

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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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

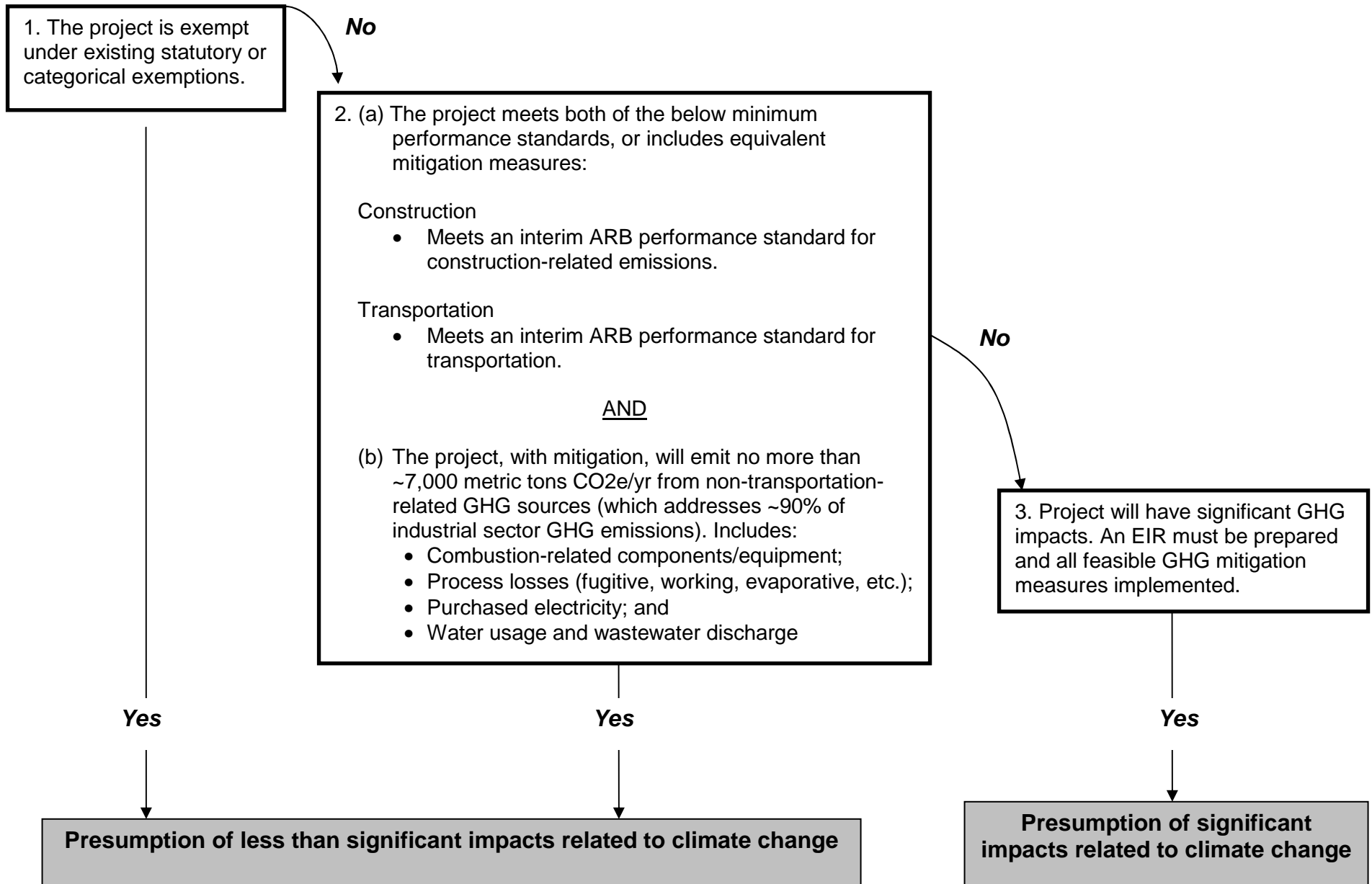
ARB staff believes that the concepts in this Staff Proposal can be further developed into interim thresholds of significance. However, staff recognizes that additional analyses and data are needed to fill in some of the blanks, and to understand how the thresholds will operate in the real world.

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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Preliminary Draft Proposal for Industrial Projects

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.

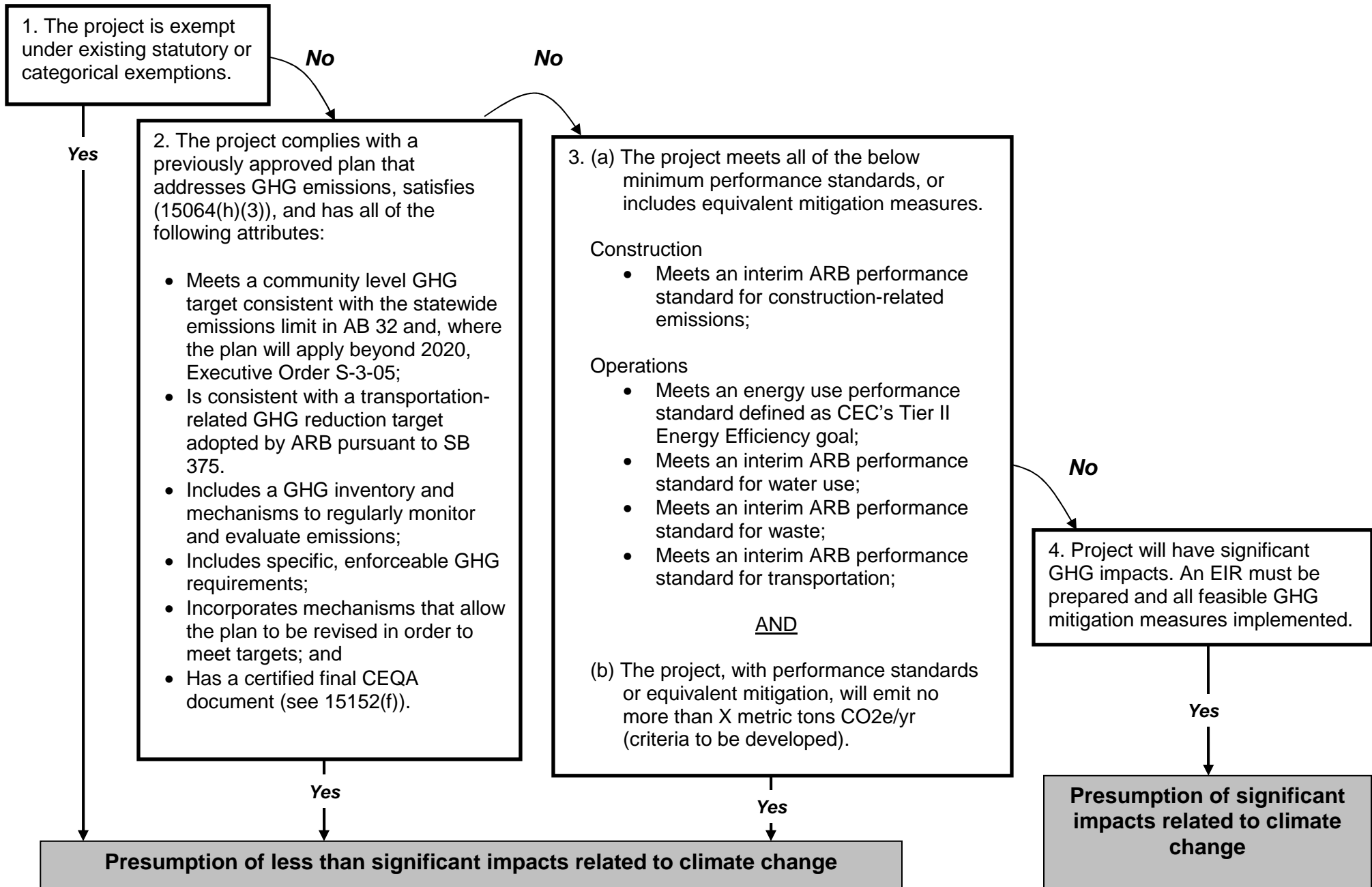
As shown in the above table, combustion processes account for 63 percent of the statewide GHG emissions from industrial facilities. Process losses, purchased electricity, and water use and water treatment account for the remaining 27 percent of emissions. Staff applied these proportions to the benchmark 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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Preliminary Draft Proposal for Residential and Commercial Projects

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.

ATTACHMENT E

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

Draft Guidance Document – Interim CEQA Greenhouse Gas (GHG) Significance Threshold

October 2008

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P R E F A C E

This Draft *Guidance Document – Interim CEQA Greenhouse Gas (GHG) Significance Threshold* document contains the proposed interim GHG significance threshold, rationale for developing the threshold, and details of the working group meetings and represents a work-in-progress of staff's efforts to date. This document will be updated as more information becomes available. For the staff recommendation to the Governing Board at the December 5, 2008 public hearing, please refer to Attachment A of Agenda Item Number 31.

Finally, to facilitate identifying changes to this Guidance Document since its release in October 2008, added text is underlined and deleted text is denoted with ~~striketrough~~ text.

LIST OF ACRONYMS AND ABBREVIATIONS

List of Acronyms and Abbreviations

Acronym/ Abbreviation	Definition
AB 32	Assembly Bill 32 Global Warming Solutions Act of 2006
AER	Annual Emission Reporting
AG	Attorney General
ARB	Air Resources Board
BACT	Best Available Control Technology
BARCT	Best Available Retrofit Control Technology
BAU	Business as Usual
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resource Board
CAT	Climate Action Team
CCAR	California Climate Action Registry
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CH ₄	Methane
CO	Carbon Monoxide
CO ₂	Carbon Dioxide
CPUC	California Public Utilities Commission
EIR	Environmental Impact Report
EPA	U.S. Environmental Protection Agency
FY	Fiscal Year
GHG	Greenhouse Gas
GGRP	Greenhouse Gas Reduction Plan
GP	General Plan
GWP	Global Warming Potential
IGR	Intergovernmental Review
IPCC	International Panel on Climate Change
ITE	Institute of Transportation Engineers
km	Kilometer
LNG	Liquefied Natural Gas
MMBTU	Million British Thermal Units
MND	Mitigated Negative Declaration
MMT CO _{2e}	Million Metric Tons Carbon Dioxide Equivalent
MW	Megawatts
N ₂ O	Nitrous Oxide
ND	Negative Declaration
NO _x	Oxides of Nitrogen
OPR	State Office of Planning and Research
PFC	Perfluorocarbon

List of Acronyms and Abbreviations (Concluded)

Acronym/ Abbreviation	Definition
PM	Particulate Mater
ROG	Reactive Organic Gas
RPS	Renewable Portfolio Standards
S-3-05	Executive Order S-3-05
SB	Senate Bill
SCAQMD	South Coast Air Quality Management District
SIP	State Implementation Plan
SO _x	Sulfur Oxides
TAC	Toxic Air Contaminants
URBEMIS	Urban Emissions Model
VMT	Vehicle Miles Traveled

CHAPTER 1

INTRODUCTION AND EXECUTIVE SUMMARY

Introduction

Purpose of This Guidance Document

California Environmental Quality Act and GHGs

Legal Authority

Contents of This Guidance Document

INTRODUCTION

The California Environmental Quality Act (CEQA) requires public agencies in California to analyze potential adverse impacts for proposed projects undertaken by a public agency, funded by a public agency, and requiring discretionary approval by a public agency. The fundamental purposes of CEQA are to inform governmental decision-makers and the public about the significant environmental effects of proposed activities, identify ways to avoid or significantly reduce environmental damage, use feasible alternatives or mitigation measures to avoid significant damage, and disclose to the public why a governmental agency approved a project if significant effects are involved (CEQA Guidelines §15002[a]). To disclose potential adverse impacts from a proposed project, pursuant to CEQA lead agencies typically prepare multidisciplinary environmental impact analysis and make decisions based on the analysis regarding the environmental effects of the proposed project (CEQA Guidelines §15002[a]).

In the past, air quality analyses tended to focus on potential adverse impacts from criteria pollutants and toxic air contaminants. Subsequent to the adoption of Assembly Bill (AB) 32 – The California Global Warming Solutions Act of 2006, lead agencies have increasingly faced legal challenges to their CEQA documents for failure to analyze greenhouse gases (GHGs) or making a determination of significance regarding GHG emission impacts.

Greenhouse gases are those gases that have the ability to trap heat in the atmosphere, a process that is analogous to the way a greenhouse traps heat. GHGs may be emitted as a result of human activities as well as through natural processes. As a result of human activities, such as electricity production, vehicle use, etc., GHGs have been accumulating in the earth's atmosphere at a faster rate than has occurred historically, i.e., prior to the Industrial Age starting approximately 150 years ago. Increasing GHG concentrations in the atmosphere are leading to global climate change.

The Intergovernmental Panel on Climate Change (IPCC) provided the first unequivocal evidence that global climate temperatures are increasing (2007a). Further, the primary driver of global climate change is increased emissions of GHGs due to human activities. According to the IPCC, there is very high confidence, based on more evidence from a wider range of species, that recent warming is strongly affecting terrestrial, marine, freshwater biological systems.

Carbon dioxide (CO₂) is the most important anthropogenic GHG because it comprises the majority of total GHG emissions emitted per year and it is very long-lived in the atmosphere. Annual emissions of CO₂ have increased approximately 80 percent between 1970 and 2004. In addition to CO₂, other GHG pollutants emitted directly as a result of human activities include methane (CH₄), nitrous oxide (N₂O) and halocarbons (a group of gases containing fluorine, chlorine or bromine). Without changes in current climate change mitigation policies and related sustainable

development practices, GHG emissions and global climate temperatures will continue to increase.

To prevent or minimize further increases in global temperatures resulting from increases in GHG emissions due to human activities, it is necessary to stabilize the concentration of GHGs in the atmosphere. Stabilizing GHGs in the atmosphere can only occur through reducing GHG emissions. Without further reductions in GHGs, increased global temperatures will surpass humans' and ecosystems' ability to adapt to these changing conditions (IPCC, 2007b).

In response to the increasing body of evidence that GHGs will continue to affect global climate, Governor Schwarzenegger issued executive order (EO S-3-05), which established the following greenhouse gas emission reduction targets for California: by 2010, reduce GHG emissions to 2000 levels; by 2020, reduce GHG emissions to 1990 levels; by 2050, reduce GHG emissions to 80 percent below 1990 levels.

Subsequent to the Governor's issuance of EO S-3-05, the California State Legislature adopted Assembly Bill (AB) 32 – The California Global Warming Solutions Act of 2006. With the adoption of AB 32, the California State Legislature recognized the growing concern regarding changes to global climate resulting from increasing emissions of greenhouse gases (GHGs). AB 32 establishes a cap on statewide greenhouse gas emissions and sets forth the regulatory framework to achieve the corresponding reduction in statewide emissions levels. Specifically, (AB 32) recognizes the serious threat to the “economic wellbeing, public health, natural resources, and the environment of California” that results from global warming. Consequently, AB 32 mandates a significant reduction in GHGs in order to contribute to efforts to stabilize atmospheric concentrations of GHGs. Under AB 32, greenhouse gases are defined as: carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride.

In general, there is currently an absence of regulatory guidance with regard to analyzing GHG emission impacts in CEQA documents. Similarly, no public agency in California has formally adopted GHG significance thresholds. Recognizing the absence of guidance regarding analyzing and determining the significance of GHGs, the California Air Pollution Control Officers Association (CAPCOA) prepared a White Paper reviewing policy choices, analytical tools, and mitigation strategies for GHGs. In particular, the White Paper identifies a number of options for establishing GHG significance thresholds, but makes no formal recommendation of one approach over another.

Air districts typically act in an advisory capacity to local governments in establishing the framework for environmental review of air pollution impacts under CEQA. This may include recommendations regarding significance thresholds, analytical tools to estimate emissions and assess impacts, and mitigations for potentially significant impacts. Although districts will also address some of these issues on a project-specific basis as responsible agencies, they may provide general guidance to local governments on these issues.

Because of its expertise in establishing air quality analysis methodologies and comprehensive efforts to establish regional and localized significance thresholds for criteria pollutants, local public agencies have asked South Coast Air Quality Management District (SCAQMD) for guidance in quantifying GHG impacts and recommending GHG significance thresholds to assist them with determining whether or not GHG impacts in their CEQA documents are significant. As a result, SCAQMD staff has received requests from a number of public agencies and other stakeholders to provide guidance on analyzing GHG impacts and establishing a GHG significance threshold. In response to these requests from the various stakeholders, SCAQMD established a stakeholder working group to receive input on establishing a GHG significance threshold. In the meantime, SCAQMD staff has joined many other stakeholders urging CARB to establish a statewide threshold for GHGs. In the absence of a statewide threshold, SCAQMD staff will recommend its interim approach to the Governing Board for consideration and it will also become the SCAQMD's input to the statewide process.

PURPOSE OF THIS GUIDANCE DOCUMENT

The purpose of this Guidance Document, therefore, is to provide information on GHG legislation relative to CEQA, a brief summary of the Working Group process, development of the resulting staff-recommended interim GHG significance threshold proposal, and how to use it. This Guidance Document also provides information on the SCAQMD's authority to establish a GHG significance threshold pursuant to CEQA and some background information on GHGs and global climate change. This Guidance Document also discusses future efforts to further refine the interim GHG significance threshold as necessary, includes recommendations for analyzing GHG impacts using current modeling tools, and describes measures to mitigate GHG emission impacts.

CALIFORNIA ENVIRONMENTAL QUALITY ACT AND GHGS

- California Attorney General's Office

Subsequent to adopting AB 32, the California Attorney General's Office determined that GHG emissions contributing to global climate change also contribute to potential adverse environmental impacts that should be evaluated pursuant to the California Environmental Quality Act (CEQA). The Attorney General's Office has submitted numerous comment letters to lead agencies on their CEQA documents for failure to analyze GHG emissions, failure to make a significance determination, and failure to implement feasible mitigation measures to reduce GHG emissions to the maximum extent feasible.

