San Joaquin Valley
Air Pollution Control District

CLIMATE CHANGE ACTION PLAN

November 2008

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EXECUTIVE SUMMARY

Global Climate Change (GCC), which is now generally accepted by the scientific community to be caused by Greenhouse Gases (GHGs), is a widely discussed scientific, economic, and political issue in the United States. Briefly stated, GCC is the cumulative change in the average weather of the earth that may be measured by changes in temperature, precipitation, storms, and wind; and GHGs are gases that trap heat in the atmosphere. The scientific and policy communities in the State of California have collectively concluded that a significant and growing scientific body of evidence supports the need for regulating GHG emissions. Worldwide, California is estimated to be the 15th largest emitter of carbon dioxide (CARB 2008), and this fact has added to the impetus behind California's leadership in this area.

California is exercising this climate change leadership in two significant efforts: one, the passage and implementation of Assembly Bill 32 (AB32), "California Global Warming Solutions Act of 2006", designed to significantly reduce existing GHG emissions in the State of California; and two, in the analysis of environmental impacts of new GHG emissions related to discretionary project approvals under the California Environmental Quality Act (CEQA). This latter effort has been particularly difficult to implement as no state or local agency has provided definitive guidance on how to address GHG emissions impacts under CEQA.

Recognizing this dearth of regulatory guidance, in August 2008 the San Joaquin Valley Air Pollution Control District's Governing Board adopted the Climate Change Action Plan (CCAP). The CCAP directed the Air Pollution Control Officer to develop guidance documents to assist land–use and other permitting agencies in addressing GHG emissions as part of the CEQA process, investigate the development of a greenhouse gas banking program, enhance the existing emissions inventory process to include greenhouse gas emissions reporting consistent with new state requirements, and administer voluntary greenhouse gas emission reduction agreements. These items would then be brought before the Governing Board for their consideration.

The intent of this staff report is to provide a starting point for developing the items called for in the CCAP. This staff report provides a summary of background information on GCC, the current regulatory environment surrounding GHG emissions, and the various concepts in addressing the potential impacts of CGG. This staff report evaluates methodologies for estimating impacts, and summarizes mitigation measures. There are many potentially valid approaches and therefore no specific approach is being recommended at this time. Instead this report presents several alternative methodologies for addressing GHG impacts that are being developed and vetted by other agencies. Each of these methodologies will be explored by the San Joaquin Valley Air Pollution Control District (District) in the November 18 Scoping Meeting and in subsequent working group meetings.

CHAPTER 1 – CLIMATE CHANGE ACTION PLAN (CCAP) INTRODUCTION

1.1 General Climate Change Issues and Background

The scientific and political communities in the State of California have collectively concluded that a significant and growing scientific body of evidence supports the need for regulating GHG emissions. Compilations of data and analyses, such as the 2007 report from the Intergovernmental Panel on Climate Change (IPCC), have provided a generally accepted scientific basis for implementing climate change policy.

In the last few years information and data have been compiled that demonstrate increases in average global air and ocean temperatures are occurring (AEP 2007). According to the IPCC Report, global temperatures are expected to rise approximately 0.2 degree Celsius per decade for the next couple of decades under a variety of scenarios (IPPC 2007). 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.

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 (AEP 2007). Figure 1 and Figure 2 (next page) show that the largest source of GHG in California is transportation, contributing 38 percent of the State's total GHG emissions in 2004, expressed in million metric tons Carbon Dioxide Equivalent (MMT CO_2eq.), up from 35% in 1990. Electricity generation and importation is the second largest source, contributing 25 percent of the State's GHG emissions (AEP 2007).

Figure 1: 1990 Greenhouse Gas Emissions by Sector (Gross Emissions: 433.3 MMT CO_2eq.)

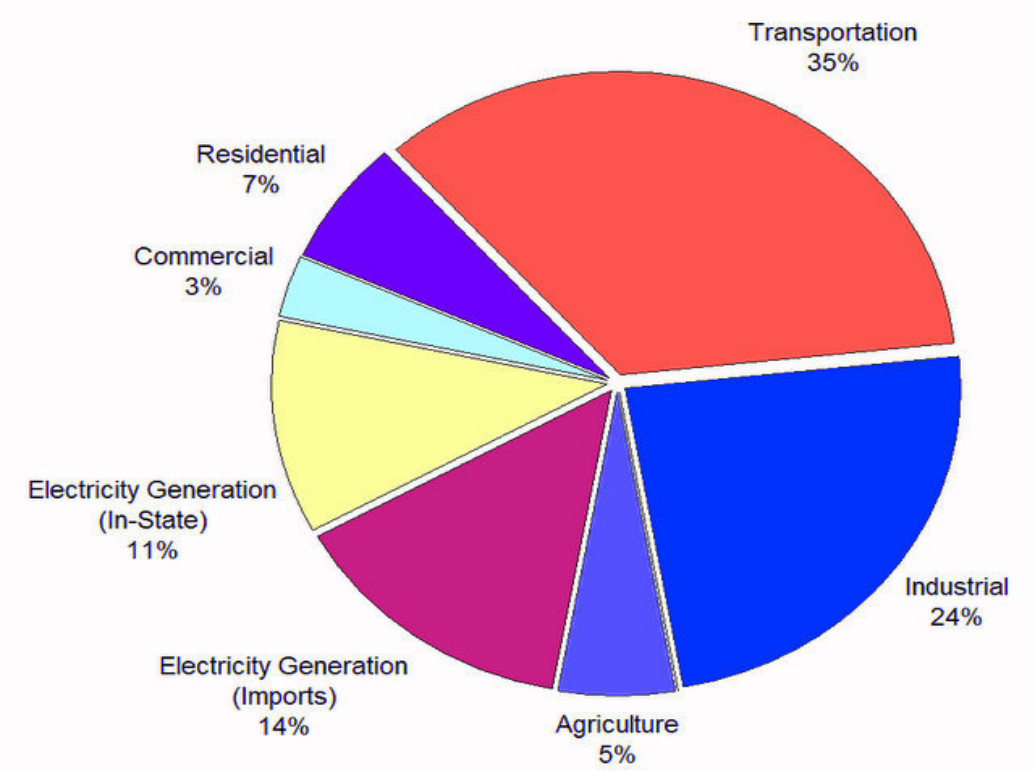
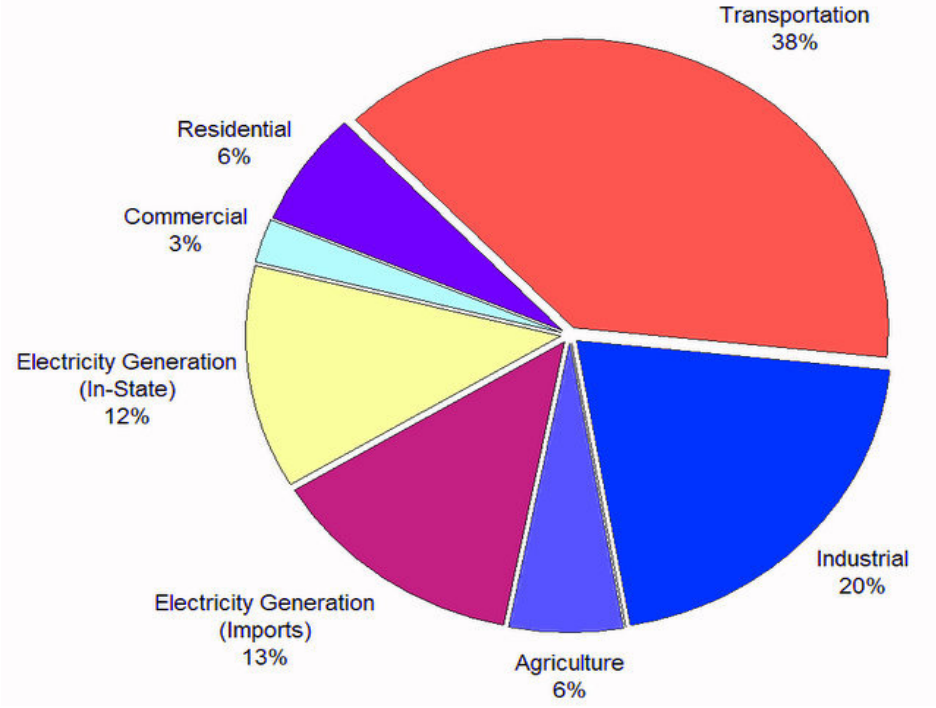


