

California Air Resources Board

Preliminary Draft Staff Proposal

Recommended Approaches for Setting Interim Significance Thresholds for Greenhouse Gases under the California Environmental Quality Act

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DOCUMENT AVAILABILITY

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INTRODUCTION

Climate change is one of the most serious environmental problems facing the world, the United States, and California today. In this State, climate change already is impacting our coastlines, water supplies, agriculture, and public health, and putting millions of acres of forested land at increased risk of fire. These adverse effects will only increase in number and intensity if we do not promptly and substantially reduce pollution of the atmosphere with greenhouse gases (GHGs).

California law provides that climate change is an environmental effect subject to the California Environmental Quality Act (CEQA).¹ Lead agencies therefore are obligated to determine whether a project's climate change-related effects may be significant, requiring preparation of an Environmental Impact Report,² and to impose feasible mitigation to substantially lessen any significant effects.³ Determining significance, however, can be a challenging task. Accordingly, the Governor's Office of Planning and Research in its June 2008 Technical Advisory, "CEQA and Climate Change,"⁴ asked the Air Resources Board (ARB) to make recommendations for GHG-related thresholds of significance – identifiable benchmarks or standards that assist lead agencies in the significance determination.⁵

With this Staff Proposal, ARB staff is taking the first step toward developing recommended statewide interim thresholds of significance for GHGs that may be adopted by local agencies for their own use. The task that ARB staff is undertaking is, however, a limited one. Staff will not attempt to address every type of project that may be subject to CEQA, but instead will focus on common project types that, collectively, are responsible for substantial GHG emissions – specifically, industrial, residential, and commercial projects.⁶ ARB staff believes that thresholds in these important sectors will advance our climate objectives, streamline project review, and encourage consistency and uniformity in the CEQA analysis of GHG emissions throughout the State.

Staff intends to make its final recommendations on thresholds in early 2009, in order to harmonize with OPR's timeline for issuing draft CEQA guidelines addressing GHG emissions⁷ and to provide much needed guidance to lead agencies in the near term.

Public, stakeholder, and local lead agency participation is essential to the success of this project. ARB staff believes that the comment and feedback it receives, along with

¹ Senate Bill 97, Public Resources Code, § 21083.05.

² California Code of Regulations, tit. 14, § 15064, subd. (f)(1).

³ Id., § 15021, subd. (a)(2).

⁴ See: <http://opr.ca.gov/download.php?dl=ceqa/pdfs/june08-ceqa.pdf>

⁵ Id., § 15064.7, subd. (a).

⁶ The collective greenhouse gas emissions from the industrial, residential and commercial sectors, together with the transportation sector, represent approximately 80% of the statewide greenhouse gas emissions inventory in 2004.

⁷ See Senate Bill 97, Public Resources Code § 21083.05 (providing that draft guidelines are due June 1, 2009).

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additional data and analyses, can form a body of evidence that lead agencies may rely on in adopting thresholds of significance consistent with ARB staff's recommendations.

Because the schedule is expedited, staff's recommendations must necessarily be interim and subject to review and revision as more information becomes available.⁸

BACKGROUND

Significance Under CEQA

A significant effect on the environment means a substantial, or potentially substantial, change in the environment caused directly or indirectly by the project.⁹ The incremental effect of a project can be significant when it is cumulatively considerable – that is, when the effect is added to that of other past, present, and reasonably foreseeable probable future projects that also contribute to the problem.¹⁰

To streamline and facilitate consistency in the significance determination, the CEQA Guidelines¹¹ encourage agencies “to develop and publish thresholds of significance that the agency uses in the determination of the significance of environmental effects.”¹² A threshold of significance is an identifiable quantitative, qualitative or performance level that marks the division between an impact that is significant and one that is not. A threshold of significance gives rise to a presumption, which can be rebutted by evidence that the threshold should not apply to a particular project.