For example, the California Attorney General, on behalf of the people of California, filed a legal challenge against the County of San Bernardino for failure to analyze "reasonably foreseeable" GHG emissions in the CEQA document prepared for its

General Plan update. The County reached a settlement with the Attorney General by committing to developing a GHG inventory and a plan for reducing GHGs.

Similarly, the California Attorney General submitted comments on the CEQA document for a refinery in northern California. Although GHG emissions were quantified, the Attorney General cited the failure of the lead agency to make a determination of significance relative to GHG emissions stating, “[E]ven if there is no established threshold in law or regulation, lead agencies are obligated by CEQA to determine significance. Neither CEQA, nor the regulations, authorize reliance on the lack of an agency-adopted standard as the basis for determining that a project’s potential cumulative impact is not significant.” In other words, the absence of a threshold does not in any way relieve lead agencies of their obligations to address GHG emissions from projects under CEQA. By not concluding whether or not a project is significant, the lead agency may be avoiding its responsibility to implement GHG mitigation measures.

- Senate Bill (SB) 97 – CEQA: Greenhouse Gas Emissions

In August 2007, Governor Schwarzenegger signed into law Senate Bill (SB) 97 – CEQA: Greenhouse Gas Emissions stating, “This bill advances a coordinated policy for reducing greenhouse gas emissions by directing the Office of Planning and Research (OPR) and the Resources Agency to develop CEQA guidelines on how state and local agencies should analyze, and when necessary, mitigate greenhouse gas emissions.” Specifically, SB 97 requires OPR, by July 1, 2009, to prepare, develop, and transmit to the Resources Agency guidelines for the feasible mitigation of greenhouse gas emissions or the effects of greenhouse gas emissions, as required by CEQA, including, but not limited to, effects associated with transportation or energy consumption. The Resources Agency would be required to certify and adopt those guidelines by January 1, 2010. OPR would be required to periodically update the guidelines to incorporate new information or criteria established by the State Air Resources Board pursuant to the California Global Warming Solutions Act of 2006. SB 97 also identifies a limited number of types of projects that would be exempt under CEQA from analyzing GHG emissions. Finally, the legislation will be repealed on January 1, 2010.

- Office of Planning and Research Technical Advisory

Consistent with SB 97, on June 19, 2008, OPR released its *Technical Advisory on CEQA and Climate Change*, which was developed in cooperation with the Resources Agency, the California Environmental Protection Agency (Cal/EPA), and the California Air Resources Board (CARB). According to OPR, the *Technical Advisory* offers the informal interim guidance regarding the steps lead agencies should take to address climate change in their CEQA documents, until CEQA guidelines are developed pursuant to SB 97 on how state and local agencies should analyze, and when necessary, mitigate greenhouse gas emissions.

According to OPR, lead agencies should determine whether greenhouse gases may be generated by a proposed project, and if so, quantify or estimate the GHG emissions by

type and source. Second, the lead agency must assess whether those emissions are individually or cumulatively significant. When assessing whether a project’s effects on climate change are “cumulatively considerable” even though its GHG contribution may be individually limited, the lead agency must consider the impact of the project when viewed in connection with the effects of past, current, and probable future projects. Finally, if the lead agency determines that the GHG emissions from the project as proposed are potentially significant, it must investigate and implement ways to avoid, reduce, or otherwise mitigate the impacts of those emissions.

SB 375 (Steinberg) Transportation, Land Use, and the California Environmental Quality Act (CEQA)

On September 30, 2008, Governor Schwarzenegger signed into law SB 375 (Steinberg). SB 375 focuses on housing and transportation planning decisions to reduce fossil fuel consumption and conserve farmlands and habitat. This legislation is important to achieving AB 32 goals because greenhouse gas emissions associated with land use, which includes transportation, are the single largest sector of emissions in California. Further, SB 375 provides a path for better planning by providing incentives to locate housing developments closer to where people work and go to school, allowing them to reduce vehicle miles traveled (VMT) every year. The following bullet points summarize some of the main provisions of the bill.

- Require the regional governing bodies in each of the state’s major metropolitan areas to adopt, as part of their regional transportation plan, a “sustainable community strategy” that will meet the region’s target for reducing GHG emissions. These strategies would get people out of their cars by promoting smart growth principles such as: development near public transit; projects that include a mix of residential and commercial use; and projects that include affordable housing to help reduce new housing developments in outlying areas with cheaper land and reduce vehicle miles traveled (VMT).
- Create incentives for implementing the sustainable community strategies by allocating federal transportation funds only to projects that are consistent with the emissions reductions.
- Provide various forms of CEQA relief by allowing projects that are shown to conform to the preferred sustainable community strategy through the local general plans (and therefore contribute to GHG reduction) to have a more streamlined environmental review process. Specifically, SB 375 will change CEQA in two ways:
 - If a development is consistent with the sustainable community’s strategy and incorporates any mitigation measures required by a prior EIR, then the environmental review does not have to consider: a) growth-inducing impacts, or b) project-specific or cumulative impacts from cars on global warming or the regional transportation network.

- A narrowly-defined group of “transit priority projects” will be exempt from CEQA review.

LEGAL AUTHORITY

CEQA Guidelines §15022(a) states that a public agency shall adopt objectives, criteria, and specific procedures consistent with CEQA and these [State] Guidelines for administering its responsibilities under CEQA. CEQA Guidelines §15022(d) states further, “In adopting procedures to implement CEQA, a public agency may adopt the State CEQA Guidelines through incorporation by reference. The agency may then adopt only those specific procedures or provisions described in subsection [15022] (a) which are necessary to tailor the general provisions of the guidelines to the specific operations of the agency.” At the December 11, 1998 Public Hearing the SCAQMD’s Governing Board formally incorporated by reference the State CEQA Guidelines as the implementing guidelines for the SCAQMD’s CEQA program. Adopting GHG significance thresholds would be consistent with CEQA Guidelines §15022 provision to tailor a public agency’s implementing guidelines by adopting criteria relative to the specific operations of the SCAQMD.

Specifically with regard to thresholds of significance, CEQA Guidelines §15064.7(a) states, “Each public agency is encouraged to develop and publish thresholds of significance that the agency uses in the determination of the significance of environmental effects.” Subsection (b) of the same section states further, “Thresholds of significance to be adopted for general use as part of the lead agency’s environmental review process must be adopted by ordinance, resolution, rule or regulation, and developed through a public review process and be supported by substantial evidence.” Staff’s recommended GHG significance threshold has undergone a public review process as part of stakeholder working group meetings that are open to the public. This Guidance Document provides the substantial evidence relative to the methodology for developing the interim GHG significance threshold. After completion of the public process, the proposed interim GHG significance threshold will be brought to the SCAQMD’s Governing Board at a public meeting, where it will be considered for adoption by resolution, consistent with CEQA Guidelines §15064.7(b). Staff’s proposed interim GHG significance threshold is a recommendation only for lead agencies and not a mandatory requirement. The GHG significance threshold may be used at the discretion of the local lead agency. However, if adopted the SCAQMD will use the interim GHG significance threshold for projects where it is the lead agency.

- Considerations When Establishing Significance Thresholds

No significance thresholds for GHG emissions have been developed, adopted, or endorsed statewide or at the local level¹. Air districts have primary authority under

¹ In response to comments submitted by the Attorney General’s Office on a dairy project, the San Joaquin Valley Air Pollution Control District (SJVAPCD) identified a significance threshold of 38,477 metric tons of

state law for "control of air pollution from all sources, other than emissions from motor vehicles" (H&SC §40000). The term air contaminant or "air pollutant" is defined extremely broadly, to mean "any discharge, release, or other propagation into the atmosphere" and includes, but is not limited to, soot, carbon, fumes, gases, particulate matter, etc. Greenhouse gases and other global warming pollutants such as black carbon would certainly be included in this definition. The U.S. Supreme Court held in *Massachusetts v. EPA* 549 U.S. 497 (2009) that greenhouse gases were clearly within the Federal Clean Air Act's broad definition of air pollutants. Therefore, air districts have the authority to regulate global warming pollutants primarily from non-vehicular sources, while pursuant to AB 32 CARB has authority over a wide range of sources, including vehicular sources.

Appendix G of the CEQA Guidelines provides a checklist of suggested environmental topics that should be addressed in a CEQA document. Questions under each environmental topic area are designed to elicit information on whether a project has the potential to generate significant adverse environmental impacts to that environmental topic area. However, neither the CEQA statutes nor the implementing Guidelines discuss or identify thresholds of significance or particular methodologies for performing an impact analysis. These tasks are left to a lead agency's judgment and discretion, based upon factual data and guidance from regulatory agencies and other sources where available and applicable.

The determination of whether a project may have a significant effect on the environment calls for careful judgment on the part of the public agency involved, based to the extent possible on scientific and factual data. An ironclad definition of significant effect is not always possible because the significance of an activity may vary with the setting. For example, an activity which may not be significant in an urban area may be significant in a rural area (CEQA Guidelines §15064(b)). Further, in evaluating the significance of the environmental effect of a project, the Lead Agency shall consider direct physical changes in the environment which may be caused by the project and reasonably foreseeable indirect physical changes in the environment which may be caused by the project (§15064(d)). Significance conclusions must be based on substantial evidence, which includes facts, reasonable assumptions predicated upon facts, and expert opinion supported by facts (CEQA Guidelines §15064(f)(5)).

Each public agency is encouraged to develop and publish thresholds of significance that the agency uses in the determination of the significance of environmental effects. A threshold of significance is essentially a regulatory standard or set of criteria that represent the level at which a lead agency finds a particular environmental effect of a project to be significant. Specifically, a threshold of significance is an identifiable quantitative, qualitative or performance level of a particular environmental effect, non-compliance with which means the effect will normally be determined to be significant

carbon dioxide equivalent per year (MT CO₂eq./yr). According to SJVAPCD staff, the agency currently has no plans to formally adopt this significance threshold through a public process.

by the agency and compliance with which means the effect normally will be determined to be less than significant (§15064.7(a)).

Even in the absence of clearly defined significance thresholds for GHG emissions, the California Attorney General has advised that such emissions from CEQA projects must be disclosed and mitigated to the extent feasible whenever the lead agency determines that the project contributes to a significant, cumulative climate change impact.

CONTENTS OF THIS GUIDANCE DOCUMENT

The following subsections provide brief summaries of the chapters contained in this guidance document.

- Summaries of Chapter 1

Chapter 1 is the introductory chapter of this document that contains general background information on GHGs and the determination that GHGs must be analyzed in CEQA documents. There is also information on CEQA legislation related to GHGs and global climate change. Finally, the chapter contains information on the legal authority that allows the SCAQMD to adopt significance thresholds for the purpose of determining the severity of impacts analyzed in CEQA documents

- Summaries of Chapter 2

Chapter 2 contains more detailed background information on GHG emissions relative to global climate change, both internationally and nationally. This chapter also provides more detailed information on legislation to reduce GHG house gas emissions, e.g., Assembly Bill 32 – the Global Warming Solutions Act of 2006, etc. Finally, Chapter 2 contains information on early guidance on evaluating GHG emissions in CEQA documents.

- Summaries of Chapter 3

Chapter 3 contains information on the working group established by the SCAQMD to provide feedback to staff on the development of an interim GHG significance threshold. The chapter also includes discussions on considerations in establishing an interim GHG significance threshold and describes the current staff proposal for an interim GHG significance threshold.

- Summaries of Chapter 4

Chapter 4 contains general recommendations for analyzing GHG emissions in CEQA documents.

- Summaries of Chapter 5

In Chapter 5 it is assumed that the SCAQMD Governing Board will adopt staff's proposed interim GHG significance threshold. Therefore, this chapter discusses future action items, including outreach to interested stakeholders, compiling lists of applicable GHG design features and mitigation measures, and periodic review and update, as necessary of the interim GHG significance threshold.

CHAPTER 2

BACKGROUND INFORMATION ON GHGS

General Background Information

Legislative Background – California

Initial Guidance on Evaluating GHGs Pursuant to CEQA

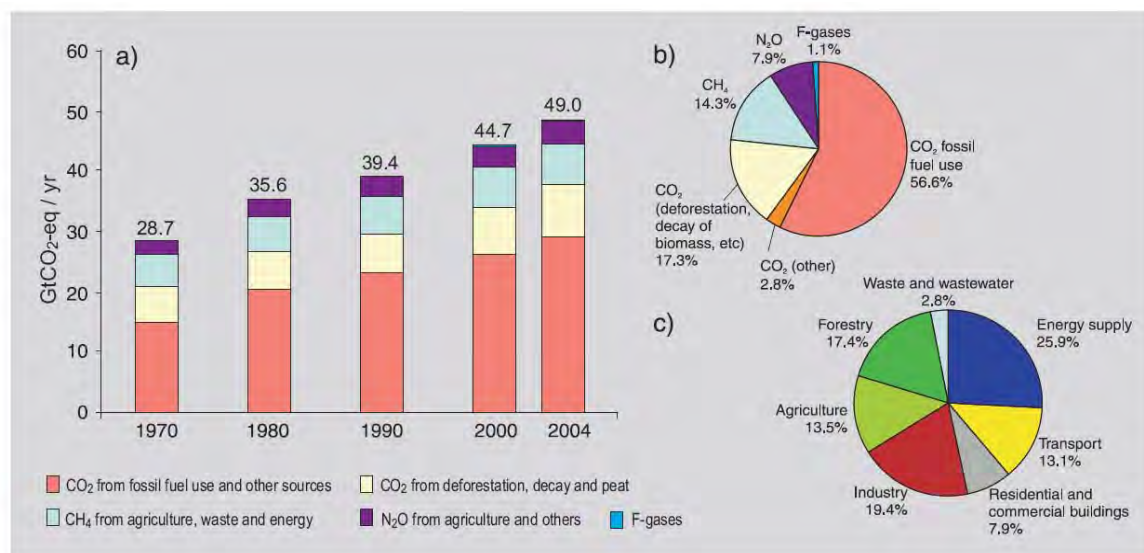
GENERAL BACKGROUND INFORMATION ON GHGS

- Intergovernmental Panel on Climate Change

In the last few years information and data have been compiled that demonstrate unequivocally that increases in average global air and ocean temperatures are occurring (IPCC, 2007a). For example, 11 of the last 12 years (1995-2006) rank among the 12 warmest years in the instrumental record of global surface temperature (since 1850). The temperature increase is widespread over the globe and is greater at higher northern latitudes. Further, increases in sea level are consistent with global warming. For example, global average sea level rose at an average rate of 1.8 [1.3 to 2.3]mm per year over 1961 to 2003 and at an average rate of about 3.1 [2.4 to 3.8]mm per year from 1993 to 2003. According to the IPCC (2007b), there is very high confidence, based on more evidence from a wider range of species, that recent warming is strongly affecting terrestrial, marine, and freshwater biological systems.

One of the major drivers in global climate change has been directly linked to the increase in greenhouse gas (GHG) emissions due to human activities worldwide (Figure 2-1). Carbon dioxide (CO₂) is the most important anthropogenic GHG. Annual CO₂ emissions have increased approximately 80 percent between 1970 and 2004 (IPCC, 2007b)

Figure 2-1
Global Anthropogenic GHG Emissions



Source – IPCC, 2007b: (a) Global annual emissions of anthropogenic GHGs from 1970 to 2004.5 (b) Share of different anthropogenic GHGs in total emissions in 2004 in terms of CO₂-eq. (c) Share of different sectors in total anthropogenic GHG emissions in 2004 in terms of CO₂-eq. (Forestry includes deforestation.) {WGIII Figures TS.1a, TS.1b, TS.2b}

Human activities have been responsible for substantial increases in four long-lived GHGs, including: CO₂, methane (CH₄), nitrous oxide (N₂O) and halocarbons (a group of gases

containing fluorine, chlorine or bromine). Global increases in CO₂ concentrations are due primarily to fossil fuel use, with land-use change providing another significant but smaller contribution. It is very likely that the observed increase in CH₄ concentration is predominantly due to agriculture and fossil fuel use. The increase in N₂O concentration is primarily due to agriculture (IPCC, 2007).

According to the IPCC (2007), for the next couple of decades global temperatures are expected to rise approximately 0.2° C per decade under a variety of scenarios. Further, global temperatures are expected to continue for centuries as a result of human activities due to the time scales associated with climate processes and feedbacks, even if GHG concentrations are stabilized. As a result, based on the current understanding of climate-carbon feedback, model studies show that substantial GHG emission reductions are necessary to avoid substantial increases in global air and ocean temperatures.

LEGISLATIVE BACKGROUND – CALIFORNIA

California has taken a leadership role in not only recognizing the future impacts to global climate change from anthropogenic sources of GHG emissions, but in establishing policies and adopting laws to substantially reduce GHG emissions by 2050. In addition to the GHG legislation related to CEQA described in Chapter 1, California has adopted the following policies and laws that specifically address reducing GHG emissions.

- Governor Schwarzenegger’s Executive Order (June 2005)

In June 2005, Governor Arnold Schwarzenegger signed Executive Order (EO) S-3-05, which establishes greenhouse gas emission reduction targets in response to projected increases in global air and ocean temperatures. Specifically, EO S-3-05 establishes the following three GHG emission reduction targets:

- Reduce GHG emissions to 2000 emission levels by 2010;
- Reduce GHG emissions to 1990 emission levels by 2020; and
- Reduce GHG emissions to 80 percent below 1990 levels by 2050.