Figure 2: 2004 Greenhouse Gas Emissions by Sector (Gross Emissions: 484.4 MMT CO_2eq.)



Source: ARB, 2007

Some greenhouse gases such as water vapor occur naturally and are emitted to the atmosphere through natural processes as well as through human activities. The most common GHG that results from human activity is carbon dioxide, followed by methane and nitrous oxide. GHGs can include:

Water Vapor: Although not considered a pollutant, water vapor is the most important, abundant, and variable GHG. In the atmosphere, it maintains a climate necessary for life. The main source of water vapor is evaporation from the ocean (approximately 85 percent). Other sources include sublimation (change from solid to gas) from ice and snow, evaporation from other water bodies, and transpiration from plant leaves.

Ozone: Unlike other GHG, ozone is relatively short- lived and, therefore, is not global in nature. It is difficult to make an accurate determination of the contribution of ozone precursors (nitrogen oxides and volatile organic compounds) to global climate change (AEP 2007).

Aerosols: Aerosols are suspensions of particulate matter in a gas emitted into the air through burning biomass (plant material) and fossil fuels. Aerosols can warm the atmosphere by absorbing and emitting heat and can cool the atmosphere by reflecting light. Cloud formation can also be affected by aerosols. Sulfate aerosols are emitted when fuel-containing sulfur is burned. Black carbon (or soot) is emitted during bio mass burning or incomplete combustion of fossil fuels. Particulate matter regulation has been lowering aerosol concentrations in the United States; however, global concentrations are likely increasing.

Chlorofluorocarbons: Chlorofluorocarbons (CFCs) are gases formed synthetically by replacing all hydrogen atoms in CH_4 or ethane with chlorine and/or fluorine atoms. CFCs are nonflammable, nontoxic, insoluble, and chemically uncreative in the troposphere (the level of air at the earth's surface). CFCs were first synthesized in 1928 for use as cleaning solvents, refrigerants, and aerosol propellants. They destroy stratospheric ozone; therefore, their production was stopped as required by the Montreal Protocol in 1987 (AEP 2007).

Carbon dioxide: Carbon dioxide (CO_2) is an odorless, colorless gas, which has both natural and anthropogenic sources. Natural sources include the following: respiration of bacteria, plants, animals, and fungus, evaporation from oceans, volcanic outgassing, and decomposition of dead organic matter. Anthropogenic sources of carbon dioxide are from burning coal, oil, natural gas, and wood. Concentrations of CO_2 were 379 parts per million (ppm) in 2005, which is an increase of 1.4 ppm per year since 1960 (AEP 2007).

Methane: Methane (CH_4) is a flammable gas and is the main component of natural gas. When one molecule of CH_4 is burned in the presence of oxygen, one molecule of carbon dioxide and two molecules of water are released. There are no direct ill health effects from CH_4. A natural source of CH_4 is from the anaerobic decay of organic matter. Geological deposits, known as natural gas fields, also contain CH_4, which is extracted for fuel. Other sources are from cattle, fermentation of manure, and landfills.

Nitrous oxide: Nitrous oxide (N_2O), also known as laughing gas, is a colorless greenhouse gas. Higher concentrations of N_2O can cause euphoria, dizziness,

and slight hallucinations. N_2O is produced by microbial processes in soil and water, including those reactions that occur in fertilizer containing nitrogen. In addition to agricultural sources, some industrial processes (nitric acid production, nylon production, fossil fuel-fired power plants, and vehicle emissions) also contribute to its atmospheric load. It is used in racecars, rocket engines, and as an aerosol spray propellant.

Fluorinated Gases: Gases that are synthetic, powerful GHG that are emitted from a variety of industrial processes.

- Hydrofluorocarbons: Hydrofluorocarbons (HFCs) are synthetic man-made chemicals that are used as a substitute for CFCs for automobile air conditioners and refrigerants.

- Perfluorocarbons: Perfluorocarbons (PFCs) have stable molecular structures and do not break down though the chemical processes in the lower atmosphere. High-energy ultraviolet rays, roughly 60 lulometers above the earth's surface are able to destroy the compounds. PFCs have long lifetimes, ranging between 10,000 and 50,000 years. Two common PFCs are tetrafluoromethane and hexafluoroethane. Concentrations of tetrafluoromethane in the atmosphere are over 70 parts per trillion (ppt) (AEP 2007). The two main sources of PFCs are primary aluminum production and semiconductor manufacture.

- Sulfur hexafluoride: Sulfur hexafluoride (SF_6) is an inorganic, colorless, odorless, nontoxic, nonflammable gas. Concentrations in the 1990s were roughly 4 ppt (AEP 2007). SF_6 is used for insulation in electric power transmission and distribution equipment, in semiconductor manufacturing, the magnesium industry, and as a tracer gas for leak detection.

Under Assembly Bill 32 (AB32) GHGs are defined as carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), sulfur hexafluoride (SF_6), hydrofluorocarbons (HFCs), and perfluorocarbons (PFCs).