Thresholds of significance must be supported by “substantial evidence.” This does not mean that there is one best threshold. In CEQA, substantial evidence “means enough relevant information and reasonable inferences from this information that a fair argument can be made to support a conclusion, even though other conclusions might also be reached.”¹³

Climate Change and GHG Thresholds of Significance

“The capacity of the environment is limited, and it is the intent of the Legislature that the government of the state take immediate steps to identify any critical thresholds for the health and safety of the people of the state and take all coordinated actions necessary to prevent such thresholds being reached.”¹⁴ But where should a threshold of significance be set for GHG emissions and climate change? This question can be answered only after considering the nature of the environmental problem.

⁸ ARB staff intends to monitor the implementation of thresholds that are adopted as a result of this process for effectiveness. In the same time frame as the update of the AB 32 Scoping Plan, staff intends to revisit its recommendations and to modify them if necessary.

⁹ California Code of Regulations, title 14, §§ 15064, subd. (d), 15382.

¹⁰ *Id.*, § 15355, subd. (b).

¹¹ *Id.*, § 15000, et. seq.

¹² *Id.*, § 15064.7, subd. (a).

¹³ *Id.*, § 15384, subd. (a).

¹⁴ Public Resources Code, § 21000, subd. (d).

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There is a scientific consensus that human activities, chief among them the burning of fossil fuels, profoundly affect the world's climate by increasing the atmospheric concentration of GHG beyond natural levels. Contributing additional GHG pollution to the atmosphere leads to higher global average temperatures, changes to climate, and adverse environmental impacts here in California and around the world.¹⁵ Climate change, caused by “collectively significant projects taking place over a period of time[,]”¹⁶ is a quintessential cumulative impact.

The experts tell us that an additional increase in global average temperatures of just 2 degrees Celsius (3.6 degrees Fahrenheit) is very likely dangerous.¹⁷ With a 2 degree Celsius increase, disastrous effects become likely, including more extreme and more frequent severe weather, more wildfires, greater frequency of droughts and floods, rapid and higher sea level rise, and increased habitat destruction and extinctions.¹⁸ These environmental effects will undoubtedly lead to serious economic, political, and national security disruptions.

In order to reduce the risk of dangerous climate change, we must stabilize atmospheric levels of GHGs at approximately 450 parts per million (ppm) by mid-century.¹⁹ We are fast approaching this limit. Since the beginning of the industrial era, atmospheric concentrations of carbon dioxide, the primary GHG, have climbed to their highest point in the last half-million years, increasing from just under 300 ppm at the turn of the last century, to over 380 ppm today, and rising at about 2 ppm per year.²⁰

In response to the challenge of climate change, California has taken a leadership role by committing to reduce its GHG emissions to 1990 levels by 2020 (about a thirty percent reduction in business-as-usual emissions in 2020) and to eighty percent below 1990 levels by 2050.²¹ The latter target is consistent with the scientific consensus of the reductions needed to stabilize atmospheric levels of GHGs at 450 ppm by mid-century. Assembly Bill 32, the Global Warming Solutions Act of 2006, codifies the 2020 reduction

¹⁵ There is a large body of authoritative sources on the causes and current and projected impacts of climate change. An extended discussion of climate change is beyond the scope of this Staff Proposal. For additional information, ARB recommends the Fourth Assessment Report by the Intergovernmental Panel on Climate Change (IPCC) and, in particular, the IPCC's "Frequently Asked Questions," available at: <http://www.ipcc.ch/pdf/assessment-report/ar4/wg1/ar4-wg1-faqs.pdf> and the 2006 California Climate Action Team's Report to the Governor and Legislature, available at: http://www.climatechange.ca.gov/climate_action_team/reports/index.html.

¹⁶ See California Code of Regulations, tit. 14, § 15355, subd. (b).

¹⁷ See IPCC 4th Assessment Report, Working Group II, Summary for Policymakers, Figure 2, available at: <http://www.ipcc.ch/graphics/graphics/ar4-wg2/jpg/spm2.jpg> (chart showing global impacts at various temperature increases); California Climate Change Center, Our Changing Climate: Assessing the Risks to California (2008) at p. 15, available at <http://www.energy.ca.gov/2006publications/CEC-500-2006-077/CEC-500-2006-077.PDF> (chart showing impacts in California at various temperature increases.)