Further, EO S-3-05 charges the California Environmental Protection Agency (CalEPA) secretary to coordinate with the Secretary of the Business, Transportation and Housing Agency, Secretary of the Department of Food and Agriculture, Secretary of the Resources Agency, Chairperson of the CARB, Chairperson of the Energy Commission and President of the Public Utilities Commission to develop a Climate Action Plan. EO S-3-05 also charges the Secretary of CalEPA with the oversight of efforts to meet the above GHG emission reduction targets and the responsibility to prepare biannual reports on progress in meeting the GHG emission reduction targets.

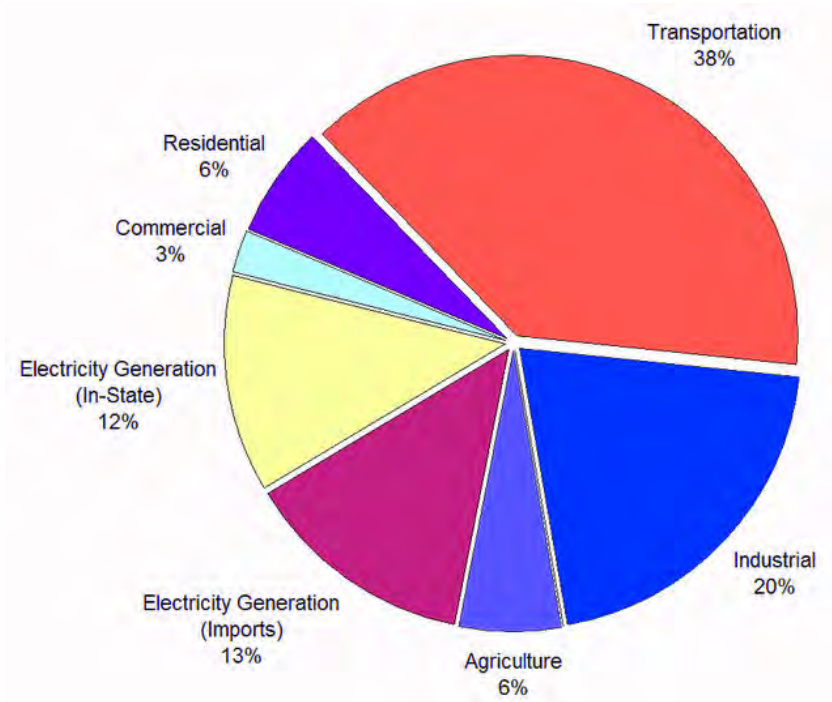
- Global Warming Solutions Act of 2006 (Assembly Bill (AB) 32)

The Global Warming Solutions Act of 2006 (AB 32) was adopted by the California State Legislature in 2006. AB 32 assigns CARB the responsibilities of monitoring and reducing GHG emissions. Specifically, AB 32 requires CARB to:

- Establish a statewide greenhouse gas emissions cap for 2020, based on 1990 emissions, by January 1, 2008;
- Adopt mandatory reporting rules for significant sources of greenhouse gases by January 1, 2009;
- Adopt a plan by January 1, 2009, indicating how emission reductions will be achieved from significant greenhouse gas sources via regulations, market mechanisms and other actions;
- Adopt regulations by January 1, 2011, to achieve the maximum technologically feasible and cost-effective reductions in greenhouse gas, including provisions for using both market mechanisms and alternative compliance mechanisms;
- Convene an Environmental Justice Advisory Committee and an Economic and Technology Advancement Advisory Committee to advise CARB;
- Ensure public notice and opportunity for comment for all CARB actions;
- To adopt rules for “sources” including non-vehicular; and
- Prior to imposing any mandates or authorizing market mechanisms, CARB must evaluate several factors, including but not limited to impacts on California's economy, the environment and public health; equity between regulated entities; electricity reliability; conformance with other environmental laws, and must ensure that the rules do not disproportionately impact low-income communities.

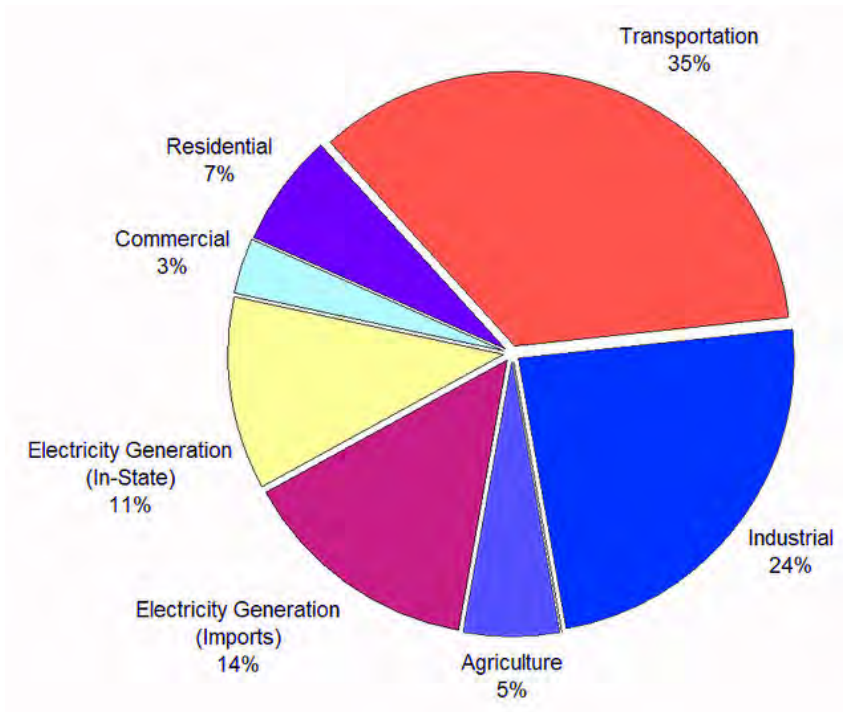
According to the schedule of milestones laid out in AB 32, CARB has made progress in the following areas. Consistent with AB 32's requirement to establish a GHG emission inventory, in December 2007 CARB adopted the California Greenhouse Gas Emission Inventory. The Inventory accounts for all GHG emissions within the state of California and supports the AB 32 Climate Change Program. Figure 2-2 shows CARB's inventory for the year 2004. The Inventory also serves as the basis for developing future year GHG emission forecasts necessary to support measure development and Scoping Plan recommendations. ARB staff has developed a year 2020 “business-as-usual” (BAU) forecast of GHG emissions for use in developing the Draft Scoping Plan. Figure 2-3 shows CARB's inventory for the year 2020, which is AB 32's target inventory.

Figure 2-2
2004 GHG Emissions by Sector (Gross Emissions: 484.4 MMT CO₂eq.)



Source: CARB, 2007

Figure 2-3
1990 GHG Emissions by Sector (Gross Emissions: 433.3 MMT CO₂eq.)



Source: CARB, 2007

On December 6, 2007, the Air Resources Board (ARB) approved a regulation for the mandatory reporting of greenhouse gas emissions from major sources, pursuant to AB 32. The mandatory reporting regulation specifies the types of facilities that must report their GHG emissions, requirements for reporting and estimating the GHG emissions, and requirements for emissions verification. Upon adoption, the CARB Board directed staff to make other conforming modifications, as may be appropriate, based on comments received. Subsequent to adoption, the mandatory reporting regulation has undergone two sets of modifications.

Consistent with the requirement to develop a scoping plan indicating how GHG emission reductions will be achieved through regulations, market mechanisms, and other actions, the Draft Scoping Plan was released for public review and comment on June 26, 2008, followed by workshops in July and August, 2008.

The Draft Scoping Plan calls for achievable GHG emission reduction in California's carbon footprint to 1990 levels. Reducing greenhouse gas emissions to 1990 levels means cutting approximately 30 percent from BAU emission levels projected for 2020, or about 10 percent from today's levels. Key elements of CARB's preliminary recommendation for reducing California's greenhouse gas emissions to 1990 levels by 2020 contained in the Draft Scoping Plan include the following:

- Expansion and strengthening of existing energy efficiency programs and building and appliance standards;
- Expansion of the Renewables Portfolio Standard for electricity generation to 33 percent;
- Development of a California cap-and-trade program that links with other WCI Partner programs to create a regional market system;
- Implementation of existing State laws and policies, including California's clean car standards, goods movement measures, and the Low Carbon Fuel Standard; and
- Targeted fees to fund the State's long-term commitment to AB 32 administration.

The Scoping Plan is expected go to the CARB Board for adoption in November, 2008.

INITIAL GUIDANCE ON EVALUATING GHGS PURSUANT TO CEQA

As noted in Chapter 1, both the California Attorney General's Office and the OPR determined that GHG emissions contributing to global climate change have the potential to generate adverse environmental impacts that should be evaluated pursuant to CEQA. Until recently, however, there has been little or no guidance relative to analyzing GHG emissions in CEQA documents or determining significance. The first explicit guidance was provided by the Association of Environmental Professionals (AEP) in its White Paper on Global Climate Change (AEP, 2007) and the White Paper on CEQA and Climate Change prepared by the California Air Pollution Control Officers Association (CAPCOA, 2008). The content of each of these White Papers is summarized in the following subsections.

- Association of Environmental Professionals – White Paper on Global Climate Change

AEP's White Paper (AEP) was one of the first attempts to discuss GHGs in the context of CEQA. The intent of the White Paper was to provide practical, interim information to CEQA practitioners and to help Lead Agencies determine how to address GHGs and global climate change in CEQA documents prior to the development and adoption of guidance by appropriate government agencies. Further, AEP's White Paper provided a summary of the current regulatory environment surrounding GHG emissions, and the various approaches that a Lead Agency may select in a CEQA document to address the potential impacts of global climate change and a project's cumulative contribution to GHG. The White Paper described several approaches for addressing GHGs and global Climate Change in CEQA documents, but did not recommend a single approach or methodology, leaving that decision to local Lead Agencies. The AEP White Paper identified eight approaches for analyzing GHGs and global climate change, which are summarized in the following bullet points.

- **Approach 1 – No Analysis:** under this approach the Lead Agency would not mention or discuss GHGs or global climate change.
- **Approach 2 – Screening Analysis:** under this approach the Lead Agency would establish a process to screen projects and determine that they would not make significant contributions to GHG emissions or GCC and, therefore, would not need to mitigate accordingly.
- **Approach 3 – Qualitative Analysis without Significance Determination:** this approach involves a qualitative discussion of GHGs and global climate change and potential ways the project will contribute to the generation of GHG emissions, but does not provide any significance conclusions.
- **Approach 4 – Qualitative Analysis with Significance Determination:** under this approach the Lead Agency would qualitatively discuss GHGs and climate change impacts and conclude that the project impacts are significant.
- **Approach 5 – Quantitative Analysis without Significance Determination:** under this approach the Lead Agency would quantify GHG emissions from the proposed project, but the results are not compared to a quantitative significance threshold.
- **Approach 6 – Quantitative Analysis with Net Zero Threshold:** this approach involves quantifying GHG emissions and using zero net carbon dioxide equivalent increase as the threshold.
- **Approach 7 – Quantitative Analysis Relative to California GHG Emission Reduction Strategies:** this approach employs both quantitative and qualitative components. The quantitative analysis contains an inventory of project GHG emissions. The qualitative component involves project compliance with the emission reduction strategies contained in the California Climate Action Team's (CAT) Report to the Governor, which contains recommendations and strategies to help ensure the targets in Executive Order S-3-05 are met.
- **Approach 8 – Use of Partial Exemption, “Within the Scope” of a Program EIR, or Tiering:** this option relies on the preparation of a broad EIR on a plan, program, or zoning action that is certified and contains a cumulative GHG and global climate change

impact analysis and mitigation. A later project that is consistent with the actions, goals, and/or policies in that plan, program, or zoning action need not again evaluate the cumulative impact regarding the project's GHG contribution to global climate change. In this situation, the later project may use the "partial exemption" provision of Public Resources Code §21083.3 and CEQA Guidelines §15183.

Since the date that the AEP White Paper was finalized (June, 2007), it has become clear that any of the above eight options that do not include quantification of GHG emissions and a determination of significance would be vulnerable to legal challenge. In addition, with the exception of the net zero approach in option 6, none of the options evaluated identify potential GHG significance thresholds. Approaches to developing GHG significance thresholds were specifically addressed in CAPCOA's White Paper (CAPCOA, 2008).

- California Air Pollution Control Officers Association – White Paper: CEQA and Climate Change

The intent of CAPCOA's White Paper is to serve as a resource for public agencies as they establish procedures for reviewing GHG emissions from projects under CEQA. It considers the application of thresholds and offers three alternative programmatic approaches toward determining whether GHG emissions are significant. Although the White Paper considers an option of not establishing a GHG significance threshold, as already noted this option is not considered to be a viable approach and will not be considered further. Ultimately, the White Paper is intended to provide consistent approaches for public agencies to ensure that GHG emissions are appropriately considered and addressed under CEQA.

The CAPCOA White Paper identifies three programmatic approaches to establishing GHG significance thresholds and also discusses the benefits and problems associated with each approach. Each approach has inherent advantages and disadvantages. The three basic approaches are:

- No significance threshold for GHG emissions (not discussed further);
- GHG emissions threshold set at zero; or
- GHG threshold set at a non-zero level, two approaches.

The following subsections briefly summarize two of the three major programmatic approaches developed by CAPCOA.

-Zero Threshold

An air district or lead agency may determine that any degree of project-related increase in GHG emissions would contribute considerably to climate change which, therefore, would be considered a significant impact. As a result, the air district or lead agency could adopt a zero-emission GHG threshold. If the zero threshold option is chosen, the lead agency would be required to quantify and mitigate GHG emissions for all projects subject to CEQA, regardless of the size of the project or the availability of GHG reduction measures available to reduce the project's emissions. Projects that could not meet the zero-emission threshold would be required to undergo an environmental impact report (EIR) CEQA process to disclose the unmitigable significant impact, and develop the justification for a statement of overriding consideration to be adopted by the lead agency.

CAPCOA notes in the White Paper that if an air district or lead agency elects to adopt a zero threshold approach, it should consider the administrative costs and the environmental review system capacity. Some projects that previously would have qualified for an exemption could require further substantial analysis, including preparation of a Negative Declaration (ND), a Mitigated Negative Declaration (MND) or an EIR. Moreover, the trade-offs between the volume of projects requiring review and the quality of consideration given to reviews should be considered. It may also be useful to consider whether meaningful mitigation can be achieved from smaller projects.

-Approach 1: Non-Zero Threshold – Statute and Executive Order Approach

According to CAPCOA, a non-zero GHG significance threshold could minimize the resources spent reviewing environmental analyses that do not result in real GHG reductions or to prevent the environmental review system from being overwhelmed. The practical advantages of considering non-zero thresholds for GHG significance determinations can fit into the concept regarding whether the project’s GHG emissions represent a “considerable contribution to the cumulative impact” and therefore warrant analysis.

The first non-zero GHG significance threshold approach is based on achieving the objectives of AB 32 or executive order EO S-3-05 and explores four possible options under this scenario. A project would be required to meet the target objectives, or reduce GHG emissions to the target objectives, to be considered less than significant. The options under this approach are variations of ways to achieve the 2020 goals of AB 32 from new development, which is estimated to be about a 30 percent reduction from business-as-usual. Table 2-1 summarizes the four statute and executive order approaches identified by CAPCOA. SCAQMD staff has identified and included in Table 2-1 potential pros and cons identified for each option.

-Approach 2: Non-Zero Threshold – Tiered Threshold Options

The second non-zero GHG significance threshold approach is comprised of a number of tiered GHG significance threshold options. Within this option, the CAPCOA White Paper discusses seven variations. The tiered threshold options offer both quantitative and qualitative approaches to setting a threshold, as well as different metrics for establishing the various tiers. Variations range from setting the first tier at zero to second tiers set at defined emission levels or based on the size of a project. This approach would then prescribe a set of GHG mitigation strategies that would have to be incorporated into the project in order for the project to be considered less than significant. CAPCOA notes that some applications of the tiered threshold approach may require inclusion in a General Plan or adoption of enabling regulations or ordinances to render them fully effective and enforceable. The various tiered threshold options are summarized in Table 2-2. SCAQMD staff has identified and included in Table 2-2 potential pros and cons identified for each option.

Table 2 – 1
Statute and Executive Order Approach

Threshold Number	Description of Threshold	Pros*	Cons*
1.1	<p>Project must reduce emissions compared to business as usual to be less than significant, two approaches:</p> <p>a. Project must reduce GHG emissions 33 percent compared to business-as-usual (BAU) (2020 target), or</p> <p>b. Project must reduce GHG emissions 80 percent compared to business-as-usual (2050 target).</p>	<ul style="list-style-type: none"> • Could reduce resource impacts compared to zero threshold, as not every project would require an EIR • Would achieve GHG reductions consistent with AB 32 • A single threshold is easier to apply and understand 	<ul style="list-style-type: none"> • Could be viewed as setting a de minimis level • Fewer projects would trigger significance, thus, less mitigation • BAU should be defined by CARB • BAU may be difficult to define for all projects
1.2	<p>All new projects must reduce GHG emissions compared to BAU by a uniform percentage to be considered less than significant, e.g., 50 percent.</p>	<ul style="list-style-type: none"> • Same as 1.1 • May produce greater percent reduction of GHGs • Single threshold easier to apply & understand 	<ul style="list-style-type: none"> • Could produce substantially greater GHG reductions than 1.1, but may be difficult to achieve • BAU should be defined by CARB • BAU may be difficult to define for all projects

* Pros and cons reflect only SCAQMD staff's evaluation of the approaches.