The global warming potential (GWP) of the various GHGs is assigned as a measure of their relative average global radiative forcing effect, the potential of a gas or aerosol to trap heat in the atmosphere. Individual GHG species have varying GWP and atmospheric lifetimes. The carbon dioxide equivalent is a consistent methodology for comparing GHG emissions since it normalizes various GHG emissions to a consistent metric. The reference gas for GWP is carbon dioxide with a GWP of one and GWP weighted emissions are measured in teragrams of CO_2 equivalents (Tg CO_2 Eg.) (EPA 2008). For example, methane has a GWP of 21; methane has a 21 times greater global warming effect than carbon dioxide on a molecule per molecule basis (EPA 2008). Several GWPs of other GHGs are shown in Table 1 below:

Table 1: Global Warming Potential of GHGs

Gas	Atmospheric Lifetime	GWP
Carbon dioxide (CO2)	50 – 200	1
Methane (CH4)	12 ± 3	21
Nitrous oxide (N2O)	120	310
HFC-23 (Hydrofluorocarbons)	264	11,700
HFC-32	5.6	650
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
Sulfer hexafluoride (SF6)	3,200	23,900

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

1.2 Legislation Relative to Addressing GHG Impacts

Executive Order S-3-05

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) in June 2005, which established several greenhouse gas emission reduction targets for California. GHG emissions are to be reduced to 2000 emission levels by 2010; to 1990 emission levels by 2020 (a 30% reduction from business as usual emissions levels projected for 2020) (CARB 2008)); and to 80% below 1990 levels by 2050.

Assembly Bill 32 (AB32)

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. 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 a 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. Specifically, AB 32 requires the California Air Resources Board (ARB) to do the following:

- By July 1, 2007, adopt a list of early action measures that can be implemented by regulation before January 2010.
- By January 1, 2008, adopt mandatory reporting requirements for significant sources.
- By January 1, 2008, establish a statewide GHG emission cap for 2020 based upon 1990 emissions levels.
- By January 1, 2009, adopt a scooping plan indicating how emission reductions will be achieved for significant GHG sources via regulations, market mechanisms, or other measures.
- By January 1, 2011, adopt regulations to achieve the maximum technologically feasible and cost effective reductions in GHG.

Other key legislation:

- California Environmental Quality Act (CEQA): 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]).

- Senate Bill (SB) 97 – CEQA: Greenhouse Gas Emissions: In August 2007, Governor Schwarzenegger signed into law Senate Bill (SB) 97 – CEQA: Greenhouse Gas Emissions. SB 97 requires the Office of Planning and Research, 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. The Office of Planning and Research would be required to periodically update the guidelines to incorporate new information or criteria established by ARB 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 (OPR) 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 ARB. 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 (OPR).

  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 every year. Finally, SB 375 provides certain exemptions under CEQA law for projects that are proposed consistent with local plans developed under SB 375.

1.3 California Environmental Quality Act (CEQA)

The California Legislature enacted CEQA in 1970. CEQA is intended to address a broad range of environmental issues, including water quality, noise, land use, natural resources, transportation, energy, human health, biological species, and air quality. CEQA requires that public agencies (i.e., local, county, regional, and state government) consider and disclose the environmental effects of their decisions to the

public and governmental decision makers. Further, it mandates that agencies implement feasible mitigation measures or alternatives that would mitigate significant adverse effects on the environment. CEQA requires public agencies to identify potentially significant effects on the environment of projects they intend to carry out or approve, and to mitigate significant effects whenever it is feasible to do so. The public agency with the principal responsibility for carrying out or approving the project (lead agency) is required to prepare an Environmental Impact Report (EIR), a Mitigated Negative Declaration, or equivalent document, when it determines that the project's impacts on the environment are potentially significant. This determination of significance must be based on the substantial evidence in light of all the information before the agency.

1.4 The District's Role in the CEQA Review Process

The District has jurisdiction over most air quality matters in the San Joaquin Valley Air Basin and is tasked with implementing certain programs and regulations required by the Federal Clean Air Act and the California Clean Air Act. As parts of the effort to accomplish its mandates, the District has prepared plans to attain national and state ambient air quality standards, conducts a CEQA review program, and maintains a staff of technical personnel versed in air pollution analysis and control. In addition, CEQA Guidelines §15004(b)(2) requires a lead agency to consult with *"Any other state, federal, and local agencies which have jurisdiction by law with respect to the project or which exercise authority over resources which may be affected by the project…."*

CEQA Guidelines §15004(b)(2) requires a lead agency to consult with *"Any other state, federal, and local agencies which have jurisdiction by law with respect to the project or which exercise authority over resources which may be affected by the project…."* Nearly all development projects in the SJVAPCD, from general plans to individual development applications, have the potential to generate pollutants that will worsen air quality or make it more difficult for national and state air quality attainment standards to be attained. Therefore, for most projects, it is necessary to evaluate air quality impacts to comply with CEQA.

As a public agency, the District takes an active part in the intergovernmental review process under CEQA. The District is available to assist governmental agencies and project proponents in understanding how to characterize project related impacts on air quality and how to mitigate those impacts. The District provides technical guidance on applicable air quality analysis methodologies, identifies applicable rules, proposes mitigation measures, and helps address any other air quality related issues.

In carrying out its duties under CEQA, performs several agency roles: the District may act as a Lead Agency, a Responsible Agency, or a "Commenting" Agency. As discussed below, the role the District serves under CEQA is dependent upon the extent of the District's discretionary approval power over the project.

Lead Agency – A Lead Agency is the public agency with the principal responsibility for carrying out or approving a project subject to CEQA. Lead Agencies are responsible for complying with CEQA by ensuring that the potential environmental impacts of projects are adequately assessed. This may include determining that a project is exempt from CEQA, or preparing a Negative Declaration or Environmental Impact Report (EIR) for nonexempt projects. Lead Agencies must also consult with and solicit comments from responsible and commenting agencies during the preparation of a Negative Declaration or EIR.

In general, the local government agency with jurisdiction over land use, such as a city or county, is the preferred Lead Agency for land development projects. The District will undertake the Lead Agency role when no other agency has broader responsibility for approving the project; the project requires a discretionary District permit; and no other agency has prepared (or is preparing) a CEQA document for the project. In addition, the District routinely serves as Lead Agency for its own projects, such as the development of rules and regulations.

Responsible Agency – A Responsible Agency is a public agency, other than the Lead Agency, that has responsibility for carrying out or approving a project. The role of a Responsible Agency is different from that of a Lead Agency. While a Lead Agency must consider all of the potential impacts of a project, a Responsible Agency may only consider those aspects that are within the agency's area of expertise or which are required to be carried out or approved by the agency. A Responsible agency complies with CEQA by considering the Negative Declaration or EIR prepared by the Lead Agency and by reaching its own conclusion on whether or how to approve the project involved.