¹⁸ *Id.*

¹⁹ See IPCC 4th Assessment Report, Working Group III, Summary for Policymakers at p. 17, available at <http://www.ipcc.ch/pdf/assessment-report/ar4/wg3/ar4-wg3-spm.pdf>.

²⁰ IPCC 4th Assessment Report, Working Group I, Figure FAQ 2.1, available at: <http://www.ipcc.ch/graphics/graphics/ar4-wg1/jpg/faq-2-1-fig-1.jpg>.

²¹ Executive Order S-03-05

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target and charges ARB with development of a Scoping Plan to map out how the State will achieve this target, including regulatory, voluntary, and market-based mechanisms beginning in 2012.²²

There is strong need, however, to aggressively address GHG emissions right now. The pollution we contribute to the atmosphere today will continue to have climate impacts for years, decades, and, in some cases, millennia to come. And the longer we delay in addressing the problem, the more we risk being unable to meet our climate objective. CEQA provides a mechanism that is independent of AB 32 through which lead agencies can begin immediately to reduce the climate change-related impacts of the projects that come before them.

What Type of Threshold is Appropriate?

Some have suggested that because of the need for urgent action and the uncertainty of the precise “tipping point” for dangerous climate change, any contribution of GHGs to the atmosphere may be significant – a so-called “zero threshold.”

ARB staff believes that for the project types under consideration, non-zero thresholds can be supported by substantial evidence. ARB staff believes that zero thresholds are not mandated in light of the fact that (1) some level of emissions in the near term and at mid-century is still consistent with climate stabilization and (2) current and anticipated regulations and programs apart from CEQA (e.g., AB 32, the Pavley vehicle regulations, the Renewable Portfolio Standard, the California Solar Initiative, and the commitment to net-zero-energy buildings by 2020 (residential) and 2030 (commercial)) will proliferate and increasingly will reduce the GHG contributions of past, present, and future projects.

But any non-zero threshold must be sufficiently stringent to make substantial contributions to reducing the State’s GHG emissions peak, to causing that peak to occur sooner, and to putting California on track to meet its interim (2020) and long-term (2050) emissions reduction targets. ARB staff believes that the preliminary interim approaches outlined in this Staff Proposal are consistent with these objectives.

RECOMMENDED THRESHOLDS – CONCEPTUAL APPROACH

ARB staff believes that different GHG thresholds of significance may apply to projects in different sectors. Two primary reasons that sector-specific thresholds are appropriate are: (1) some sectors contribute more substantially to the problem, and therefore should have a greater obligation for emissions reductions, and, (2) looking forward, there are differing levels of emissions reductions expected from different sectors in order to meet California’s climate objectives. We also believe that different types of thresholds – quantitative, qualitative, and performance-based – can apply to different sectors under the premise that the sectors can and must be treated separately given the state of the science and data. A sector-specific approach is consistent with ARB’s

²² Health and Safety Code, § 38500, et. seq.

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Proposed Scoping Plan. Consequently, the Staff Proposal takes different, although harmonious, approaches to setting thresholds for different sectors.

The attached flowcharts describe ARB staff's preliminary interim threshold concepts for two important sectors: industrial projects (**Attachment A**) and residential and commercial projects (**Attachment B**). The objective is to develop thresholds for projects in these sectors that will result in a substantial portion of the GHG emissions from new projects being subject to CEQA's mitigation requirement, consistent with a lead agency's obligation to "avoid or minimize environmental damage where feasible."²³ ARB staff is working on a proposal for an interim approach for thresholds for transportation projects and large dairies. Electricity generation is another sector where clarity is needed in the near term. The California Energy Commission (CEC) recently began a public process for identifying an approach for assessing the significance of GHG emissions from power plant projects. CEC staff anticipates concluding that work in Spring 2009.²⁴

ARB staff's proposed recommendations for GHG thresholds address projects for which local agencies are typically the CEQA lead agency. In addition to the CEC, other State agencies also serve as lead agencies under CEQA. ARB is coordinating with these State agencies on their approaches to thresholds of significance.

²³ California Code of Regulations, title 14, § 15021.