Table 2 – 1 (Concluded)
Statute and Executive Order Approach

Threshold Number	Description of Threshold	Pros*	Cons*
1.3	Projects must reduce GHG emissions compared to business-as-usual by a uniform percentage based on economic sector to be less than significant, i.e., different reductions required for different market sectors.	<ul style="list-style-type: none"> • Sector-specific approach may be more appropriate approach • Would take into account costs & available control technologies • Avoids over- or under-regulation of GHGs per sector 	<ul style="list-style-type: none"> • Requires extensive information on emission inventories • Requires extensive information on control technologies • Difficult to determine percent reduction by sector • Because of information requirements, may be more viable in the long term
1.4	Uniform GHG emission reduction by region. Regional GHG reduction plan developed consistent with AB32 emission reductions, e.g., reduce GHG emissions 33% or 80% compared to BAU. A project is not significant if its GHG emissions are consistent with plan.	<ul style="list-style-type: none"> • Could tailor GHG reductions to specific regional needs • GHG reduction strategies could be integrated into regional plans 	<ul style="list-style-type: none"> • Would need to establish GHG regions • Requires extensive information on regional emission inventories • Because of the need to develop a regional plan, may be a more viable interim approach

* Pros and cons reflect only SCAQMD staff's evaluation of the approaches.

Table 2 – 2
Tiered Threshold Options

Threshold Number	Description of Threshold	Pros*	Cons*
2.1	This threshold employs a decision tree approach. Tier 1, no increase in GHG emissions, not significant (zero threshold). If GHG emissions greater than zero, tier two, use one of the following threshold options.	<ul style="list-style-type: none"> • Tiered approach allows flexibility by establishing multiple thresholds to cover a wide range of projects • Tier 2 may minimize administrative burden & costs • Tiers could be set at different levels depending on GHGs, size & other project characteristics • Projects exceeding tier 2 must implement mitigation 	<ul style="list-style-type: none"> • Tier 1 may increase administrative burdens & costs • There may not be meaningful mitigation for small projects • Available mitigation may consist of purchasing offsets • EJ concerns of purchasing offsets because of associated criteria pollutant emissions • Offset markets not well established
2.2	Establish a quantitative threshold based on capturing a percentage, e.g., 90%, of future discretionary projects, CAPCOA's threshold is 900 metric tons CO ₂ eq per year (equivalent to 50 houses or 30,000 square feet of commercial space, i.e., CAPCOA assumes 90% of all projects are this size or greater). Projects less than this would not be significant.	<ul style="list-style-type: none"> • Would capture a larger percentage of projects in the district than is currently the case • Would exclude small projects from further GHG analysis • Single threshold easier to apply & understand 	<ul style="list-style-type: none"> • Would increase administrative & cost burden, especially in developing & moderate growth areas • May not be amenable to industrial projects because of the diversity of these projects • There may not be meaningful mitigation for small projects

* Pros and cons reflect only SCAQMD staff's evaluation of the approaches.

Table 2 – 2 (Continued)
Tiered Threshold Options

Threshold Number	Description of Threshold	Pros*	Cons*
2.3	This threshold is based on CARB’s proposed mandatory reporting threshold of 25,000 metric tons of CO ₂ eq per year. Alternatively, use the Market Advisory Committee of 10,000 metric tons of CO ₂ eq per year. Projects less than either would not be significant.	<ul style="list-style-type: none"> • CARB estimates this threshold would capture 90 % of all industrial projects • Single threshold easier to apply & understand 	<ul style="list-style-type: none"> • May not be amenable to industrial projects because of the diversity of these projects • There may not be meaningful mitigation for small projects
2.4	<p>This approach establishes a GHG threshold based on and analogous to a NO_x/VOC criteria pollutant CEQA significance threshold and is established using the following four steps:</p> <p>a. Define NO_x/VOC CEQA thresholds in tons per year (e.g., 10 t/yr)</p> <p>b. Define the regional NO_x/VOC inventory in tons per year (e.g., annual NO_x inventory for 2005 from 2007AQMP ~ 375,585 t/yr)</p> <p>c. Calculate percentage of NO_x/VOC inventory the significance threshold represents ($10 / 375,585 = 0.00003$) to obtain “minimum percentage of regulated inventory” for NO_x/VOC.</p>	<ul style="list-style-type: none"> • Single threshold easier to apply & understand 	<ul style="list-style-type: none"> • Threshold cumbersome to derive • Threshold would change periodically as inventory goes up or down • Could have widely divergent thresholds by air basin because of varying inventories

* Pros and cons reflect only SCAQMD staff’s evaluation of the approaches.

Table 2 – 2 (Continued)
Tiered Threshold Options

Threshold Number	Description of Threshold	Pros*	Cons*
2.4 (Cont.)	d. Define California GHG emission inventory for 2004 in tons CO ₂ eq per year (499 MMT CO ₂ eq). Apply minimum percentage of regulated inventory to California GHG inventory for 2004 to develop a GHG threshold analogous to the CEQA Threshold (e.g., 0.00003 x 499 MMT = 14,970 metric tons CO ₂ eq per year = significance threshold).	•	•
2.5	Establish quantitative unit-based thresholds based on capturing a percentage, e.g., 90%, of future discretionary projects in specific market sectors (similar to 2.2 above). CAPCOA examples include: <ul style="list-style-type: none"> • 30,000 square-foot (SF) office = 800 metric tons CO₂eq per year; • 30,000 SF retail = 2,500 metric tons CO₂eq per year; • 30,000 SF supermarket = 43,000 metric tons CO₂eq per year. 	<ul style="list-style-type: none"> • Would capture a larger percentage of projects in the district than is currently the case • Would exclude small projects from further GHG analysis • Single threshold easier to apply & understand 	<ul style="list-style-type: none"> • Would increase administrative & cost burden, especially in developing & moderate growth areas • May not be amenable to industrial projects because of the diversity of these projects • There may not be meaningful mitigation for small projects

* Pros and cons reflect only SCAQMD staff's evaluation of the approaches.

Table 2 – 2 (Concluded)
Tiered Threshold Options

Threshold Number	Description of Threshold	Pros*	Cons*
2.6	<p>This threshold would include tiered CEQA thresholds based on CEQA’s definition of “projects with statewide, regional or areawide significance (§15206(b)), which include:</p> <ul style="list-style-type: none"> • Residential development > 500 dwellings • Shopping center or business establishment employing > 1,000 persons or > 500,000 SF • Commercial office building employing >1,000 persons or > 250,000 SF • Hotel/motel > 500 rooms • Industrial, manufacturing or processing plant or industrial park employing > 1,000 persons or > 600,000 SF 	<ul style="list-style-type: none"> • Could capture up to 50% of all future commercial development 	<ul style="list-style-type: none"> • May capture substantially less than 50% if future development, resulting less GHG mitigation • Percentage capture of industrial/manufacturing projects currently unknown
2.7	<p>Efficiency-based thresholds would be based on measurements of efficiency compared to intensity. Must be based on reasonable GHG emissions compared to business-as-usual.</p>	<ul style="list-style-type: none"> • Would benchmark GHG intensity against target levels of efficiency • Thresholds established to provide future foreseeable GHG reductions compared to BAU • Would support AB 32 target objectives 	<ul style="list-style-type: none"> • Would require substantial data & possibly modeling • May be more appropriate as a threshold in the long term

* Pros and cons reflect only SCAQMD staff’s evaluation of the approaches.

CHAPTER 3

INTERIM GHG SIGNIFICANCE THRESHOLD STAFF PROPOSAL

Introduction

GHG Analysis Considerations

Current Staff Interim GHG Significance Threshold Proposals

INTRODUCTION

Because GHG emissions affect global climate, some have argued that it may be more appropriate for national or state agencies to establish significance thresholds or GHG emission reduction target objectives. However, no agency has established GHG significance thresholds that could assist Lead Agencies with determining the significance of GHG emissions in CEQA documents. In the absence of statewide guidance on this issue and in response to requests from a variety of stakeholders, the SCAQMD established a GHG Significance Threshold Stakeholder Working Group (Working Group) to establish an interim GHG significance threshold until such time as the state establishes a GHG significance threshold or provides recommended guidance on establishing a GHG significance threshold. Staff's goal is to reach consensus regarding an interim GHG significance threshold to the extent possible and take the staff proposal to the SCAQMD Governing for consideration and approval.

The Working Group was formed to assist staff's efforts to develop an interim GHG significance threshold and is comprised of a wide variety of stakeholders including: state agencies, OPR, CARB, and the Attorney General's Office; local agencies, city and county planning departments, utilities such as sanitation and power, etc.; regulated stakeholders, industry and industry groups; and organizations, both environmental and professional. Stakeholders were chosen based on their participation in other related stakeholder working groups and their expressed interest in participating in the developing a GHG significance threshold. Working group meetings are open to the public and have been well attended. The members of the Working Group and other interested parties who have requested to be notified of the meetings are listed in Appendix A. Information on the progress of the Working Group, including agendas, overhead presentations, and letters received from the various stakeholders can be found at the following website:

<https://www.aqmd.gov/ceqa/handbook/GHG/GHG.html>.

Part of the purpose of the Working Group is to provide a forum to solicit comments and suggestions from the various stakeholders to assist SCAQMD staff with developing an interim GHG significance threshold that is consistent with CEQA requirements for developing significance thresholds, is supported by substantial evidence, and provides guidance to CEQA practitioners with regard to determining whether GHG emissions from a proposed project are significant.

SCAQMD staff held the first Working Group meeting in April 2008. Except for September, Working Group meetings have been held on a monthly basis since April. Brief summaries of each Working Group meeting and the topics and staff GHG significance threshold proposals discussed to date are provided in Appendix B. Staff's initial proposed has been modified over time based on comments and concerns raised at Working Group meetings or in written comments. The following sections summarize staff's latest recommended interim GHG significance threshold proposal and some of the concepts necessary to understanding the various components of staff's

proposal. The latest staff proposal is considered to be a work-in-progress as staff is continuing to solicit further public input and suggestions.

The following subsections briefly summarize the GHG significance threshold design criteria concepts included as part of staff's proposed interim GHG significance threshold proposal. Following the discussion of design concepts, SCAQMD staff's current interim proposal is described.

GHG ANALYSIS CONSIDERATIONS

Before discussing quantification methodologies, it is necessary to consider design criteria that establish the parameters upon which the actual GHG analysis is based. The following subsections include discussions from the Working Group of some of the most important design criteria to be considered when quantifying GHG emissions. The following topics include some of the most important parameters that should be considered when quantifying GHG emissions and, therefore, should not be considered an exhaustive list of considerations as individual projects may include characteristics that may require additional considerations.

Policy Objective

The overarching policy objective with regard to establishing a GHG significance threshold for the purposes of analyzing GHG impacts pursuant to CEQA is to establish a performance standard or target GHG reduction objective that will ultimately contribute to reducing GHG emissions to stabilize climate change. Full implementation of the Governor's Executive Order S-3-05 would reduce GHG emissions 80 percent below 1990 levels or 90 percent below current levels by 2050. It is anticipated that achieving the Executive Order's objective would contribute to worldwide efforts to cap GHG concentrations at 450 ppm, thus, stabilizing global climate.

As described below, staff's recommended interim GHG significance threshold proposal uses a tiered approach to determining significance. Tier 3, which is expected to be the primary tier by which the AQMD will determine significance for projects where it is the lead agency, uses the Executive Order S-3-05 goal as the basis for deriving the screening level. Specifically, the Tier 3 screening level for stationary sources is based on an emission capture rate of 90 percent for all new or modified projects. A 90 percent emission capture rate means that 90 percent of total emissions from all new or modified stationary source projects would be subject to some type of CEQA analysis, including a negative declaration, a mitigated negative declaration, or an environmental impact.

Therefore, the policy objective of staff's recommended interim GHG significance threshold proposal is to achieve an emission capture rate of 90 percent of all new or modified stationary source projects. A GHG significance threshold based on a 90 percent emission capture rate may be more appropriate to address the long-term adverse impacts associated with global climate change. Further, a 90 percent emission

capture rate sets the emission threshold low enough to capture a substantial fraction of future stationary source projects that will be constructed to accommodate future statewide population and economic growth, while setting the emission threshold high enough to exclude small projects that will in aggregate contribute a relatively small fraction of the cumulative statewide GHG emissions. This assertion is based on the fact that staff estimates that these GHG emissions would account for less than one percent of future 2050 statewide GHG emissions target (85 MMTCO₂eq/yr). In addition, these small projects would be subject to future applicable GHG control regulations that would further reduce their overall future contribution to the statewide GHG inventory

- GHG Pollutants

Gases that trap heat in the atmosphere are often called greenhouse gases. The Kyoto Protocol, adopted in December 1997, is an agreement under which industrialized countries will reduce their collective emissions of greenhouse gases by specified percentages, depending on the country, compared to 1990 levels. The goal is to lower overall emissions of six greenhouse gases - carbon dioxide, methane, nitrous oxide, sulfur hexafluoride, hydrofluorocarbons, and perfluorocarbons, averaged over the period of 2008-2012.

Similarly, AB 32 defines GHGs as including the following: carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride (Health and Safety Code, section 38505(g)). The most common GHG that results from human activity is carbon dioxide, followed by methane and nitrous oxide.

Some greenhouse gases such as carbon dioxide occur naturally and are emitted to the atmosphere through natural processes and human activities. Other greenhouse gases (e.g., fluorinated gases) are created and emitted solely through human activities. The principal greenhouse gases that enter the atmosphere because of human activities are:

- **Carbon Dioxide (CO₂):** Carbon dioxide enters the atmosphere through the burning of fossil fuels (oil, natural gas, and coal), solid waste, trees and wood products, and also as a result of other chemical reactions (e.g., manufacture of cement). Carbon dioxide is also removed from the atmosphere (or “sequestered”) when it is absorbed by plants as part of the biological carbon cycle.
- **Methane (CH₄):** Methane is emitted during the production and transport of coal, natural gas, and oil. Methane emissions also result from livestock and other agricultural practices and by the decay of organic waste in municipal solid waste landfills.
- **Nitrous Oxide (N₂O):** Nitrous oxide is emitted during agricultural and industrial activities, as well as during combustion of fossil fuels and solid waste.

- **Fluorinated Gases:** Hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride are synthetic, powerful greenhouse gases that are emitted from a variety of industrial processes. Fluorinated gases are sometimes used as substitutes for ozone-depleting substances (i.e., CFCs, HCFCs, and halons). Fluorinated gases are typically emitted in smaller quantities, but because they are potent greenhouse gases, they are sometimes referred to as high global warming potential gases (high GWP gases).
 - Hydrofluorocarbons are manmade chemicals that have historically replaced Chlorofluorocarbons used in refrigeration and semiconductor manufacturing.
 - Perfluorocarbons are manmade chemicals that are by-products of aluminum smelting and uranium enrichment.
 - Sulfur hexafluoride is a manmade chemical that is largely used in heavy industry to insulate high voltage equipment and to assist in the manufacturing of cable cooling systems.

GWP is a measure of how much a given mass of greenhouse gas is estimated to contribute to global warming. It is a relative scale that compares the gas in question to the same mass of carbon dioxide (whose GWP is by definition 1). A GWP is calculated over a specific time interval and the value of this must be stated whenever a GWP is quoted or else the value is meaningless. A substance's GWP depends on the time span over which the potential is calculated. A gas which is quickly removed from the atmosphere may initially have a large effect but for longer time periods as it has been removed becomes less important. For the purposes of a CEQA analysis, especially an analysis of operation emissions, the maximum GWP is typically used, regardless of the actual atmospheric lifetime. This approach simplifies the analysis and provides a very conservative analysis, especially for the fluorinated gases. The GWP of the six Kyoto GHGs is shown in Table 3-1.

The SCAQMD staff recommends that a GHG analysis include the six Kyoto GHGs, to the extent emission factors are available primarily because there is more information on these GHGs than other potential GHGs. Other GHGs would be added to the list as scientific information becomes available and agreed to by national or international protocols and agreements.

Table 3-1
Global Warming Potential of Kyoto GHGs

Gas	Atmospheric Lifetime	GWP
Carbon dioxide (CO ₂)	50 – 200	1
Methane (CH ₄)	12 ± 3	21
Nitrous oxide (N ₂ O)	120	310
HFC-23 (Hydrofluorocarbons)	264	11,700
HFC-32	5.6	650

Table 3-1 (Concluded)
Global Warming Potential of Kyoto GHGs

Gas	Atmospheric Lifetime	GWP
HFC-125	32.6	2,800
HFC-134a	14.6	1,300
HFC-143a	48.3	3,800
HFC-152a	1.5	140
HFC-227ea	36.5	2,900
HFC-236fa	209	6,300
HFC-4310mee	17.1	1,300
CF4 (Perfluorocarbons)	50,000	6,500
C2F6	10,000	9,200
C4F10	2,600	7,000
C6F14	3,200	7,400
Sulfur hexafluoride (SF6)	3,200	23,900

Source: U.S. EPA (<http://www.epa.gov/>)

Carbon black, a form of particulate air pollution most often produced from biomass burning, cooking with solid fuels and diesel exhaust, may also have a warming effect in the atmosphere. It is estimated that carbon black's contribution to climate change is second only to carbon dioxide. Carbon black contributes to global warming by absorbing heat while airborne in the atmosphere. Carbon black is of particular concern in the arctic because it settles on ice and snow, reducing its reflectivity and increasing the rate of melting.

Based on a survey of available information, there are little data available for calculating carbon black effects on global warming. As a result, SCAQMD staff is not recommending analyzing carbon black effects on global warming. As information becomes available, staff will reconsider adding carbon black to the list of GHGs to be analyzed in CEQA documents.

- Business-As-Usual (BAU)

In CARB's Scoping Plan (CARB, 2008) CARB states that the BAU case is a representation of what the state of the California economy will be in the year 2020 assuming that none of the measures recommended in the Scoping Plan are implemented. CARB's projected BAU GHG emissions in 2020 are shown in Table 3-2.