The District is typically a Responsible Agency for projects or portions of a project that require a District permit, or that require any other approval by the District. When considering the lead agency's environmental analysis, the District will review the air quality section of the analysis and other sections relevant to assessing potential impacts on air quality, i.e. sections assessing traffic and public health impacts. At the conclusion of its review, the District may submit comments to the lead agency that identify any deficiencies in the air quality analysis and suggest approaches to correct the deficiencies. Where appropriate, the District may recommend additional feasible mitigation measures.

Commenting Agency – Under CEQA, an agency that has "jurisdiction by law" over a particular natural resource, but does not have discretionary approval over the project is a "Trustee Agency", otherwise known as a "Commenting Agency". The District serves as a Commenting Agency when reviewing projects which typically do not require air permits, e.g. residential and commercial development projects. In addition to the air quality section, the District may review and comment on other sections of the environmental document that relate to air quality impacts, e.g. traffic, health risks, etc. When serving as a Commenting Agency, the District may provide the Lead Agency comments on the adequacy of the air quality analysis; identify District rules

which apply to the project, and may recommend potential mitigation measures for the Lead Agency's consideration.

Identifying significant air quality impacts and mitigation early in the development of a project will allow fundamental design changes for the benefit of air quality at the lowest possible cost. The District is available for consultation at any time during the project review process, but there are certain times when consultation is required. For example, when the District has discretionary approval authority over a project for which another public agency is serving as Lead Agency, the District is to be consulted as a Responsible Agency. When the District does not have any discretionary approval authority over a project, but the project may impact air quality, the District is to be consulted as a Commenting Agency.

1.5 CEQA and GHG Emissions

General scientific consensus and increasing public awareness regarding global warming and climatic change have placed new focus on the CEQA review process as a means to address the effects of GHG emissions from proposed projects on climatic change. Senate Bill 97, as discussed above, amends the CEQA statute to clearly establish that GHG emissions and the effects of GHG emissions are appropriate subjects for CEQA analysis. It directs the Governor's Office of Planning and Research to develop draft CEQA Guidelines "for the mitigation of greenhouse gas emissions or the effects of green house gas emissions" by July 1, 2009 and directs the Resource Agency to certify and adopt CEQA Guidelines by January 1, 2010. However, at this time there are no generally accepted thresholds of significance for determining the impact of GHG emissions from an individual project on global climatic change.

Although AB 32 gives wide responsibility to ARB to regulate GHG emissions from all sources, including non-vehicular sources, it does not preempt or excuse permitting agencies from addressing GHGs under CEQA. Under state law, it is the purview of each lead agency to determine what, if any, significance thresholds will be established to guide its review of projects under CEQA. Traditionally, the District has provided local lead agencies technical guidance for assessing a project's potential impact on air quality, including establishment of significance thresholds for criteria pollutants. The District's Climate Change Action Plan is being developed consistent with the District's traditional role of providing local lead agencies technical guidance for assessing a project's potential impact on air quality, including establishment of significance thresholds for criteria pollutants. This report is the first step toward expanding that guidance to include methodologies for addressing GHG impacts of projects proposed in the San Joaquin Valley.

CHAPTER 2 – CLIMATE CHANGE ACTION PLAN MISSION

2.1 Purpose of the Climate Change Action Plan

California's Global Warming Solutions Act of 2006 (AB 32) includes a large number of initiatives to reduce GHG emissions state wide. These initiatives are discussed in ARB's draft AB 32 Scoping Plan, which is scheduled for adoption by ARB in December 2008.

AB 32 and the AB 32 Scoping Plan do not yet impose direct mandates on local Air District's. However, the draft AB 32 Scoping Plan includes demanding mandates on land use agencies and businesses that often look to the District for technical assistance. As such, the District can play a supportive role and be a leader in facilitating compliance with AB 32 for Valley land use agencies and businesses.

The goals of the District's Climate Change Action Plan (CCAP) are to assist local land use agencies comply with CEQA for projects with GHG emissions, assist Valley businesses in complying with state law related to GHGs, and to ensure that collateral emissions from GHG emission reduction projects do not adversely impact public health or environmental justice communities in the Valley.

Thoughtful and well documented guidance by the District designed to help local land-use agencies to properly address climate change issues in the CEQA documents, and assistance by the District in identifying and implementing GHG mitigation measures, can be beneficial by bringing structure and relative certainty to the CEQA process.

The District can also assist Valley businesses in complying with AB 32 requirements in other ways. The District's long-standing relationship with Valley businesses has yielded a comprehensive regulatory infrastructure that can facilitate efficient and streamlined compliance with many of the upcoming AB 32 requirements.

2.2 District Governing Board Mandates

In August 2008 the District's Governing Board adopted the Climate Change Action Plan (CCAP). The CCAP authorized the Air Pollution Control officer (APCO) to develop guidance documents to assist land use agencies and other permitting agencies in addressing GHG emissions as part of the CEQA process, investigate the development of a greenhouse gas banking program, enhance the existing emissions inventory process to include greenhouse gas emissions reporting consistent with new state requirements, and administer voluntary greenhouse gas emission reduction agreements. Except for the latter two, which can be implemented immediately, the APCO's recommendations for accomplishing these initiatives would then be brought before the Governing Board for their additional consideration.

The following discussion of these potential programs is intended to outline potential actions the District may pursue. The implementation of these actions, if determined to be warranted and feasible, will be determined with extensive stakeholder input.

2.2.1 Greenhouse Gas Guidance for CEQA

CEQA requires lead agencies to identify potentially significant effects on the environment of projects they intend to carry out or approve and to mitigate significant effects whenever it is feasible to do so.

For projects with GHG emissions, determining if the GHG emissions are significant involves three steps:

- Identify and quantify GHG emissions.
- Assess the significance of the GHG emissions on the environment.
- If the GHG emissions are found to be significant, identify alternatives and/or mitigation measures that will reduce the impact of the GHG emissions below significance.

The CCAP authorizes the APCO to develop guidance and procedures for assessing the significance of project-related GHG emissions. By establishing a GHG significance level, or developing some alternative method to address GHG impacts, the uncertainty of characterizing the impacts on GCC during the CEQA process will be reduced for both lead agencies and project proponents. Also, for projects that are determined to have significant GHG emissions, or otherwise require GHG mitigation to reduce or offset the GHG emissions, sources of potential and approvable GHG mitigation must be clearly identified.