²⁴ The CEC adopted an Order Instituting Informational Proceeding on October 8, 2008 to address GHG emissions in power plant licensing cases: http://www.energy.ca.gov/ghg_powerplants/notices/2008-10-06_PROPOSED_GHG_CEQA_OII.PDF.

REQUEST FOR PUBLIC COMMENT

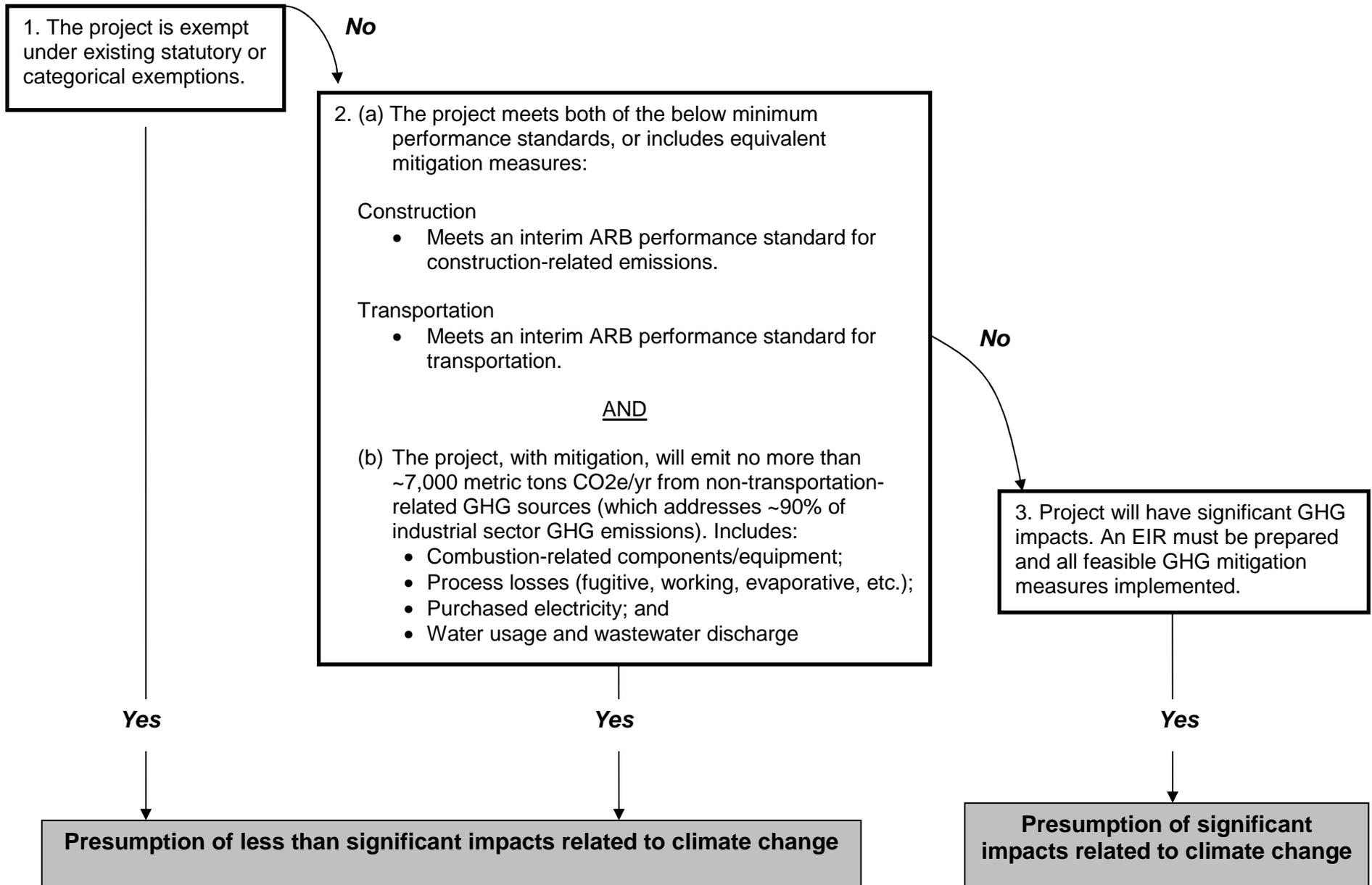
ARB staff believes that the concepts in this Staff Proposal can be further developed into interim thresholds of significance. However, staff recognizes that additional analyses and data are needed to fill in some of the blanks, and to understand how the thresholds will operate in the real world.

