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What Role Can CEQA Play in Reaching GHG Emissions Reductions Goals Set Forth in AB 32 – An Analysis of CEQA, AB 32, and Recommendations for CEQA Reform

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Abstract

The Global Warming Solutions Act of 2006 (AB 32) intends to reduce the effects of climate change through several mechanisms, including greenhouse gas (GHG) emissions reduction. AB 32 established a statewide GHG emissions goal, which requires California to decrease its GHG emissions to 1990 levels by 2020. The California Environmental Quality Act (CEQA) is an environmental assessment law adopted in 1970 that requires lead agencies (private developers, public agencies, etc.) to consider and disclose the potential significant environmental impacts of new development projects the lead agency is planning. CEQA has attracted much controversy since adoption and continues to be the topic of much debate, especially regarding potential reform. The passage of Senate Bill (SB) 97 in 2007 tasked the Office and Planning and Research (OPR) to develop new guidelines to help analyze GHG emissions in the CEQA environmental review process. This was the first time CEQA review was required to include climate change related analysis. Significant potential exists to integrate CEQA and AB 32 to achieve even greater emission reductions.

Potential for CEQA reform includes incorporating the carbon-offset program established under AB 32 as part of the California cap-and-trade program into CEQA projects, expanding CEQA streamlining to include projects that employ green building, energy efficiency, and VMT reducing projects, and improving the energy conservation analysis, as well as the GHG and transportation assessments under CEQA.

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List of Acronyms

AB 32	Global Warming Solutions Act of 2006
BAAQMD	Bay Area Air Quality Management District
BAU	Business As Usual
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CAT	Climate Action Team
CEQA	California Environmental Policy Act
CO2e	Carbon dioxide equivalent
EIR	Environmental Impact Report
EPA	Environmental Protection Agency
GHG	Greenhouse Gas
IOZ	Infill Opportunity Zone
IS	Initial Study
LOS	Level of Service
MEIR	Master Environmental Impact Report
MMT	Million Metric Tons
MND	Mitigated Negative Declaration
MPO	Metropolitan Planning Organization
ND	Negative Declaration
NEPA	National Environmental Policy Act
OPR	Office of Planning and Research
RHNA	Regional Housing Needs Assessment
RTP	Regional Transportation Plan
SB 97	Senate Bill
SCS	Sustainable Communities Strategy
TOD	Transit Oriented Development
TPP	Transit Priority Projects
VMT	Vehicle Miles Traveled

1. Introduction

The California Environmental Policy Act (CEQA) is the premiere environmental law governing new project development in California. Currently, it operates as a stand-alone policy that requires local government agencies considering new development projects to analyze and publicly reveal the potential environmental impacts of their projects. The requirements of CEQA have been extremely contentious since adoption. Issues with its high costs and misuse to delay projects, to criticism of its methods of evaluation, CEQA has drawn much attention and undergone several reforms. Specifically, critics have alleged that CEQA's greenhouse gas (GHG) analysis lacks guidance, and that methods in evaluating traffic and transportation may actually act to discourage infill development and promote urban sprawl, thus increasing travel-related GHG emissions. Following the adoption of the Global Warming Solutions Act of 2006 (AB 32), California set an aggressive statewide GHG emissions reduction target of reaching 1990 levels of GHGs by 2020 (approximately a 30 percent reduction from business as usual). Following approval, the California Air Resources Board (CARB) developed a scoping summary report designed to recommend actions and new policies with the purpose of achieving the 2020 GHG emissions limit (Adams, Nichols, & Goldstene, 2008). Significant potential exists to integrate CEQA and AB 32 to achieve even greater emissions reductions. Specifically, the GHG analysis under CEQA could be improved to help to reach the target set forth under AB 32. Furthermore, CEQA reform could be improved to include updates to the transportation analysis and improved streamlining for infill projects to further reduce transportation-related GHG emissions and encourage dense, urban mixed-use development.