2.2.2 Carbon Exchange Program

The CCAP authorized the APCO to develop regulations and procedures for a greenhouse gas emission reduction banking system. This voluntary banking system, the San Joaquin Valley Carbon Exchange (SJVCE), would provide a mechanism for the voluntary banking of GHG emission in the San Joaquin Valley.

The outcome of stakeholder meetings will be considered when determining if the SJVCE should be developed. At the conclusion of such meetings, the District may determine that a rule to establish a SJVCE should be developed or that a SJVCE is not warranted.

A District administered GHG banking system may be beneficial to stakeholders in the District for the following reasons:

- Banked GHG emission reductions could be used to provide mitigation for CEQA,

- GHG emission reductions could possibly be used for compliance with AB32,
- Promote the early reductions of GHGs and their associated criteria and toxic pollutants in the District (especially in environmental justice areas),
- Provide a mechanism for the trading of GHG emission reductions,
- Provide a measure of certainty of banked GHG emission reductions due to the District's extensive experience in banking criteria pollutant emissions, and
- Provide a mechanism for persons to purchase and retire banked GHG emission reductions for societal benefit.

The SJVCE would be a voluntary program allowing Valley businesses and entities to obtain carbon credits for voluntary projects that generate early reductions in greenhouse gas emissions in advance of regulatory requirements. The program would be designed to promote and facilitate early local reductions in the San Joaquin Valley and, thereby, minimize disparate impact on environmental justice areas in the region. These credits could then be used by Valley businesses to provide CEQA mitigation for future growth, comply with AB 32 requirements (pending state regulations), or sold as a commodity to others needing such credits

There are currently several voluntary GHG banking systems in existence in the U.S. as discussed below.

Chicago Climate Exchange (CCX) members make a commitment to reducing greenhouse gases and are given allocations with a declining balance. Selling excess allocations or purchasing allocations to match emissions with the annual allocation are part of this cap-and-trade program. Qualifying offset projects can also generate reductions which are traded on the CCX. Such offsets can be produced world-wide, which makes verification more challenging. GHG credits are traded on the CCX.

CCX announced the formation of the New York Climate Exchange and the Northeast Climate Exchange, who will develop instruments for Regional Greenhouse Gas Initiative (RGGI) in 2009. RGGI is an agreement by the Northeastern states to agree to cap emissions from fossil-fuel fired electric generation plants larger than 25 megawatts at current levels for 2009. A cap-and-trade program is in place with a 10 percent decrease in greenhouse gas emissions by 2019.

The Climate Action Reserve (a separate program of the California Climate Action Registry) allows members to bank GHG emission reductions that occur in the U.S. This is solely a banking system; there is no cap and trade component. The Climate Action Reserve is not party to GHG emission reduction transactions. The Climate Action Reserve banking program is recognized by ARB. With some GHG banking programs there is

uncertainty involved with many of the emission reduction projects, and it is sometimes difficult to judge whether the offsets are real.

2.2.2.1 Criteria for GHG Emission Reduction Banking

To qualify for banking GHG emission reductions must be real, enforceable, quantifiable, and additional (i.e. would not happen in the absence of the GHG emission reduction project and surplus of any current GHG emission reduction requirement).

The program should not allow the banking of GHG emission reductions that are required by AB 32. The proposed AB 32 Scoping Plan includes a cap and trade program for electricity generation and industrial facilities with GHG emissions greater than 25,000 metric tons per year starting in 2012 and for fuel requirements for facilities with GHG emissions less than 25,000 metric tons per year starting in 2015, and various early action measures to reduce GHG emissions from a variety of industrial and commercial sources. However, the banking system may allow for the banking of temporary emission reductions that will be eventually required by AB 32 requirements. In such a case, when the AB 32 emission reduction requirement is in force, the emission reduction would no longer be valid.

The quantification methods for GHG emission reductions would follow pre-approved emission reduction project protocols, i.e. methods to quantify GHG emission reductions. These protocols must be consistent with protocols used by other banking programs to maintain inter-changeability of banked GHG emission reduction between banking systems. Such protocols would have to be approved by the District and ARB.

ARB has developed three emission reduction project protocols to date:

- forestry sector project protocol
- urban forestry project protocol
- manure management project protocol.

The Chicago Climate Exchange (CCX) has developed standardized rules for allowing GHG banking for the following types of projects:

- agricultural methane
- coal mine methane
- landfill methane
- agricultural soil carbon
- rangeland soil carbon management
- forestry
- renewable energy

- ozone depleting substance destruction

The Regional Greenhouse Gas Initiative (RGGI) has standardized methods for allowing GHG banking for the following types of projects:

- landfill methane capture and destruction
- reduction in emissions of sulfur hexafluoride (SF6) in the electric power sector
- sequestration of carbon due to forestation;
- reduction or avoidance of CO2 emissions from natural gas, oil, or propane end-use combustion due to end-use energy efficiency in the building sector
- avoided methane emissions from agricultural manure management operations

Please note that the CCX and RGGI emission reduction calculation methods have not been approved by ARB.

Unlike the GHG emission reduction banking programs described above, banked GHG emission reductions in California would have to be in excess of that required by AB 32.

2.2.2.2 Typical GHG Emission Reduction Projects

In general, any of a wide variety of projects that reduces GHG emissions may qualify for banking. Such projects are likely to have greater diversity than projects that that solely generated criteria pollutant emission reductions, but criteria pollutant emission reductions may occur as well.

GHG emission reduction that may qualify for banking may include, but are not limited to:

- reducing CO2 emissions from combustion equipment due to equipment efficiency upgrades
- installing landfill gas collection and control to reduce methane emissions
- reducing flaring of process gasses from industrial facilities
- switching fuels from a high GHG fuel to a lower GHG fuel
- tree planting/reforestation projects to act as CO2 sinks

As stated in the CCAP, some GHG emission reduction projects could result in a significant increase in criteria or toxic air pollutants, e.g. methane collection and incineration. Because of the District's severe air pollution problems, minimization or avoidance of criteria pollutant emissions will take precedence over GHG emission reductions. As such, GHG emission reductions projects that result in increased criteria

or toxic air pollutants may not be eligible for banking or may be highly discounted.

2.2.2.3 Compatibility with Other GHG Banking Programs

The SJVCE would be designed to be compatible, to the extent possible, with other established and pending GHG banking systems such as the following:

- Chicago Climate Exchange
- Climate Action Reserve (part of California Climate Action Registry)
- Pending Regional Greenhouse Gas Initiative (10 Northeast and Mid-Atlantic states) offset program
- Pending Western Climate Exchange banking program
- Pending SCAQMD GHG banking program "SoCal Climate Solutions Exchange"

Please note that GHG banking programs outside of California generally allow the banking of a larger variety of GHG emission reductions that would be allowed in California. Due to the requirements of AB 32 and the draft Scoping Plan, some emission reductions that can be banked in other states may not be "additional" emission reductions in California and therefore would not qualify for banking.