Comments on all aspects of the Staff Proposal are encouraged. In particular, ARB seeks the active participation of local lead agencies. Staff has identified a few questions to solicit public comment, but this list is not exhaustive.

- Will the recommended approaches have any unintended consequences, for example, encouraging the piecemealing of projects?
- As set out in the attachments to the Staff Proposal, staff proposes to define certain performance standards (*e.g.*, for energy efficiency) by referencing or compiling lists from existing local, State or national standards. For some sub-sources of GHG emissions (*e.g.*, construction, transportation, waste), ARB staff has not identified reference standards. How should the performance standards for these sub-sources be defined?
- Are any of the industrial, residential, or commercial project types eligible for categorical exemptions likely to contribute more significantly to climate change than staff's preliminary analysis indicates?
- For residential and commercial projects, staff has proposed that the GHG emissions of some projects that meet GHG performance standards might under some circumstances still be considered cumulatively considerable and therefore significant. What types of projects might still have significant climate change-related impacts?

ATTACHMENT A

Preliminary Draft Proposal for Industrial Projects



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Introduction

CEQA guidelines provide that thresholds of significance can be qualitative, quantitative, or in the form of performance standards. ARB staff's objective is to develop a threshold of significance that will result in the vast majority (~90% statewide) of the greenhouse gas (GHG) emissions from new industrial projects being subject to CEQA's requirement to impose feasible mitigation. ARB staff believes this can be accomplished with a threshold that allows small projects to be considered insignificant. ARB staff used existing data for the industrial sector to derive a proposed hybrid threshold. The threshold consists of a quantitative threshold of 7,000 metric tons of CO₂ equivalent per year (MTCO₂e/year) for operational emissions (excluding transportation), and performance standards for construction and transportation emissions.

The goal of this effort is to provide for the mitigation of GHG emissions from industrial projects on a statewide level. Over time, implementation of AB 32 will reduce or mitigate GHG emissions from industrial sources. Once such requirements are in place, they could become the performance standard for industrial projects for CEQA purposes. ARB staff intends to pursue this approach in conjunction with development of the regulatory requirements for industrial sources in the Proposed AB 32 Scoping Plan. Staff is proposing the use of a quantitative significance threshold at least until such time that performance standards, such as AB 32 regulatory requirements, are in place to ensure mitigation of significant impacts of GHG emissions from projects in the industrial sector.

The performance standards are largely self explanatory and similar to the approaches proposed for residential and commercial projects. The method for deriving the quantitative aspect of the threshold warrants further explanation.

Technical foundation for proposed quantitative aspect of the threshold

Based on the available data, ARB staff found that for the industrial sector, small projects – defined as the portion of new projects that, when viewed collectively, were responsible for only a relatively small amount of emissions – could be allowed to proceed without requiring additional mitigation under CEQA. The question for ARB staff was what line divides these small projects from the rest of the projects that should undergo mitigation to achieve the larger environmental objective.

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ARB decided to construct a representative small project and to estimate that project's expected emissions. First, ARB considered the common sub-sources of GHG emissions in the industrial sector. The four main broad emission categories and their approximate statewide contribution to GHG emissions from industrial facilities other than power plants are:

Category	MMTCO₂e/year	Percent (%)
Combustion processes	70	63 %
Process Losses (evaporative, fugitive, working, etc.)	15	13 %
Purchased Electricity	18	17 %
Water Use and Wastewater Treatment	7	7 %

As the table indicates, GHG emissions from industrial sources are dominated by combustion emissions. To ensure that significant industrial emissions would be captured by the proposed threshold, ARB staff evaluated industrial boilers because they are a very common piece of equipment, are essential in many energy-intensive industries, and are a top contributor to industrial combustion emissions.