In this paper I will look at ways in which CEQA can be improved to complement AB 32, and ultimately help to achieve the GHG emissions reduction target set forth in AB 32. I will begin by describing the goals and policies outlined in AB 32, the *Climate Change Scoping Plan* (Scoping Plan), and specific policies and implementation measures that have been developed since its adoption that share common themes with CEQA. I will then provide an overview of CEQA: its history, purpose, evolution, how it works, and current challenges in the face of reform. I will then consider the existing CEQA framework as it relates to GHGs, transportation, energy, and infill development. In doing so, I will offer recommendations for CEQA reform in order to promote smart land use, reduce vehicle miles traveled (VMT),

decrease overall GHG emissions, and ultimately complement AB 32 to help reach the GHG emissions reduction target set for 2020 and beyond.

1.1 Overview of AB 32

Given the evidence that GHGs contribute significantly to climate change (Intergovernmental Panel on Climate Change, 2013), GHG emissions reduction plays a considerable role in achieving goals aimed at reducing the effects of climate change. AB 32 was signed into law on September 27, 2006 and aims to reduce GHG emissions in California. This landmark environmental policy established a statewide GHG emissions reduction goal that directs California to reduce GHG emissions to 1990 levels by 2020 (Adams et al., 2008). The adoption of this ambitious policy put California in the lead of the national climate change abatement effort. Setting the bar even higher is California's Executive Order S-3-05, which requires an 80 percent reduction in GHGs from 1990 levels by 2050. In order to achieve these progressive goals California will need to shift to a new landscape of clean and renewable energies and energy efficiency, and develop comprehensive new and improved policies to aid the transition to a more environmentally sustainable State.

CARB was tasked with several specific requirements to implement AB 32, as shown in Table 1.

Table 1: Requirements of AB 32 and Progress to-date

Requirements of AB 32	Current Status
Identify statewide GHG emission limit for 2020	GHG emissions limit of 427 million metric tons of CO2e for 2020 approved in 2007.
Prepare Scoping Plan	Scoping Plan developed and approved in 2008, currently developing the Final Scoping Plan Update and Environmental Assessment.
Adopt GHG reporting regulations	Regulation developed in 2007 requiring the largest industrial sources of GHG emissions to report and verify their GHG emissions. Cap-and-trade regulation adopted in 2011. GHG rules and market mechanisms took effect January 1, 2012.
Adopt discrete early actions regulations	Nine discrete early actions were adopted and took effect January 1, 2010.
Convene an Environmental Justice Advisory Committee (EJAC)	Since 2007 the EJAC has met 12 times and provided comments on the early action measures and the Scoping Plan.

Requirements of AB 32	Current Status
Appoint an Economic and Technology Advancement Advisory Committee (ETAAC)	ETAAC has convened and has provided recommendations for technologies research, and GHG emissions reduction measures, and provided comments on the Scoping Plan.

Source: CARB, 2014.

First and foremost, CARB was required to establish a GHG emissions limit goal for 2020, develop and implement discrete early actions to reduce GHGs, and create a scoping plan identifying specific regulations and market mechanisms to help reach the 2020 emissions reduction goal. After much deliberation, in December 2007 CARB approved a GHG emissions limit of 427 million metric tons (MMT) of carbon dioxide equivalent (CO2e), equal to an approximately 30 percent reduction in business as usual (BAU) emissions levels projected for 2020 (Adams et al., 2008). Nine discrete early actions were established and made enforceable by January 1, 2010. According to CARB, these discrete early actions include: the "Low Carbon Fuel Standard, Landfill Methane Capture, Reductions from Mobile AC, Semiconductor Reduction, SF6 Reductions, High GWP Consumer Products, Heavy-Duty Measure, Tire Pressure Program, and Shore Power." The Scoping Plan, approved by CARB in 2008, outlines how emissions reduction will be achieved through the development of regulations, market mechanisms (such as cap-and-trade), and other actions. A draft of the Scoping Plan Update was published and posted to the CARB website on February 10, 2014. The update offers new strategies and recommendations that are an extension of those laid out in the initial Scoping Plan, and prioritizes CARB's climate change activities for the next five years. The Environmental Analysis was released on March 14, 2014, and on May 22, 2014 there is a Board Hearing scheduled to consider the Final Scoping Plan Update (CARB, 2014).