2.2.2.4 Structure of a District GHG Emission Reduction Banking System

A new District regulation would likely be developed to allow for the banking of GHG emission reductions. Such a regulation would specify the criteria that GHG emission reductions must meet to be eligible for banking, including detailed references to requirements of AB 32 to determine if such emission reductions are additional.

Such a rule would also address the generation of temporary GHG emission reductions.

The regulation would list the specific approved project protocols that must be used in quantifying GHG emission reductions. Such protocols would require District and ARB approval prior to use.

2.2.3 GHG Emission Reporting

AB 32 requires facilities which emit greater than or equal to 25,000 metric tons per year of CO_2 from stationary combustion sources, and some smaller specific facility-types, to report their green house gas emissions to ARB starting in 2009 for the 2008 reporting year. Emissions reports would

have to be verified by a third-party verifier starting in 2010 for the 2009 reporting year.

As required by AB 32, ARB has developed a comprehensive mandatory reporting regulation designed to maintain an ongoing GHG emissions inventory for major sources of GHG emissions. At this time, the rule has not yet been submitted to the Office of Administrative Law, and therefore is not final. However, Valley businesses have already expressed concerns regarding potential issues regarding GHG emission reporting requirements imposed by ARB's draft regulation. In particular, the regulated community has indicated that the reporting requirements might be duplicative, at least in part, of the District's annual criteria emissions inventory responsibilities, and could result in significant additional cost in their operation.

The APCO has been authorized by the Governing Board to develop a system that allows Valley business to report their GHG emissions to the District as part of the existing criteria emissions inventory process. To minimize the duplication of efforts by Valley businesses, and to streamline the reporting process, the District will combine the existing annual criteria and toxic emissions inventory system with the new GHG reporting requirements into one comprehensive emissions inventory program.

Using our current mature and comprehensive emissions inventory program as a cornerstone, the District is currently developing a new web-based interface. The first phase of development will be completed in early 2009. At that time, facilities subject to ARB's mandatory report regulation will have the option to use this new web-based interface to report criteria pollutant information for the 2008 reporting year. The next step will be to add a reasonably small number of additional reporting fields and a facility-wide survey section. The new system will then be capable of collecting criteria pollutants and essential GHG emissions inventory reporting information.

When fully implemented, the web-based interface will offer an alternative method for facilities to report emissions inventory data to the District. The system will also allow facilities to view the data submitted for their facility and to modify them as necessary. This new reporting system will ultimately streamline the dual reporting requirements for criteria pollutants and GHG, and minimize the additional cost associated with the GHG reporting requirement.

2.2.4 Voluntary Greenhouse Gas Mitigation Agreements

The CCAP authorizes the APCO to develop guidance and procedures for implementing a program by which project proponents can voluntarily enter into contractual arrangements with the District to fund projects, mitigating their projects cumulative impact on GCC. CEQA Guidelines clearly recognize the use of fee payments as mitigation for a project's otherwise

cumulatively considerable incremental contribution to significant cumulative impacts. A project's contribution is less than cumulatively significant if the project is required to implement or fund its fair share of a mitigation measure or measures designed to alleviate the cumulative impact (CEQA Guidelines § 15130, subd. (a)(3)).

The District has considerable experience with the use of voluntary emission reduction agreements to mitigate impacts of criteria pollutants. In the past, the District has used its grant program (Emissions Reduction Incentive Program), to successfully mitigate cumulative impacts of criteria pollutants resulting from growth and development projects occurring within the San Joaquin Valley. To date, the program has resulted in permanent emission reductions totaling 1,074.57 tons NOx, 42.51 tons PM and 125.76 tons of VOC. The District's current mitigation program could readily be expanded to include mitigation of GHG emissions.

Conceptually, project proponents required to mitigate their GHG emissions as part of the CEQA process would enter into voluntary mitigation agreements with the District. Each mitigation agreement would be subject to Governing Board approval. Under such a voluntary agreement, the project proponent would provide funding to the District in amounts necessary to obtain the needed reduction in GHG emissions. The District would accept funds from project proponents and through its grant program fund projects that would achieve the required GHG emission reductions. The cost of bringing about GHG emission reductions can vary widely. In determining which projects to fund, priority would likely be given to those projects that are the most cost effective. Project's that also result in reductions of criteria and toxic air pollutants, and are located in environmental justice areas would be given priority in the funding process. Funds from individual mitigation agreements could be pooled together to provide sufficient funding for large GHG emission reduction projects. When the emission reduction projects are implemented by the grant recipients, the emissions reductions monitored, verified, and enforced by the District, thus guaranteeing that the mitigation does indeed occur.

Separately, the California Attorney General (AG) has required some projects to mitigate their GHG emissions through the payment of mitigation funds. In fact, for several projects in the District, the District may enter into memorandums of understanding (MOUs) with the AG to accept these funds and obtain GHG emission reductions on behalf of the project proponent.

District staff is currently preparing an analysis of potential GHG reduction projects that might be funded through grants administered by the District. This analysis will include individual project-types, their potential for generating GHG reductions, the cost effectiveness of the reductions, and an assessment of various criteria for considering collateral criteria emission

reduction benefits (i.e., how to recognize the benefits of projects that reduce both GHG and criteria pollutants).

2.3 Proposed Timeline and Method to Achieve the CCAP Goals

The District will hold a scoping meeting on November 18, 2008. During this meeting, the District will solicit volunteers to participate in one or two stakeholder workgroups. To receive the broadest input possible, the District is seeking participation from industry representatives, local Land Use Agency members, other Public Agency members, environmental group representatives and any other interested party.

If two workgroups are formed, one group will investigate and propose methods to address GHG emissions in compliance with CEQA requirements and the other group will evaluate the feasibility of developing a San Joaquin Valley Carbon Exchange Bank. However, there is some inherent overlap of discussion points and issues, and therefore we are open to the possibility of forming only one workgroup that would provide input on both fronts.

These workgroups will regularly meet, approximately twice per month, with the first meeting taking place in December. The process of developing recommendations is expected to take approximately three to six months. Subsequently, proposed guidance and recommendations will be subject to additional public workshop during the late spring of 2009, to be ready for Governing Board consideration in the summer of 2009.

CHAPTER 3 – CURRENT STATUS: ADDRESSING PROJECT GHG IMPACTS

3.1 Introduction

Public agencies, including the California Air Resources Board, and other air districts, are striving to determine the appropriate means by which to evaluate the impact of GHG emissions at the project level. The following discussion summarizes various approaches and methodologies for addressing GHG emissions, as well as possible mitigation measures that are being considered. District staff, before formalizing a recommendation to the Board, is seeking stakeholder input to develop an approach that is appropriate for the San Joaquin Valley Air District.