A recent comprehensive survey of industrial boilers by Oak Ridge National Laboratory²⁵ found that boilers with an input capacity of 10 MMBtu/hr or greater correspond to 93 percent of total industrial boiler input capacity. Based on this data, ARB staff used a natural gas boiler input capacity benchmark of 10 MMBtu/hr which equates to emissions of 4,660 MTCO₂e/yr. This capacity benchmark defines a significant combustion source.

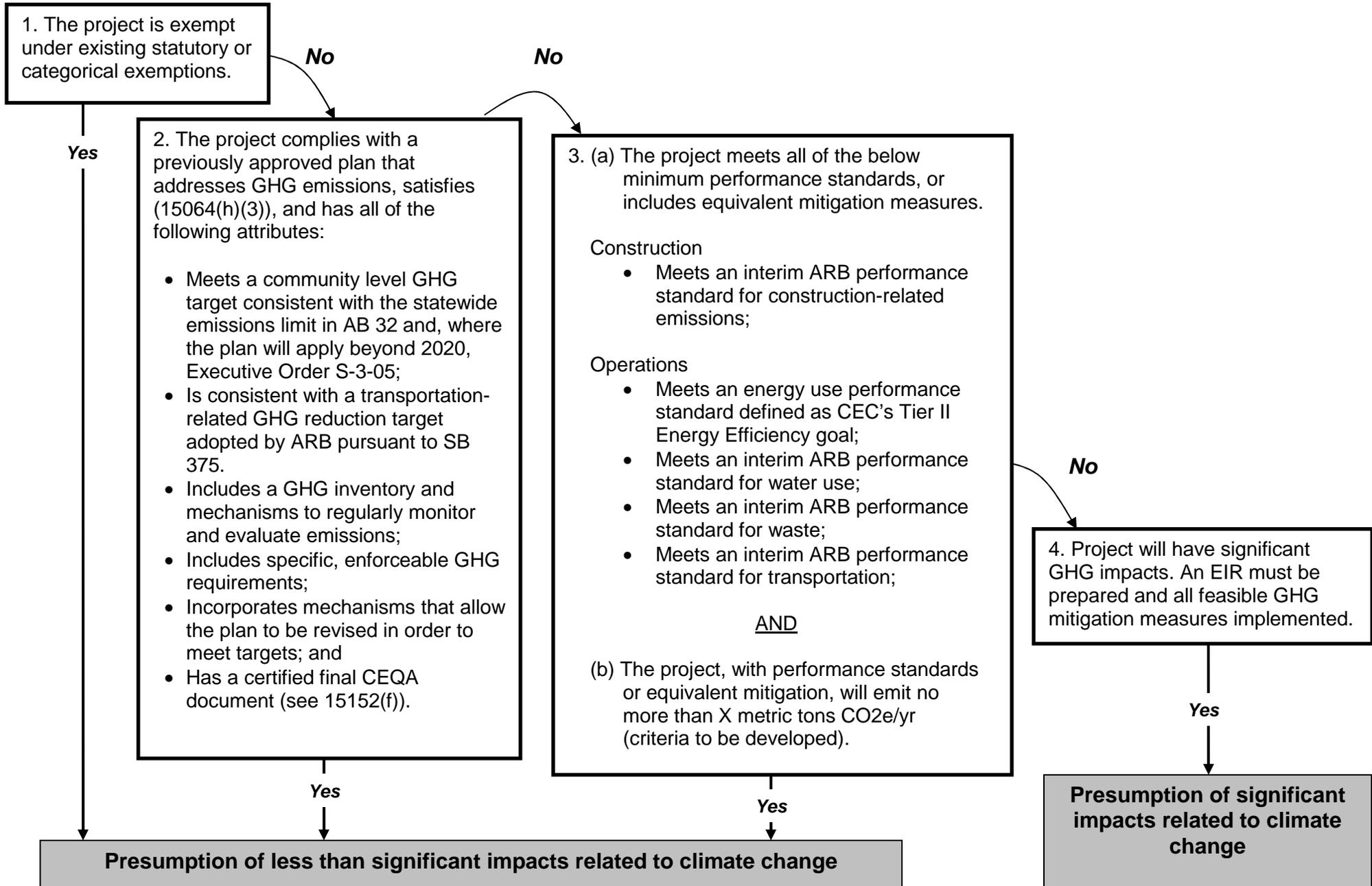
As shown in the above table, combustion processes account for 63 percent of the statewide GHG emissions from industrial facilities. Process losses, purchased electricity, and water use and water treatment account for the remaining 27 percent of emissions. Staff applied these proportions to the benchmark combustion emissions estimate (4,660 MTCO₂e/yr). The result is an overall emissions estimate of approximately 7,000 MTCO₂e/yr for a representative small project that accounts for the four main categories in the table above.