Table 3-2
2002-2004 Average Emissions and 2020 Projected Emissions (Business-as-Usual)
(MMTCO₂E)

Sector	2002-2004 Average Emissions	Projected 2020 Emissions [BAU]
Transportation	179.3	225.4
Electricity	109.0	139.2
Commercial and Residential	41.0	46.7
Industry	95.9	100.5
Recycling and Waste	5.6	7.7
High GWP	14.8	46.9
Agriculture	27.7	29.8
Forest Net Emissions -	4.7	0.0
Emissions Total	469	596

Source: CARB, 2008 – Scoping Plan, Table 1

CARB's Scoping Plan states further that continuing increases in global greenhouse gas emissions at BAU rates would result, by late in the century, in California losing 90 percent of the Sierra snow pack, sea level rising by more than 20 inches, and a three to four times increase in heat wave days, flood damage, etc. To avoid future foreseeable environmental impacts to California, the Scoping plan calls for an ambitious but achievable reduction in California's carbon footprint. Reducing greenhouse gas emissions to 1990 levels means reducing approximately 30 percent from BAU emission levels projected for 2020, or about 15 percent from today's levels. On a per-capita basis, that means reducing our annual emissions of 14 tons of carbon dioxide equivalent for every man, woman and child in California down to about 10 tons per person by 2020.

Although CARB's Scoping Plan calls for reducing GHG emissions 30 percent from BAU levels, it does not explicitly define BAU. There is, however, a brief definition of BAU in CARB's GHG inventory document (CARB, 2007). In that document CARB describes BAU as:

- BAU is based on GHG emissions estimates in the absence of policies and reduction measures, and
- BAU is based on forecasted demographic and economic growth.

In its White Paper, CAPCOA provides a more detailed definition of BAU compared to the above definition in CARB's inventory document. In the White Paper BAU is defined as follows:

- The projection of GHGs into the future based on current technologies and regulations;

- The adoption of new GHG reduction regulations, e.g., CARB’s Scoping Plan measures, in the future establishes new BAU, i.e., the definition of BAU evolves over time; and
- BAU will normally define the CEQA no project alternative, but does not necessarily form the project baseline.

Based on the above definitions and discussions from the Working Group, SCAQMD staff defines BAU as the following

- Is used to project project’s future emissions (consistent with CAPCOA and CARB definitions), i.e., level from which GHG reductions must occur;
- Is based first and foremost on current regulatory requirements (consistent with CAPCOA and CARB definitions);
- Regulatory requirements may determine current technology, e.g., advanced technology may be available, but not required, such as combined cycle gas turbine;
- Will normally define the no project alternative (consistent with CAPCOA and CARB definitions); and
- May be used to establish a project’s CEQA baseline, only if consistent with CEQA Guidelines §15125.

The importance of BAU lies not only in the fact that it is a methodology for calculating a project’s future emissions, is also forms the emission level from which GHG emission reductions must occur. SCAQMD staff’s current GHG significance threshold proposal includes the Tier 4 compliance option 1 that establishes a performance standard of reducing GHG emissions 30 percent below the project’s projected BAU emissions through design features and/or mitigation measures. A 30 percent reduction from BAU is consistent with the target objectives of AB 32 and CARB’s Scoping Plan. The intent of the Tier 4 compliance option 1 is to provide a feasible target objective, that will not only contribute to achieving the AB 32 target objective, but will also contribute to achieving the 2050 target of the Governor’s Executive Order S-3-05, which establishes of target objective of reducing GHG emissions 80 percent below 1990 levels or a 90 percent reduction from current BAU estimates.

As recognized by CAPCOA and SCAQMD, BAU will evolve over time as the current regulatory framework changes to implement GHG reduction strategies, either statewide strategies, e.g., CARB’s Scoping Plan, or any future federal strategies. Evolving BAU creates two issues for the CEQA practitioner. First, staff’s proposed Tier 4 compliance option 1 target objective is unchanged from 30 percent, then over time as BAU changes to incorporate GHG reduction strategies, achieving the target objective will become more difficult. Second, any GHG significance thresholds that rely on BAU will have higher uncertainties because they rely on a constantly changing BAU, which may be difficult to define.

To resolve some of these issues of an evolving definition of BAU, SCAQMD staff recommends that a statewide definition be developed by CARB that is updated periodically. Until such time as a statewide definition of BAU is developed, the SCAQMD staff will rely on the above definition. Because the SCAQMD's staff's GHG significance proposal is considered to be an interim proposal, future updates or revisions to staff's proposal would also include updates to BAU or the target objective as BAU levels decline over time. It may be that a target objective percent reduction from BAU levels is a short-term GHG threshold proposal and may become less important in the future as other concepts are evaluated and more fully developed.

- GHG Source Categories to Analyze

Life Cycle Analysis

CEQA requires that the lead agency analyze direct and indirect impacts from a proposed project, giving due consideration to short-term and long-term effects (CEQA Guidelines 15126.2(a)). In the case of GHG pollutants a systems approach to evaluating the consequences of a particular product, process or activity may be more appropriate because of the long atmospheric lifetimes of the various GHGs (see Table 3-1). One of the most effective ways of evaluating GHGs using a systems approach is through the preparation of a life cycle analysis (LCA).

The goal of a life cycle analysis is to compare the full range of environmental damages assignable to products and services, to be able to choose the least burdensome one. The term 'life cycle' refers to the concept that a fair, holistic assessment requires the assessment of raw material production, manufacture, distribution, use and disposal including all intervening transportation steps necessary or caused by the product's existence. The sum of all those steps - or phases - is the life cycle of the product.

Performing a life cycle analysis may be difficult for a number of projects or processes because life cycle emission factors may not be well established for many activities or projects and the life cycle process itself may not be known or well-defined. SCAQMD staff, however, recommends that life cycle analyses be prepared for all projects undergoing a CEQA analysis, as this will produce a more defensible approach. If, however, any component of the life cycle analysis is unavailable, unknown, or not supported by scientific evidence, the lead agency should note such an analysis would be speculative pursuant to CEQA Guidelines §15145 and terminate discussion of that impact.

Direct/Indirect Impacts

Consistent with CEQA, indirect and direct impacts of the project, typically within California, are required to be analyzed in the CEQA document for a proposed project. The analysis of direct GHG impacts is relatively straightforward as onsite GHG sources or directly related offsite GHG sources, such as worker commute trips, are generally readily identifiable. Indirect GHG emission sources are less obvious, but may include some of the sources identified in the following paragraphs. In general,

for most projects information on direct and indirect emissions may be available, rather than a full life-cycle analysis of emissions. The lead agency has typically been expected to address emissions that are closely related and within the capacity of the project proponent to control and/or influence.

Direct Impacts - are primary effects that are caused by a project and occur at the same time and place, such as emissions from boilers, heaters, or other onsite emissions sources. Direct impacts generated by a project may include offsite sources directly related to the project such as emissions from worker commute trips, haul truck trips to import raw materials and/or export finished products or other goods.

Direct GHG emission impacts will include both construction and operation activities. Because impacts from construction activities occur over a relatively short-term period of time, they contribute a relatively small portion of the overall lifetime project GHG emissions. In addition, GHG emission reduction measures for construction equipment are relatively limited. Therefore, SCAQMD staff is recommending that construction emissions be amortized over a 30-year project lifetime, so that GHG reduction measures will address construction GHG emissions as part of the operational GHG reduction strategies.

Indirect Impacts - The CEQA Guidelines define indirect impacts as the following: an indirect physical change in the environment...which is not immediately related to the project, but which is caused indirectly by the project. If a direct physical change in the environment in turn causes another change in the environment, then the other change is an indirect change in the environment (CEQA Guidelines §15064 (d)(2)). Indirect or secondary effects may include growth-inducing effects and other effects related to induced changes in the pattern of land use, population density, or growth rate, and related effects on air and water and other natural systems, including ecosystems (CEQA Guidelines §15358)(a)(2)).

DRAFT STAFF INTERIM GHG SIGNIFICANCE THRESHOLD PROPOSAL

As indicated by the evolution of the staff proposal over time, SCAQMD has generally recommended a tiered decision tree approach to establishing a GHG significance threshold. In CAPCOA's White Paper, eight of the 12 significance threshold options are based on a tiered threshold approach (see also Table 2-2 in Chapter 2). A tiered GHG significance threshold approach is an appealing approach because it provides flexibility in determining whether or not GHG emissions from a project are significant typically using a single methodology to establish various tiers that can be based on the physical size of the project, land use type, or other characteristics. The tiered approach envisioned by SCAQMD staff would require quantification of GHG emissions for all projects that are subject to CEQA and quantification of the GHG reduction effectiveness of design parameters incorporated into the project and any mitigation measures imposed by the lead agency. It may even be necessary to

quantify GHG emissions, if any, for projects that would otherwise qualify for a categorical exemption to document that no “cumulative impact of successive projects of the same type in the same place, over time is significant” (CEQA Guidelines §15300.2(b), or that there is no “reasonable possibility that the activity will have a significant effect on the environment due to unusual circumstances.” (CEQA Guidelines §15300.2(c)).

The CAPCOA White Paper also includes a discussion of a decision tree approach to tiering. Instead of using a single methodology to establish tiers, a decision tree approach would use multiple methodologies to demonstrate significance for a broad range of projects/plans that may be difficult to address using a single GHG significance threshold methodology. Using a decision tree approach promotes even greater flexibility in determining significance for a variety of project types.

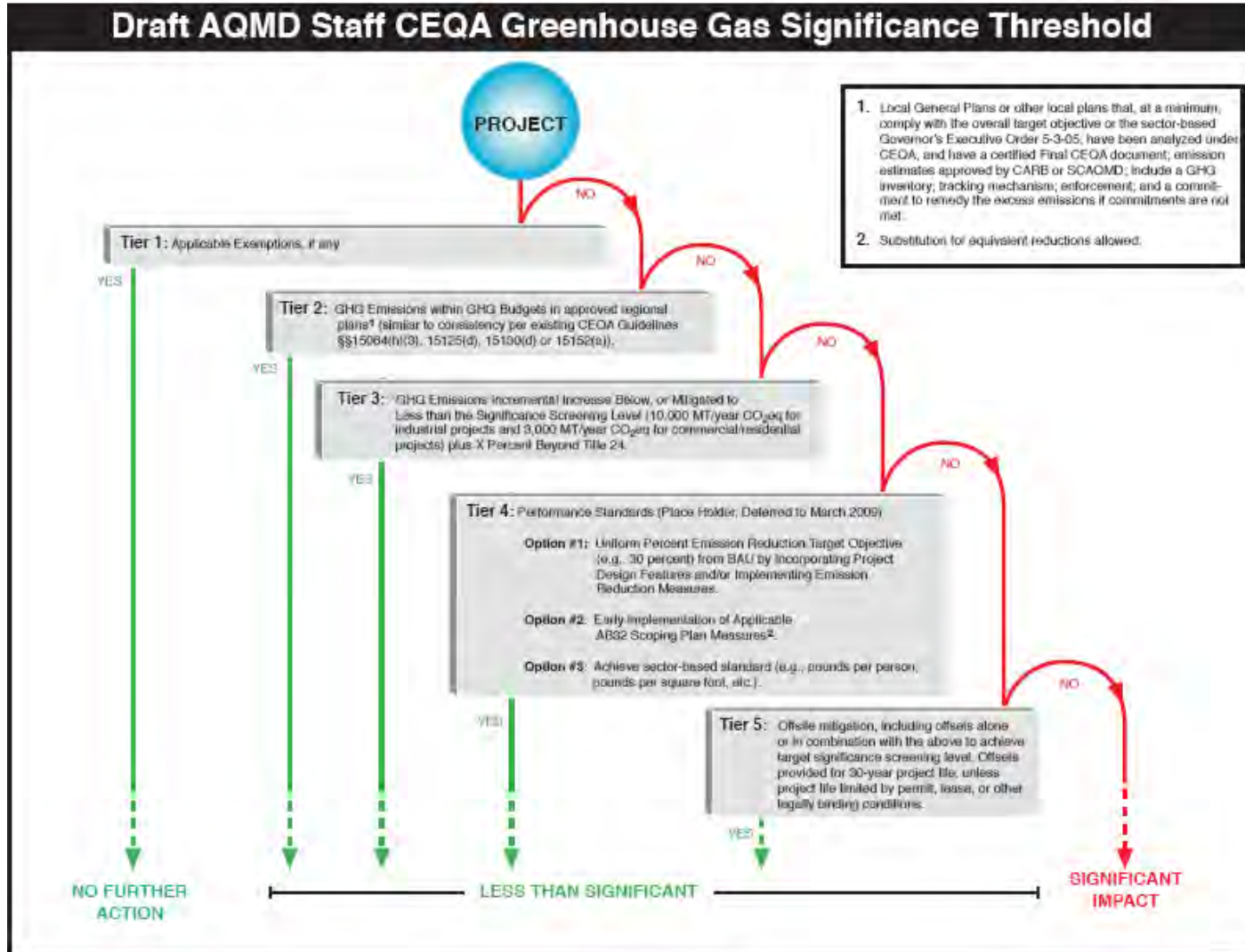
At the August 27, 2008 Working Group meeting #5, staff presented the revised interim GHG significance proposal #3, which included a tiered decision tree approach. Unlike the decision tree approach discussed in CAPCOA’s White Paper, some tiers include multiple approaches for determining whether a project’s GHG emissions are significant, rather than using a single different methodology for each tier.

For the purposes of determining whether or not GHG emissions from affected projects are significant, project emissions will include direct, indirect, and, to the extent information is available, life cycle emissions during construction and operation. Construction emissions will be amortized over the life of the project, defined as 30 years, added to the operational emissions, and compared to the applicable interim GHG significance threshold tier. The following bullet points describe the basic structure of staff’s tiered GHG significance threshold proposal for stationary sources.

The components of revised staff proposal #3 are described in the following paragraphs and shown graphically in Figure 3-1.

- **Tier 1** – consists of evaluating whether or not the project qualifies for any applicable exemption under CEQA. For example, SB 97 specifically exempts a limited number of projects until it expires in 2010. If the project qualifies for an exemption, no further action is required. If the project does not qualify for an exemption, then it would move to the next tier.
- **Tier 2** – consists of determining whether or not the project is consistent with a GHG reduction plan that may be part of a local general plan, for example. The concept embodied in this tier is equivalent to the existing concept of consistency in CEQA Guidelines §§15064(h)(3), 15125(d), or 15152(a). The GHG reduction plan must, at a minimum, comply with AB 32 GHG reduction goals; include emissions estimates agreed upon by either CARB or the SCAQMD, have been analyzed under CEQA, and have a certified Final CEQA document. Further, the GHG reduction plan must include a GHG emissions inventory tracking mechanism; process to monitor progress in achieving GHG emission reduction targets, and a commitment to remedy the excess emissions if AB 32 goals are not met (enforcement).

Figure 3-1
 Revised Staff Proposal #3 Tiered Decision Tree Approach – August 27, 2008



If the proposed project is consistent with the local GHG reduction plan, it is not significant for GHG emissions. If the project is not consistent with a local GHG reduction plan or there is no approved plan, the GHG reduction does not include all of the components described above, or there is no adopted GHG reduction plan, the project would move to tier 3.

- **Tier 3** – attempts to identify small projects that would not likely contribute to significant cumulative GHG impacts. However, because of the magnitude of increasing global temperatures from current and future GHG emissions, staff is recommending that all projects must implement some measure or measures to contribute to reducing GHG emissions. Therefore, Tier 3 includes a requirement that ~~all residential/commercial~~ projects with GHG emissions less than the screening level must include efficiency components that ~~reduce a certain~~ **X** percentage beyond the requirements of Title 24 (Part 6, California Code of Regulations), California's energy efficiency standards for residential and nonresidential buildings. Project proponents would also have to reduce by a specified percentage electricity demand from water use, primarily electricity used for water conveyance.

~~The most recently~~ **A past recommended** screening level proposed by staff was 6,500 MTCO₂eq./year. This screening level was derived using the SCAQMD's existing NO_x operational threshold as a basis. The daily NO_x operational significance threshold, 55 pounds per day was annualized, which results in 10 tons of NO_x per year.

Staff initially considered and then rejected a bifurcated screening level, that is one screening level for residential and commercial projects and a different screening level for industrial projects based on the URBEMIS modeling runs used to derive the 6,500 MTCO₃eq/yr screening level because GHG emissions from industrial were of the same magnitude as the GHG emissions from residential and commercial projects. Staff has reconsidered the bifurcated screening level approach as there is a more scientific basis for deriving the different screening levels.

SCAQMD staff is now recommending a bifurcated screening level approach to address two greatly differing project types: industrial projects as opposed to residential and commercial projects (which are largely indirect sources). The former category typically contains stationary source equipment whose emissions are largely permitted or regulated by the SCAQMD; whereas the latter category is mostly residential, commercial (may also include industrial) building structures that attract or generate mobile source emissions. In light of the GHG reductions needed to stabilize the climate while considering implementation resource requirements, the policy objective used to establish the screening thresholds is to capture projects that represent approximately 90 percent of GHG emissions from new sources. The following paragraphs describe the steps taken to derive the screening threshold values.