The following sections summarize the activities of various agencies and groups concerning the role of GHGs in the CEQA process.

3.2 Environmental Protection Agency

The U.S. Environmental Protection Agency (EPA) has made available a large volume of information on greenhouse gases including their nature, impact, emissions inventory, and emissions trend and projections. However, none of the available

information addresses or evaluates specific approaches on how to comply with the CEQA requirements, as CEQA is a California-specific law.

However, it is important to note that EPA has published an Advanced Notice of Proposed Rulemaking: Regulating Greenhouse Gas Emissions under the Clean Air Act (http://www.epa.gov/climatechange/anpr.html). This notice asks for public input on the appropriateness of regulating GHGs under the Federal Clean Air Act, and if appropriate, the form that regulation would take. EPA is not expected to act further on this notice anytime soon, but because activities on the federal level have the potential to circumvent or replace local actions, all interested parties should watch and participate in this federal process.

3.3 California Air Resources Board (ARB)

ARB is currently working on a scoping plan addressing AB 32 requirements according to specific deadlines. The AB 32 Scoping Plan contains the main strategies California will use to reduce greenhouse gases (GHG) that cause climate change. The Scoping Plan has a range of GHG reduction actions which include direct regulations, alternative compliance mechanisms, monetary and non-monetary incentives, voluntary actions, and market-based mechanisms such as a cap-and-trade system.

On October 24, 2008, ARB released its Preliminary Draft Staff Proposal, *Recommended Approaches for Setting Interim Significance Thresholds for Greenhouse Gases under the California Environmental Quality Act.* ARB staff believes that zero thresholds are not warranted 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 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, causing that peak to occur sooner, and 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.

A key aspect of ARB's approach is to recognize 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. ARB also believes 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 proposed Scoping Plan.

Industrial Processes
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 (CARB). 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 AB 32 regulatory requirements, are in place to ensure mitigation of significant impacts of GHG emissions from projects in the industrial sector.

ARB determined that 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 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. Per ARB's analysis, 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.

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

Residential and commercial developments
ARB has indicated that a similar approach to establish a GHG significance threshold is under development for residential and commercial developments.

3.4 Office of Planning and Research (OPR)

OPR Recommendations

On or before January 1, 2010, The Governor's Office of Planning and Research (OPR) will develop, and the California Resources will certify and adopt amendments

to the Guidelines providing regulatory guidance on the analysis and mitigation of GHG emissions in CEQA documents. In the interim, OPR offers the following informal guidance regarding steps lead agencies should take to address climatic change in their CEQA documents.

General Guidance
Per the OPR, "*until such time as further state guidance is available on thresholds of significance, public agencies should consider the following general factors when analyzing whether a proposed project has the potential to cause a significant climate change impact on the environment"*.

Identify GHG Emissions
Lead agencies should make a good-faith effort, based on available information, to calculate, model, or estimate the amount of CO2 and other GHG emissions from a project, including the emissions associated with vehicular traffic, energy consumption, water usage and construction activities.

Determine Significance
As with any environmental impact, lead agencies must determine what constitutes a significant impact. In the absence of regulatory standards for GHG emissions or other scientific data to clearly define what constitutes a "significant impact", individual lead agencies may undertake a project-by-project analysis, consistent with available guidance and current CEQA practice. The potential effects of a project may be individually limited but cumulatively considerable. Lead agencies should not dismiss a proposed project's direct and/or indirect climate change impacts without careful consideration, supported by substantial evidence. Although climate change is ultimately a cumulative impact, not every individual project that emits GHGs must necessarily be found to contribute to a significant cumulative impact on the environment. CEQA authorizes reliance on previously approved plans and mitigation programs that have adequately analyzed and mitigated GHG emissions to a less than significant level as a means to avoid or substantially reduce the cumulative impact of a project.

Mitigate Impacts
Mitigation measures will vary with the type of project being contemplated, but may include alternative project designs or locations that conserve energy and water, measures that reduce vehicle miles traveled (VMT) by fossil-fueled vehicles, measures that contribute to established regional or programmatic mitigation strategies, and measures that sequester carbon to offset the emissions from the project. The lead agency must impose all mitigation measures that are necessary to reduce GHG emissions to a less than significant level. However, CEQA does not require mitigation measures that are infeasible for specific legal, economic, technological, or other reasons, and a lead agency is not responsible for wholly eliminating all GHG emissions from a project; the CEQA standard is to mitigate to a level that is "less than significant". If there are not sufficient mitigation measures that the lead agency determines are feasible to achieve the less than significant level, the lead agency should adopt those measures that are feasible, and adopt a Statement of

Overriding Considerations that explains why further mitigation is not feasible. Agencies are encouraged to develop standard GHG emission reduction or mitigation measures that can be applied on a project-by-project basis.

Land Use Considerations
Local governments with land use authority are beginning to establish policies that result in land use patterns and practices that will result in less energy use and reduce GHG emissions. For example, some cities and counties have adopted general plans and policies that encourage the development of compact, mixed use, transit-oriented development that reduces VMT; encourage alternative fuel vehicle use; conserve energy and water usage; and promote carbon sequestration. Models of such developments exist throughout the state. For local government lead agencies, adoption of general plan policies and certification of general plan EIRs that analyze broad jurisdiction-wide impacts of GHG emissions can be part of an effective strategy for addressing cumulative impacts and for streamlining later project-specific CEQA reviews.

3.5 California Air Pollution Control Officers Association (CAPCOA)

CAPCOA – 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 (CAPCOA).

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 basic approaches are:

- GHG emissions threshold set at zero; or
- GHG threshold set at a non-zero level (AB32 Goals)
- GHG threshold set at a non-zero level (Tiered Approach)

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 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.

Non-Zero Threshold – Statute and Executive
The first non-zero GHG significance threshold approach is based on achieving the objectives of AB 32 or Executive Order 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.. 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.

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 several 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.

3.6 Association of Environmental Professionals (AEP)

AEP – White Paper on Global Climate Change
AEP's White Paper 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 proposed approaches 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

While some of the approaches discussed above are dated and obsolete (such as those suggesting no analysis, or no determination of significance), the paper remains a valid and useful resource.

3.7 South Coast Air Quality Management District (SCAQMD)

SCAQMD has generally recommended a tiered decision tree approach to establishing a GHG significance threshold (SCAQMD). (See Figure 3). 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 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.

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 ARB 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).

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, SCAQMD 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 projects with GHG emissions less than the screening level must include efficiency components that reduce a certain 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.

Tier 3 includes 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.