Based on the available data, staff believes that the 7,000 MTCO₂e/year benchmark can be used to effectively mitigate industrial projects with significant GHG emissions.

²⁵ Characterization of the U.S. Industrial/Commercial Boiler Population, Energy, and Environmental Analysis, Inc. submitted to Oak Ridge National Laboratory, available at: http://www.eea-inc.com/natgas_reports/BoilersFinal.pdf.

ATTACHMENT B

Preliminary Draft Proposal for Residential and Commercial Projects



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Introduction

CEQA guidelines provide that thresholds of significance can be qualitative, quantitative, or in the form of performance standards. ARB staff's objective is to develop a threshold for residential and commercial projects that will substantially reduce the greenhouse gas (GHG) emissions from new projects and streamline the permitting of carbon-efficient projects. To achieve this, staff's preliminary recommendation is to develop a threshold based on clear and stringent performance standards.

Performance standards will address the five major emission sub-sources for the sector: energy use, transportation, water use, waste, and construction. For the energy use performance standard, staff recommends reliance on the California Energy Commission's (CEC) Tier II Energy Efficiency standards for solar energy incentive programs. These standards are consistent with what is needed to meet the state's goal of zero net energy buildings and are continuously updated to reflect energy efficiency best practices. For the remaining sub-sources (water, waste, etc.), staff intends to compile benchmark performance standards as part of its final threshold recommendation. Projects may alternatively incorporate mitigation equivalent to these performance standards.

Staff recognizes that a substantial body of measures to address GHG emissions exists through programs like LEED, GreenPoint Rated, and the California Green Building Code. As work on performance standards moves forward, staff intends to make use of these projects.

In addition, staff proposes that a presumption of non-significance apply only to projects whose total net emissions, after meeting the performance standards or equivalent, are below a specified level. Staff proposes to develop this emissions level as part of its final threshold recommendation.

Discussion of Flow Chart

Box 1: In general, categorical exemptions will continue to apply.

Based on its preliminary analysis, ARB staff believes that projects described in CEQA's categorical and statutory exemption provisions (Articles 18 and 19 of the California Code of Regulations, title 14) will not interfere with achieving the objective to minimize emissions from new projects in this sector. GHG emissions from residential and commercial projects that are described in the categorical exemption language appear to be relatively small from a GHG perspective. For example, staff's preliminary analysis indicates that emissions from a project qualifying for the statutory infill project exemption (Cal. Code Regs., tit. 14, § 15195) will emit approximately 1,600 metric tons (MT)CO₂e/yr. Staff believes

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such infill projects represent some of the largest projects described in the exemption provisions. ARB staff expects to provide additional analyses to support a lead agency's determination that the GHG impact of these project types is less than significant. Staff invites the public and stakeholders to provide further evidence on the application of categorical exemptions to residential and commercial projects.

Box 2: If GHGs are adequately addressed at the programmatic level, the impact of certain individual projects can be found to be insignificant.

As OPR noted in its June 2008 Technical Advisory:

CEQA can be a more effective tool for greenhouse gas emissions analysis and mitigation if it is supported and supplemented by sound development policies and practices that will reduce greenhouse gas emissions on a broad planning scale and that can provide the basis for a programmatic approach to project-specific CEQA analysis and mitigation.... For local government lead agencies, adoption of general plan policies and certification of general plan EIRs that analyze broad jurisdiction-wide impacts of greenhouse gas emissions can be part of an effective strategy for addressing cumulative impacts and for streamlining later project-specific CEQA reviews.