Industrial Projects: Since the majority of GHG emissions in the district are comprised of CO₂ emissions from burning natural gas rather than other types of fossil fuel, staff compiled reported annual natural gas consumption for 1,297 ~~115~~ permitted facilities for 2006-2007 and rank-ordered the facilities to estimate the 90th percentile of the cumulative natural gas usage for all permitted facilities. Operators of these facilities are required to report their emissions and associated throughput under the SCAQMD's Annual Emission Reporting (AER) Program if any of their criteria pollutant emissions exceed four tons per year (100 tons per year for CO) or if the facility has any reportable air toxics emission. Figure 3-2 shows that approximately 10 percent of facilities evaluated comprise more than 90 percent of the total natural gas consumption, which corresponds to 10,000 metric tons per year (tpy) of CO₂ emissions. This value represents a boiler with a rating of approximately 27 million British thermal units per hour (mmbtu/hour) of heat input, operating at ~~an 25-80~~ percent capacity factor. If the screening threshold of 10,000 MTCO₂eq./yr is implemented, based on the permitting activities for 2006-2007 it will result in at least 31 additional MNDs or EIRs being prepared by the SCAQMD as the lead agency unless another tier option is selected to demonstrate no significant impacts for GHG emissions. It should be noted that this analysis did not include other possible GHG pollutants such as methane, N₂O; a life-cycle analysis; mobile sources; or indirect electricity consumption. Therefore, under a 10,000 MTCO₂eq./yr screening level more projects would be required to go through an MND or EIR environmental analysis than is currently the case. Furthermore, when the SCAQMD acts as a lead agency, the stationary source equipment employed as part of the proposed project typically must comply with BACT or other SCAQMD rules, regulations, programs that require reducing criteria pollutants or air toxics. Therefore, staff is proposing to replace the 6,500 MTCO₂/yr screening level with the 10,000 MTCO₂eq/yr as the screening level in tier III for industrial projects when the SCAQMD is the lead agency for the project.

Residential and Commercial Projects: To achieve the same 90 percent GHG emission capture rate for this segment of projects GHG emissions from residential and commercial sectors were compared to the GHG emissions from the industrial sector including the in-state power plants. The draft AB32 scoping plan indicates that based on statewide 2002-2004 average GHG emissions, the residential and commercial sectors account for approximately nine percent of the total statewide GHG inventory, while the industrial sector (including instate power plants) accounts for approximately 30 percent of the statewide GHG emission inventory. The inventory methodology for both sectors includes only on-site energy use, consistent with the staff approach taken in deriving the 10,000 tpy threshold. Assuming similar emission characteristics also exist for the residential and commercial sector (i.e., large residential or commercial projects, although fewer in numbers, contribute substantially more to the total emissions), it is estimated that at a threshold of approximately 3,000 MTCO₂eq/yr emissions (10,000 x (9 percent / 30 percent)) would capture 90 percent of the GHG emissions from new residential or commercial projects. A series of sensitivity analyses was performed by the staff using URBEMIS to assess the likely project size for 3,000 MTCO₂eq/yr emissions. Table 3-3 illustrates various projects by size and shape.

Figure 3-2

**Total Number of AER Facilities and Their Accumulative Reported NG Usage
FY 06-07**

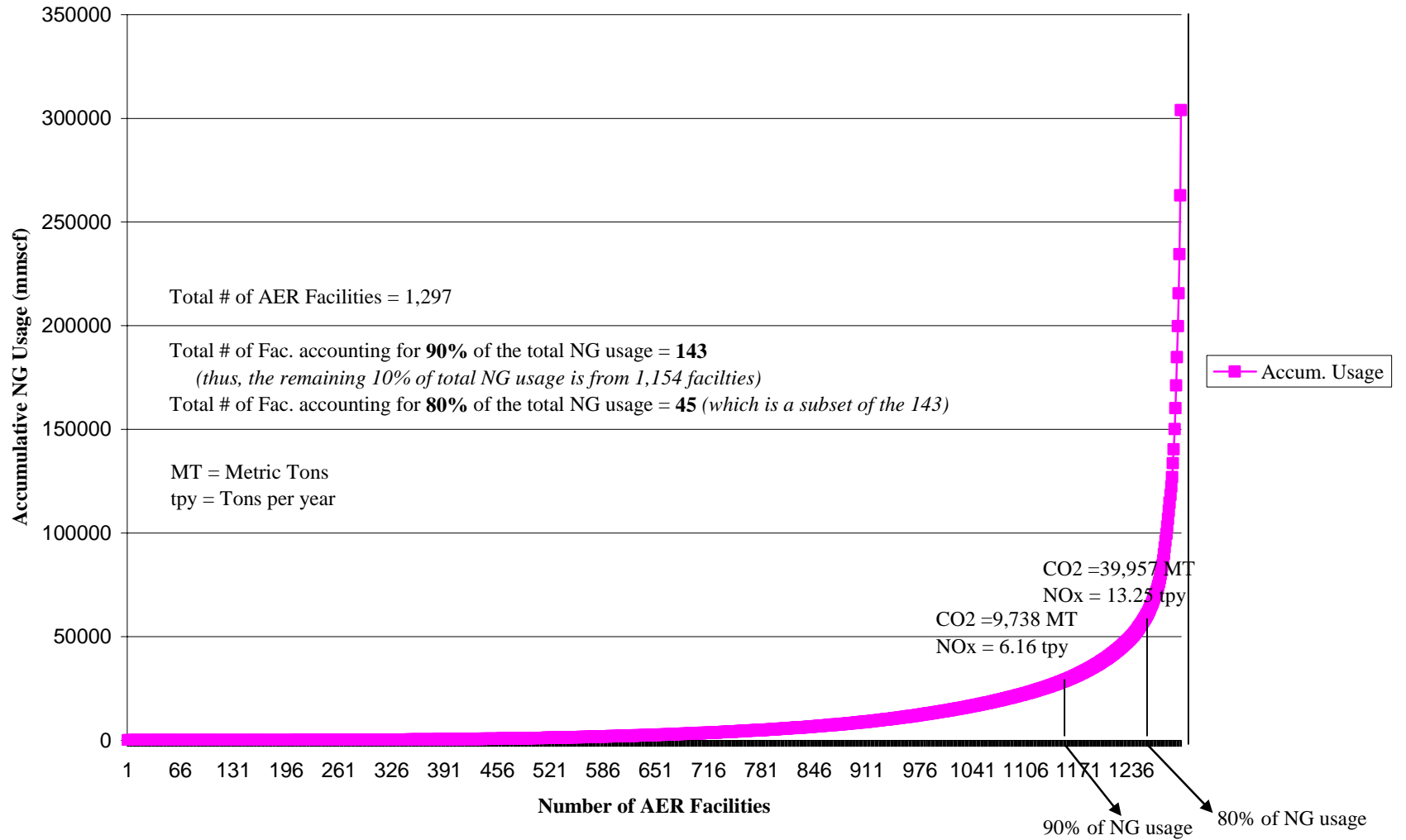


Table 3-3
URBEMIS Run Results for Residential/Commercial Projects Emitting Approximately 3,000 MTCO₂ per Year*

	Weighted Avg Trip Rate	Size	Area Source Emissions		Operational Emissions		TOTAL
			CO ₂ (tons/year)	CO ₂ (MT/year)	CO ₂ (tons/year)	CO ₂ (MT/year)	CO ₂ (MT/year)
Res - Single Unit	19.54	80 units	326.86	297.15	3003.56	2730.51	3027.65
Res - Apt	9.17	175 units	422.70	384.27	2971.95	2701.77	3086.05
Comm - Office	6.02	265,000 ft ²	387.41	352.19	2961.75	2692.50	3044.69
Comm - Bank	206.22	9,500 ft ²	14.38	13.07	3192.90	2902.64	2915.71
Single/Apt	19.54	35 units	379.59	345.08	2964.82	2695.29	3040.37
	9.17	100 units					
Office/Bank	6.02	170,000 ft ²	254.19	231.08	3042.71	2766.10	2997.18
	206.22	3,400 ft ²					
Office/Single	6.02	135,000 ft ²	355.13	322.85	2956.32	2687.56	3010.41
	19.54	40 units					
Office/Apt	6.02	135,000 ft ²	403.19	366.54	2952.34	2683.95	3050.48
	9.17	85 units					
Bank/Single	206.22	3,700 ft ²	202.81	184.37	3052.93	2775.39	2959.76
	19.54	50 units					
Bank/Apt	206.22	4,000 ft ²	248.12	225.56	3042.64	2766.04	2991.60
	9.17	100 units					
Single/Apt/Office	19.54	20 units	382.60	347.82	2945.26	2677.51	3025.33
	9.17	65 units					
	6.02	100,000 ft ²					
Single/Apt/Bank	19.54	20 units	241.78	219.80	3020.76	2746.15	2965.95
	9.17	65 units					
	206.22	3,550 ft ²					
						Avg CO ₂ (MT/year):	3009.60

*Offsite electricity use, water use, or other potential life cycle emissions not included.

As shown in Table 3-3, this threshold would represent a residential development of about 70 single-family dwelling units. It should be noted that the sensitivity analysis did not include GHG emissions from electricity use and water use. As a result, similar to the earlier discussion of industrial projects, this screening level of 3,000 MTCO₂eq/yr could capture development projects less than 70 single-family dwelling units.

In CAPCOA’s White Paper, it is suggested that a thresholds of 900 MTCO₂eq/yr would capture 90 percent of all development projects, which should translate into at least 90 percent of GHG emissions from the residential and commercial sectors². According to CAPCOA 900 MTCO₂eq/yr equates to approximately 50 single-family dwelling units. This information appears to corroborate the SCAQMD staff’s finding that the policy objective of capturing 90 percent of all GHG emissions for this region can be achieved with a screening level of 3000 MTCO₂eq/yr. Therefore, staff is recommending that this value be used by lead agencies for residential and commercial developments, including industrial parks, warehouses, etc.

- **Tier 4 – Decision Tree Options:** consists of three decision tree options to demonstrate that a project is not significant for GHG emissions. The three compliance options are as follows.

Compliance Option 1 – the lead agency would calculate GHG emissions for a project using a BAU methodology. Once GHG emissions are calculated, the project proponent would need to incorporate design features into the project and/or implement GHG mitigation measures to demonstrate a 30 percent reduction from BAU. Although a 30 percent reduction below BAU is consistent with the target objectives of AB 32, it will continue to reduce GHG emissions beyond 2020, thus, contributing to GHG reductions pursuant to the Governor’s Executive Order S-3-05 (a 90 percent reduction compared to current GHG emissions). A 30 percent reduction is also considered to be an achievable GHG reduction target based on current technologies.

Compliance Option 2 – this option consists of early compliance with AB 32 through early implementation of CARB’s Scoping Plan Measures. The intent of this compliance option is to accelerate GHG emission reductions from the various

² Although the CAPCOA White Paper implies that 900 metric tons per year equates to a 90 percent capture rate, there is no explicit information provided in the White Paper that demonstrates this correlation. Indeed, the CAPCOA authors state that 900 metric tons, which represents approximately 50 residential units, corresponds to widely divergent capture rate percentile rankings depending on the project location (see discussion on page 43 of the White Paper). Percentile rankings were based on a survey of four cities in California. A project of 900 metric tons per year representing a 90 percent capture rate appears to be a working assumption for which there appears to be no factual basis. Further, although not explicitly stated, it is assumed that the 900 metric tons were derived using the URBEMIS2007 model. It should be noted that that the URBEMIS2007 model only quantifies CO₂ emissions and direct emissions primarily from on-road mobile sources. It does not capture other GHG pollutants or indirect GHG emissions such as emissions from energy generation, water conveyance, etc. Therefore, it is likely that a 50-unit residential project would actually generate higher GHG emissions than 900 metric tons per year.

sectors subject to CARB’s Scoping Plan to eliminate GHG emission, especially for those GHGs that have a long atmospheric lifetime such as CO₂, sulfur hexafluoride, etc., to minimize future projected impacts to California from global climate change.

Compliance Option 3 – this compliance option consists of establishing sector-based performance standards. For example, it may be possible to use the 1990 inventory required under AB 32 to establish an efficiency standard such as pounds per person, pounds per worker, pounds per square feet, pounds per item manufactured, etc. When calculating GHG emissions from a project, if they are less than the established efficiency standard the project would not be significant relative to GHG emissions, while projects exceeding the efficiency standard would be significant.

If the lead agency or project proponent cannot achieve the performance standards on any of the compliance options in Tier 4, GHG emissions would be considered significant.

- **Tier 5** – under this tier, the lead agency would quantify GHG emissions from the project and the project proponent would implement offsite mitigation (GHG reduction projects) or purchase offsets to reduce GHG emission impacts to less than the proposed screening level. In addition, the project proponent would be required to provide offsets for the life of the project, which is defined as 30 years. If the project proponent is unable to obtain sufficient offsets, incorporate design features, or implement GHG reduction mitigation measures to reduce GHG emission impacts to less than the screening level, then GHG emissions from the project would be considered significant. Since it is currently uncertain how offsite mitigation measures, including purchased offsets, interact with future AB 32 Scoping Plan measures, the AQMD would allow substitution of mitigation measures that include an enforceable commitment to provide mitigation prior to occurrence of emissions and to prevent mitigating the same emissions twice.

Mitigation Preference – If a project generates significant adverse impacts, CEQA Guidelines §15126.4 requires identification of mitigation measures to minimize potentially significant impacts. Because GHG emissions contribute to global change, mitigation measures could be implemented locally, nationally, or internationally and still provide global climate change benefits. Because reducing GHG emissions may provide co-benefits through concurrent reductions in criteria pollutants, when considering mitigation measures when the AQMD is the lead agency under CEQA, staff will implement mitigation measures that are real, quantifiable, verifiable, and surplus in the following order of preference.

- Incorporate GHG reduction features into the project design, e.g., increase a building’s energy efficiency, use materials with a lower global warming potential than conventional materials, purchase building materials locally, etc.
- Implement onsite measures that provide direct GHG emission reductions onsite, e.g., replace onsite combustion equipment (boilers, heaters, steam

generators, etc.) with more efficient combustion equipment, replace existing high global warming potential refrigerants with low global warming refrigerants, eliminate or minimize fugitive emissions, etc.

- Implement neighborhood mitigation measure projects that could include incentives for installing solar power, increasing energy efficiency by exceeding Title 24 building standards through replacing low efficiency water heaters with high efficiency water heaters, increasing building insulation, using fluorescent bulbs, replacing old inefficient refrigerators with efficient refrigerators using low global warming potential refrigerants, etc.
- Implement in-district mitigation measures such as any of the above identified GHG reduction measures; reducing vehicle miles traveled (VMT) through greater rideshare incentives, transit improvements, etc.
- Implement in-state mitigation measures, which could include any of the above measures.
- Implement out of state mitigation measure projects, which may include purchasing offsets if no other options are available.

CARB's Interim GHG Significance Threshold Proposal

In October 2008 CARB released its interim GHG significance threshold proposal and held a public workshop on October 27, 2008. CARB's threshold is considered to be an interim threshold because CARB staff intends to periodically review and change its threshold proposal as necessary. CARB's Preliminary Draft Staff Proposal (Proposal) states that non-zero GHG significance thresholds can be supported by substantial evidence. Further, different GHG significance thresholds may be established for different sectors. Therefore, as part of its initial interim GHG significance threshold proposal CARB is proposing two separate GHG significance thresholds, one for new industrial projects and another for residential/commercial projects subject to CEQA. CARB's proposal uses a tiered approach (see Table 3-4).

Table 3-4
 Comparison of CARB’s and AQMD’s Interim GHG Significance Thresholds Approaches

	<u>Stationary/Industrial Sector Projects</u>		<u>Residential/Commercial Sector Projects</u>	
	<u>CARB</u>	<u>AQMD</u>	<u>CARB</u>	<u>AQMD (Not Recommended at this Time)</u>
<u>Policy Objective</u>	<u>Capture 90% of statewide stationary project emissions</u>	<u>Capture 90% of district wide GHG emissions (industrial)</u>	<u>Capture X% of statewide residential/commercial project emissions</u>	<u>Capture 90% of district wide residential/commercial project GHG emissions</u>
<u>Exemption</u>	<u>Apply applicable exemption</u>	<u>Apply applicable exemption</u>	<u>Apply Applicable Exemption</u>	<u>Apply Applicable Exemption</u>
<u>Regional GHG Reduction Plan</u>	<u>N.A.</u>	<u>Project Consistent with Applicable GHG Reduction Plan with GHG inventorying, monitoring, enforcement, etc.</u>	<u>Project Consistent with Applicable GHG Reduction Plan with GHG inventorying, monitoring, enforcement, etc.</u>	<u>Project Consistent with Applicable GHG Reduction Plan with GHG inventorying, monitoring, enforcement, etc.</u>
<u>Thresholds</u>	<u>Project < 7,000 MTCO₂eq/yr & meets construction & transportation performance standards</u>	<u>GHG emissions from industrial project is < 10,000 MTCO₂eq/yr, includes construction emissions amortized over 30 years & added to operational GHG emissions</u>	<u>Project meets construction & operation performance tandards, e.g., energy, water use, waste & ransportation & < X MTCO₂eq/yr</u>	<u>Project is < 3,000 MTCO₂eq/yr & exceeds Title 24 Energy Efficiency Standards by X%, if applicable – construction emissions amortized over 30 years & added to operational GHG emissions</u>
<u>Performance Standards</u>	<u>See above</u>	<u>NA</u>	<u>See above</u>	<u>3 Compliance Options: 1) Reduce GHG emissions 30% below BAU; 2) Early Implement AB 32 Measure; 3) Comply with Performance Standard</u>
<u>Offsets</u>	<u>Offsite substitution allowed</u>	<u>Implement offsite mitigation for life of project, i.e., 30 years, with mitigation preference</u>	<u>Offsite substitution allowed</u>	<u>Implement offsite mitigation for life of project, i.e., 30 years with mitigation preference</u>
<u>Determination</u>	<u>GHG emissions significant, EIR is prepared, if meeting none of the above</u>	<u>GHG emissions significant, EIR is prepared, if meeting none of the above</u>	<u>GHG emissions significant, EIR is prepared, if meeting none of the above</u>	<u>GHG emissions significant, EIR is prepared, if meeting none of the above</u>

CARB’s interim GHG significance threshold for industrial sources was developed to capture “the vast majority (~90% statewide) of the GHG emissions from new industrial projects being subject to CEQA’s requirement to impose feasible mitigation.” According to CARB’s Proposal, CARB staff used data from a survey of industrial boilers performed by the Oak Ridge National Laboratory in which it was concluded that small boilers with an input capacity of 10 MMBtu/hr corresponded to 93 percent of total industrial boiler input capacity, or 4,660 MTCO₂e/yr. Using this result and accounting for process losses, purchased electricity, and water usage and wastewater discharge, CARB staff is recommending 7,000 MTCO₂eq/yr as a GHG significance threshold for industrial projects. The following bullet points summarize CARB’s proposed interim GHG significance threshold for industrial sources.

