or Assembly Bill 617 community.
Require all diesel-fueled off-road construction equipment be equipped with EPA Tier 4 Final compliant engines or better as a condition of contract.
Require all on-road heavy-duty trucks to be zero emissions or meet the most stringent emissions standard, such as model year (MY) 2024 to 2026, as a condition of contract.
Minimize idling time either by shutting equipment off when not in use or reducing the time of idling to no more than 2 minutes (A 5-minute limit is required by the state airborne toxics control measure [Title 13, Sections 2449(d)(3) and 2485 of the California Code of Regulations]). Provide clear signage that posts this requirement for workers at the entrances to the site and develop an enforceable mechanism to monitor idling time to ensure compliance with this measure.
Prohibit off-road diesel-powered equipment from being in the "on" position for more than 10 hours per day.
Use California Air Resources Board–approved renewable diesel fuel in off-road construction equipment and on-road trucks.
Use U.S. Environmental Protection Agency SmartWay certified trucks for deliveries and equipment transport.
Require all construction equipment is maintained and properly tuned in accordance with manufacturer's specifications. Equipment should be checked by a certified mechanic and determined to be running in proper condition prior to operation.
Where grid power is available, prohibit portable diesel engines and provide electrical hook ups for electric construction tools, such as saws, drills and compressors, and using electric tools whenever feasible.
Where grid power is not available, use alternative fuels, such as propane or solar electrical power, for generators at construction sites.
Encourage and provide carpools, shuttle vans, transit passes, and/or secure bicycle parking to construction workers and offer meal options onsite or shuttles to nearby meal destinations for construction employees.
Reduce electricity use in the construction office by using LED bulbs, powering off computers every day, and replacing heating and cooling units with more efficient ones.
Minimize energy used during site preparation by deconstructing existing structures to the greatest extent feasible.
Recycle or salvage nonhazardous construction and demolition debris, with a goal of recycling at least 15% more by weight than the diversion requirement in Title 24.
Use locally sourced or recycled materials for construction materials (goal of at least 20% based on costs for building materials and based on volume for roadway, parking lot, sidewalk and curb materials). Wood products used should be certified through a sustainable forestry program.
Use low-carbon concrete, minimize the amount of concrete used and produce concrete on-site if it is more efficient and lower emitting than transporting ready-mix.
Develop a plan to efficiently use water for adequate dust control since substantial amounts of energy can be consumed during the pumping of water.
Include all requirements in applicable bid documents, purchase orders, and contracts, with successful contractors demonstrating the ability to supply the compliant on- or off-road construction equipment for use prior to any ground-disturbing and construction activities.

6.4 STATIONARY SOURCES OF GHG EMISSIONS

For a project to have a less-than-significant impact related to stationary source GHG emissions, it must fall below the bright-line threshold of producing 10,000 metric tons of carbon dioxide equivalent ($MTCO_2e$) per year (see Chapter 3, Table 3-2).

The Air District is responsible for issuing permits for the construction and operation of stationary sources in order to reduce air pollution and to attain and maintain the national and California ambient air quality standards in the Bay Area. A stationary source consists of an emission source with an identified emission point, such as a stack at a facility. It should include mobile sources that are associated with the stationary source such as trucks, ships, and rail. Facilities can have multiple emission point sources located on-site. Major stationary sources are typically associated with industrial processes, such as refineries and power plants. Minor stationary sources include gasoline-dispensing stations and dry-cleaning establishments. Examples of other Air District–permitted stationary sources include backup diesel generators, boilers, heaters, flares, cement kilns, and other types of combustion equipment, as well as non-combustion sources, such as coating or printing operations. Newly modified or constructed stationary sources subject to Air District permitting are required to implement best available control technology, which may include the installation of emission control equipment and/or operational requirements (for information on Air District permitting requirements, see the Bay Area Air Quality Management District Permit Handbook).[6]

🔨 Are the estimated GHG emissions greater than the bright-line threshold?

If GHG emissions would be greater than 10,000 $MTCO_2e$ per year, the project would have significant impact related to GHG emissions. If emissions would be less than 10,000 $MTCO_2e$ per year, the impact would be less than significant.

Estimating the GHG emissions from stationary sources should be done in consultation with the Air District. Although some stationary source GHG emissions can be calculated in the California Emissions Estimator Model (CalEEMod), many will need to be calculated off-model. Sources of emission factors include the U.S. Environmental Protection Agency (EPA) AP-42 emission factors for certain industrial processes, manufacturer specifications for specific equipment, throughput data (e.g., fuel consumption, rate of material feedstock input), and other specifications provided by the project engineer. In addition, the California Regulation for the Mandatory Reporting of GHG Emissions (CARB 2018) provides and references methodologies to calculate GHG emissions and includes GHG emission factors from various emission sources, including cement production, electricity generation and cogeneration, petroleum refineries, hydrogen production, and stationary fuel combustion sources. The most up-to-date emission factors and methodologies consistent with requirements of the Air District permitting process should be used.

For backup generators, the Air District recommends that lead agencies include non-testing and non-maintenance (emergency) operations hours in addition to the permitted testing and maintenance hours for purposes of calculating emissions. While emergency operation is unplanned and infrequent, it is foreseeable that a backup generator may have to operate to respond to emergency conditions at some point during its useful life. Inclusion of annual emergency operations hours is consistent with Air District requirements for

[6] Bay Area Air Quality Management District. Permit Handbook, https://www.baaqmd.gov/~/media/files/engineering/permit-handbook/baaqmd-permit-handbook.pdf (accessed February 28, 2022)

calculating the Potential to Emit (PTE) for purposes of determining the applicability of permitting regulations under Reg. 2 including the Air District's New Source Review regulations (Reg. 2, Rule 2) and Title V Major Facility Review regulations (Reg. 2, Rule 6). As described in the Air District's Policy "Calculating Potential to Emit for Emergency Backup Power Generators" (BAAQMD 2019), the Air District uses 100 hours to represent a reasonable worst-case assumption of emergency operations hours for a given year.

To determine appropriate emergency operations hours, lead agencies can refer to available information regarding backup generator use, such as the California Public Utilities Commission (CPUC) Emergency Load Reduction Program (CPUC 2021a) or CPUC information on temporary emergency generation use (CPUC 2021b). Additionally, the Air District is developing supplemental guidance to assist lead agencies in selecting appropriate backup generator emergency operations hours.

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CARB. *See* California Air Resources Board.

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