Industrial Projects:

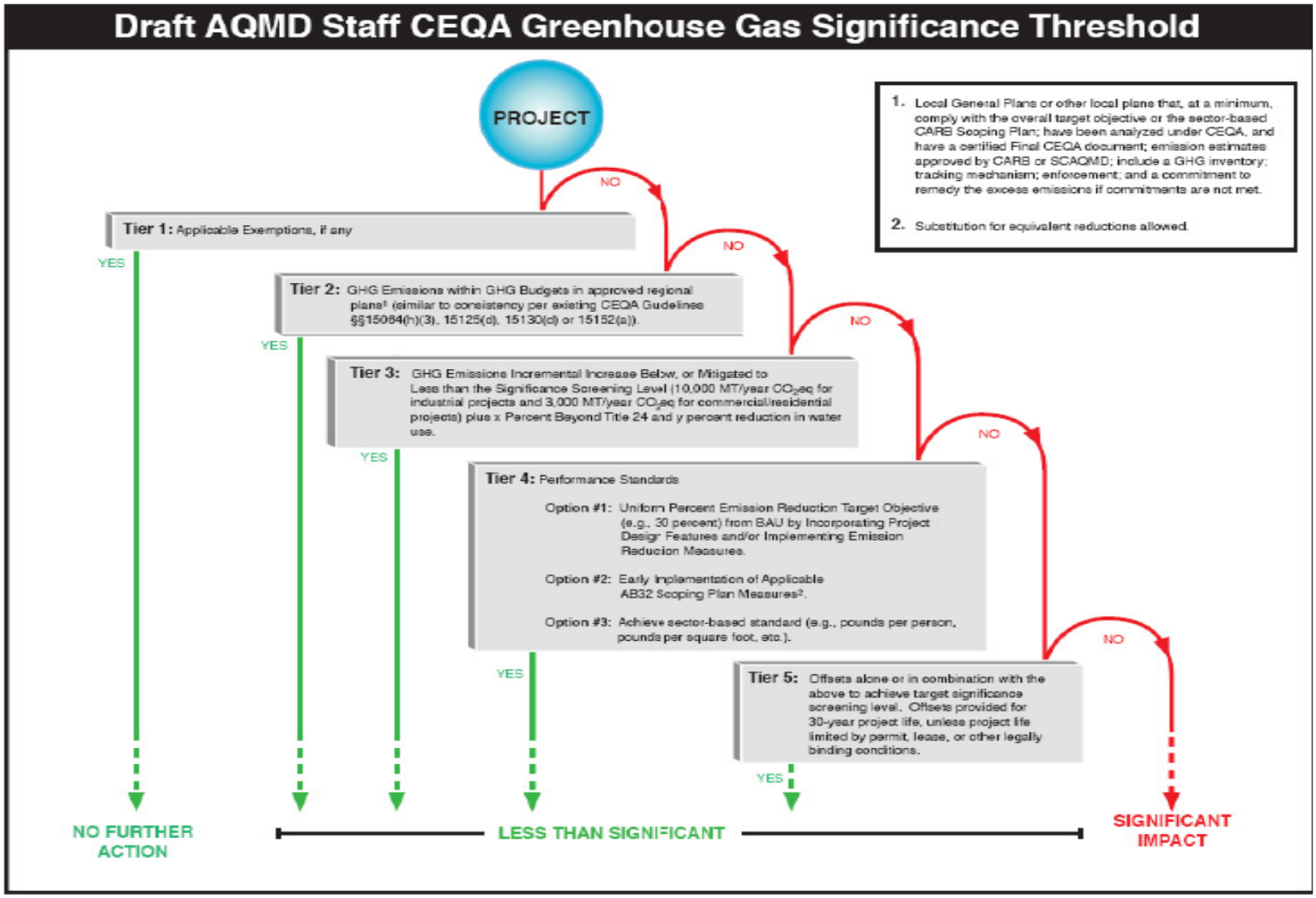
SCAQMD determined that the majority of GHG emissions in the district are comprised of CO2 emissions resulting from burning natural gas. SCAQMD staff compiled reported annual natural gas consumption for 1,115 permitted facilities for 2006-2007 and concluded that approximately 10 percent of facilities evaluated represent more than 90 percent of the total natural gas consumption. Based on their analysis, SCAQMD has proposed a threshold of 10,000 metric tons per year (tpy) of CO2 emissions, which will capture 90 percent of the GHG emissions in their district. SCAQMD determined that this value would represent a boiler with a rating of approximately 27 million British thermal units per hour (mmbtu/hour) of heat input, operating at a 25 percent capacity factor.

Residential and Commercial Projects:

The draft AB 32 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. Similar to the earlier discussion of industrial projects, SCAQMD determined that a threshold of 3,000 MTCO2eq/yr would capture 90 percent of the emissions from this emissions category. Based on their analysis, SCAQMD determined that this value could represent a residential development of about 70 single-family dwelling units. Therefore, SCAQMD is recommending that this value be used by lead agencies for residential and commercial developments, including industrial parks, warehouses, etc.

Any project exceeding proposed Tier 3 thresholds would be evaluated under Tier 4.

Figure 3: SCAQMD Tier Approach



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

> **Compliance Option 1 –** the lead agency would calculate GHG emissions for a project using a Business As Usual (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.
>
> **Compliance Option 2 –** this option consists of early compliance with AB 32 through early implementation of ARB's Scoping Plan Measures. The intent of this compliance option is to accelerate GHG emission reductions from the various sectors subject to ARB's Scoping Plan to eliminate GHG emission.
>
> **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 evaluated under Tier 5.

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.

3.8 Bay Area Air Quality Management District (Bay Area AQMD)

On June 1, 2005 the Bay Area Air District Board of Directors adopted a resolution establishing a Climate Protection Program and acknowledging the link between climate protection and programs to reduce air pollution in the Bay Area. The Board of Directors also formed a standing Committee on climate protection to provide direction on District climate protection activities (BAAQMD).

For CEQA purposes, the Bay Area AQMD currently refers to CAPCOA's White Paper presented above in this document with no further recommendation.

3.9 Sacramento Metropolitan Air Quality Management District (AQMD)

The Sacramento Metropolitan AQMD recommends that CEQA environmental documents include a discussion of anticipated GHG emissions during both the construction and operation phases of the project (SMAQMD). This recommendation is consistent with comments made by the previous and current California Attorney Generals on Land Use projects undergoing CEQA review. The Sacramento Metropolitan AQMD indicates that models are available to quantify GHG emissions from projects. In addition, the Sacramento Metropolitan AQMD offers several example of type of mitigations that local agencies may consider under CEQA to offset or reduce global warming impacts, and is currently developing a pilot project in which a development project proponent will be contributing fees to the District which will then use those funds in GHG mitigation projects.

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