- Box 1 – Apply any applicable categorical or statutory exemptions. If the project does not qualify for an exemption, move to Box 2.
- Box 2 – The industrial project must meet both of the following performance standards or equivalent mitigation measures to be deemed insignificant for GHGs:
 - Construction – Project must meet an interim performance standard for construction- related emissions (performance standard not yet defined).
 - Transportation – Project must meet an interim performance standard for transportation (performance standard not yet defined).

AND

- Project with mitigation will emit no more than 7,000 MTCO₂eq/yr. If the project does not qualify for either of the performance standards or exceeds 7,000 MTCO₂eq/yr, move to Box 3.
- Box 3 – Project is deemed significant and an EIR must be prepared.
- CARB’s Preliminary Draft Proposal for Residential and Commercial projects is summarized in the following bullet points.
- Box 1 – Apply any applicable categorical or statutory exemptions. If the project does not qualify for an exemption, move to Box 2.
- Box 2 – Project complies with a previously approved plan that addresses GHG emissions and must: include a GHG reduction target consistent with AB 32; be consistent with transportation-related target adopted by CARB pursuant to SB 375; include a GHG inventory and mechanism for monitoring GHG emissions; include enforceable GHG requirements; include a mechanism for periodic updates to plan; and have a certified CEQA document. If the project is

consistent with a GHG plan that includes all of these elements, it is presumed to be insignificant for GHGs. If the project is not consistent with a GHG plan or there is no adopted GHG plan that includes all of the above elements, move to Box 3.

- Box 3 – The residential/commercial project must meet all of the following performance standards or equivalent mitigation measures to be deemed insignificant for GHGs:
 - Construction – Project must meet an interim performance standard for construction- related emissions (performance standard not yet defined).
 - Operations – Project must meet the following performance standards: energy use performance standard defined in CEC’s Tier II Energy Efficiency goal; an interim performance standard for water use (performance standard not yet defined); an interim performance standard for waste (performance standard not yet defined); and an interim performance standard for transportation (performance standard not yet defined).

AND

The project with performance standards or equivalent mitigation will emit no more than X MTCO₂eq/yr (criterion to be developed). If the project does not qualify for any one of the performance standards or exceeds X MTCO₂eq/yr, move to Box 4.

- Box 4 – Project is deemed significant and an EIR must be prepared.

For a detailed description of CARB’s interim GHG significance threshold proposal, refer to the following URL:
<http://www.arb.ca.gov/cc/localgov/ceqa/meetings/102708/prelimdraftproposal102408.pdf>.

CARB is currently accepting comments on its Draft Proposal and has scheduled a second public workshop on December 9, 2008. CARB staff currently anticipates taking their proposal to their Board in February 2009.

CHAPTER 4

CONSIDERATIONS WHEN ANALYZING GHG EMISSIONS

Introduction

GHG Analysis Recommendations

INTRODUCTION

As noted in Chapter 1, on June 19, 2008, OPR, in collaboration with the California Resources Agency, the California Environmental Protection Agency and the California Air Resources Board, released a *Technical Advisory* containing informal guidance for public agencies as they address the issue of climate change in their CEQA documents. With regard to analyzing GHG emission impacts OPR states,

“Each public agency that is a lead agency for complying with CEQA needs to develop its own approach to performing a climate change analysis for projects that generate GHG emissions. A consistent approach should be applied for the analysis of all such projects, and the analysis must be based on best available information... Lead agencies should determine whether greenhouse gases may be generated by a proposed project, and if so, quantify or estimate the GHG emissions by type and source.”

Other than this general advice, the *Technical Advisory* does not provide explicit details for quantifying GHG emissions.

CAPCOA’s White Paper provides a comprehensive discussion of modeling tools that are currently available for analyzing GHG emissions³. As indicated in the White Paper, no one model is currently available that is capable of estimating all of a project’s direct and indirect GHG emissions. It is likely, however, that the Urban Emissions (URBEMIS) Model will be the most commonly used model for calculating GHG emissions because it currently calculates CO₂ emissions (in addition to criteria pollutant emissions) during both construction and operation of proposed projects, it is publicly available, and already widely used in California. Statewide use of the URBEMIS model would provide consistency throughout California with regard to quantifying GHG emissions. For a list of currently available models that calculate GHG emissions and summaries of the capabilities, advantages, and disadvantages of each model refer to Table 10 on pages 75 through 78 in the CAPCOA White Paper.

The purpose of this chapter is to provide more explicit guidance to CEQA practitioners with regard to quantifying GHG emissions than OPR’s *Technical Advisory*, while building on the information provided CAPCOA’s White Paper.

GHG ANALYSIS RECOMMENDATIONS

Direct/Indirect Impacts

As noted in Chapter 3 of this Guidance Document, consistent with CEQA, indirect and direct impacts of the project, typically within California, are required to be analyzed in the CEQA document for a proposed project. The analysis of direct GHG impacts is

³ For maximum transparency with regard to quantifying GHG emissions and disclosure to the public, SCAQMD staff recommends using only publicly available models.

relatively straightforward as onsite GHG sources or directly related offsite GHG sources, such as worker commute trips, are generally readily identifiable. Indirect GHG emission sources are less obvious, but may include some of the sources identified in the following paragraphs. In general, for most projects information on direct and indirect emissions may be available, rather than a full life-cycle analysis of emissions. The lead agency has typically been expected to address emissions that are closely related and within the capacity of the project proponent to control and/or influence.

Direct Impacts - are primary effects that are caused by a project and occur at the same time and place, such as emissions from boilers, heaters, or other onsite emissions sources. Direct impacts generated by a project may include offsite sources directly related to the project such as emissions from worker commute trips, haul truck trips to import raw materials and/or export finished products or other goods. The following paragraphs provide general guidance on quantifying direct GHG emissions.

CAPCOA's White Paper provides a comprehensive discussion of modeling tools that are currently available for analyzing GHG emissions. Further, no one model is currently available that is capable of estimating all of a project's direct and indirect GHG emissions. Although there are a number of modeling tools available to calculate GHG emissions the following discussion focuses on a combination of approaches using the URBEMIS model as the basis for analyzing GHG emission impacts. Other approaches for calculating GHG emissions can be used, as long as they are supported by scientific evidence and include publicly available information.

The URBEMIS model is a publicly available model that is currently used statewide to calculate criteria pollutant emissions from construction and operation activities for a wide variety of land use projects. The model is regularly updated through a collaboration of air pollution control agencies, including the SCAQMD, to reflect the most current data, methodologies, and emission factors for quantifying criteria pollutant emissions. The most current update to the model is URBEMIS2007 version 9.2.4, which quantifies CO₂ emissions in addition to criteria pollutant emissions.

Currently, there are several disadvantages to using the URBEMIS model to calculate GHG emissions from a proposed project and, as a result, it should not be the only tool used to calculate GHG emissions. For example, currently the URBEMIS model only quantifies CO₂ emissions and not other GHG pollutants, with the exception of methane from mobile sources, which is converted to CO₂eq. emissions. Since CO₂ emissions comprise the bulk of GHG emissions from most projects, URBEMIS GHG results are fairly representative of GHG emissions from a project.

To quantify mobile source emissions from on-road mobile sources, the URBEMIS model uses trip rate information from the Institute of Transportation Engineers Trip Generation Handbook (ITE, 2001) as the trip rate default factor for all land uses. ITE trip rate information is widely used and is considered legally defensible as they rely on substantial reports and surveys of trip rates in cities with little or no transit. As a result, the ITE trip rates are also considered to provide a conservative estimate of trip

rates and associated emissions. The model, however, treats each trip as a separate trip and doesn't consider that a single trip may be used for more than one purpose, referred to as "internalization." The model also does not fully account for interaction between land uses in its estimation of mobile source operational emissions. URBEMIS does allow the user to overwrite the default trip rates and characteristics with more project-specific data from a traffic study prepared for a project.

In spite of the disadvantages of the URBEMIS model described above, it can be used as the first step in quantifying GHG emissions for typical land use projects because it establishes default parameters for the most common emission sources from a project including construction equipment types and activity profiles, area of site disturbed during construction, building size, number vehicle trips, etc., if the level of information about the project is low. If more information about the project is available such as a precise profile of construction equipment and activity levels, number of vehicle trips based on a traffic study prepared for the project, etc., this information can be incorporated into the model. The model can then quantify CO₂ emissions from both construction and operation.

The URBEMIS construction analysis quantifies criteria pollutant and CO₂ emissions from both off-road sources (primarily construction equipment) and on-road sources (worker commute trips, haul truck trips, etc.). To further flesh out the construction analysis, the lead agency would have to identify emission factors for other GHG pollutants likely to be emitted during construction, i.e., methane and nitrous oxide⁴, for both off-road and on-road emissions sources and then quantify the GHG emission results using spreadsheets or other available tools.

The off-road CO₂ emission factors in the URBEMIS model are generated from CARB's off-road model (<http://www.arb.ca.gov/msei/offroad/offroad.htm>). Methane emission factors for off-road equipment can also be obtained from CARB's OFFROAD2007 model. CO₂ and methane emission factors for off-road equipment that are based on CARB's OFFROAD2007 model can also be found on the SCAQMD's CEQA webpages at the following URL: <http://www.aqmd.gov/ceqa/handbook/offroad/offroad.html>. Other sources of off-road GHG emissions factors for equipment used in California may be used, as long as they are supported by scientific evidence and are publicly available.

The URBEMIS model is able to quantify mobile source CO₂ emissions during construction from on-road mobile sources such as construction worker commute trips, heavy-duty truck trips to haul away demolition debris, soil hauling to and from the site etc., and during operation, primarily vehicle trips using ITE's Trip Generation Manual (ITE, 2001). The on-road CO₂ emission factors in the URBEMIS model for both construction and operation are generated from CARB's on-road mobile source emissions model, EMFAC2007 (<http://www.arb.ca.gov/msei/onroad/onroad.htm>). Methane emission factors for on-road mobile sources can also be obtained from

⁴ Hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride are not combustion emissions, so would not normally be emitted during construction.

CARB's EMFAC2007 model. CO₂ and methane emission factors for on-road mobile sources that are based on CARB's EMFAC2007 model can also be found on the SCAQMD's CEQA webpages at the following URL: <http://www.aqmd.gov/ceqa/handbook/onroad/onroad.html>.

The analysis of operation emissions from all types of land uses in the URBEMIS model focuses primarily on mobile source emissions and some area sources. The model does not quantify emissions from stationary sources. For stationary sources that require a permit from the SCAQMD, emission calculation procedures and methodologies are available in the SCAQMD's Best Available Control Technology Guidelines (<http://www.aqmd.gov/bact/partd7-9-2004update.pdf>). Examples of facilities that use stationary sources requiring a permit from the SCAQMD include: fossil fuel power plants⁵, cement plants, landfills, wastewater treatment plants, gas stations, dry cleaners and industrial boilers. The SCAQMD has procedures and methodologies for projects subject to SCAQMD permits to calculate criteria pollutants and air toxics. It is anticipated that these same procedures and methodologies could be extended to estimate a permitted facility's GHG calculations. For any stationary and area sources that do not require SCAQMD permits, the same methodologies used for permitted sources could be used. It will be necessary to contact the SCAQMD to obtain information on GHG emission calculation methodologies applicable to stationary source equipment.

Indirect Impacts - Indirect or secondary effects may include growth-inducing effects and other effects related to induced changes in the pattern of land use, population density, or growth rate, and related effects on air and water and other natural systems, including ecosystems (CEQA Guidelines §15358)(a)(2)). The examples of facilities that use stationary sources requiring a permit from the SCAQMD that may contribute to direct environmental impact (fossil fuel power plants, cement plants, landfills, wastewater treatment plants, gas stations, dry cleaners and industrial boilers) may also contribute to indirect impacts and, therefore, should be included, as necessary in the CEQA analysis of GHGs.

Quantification Methodologies and GHG Emission Factors

Methodologies for calculating GHG emissions and GHG emission factors are currently not readily available. Until such time as GHG calculation methodologies and emission factors become well established and more readily available, lead agencies may want to consult the following references to identify acceptable methodologies and emission factors.

1. The first useful reference for GHG emission factors for stationary sources is EPA's Air Pollutant (AP)-42, which is a compilation of air pollutant emission

⁵ According to CEQA Guidelines §15227, CEQA does not apply to projects outside of California. The California Attorney General's Office has rendered an opinion stating that the definition of the environment in CEQA does not stop at the borders of California. Further, California public agencies that take an action outside of California is still bound by the requirements of CEQA to prepare an EIR if the action may cause a significant effect on the environment.

factors for stationary point and area sources. Each of the first 13 chapters of AP-42 is dedicated to a specific source activity such as solid waste disposal, petroleum industry, and metallurgical industry. Since the publication of the fifth edition (and supplementals) in 2001, there have been a number of updates to the various specific stationary sources such as hot asphalt plants, organic liquid storage tanks, and coke production. In addition to the criteria pollutant emissions, some of the updated AP-42 chapters provide GHG emission factors for a variety of sources. For example, Chapter 15 of AP-42 focuses on GHG emissions from biogenic sources such as soils, termites, lightning, and enteric fermentation (animal digestive fermentation).

2. Second, the California Climate Action Registry (C-CAR) has prepared a General Reporting Protocol (GRP), which is a relatively easy-to-follow user's manual that outlines the principles, concepts, calculation methodologies and procedures required for effective participation in the California Registry. The appendices of the GRP provide GHG emissions factors, specifically CO₂, CH₄ and N₂O, for electricity use, mobile combustion and stationary combustion based on fuel usage type.
3. Third, a thorough internet search should be conducted to find reliable sources of emissions factors that would assist in accurately determining GHG emissions from a specific source being evaluated. Again, all potential GHGs, such as CO₂, CH₄ and N₂O, should be evaluated to the best of one's ability to locate dependable information.
4. Finally, a material balance approach also may provide reliable average emission estimates for specific sources. A material balance is when one accounts for (or "balances") all the materials going into and coming out of the process in order to make a credible emissions estimation. For some sources, a material balance may provide a better estimate of emissions especially in situations where a high percentage of material is lost to the atmosphere (e. g., sulfur in fuel, or solvent loss in an uncontrolled coating process.) In other cases, material balances may be inappropriate where material is consumed or chemically combined in the process, or where losses to the atmosphere are a small portion of the total process throughput.

Reporting GHG Emissions – Daily vs. Annual Emissions

The analysis of GHGs is a much different analysis than the analysis of criteria pollutants for the following reasons. For criteria pollutants, significance thresholds are based on daily emissions because attainment or non-attainment is based on daily exceedances of applicable ambient air quality standards. Further, several ambient air quality standards are based on relatively short term exposure effects on human health, e.g., one-hour and eight-hour. Since the half-life of CO₂ is approximately 100 years, the effects of GHGs are longer-term, affecting global climate over a relatively long time frame (see also Table 3-1).

Typical GHG emission inventories (EPA5, ARB6, etc.) represent directly emitted GHGs during a given year. As a result, the current convention is to present GHG emissions as annual emissions. The URBEMIS model can be set to calculate annual emissions for a project. When using the URBEMIS model to calculate annual GHG emissions, it may be useful to modify the trip rate for each land use using a weighted trip rate average to more accurately reflect annualized trip rates. A weighted trip rate average reflects the trip rates during the week, as well as trip rates during Saturdays and Sundays. Trip rate information for weekdays and weekend days can be found in the ITE Trip Rate Handbook.

CHAPTER 5

CONCLUSION

Introduction

Future Action Items

INTRODUCTION

CEQA Guidelines §15064.7(a) encourages lead agencies to establish thresholds of significance to determine the significance of an environmental impact. Further, thresholds of significance to be adopted for general use as part of the lead agency's environmental review process must be adopted by ordinance, resolution, rule, or regulation, and developed through a public review process and be supported by substantial evidence (CEQA Guidelines §15064.7(b)). Staff's proposed interim GHG significance threshold proposal has been developed through a public process consisting of a series of Stakeholder Working Group meetings. Staff proposals have been modified over time based on written and oral feedback from the Working Group. Staff's intent was to reach consensus to the extent feasible, but for some items staff could not find common ground with some of the stakeholders.

The next immediate step for SCAQMD staff is to present a final interim GHG significance threshold proposal to the SCAQMD Governing Board for consideration. If the Governing Board approves staff's final interim GHG significance threshold proposal, then staff will embark on a number of short-term and intermediate term activities to provide outreach to public agencies that might use staff's interim GHG significance threshold to determine whether or not their projects' GHG emissions are significant, periodically revisit and revise as necessary the interim proposal, and accommodate stakeholders' requests for more information on GHG calculation methodologies and mitigation measures. The following sections provide discussions on future anticipated action items

FUTURE ACTION ITEMS

Interim GHG Significance Threshold Outreach Program

It is currently anticipated that staff's interim GHG significance threshold proposal will be presented to, and considered by the Board at the November 7, 2008 public hearing. Consistent with other significance threshold proposals adopted by the Governing Board, if the draft GHG significance threshold proposal is adopted, staff will meet with local cities, councils of governments, and leagues of cities to discuss the staff proposal and address any questions or concerns.