ARB staff encourages local agencies to take advantage of a programmatic approach to address climate change, consistent with existing law.

If a project complies with the requirements of a previously adopted GHG emission reduction plan or mitigation program that satisfies California Code of Regulations, title 14, section 15064(h)(3), and includes the attributes specified in that provision and Box 2, the lead agency may determine that the project's GHG impacts are less than significant with no further analysis required. Examples of plans that may satisfy this provision include Climate Action Plans incorporated into General Plans that have inventories, an emissions target, suites of specific and enforceable measures to reach that target, monitoring and reporting, and mechanisms to revise the plan to stay on target. Moreover, a prior EIR that "adequately addressed" climate change may be used for tiering purposes. (See Cal. Code Regs. tit. 14, § 15152.)

Box 3: Projects that meet performance standards, or include equivalent mitigation, can be found to be insignificant.

The threshold incorporates performance standards requiring carbon efficiency for each major sub-source of emissions from projects in these sectors. Provided they are set at a sufficiently stringent level, performance standards will dramatically reduce GHG emissions and promote a transition toward zero and low emission projects. In most cases, ARB staff expects that performance

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standards will need to reach beyond current State mandates by a substantial amount, given that GHG emission reduction goals have not yet been adequately incorporated into State programs. Staff anticipates that performance standards will become more stringent over time.

ARB staff has identified the California Energy Commission's Tier II Energy Efficiency goals as an appropriate performance standard for energy use. Under State law, the CEC is required to establish eligibility criteria, conditions for incentives, and rating standards to qualify for ratepayer-funded solar energy system incentives in California. As part of this effort, the CEC establishes energy efficiency standards for homes and commercial structures, and requires new buildings to exceed current building standards by meeting Tier Energy Efficiency goals. CEC's Tier II Energy Efficiency goals will continue to be updated to achieve energy efficiency best practices, and are consistent with what is needed to meet the California Public Utilities Commission Strategic Plan goals of zero net energy buildings. Currently, the CEC's proposed guidelines for the solar energy incentive program recommend a Tier II goal for residential and commercial projects of a 30 percent reduction in building combined space heating, cooling, and water heating energy compared to the 2008 Title 24 Standards.²⁶

For the remaining sub-sources, staff intends to compile benchmark performance standards as part of its final threshold recommendation. ARB staff believes that existing progressive green building standards provide a starting point for performance standards for transportation, water use, waste, and construction-related emissions. Existing green building rating systems like LEED, GreenPoint Rated, the California Green Building Code, and others, contain examples of measures that are likely to result in substantial GHG emission reductions from residential and commercial projects. The key to this approach will be identifying effective GHG reduction measures within these systems. ARB staff would like input from the public and stakeholders on appropriate performance standards for these sub-sources. Performance standards that already exist and have been proven to be effective – at the local, State, national or international level – are preferable.

Under staff's proposed approach, lead agencies would be allowed to find that a project's mitigation is "equivalent" to identified performance standards, thereby allowing for cost-effective and innovative approaches to reducing GHG emissions.

Staff believes that under some circumstances, projects that meet performance standards or include equivalent mitigation measures will have impacts that may still be cumulatively considerable and therefore significant. For this reason, staff recommends that, in addition to meeting performance standards or including

²⁶ [Guidelines for California's Solar Electric Incentive Program Pursuant to Senate Bill 1 - SECOND EDITION - Draft Guidelines](http://www.energy.ca.gov/2008publications/CEC-300-2008-007/CEC-300-2008-007-D.PDF) can be found at:
<http://www.energy.ca.gov/2008publications/CEC-300-2008-007/CEC-300-2008-007-D.PDF>

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equivalent mitigation measures, a project must also emit no more than “X” MTCO₂e/yr. Criteria for determining this emissions level have yet to be defined. ARB requests public and stakeholder input on what types of projects might still have significant climate change-related impacts.

Box 4: Presumption of significant impacts.

If a project cannot meet the requirements in the previous boxes, it should be presumed to have significant impacts related to climate change. The lead agency must then prepare an EIR, or other appropriate document, and implement all feasible GHG mitigation measures.