Once the interim GHG significance threshold is adopted, this Guidance Document will be posted on the SCAQMD's CEQA web pages. Staff will also send notice of the adoption of the staff proposal to all agencies, organizations, and individuals on the SCAQMD's CEQA "Interested Parties" mailing list. In addition, it is expected that staff will prepare and make available an informational brochure that summarizes information about the interim GHG significance proposal in addition to this Guidance Document.

Starting in January 2009, as part of its intergovernmental review (IGR) responsibilities under CEQA, where the SCAQMD reviews and CEQA documents prepared by other public agencies, SCAQMD will begin more thorough evaluations of CEQA documents with regard to their GHG analyses and the basis by which they make a determination of significance. Staff will begin recommending use of the staff's interim GHG significance threshold proposal or other available GHG significance thresholds based on substantial evidence in comment letters on notices of preparation of an EIR. As of March 1, 2009, staff will formally recommend use of staff's interim GHG significance threshold proposal or other available GHG significance thresholds based on substantial evidence in comment letters on NDs and MNDs. As of July 1, 2009, staff will formally recommend use of staff's interim GHG significance threshold proposal or other available GHG significance thresholds based on substantial evidence in comment letters on EIRs.

Compile Lists of GHG Design Features and Mitigation Measures

CEQA Guidelines §15126.4 requires an EIR to “describe feasible measures which could minimize significant adverse impacts, including where relevant, inefficient and unnecessary consumption of energy.” Ideally, it is desirable to avoid impacts altogether through incorporating design features into the proposed project. Because staff's recommended interim GHG significance threshold includes performance standards (see tier 4 compliance options 1 and 3) or a project proponent may try to reduce GHG emissions to less than the applicable screening levels, mitigation measures or design features are important components of the overall GHG significance threshold strategy. As a result, a number of GHG Working Group stakeholders has requested that SCAQMD compile lists of design features or mitigation measures to assist with reducing GHG emissions for all land use types.

In response to the request from GHG Working Group stakeholders to develop GHG design features and mitigation measures, over the next year SCAQMD staff will compile lists of GHG reduction strategies, including control efficiencies, by sector and make the lists available online with other recommended mitigation measures. There is already a robust body of mitigation measures available (see in particular the CAPCOA bullet point discussion below), but in most cases, they do not include control efficiencies. SCAQMD staff will use the following mitigation sources as a basis from which to compile mitigation strategies.

- **CEQA Guidelines, Appendix F** – this appendix includes a list of general energy conservation measures that may be used as a basis to identify GHG reduction strategies. The measures do not contain GHG control efficiencies, so they would need further review to determine if control efficiencies are available.
- **CAPCOA White Paper** – this document provides a comprehensive discussion of GHG reduction strategies and specific mitigation measures are listed in Table 16 in Appendix B. The mitigation measures are grouped by emissions source type, such as transportation measures, parking measures, commercial and residential design features, etc. Table 16 also provides other useful information about each

mitigation measure including source of each measure, comments and descriptions about each control measure, etc. Most importantly, for many of the mitigation measures CAPCOA has included an emission reduction score. In most cases, the emission reduction score is given as a range. As a result, further evaluation would be necessary to provide a single more precise emission reduction score or a defensible average. Otherwise, it is likely that the high end of the emission reduction score would be used.

- CARB** - is actively working to develop and adopt GHG protocols to support the Climate Change Program. CARB is working in collaboration with other agencies and organizations, including the California Climate Action Registry, to adopt consistent and standardized methods to accurately report GHG emissions. There are two kinds of GHG protocols, a reporting protocol and a project protocol. The project protocol may be useful as it sets standards and provides specific guidance to define GHG reduction projects and quantify and report GHG reductions from project activities. Some example protocols include manure management and urban forestry. It is expected that additional protocols will be developed and adopted by CARB. It is also expected that CARB's Scoping Plan may provide guidance on regulatory guidance that could be used to develop GHG emission reduction measures. GHG reduction strategies that may also serve as GHG mitigation measures to be developed by CARB over the next two years are shown in Table 5-1.

Table 5-1
California Air Resources Board GHG Emission Reduction Strategies

Strategy	Description of Strategy
Other Light Duty Vehicle Technology	New standards would be adopted to phase in beginning in the 2017 model year
Hydrofluorocarbon Reduction	1) Ban retail sale of HFC in small cans; 2) Require that only low global warming potential (GWP) refrigerants be used in new vehicular systems; 3) Adopt specifications for new commercial refrigeration; 4) Add refrigerant leak-tightness to the pass criteria for vehicular Inspection and Maintenance programs; 5) Enforce federal ban on releasing HFCs.
Transportation Refrigeration Units, Off-Road Electrification, Port Electrification	Strategies to reduce emissions from TRUs, increase off-road electrification, and increase use of shore-side/port electrification.
Manure Management	San Joaquin Valley Rule 4570 (adopted 6/15/06) reduces volatile organic compounds from confined animal facilities through implementation of control options.
Alternative Fuels: Biodiesel Blends	CARB would develop regulations to require the use of 1 to 4 percent biodiesel displacement of California diesel fuel.

Table 5-1 (Concluded)
California Air Resources Board GHG Emission Reduction Strategies

Strategy	Description of Strategy
Alternative Fuels: Ethanol	Increased use of ethanol fuel.
Heavy-Duty Vehicle Emission Reduction Measures	Increased efficiency in the design of heavy duty vehicles and an education program for the heavy duty vehicle sector.
Reduced Venting and Leaks in Oil and Gas Systems	Rule considered for adoption by the Air Pollution Control Districts for improved management practices.
Hydrogen Highway	The California Hydrogen Highway Network (CA H2 Net) is a State initiative to promote the use of hydrogen as a means of diversifying the sources of transportation energy.
Achieve 50% Statewide Recycling Goal	Achieving the State's 50 percent waste diversion mandate as established by the Integrated Waste Management Act of 1989, (AB 939, Sher, Chapter 1095, Statutes of 1989), will reduce climate change emissions associated with energy intensive material extraction and production as well as methane emission from landfills. According to the California Integrated Waste Management Board, in 2005 the statewide waste diversion rate was 52 percent. ⁶
Landfill Methane Capture	Install direct gas use or electricity projects at landfills to capture and use emitted methane.
Zero Waste - High Recycling	Additional recycling beyond the State's 50% recycling goal.

- CEC and CPUC – These agencies are actively developing GHG emission reduction strategies that may also be used to develop GHG mitigation measures for specific energy production sources. Examples of CEC and CPUC GHG emission reduction strategies are shown in Table 5-2.

Other sources of potential GHG emission reduction measures will be evaluated and incorporated, as applicable into any GHG mitigation measure lists developed by the SCAQMD.

⁶ CIWMB, 2007; <http://www.ciwmb.ca.gov/LGCentral/Rates/Diversion/2005/Default.htm>

Table 5-2
GHG Emission Reduction Strategies Implemented by CEC and CPUC

Strategy	Description of Strategy
ENERGY COMMISSION (CEC)	
Building Energy Efficiency Standards in Place and in Progress	Public Resources Code 25402 authorizes the CEC to adopt and periodically update its building energy efficiency standards (that apply to newly constructed buildings and additions to and alterations to existing buildings).
Appliance Energy Efficiency Standards in Place and in Progress	Public Resources Code 25402 authorizes the Energy Commission to adopt and periodically update its appliance energy efficiency standards (that apply to devices and equipment using energy that are sold or offered for sale in California).
Cement Manufacturing	Cost-effective reductions to reduce energy consumption and to lower carbon dioxide emissions in the cement industry.
Municipal Utility Strategies	Includes energy efficiency programs, renewable portfolio standard, combined heat and power, and transitioning away from carbon intensive generation.
Alternative Fuels: non-Petroleum Fuels	Increasing the use of non-petroleum fuels in California’s transportation sector, as recommended in the CEC’s 2003 and 2005 Integrated Energy Policy Reports.
PUBLIC UTILITIES COMMISSION (PUC)	
Accelerated Renewable Portfolio Standard (33 percent by 2020)	The Governor has set a goal of achieving 33 percent renewables in the State’s resource mix by 2020. The joint PUC/Energy Commission September 2005 Energy Action Plan II (EAP II) adopts the 33 percent goal.
California Solar Initiative	The solar initiative includes installation of 1 million solar roofs or an equivalent 3,000 MW by 2017 on homes and businesses, increased use of solar thermal systems to offset the increasing demand for natural gas, use of advanced metering in solar applications, and creation of a funding source that can provide rebates over 10 years through a declining incentive schedule.
Investor-Owned Utility	This strategy includes energy efficiency programs, combined heat and power initiative, and electricity sector carbon policy for investor owned utility.

Periodically Review the Interim GHG Significance Threshold

SCAQMD staff will periodically review and revise staff’s GHG proposal to incorporate applicable updated information on GHGs and GHG reduction strategies resulting from regulatory requirements or advances in technology. Some areas of the current proposal that may be reevaluated include the tier 3 screening levels, and the tier 4 compliance option 1 GHG reduction target objective. Further, staff will evaluate whether or not sector based performance standards can be developed for tier 4 compliance option 3.

If a statewide GHG significance threshold is developed by CARB, staff will review that threshold and report to the Governing Board [by March 2009 considering such a](#)

~~threshold for adoption regarding any implementation issues and ways to transition into the recommended GHG significance threshold within six months of formal approval by the CARB Board.~~

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APPENDIX A

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APPENDIX B

SUMMARIES OF WORKING GROUP MEETINGS

WORKING GROUP MEETING #1 (APRIL 30, 2008)

At the first Working Group meeting SCAQMD staff presented the Working Group with a number of policy objectives and design criteria for consideration to establish the framework for developing a GHG significance threshold. Policy objectives include the following concepts. First, the GHG significance threshold should minimize environmental degradation, that is, it should not make impacts worse. To this end, it may be useful to develop a GHG significance threshold that achieves GHG emissions reductions that are consistent with the goals of AB 32 estimated to be approximately 30 percent reduction of GHG emissions from business-as-usual. Although CEQA or a GHG significance threshold established pursuant to CEQA may be useful tools in reducing GHG emissions, they would act in parallel with regulatory requirements, e.g., AB 32, but they do not replace them. As a result, there is no requirement that a GHG significance threshold must reduce GHG emissions consistent with AB 32 or EO S-3-05.

In addition to policy considerations, a number of GHG significance threshold design criteria were also considered. An important consideration in developing a GHG significance threshold is the potential administrative burden it may create on lead agencies through increased resource impacts such as increased costs and staff if the significance threshold is established too low. For example, a zero threshold might result in eliminating or substantially reducing the number of projects that qualify for a categorical exemption, a negative declaration, or a mitigated negative declaration. Other design considerations discussed included establishing a single GHG threshold, such as a “bright line” numerical threshold or multiple thresholds, such as the tiered approaches identified by CAPCOA, etc.

WORKING GROUP MEETING #2 (MAY 28, 2008)

At the second Working Group meeting, staff presented design criteria recommendations based on the discussion at the first Working Group meeting and correspondence received subsequent to the first Working Group meeting. With regard to analyzing life cycle GHG emissions, staff’s initial recommendation was to exclude an analysis of life cycle emissions because life cycle process are not well established. Instead, the GHG emissions analysis should focus on direct and indirect impacts, consistent with current CEQA requirements (CEQA Guidelines §15064(d)). Feedback from the Working Group suggested that a CEQA analysis may be considered deficient without making an effort to conduct a life cycle analysis. Further, if life cycle emissions data are not available, the lead agency should note this consider further analysis speculative and terminate the discussion (CEQA Guidelines §15145).

Another design criteria recommendation made by staff was to take into consideration the administrative burden and resources impacts when establishing a GHG significance threshold. Staff recommended that the GHG significance threshold

should not be set too low, which could result in all projects going through the EIR process. It was pointed out that requiring an EIR for all projects does not necessarily result in more mitigation, no meaningful mitigation may be available for small projects, and it may provide a disincentive for implementing mitigation if the measures are unable to reduce GHG impacts to less than significant.

Other design criteria recommended by staff included analyzing the six Kyoto GHGs, any GHG significance threshold established would be considered interim and would be periodically evaluated and updated as necessary, etc. Staff also introduced the concept of preferred GHG mitigation strategies using a hierarchy from the most to least preferred strategies as shown below.

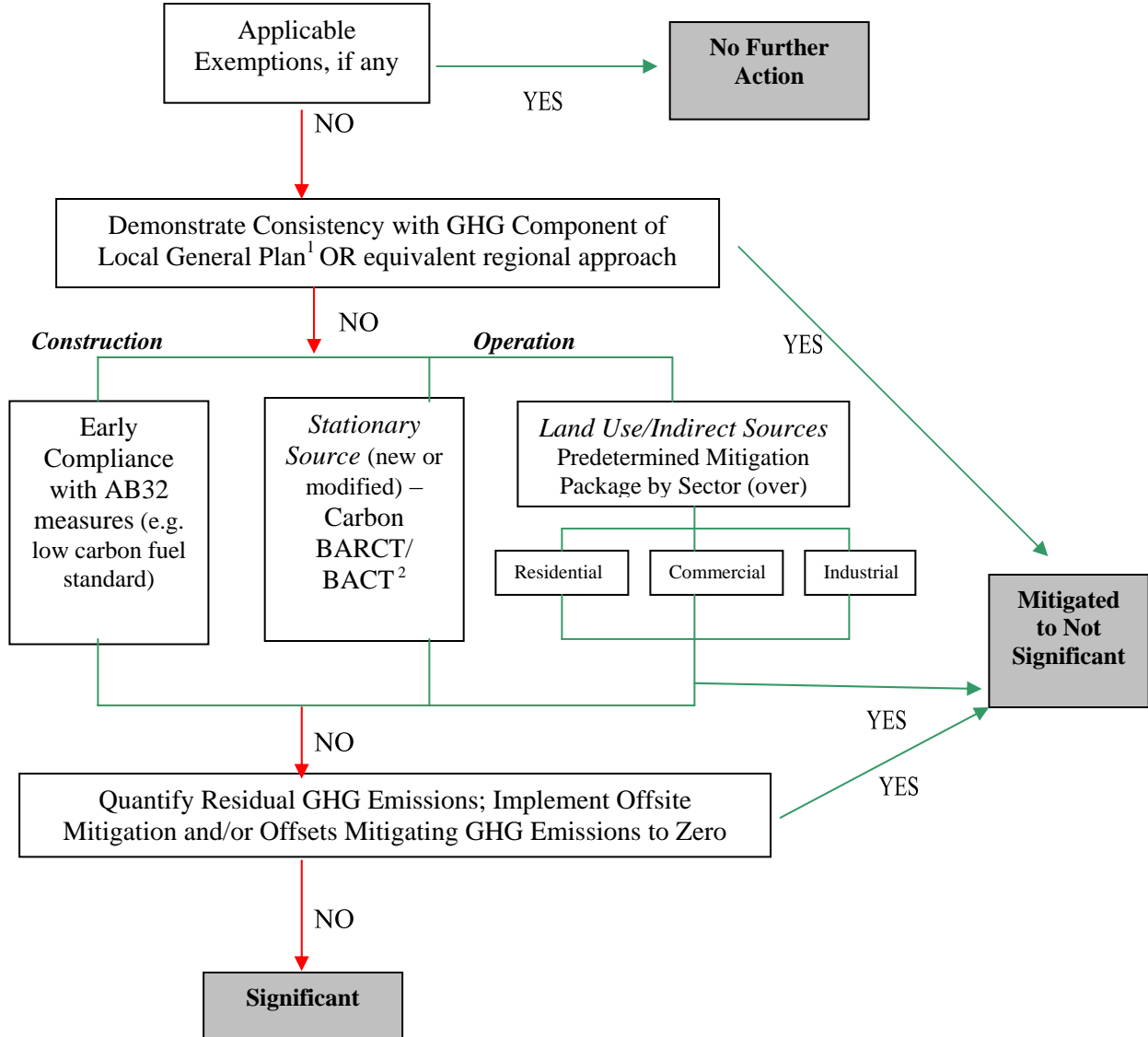
1. Incorporate GHG reduction strategies into project design
2. Mitigate GHGs from other onsite sources for modification projects
3. Mitigate offsite GHG emission reduction projects
4. Mitigate both construction & operational GHG impacts
5. Consider feasible mitigation based on economic factors (cost) pursuant to CEQA Guidelines §15364
6. Purchase acceptable GHG offsets with preference toward GHG reduction projects occurring in-basin or in-state (offset cost a consideration). The following points should be considered:
 - a. Offset market still developing, so it is necessary to ensure offsets are obtained from a credible source
 - b. Offsets should be provided for at least 10 years of project operation (see SJVAPCD indirect source Rule 9510 §6.2 mitigation requirements)

Finally, SCAQMD staff introduced the initial staff proposal. The initial staff proposal consisted of a tiered approach, similar to CAPCOA's Approach 2 with mandatory GHG mitigation measures. Each tier of this proposal is briefly described in the following bullet points and shown graphically in Figure B-1.

- The first tier consists of evaluating whether or not the project qualifies for any applicable exemption under CEQA. For example, SB 97 specifically exempts a limited number of projects until it expires in 2010. If the project qualifies for an exemption, no further action is required. If the project does not qualify for an exemption, then move to the next tier.

Figure B-1
Initial Staff Proposal – Proposed Tiered Approach – May 28, 2008

Significance determination of Cumulative Impacts from GHG emissions:



1. Local General Plans, at a minimum, must comply with AB32 reduction goals; have been analyzed under CEQA, and have a certified Final CEQA document; emission estimates approved by CARB or SCAQMD; include a GHG inventory tracking mechanism; and a commitment to remedy the excess emissions if AB32 goals are not met.
2. SCAQMD will work with CAPCOA to develop a list of mitigation measures.