CARB developed a cap-and-trade program as a major strategy in reducing GHG emissions in California. Under this program, capped sectors are restricted to specific GHG emissions limits, and individual companies are given explicit permits (allowances). Permits to emit GHGs under this regulatory scheme are tradable, allowing some flexibility in reducing GHG emissions (CARB, 2014).

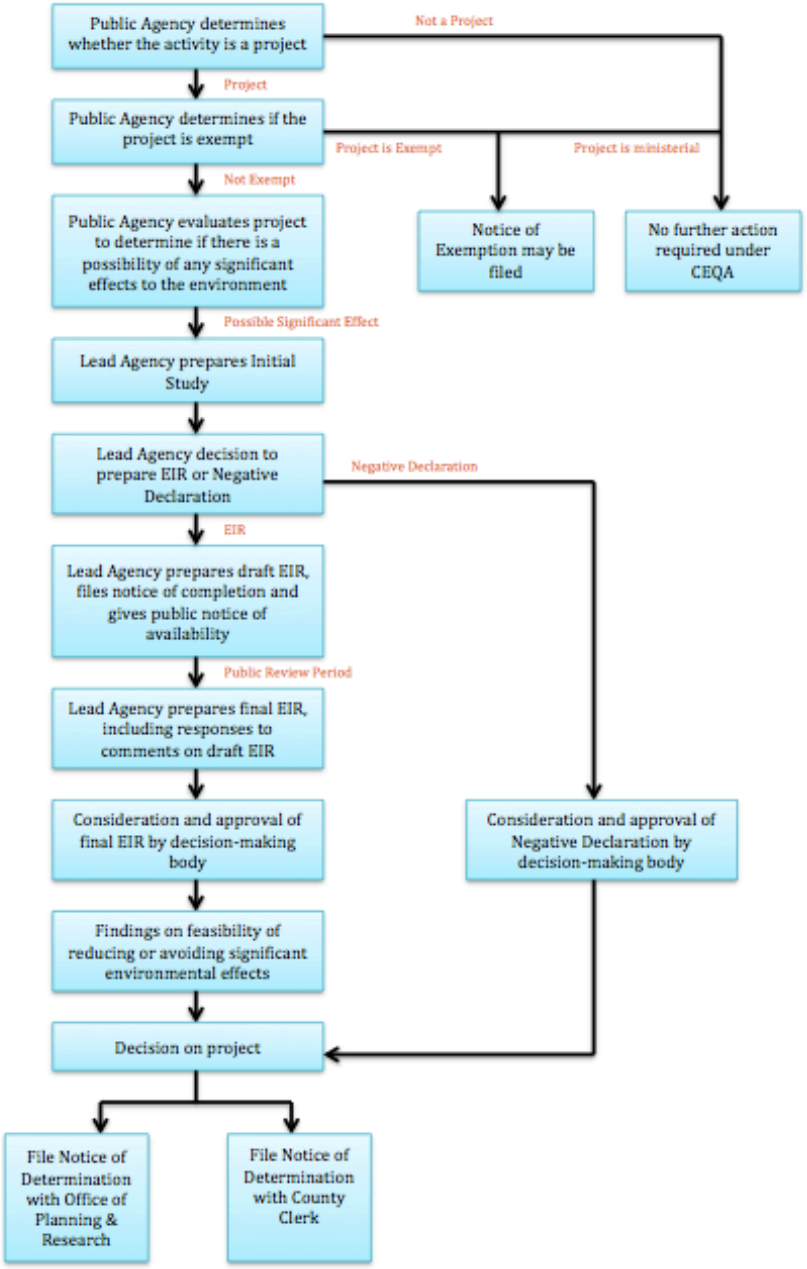
1.2 Overview of CEQA

The California Environmental Quality Act (CEQA) is an environmental assessment law adopted in 1970 that requires lead agencies (private developers, public agencies, etc.) to consider and disclose the potential significant environmental impacts of new development projects the lead agency is planning. CEQA applies to projects carried out or funded by a public agency, or to projects requiring discretionary approval (such as a permit) by a public agency. A "project" under CEQA is defined as an action that has the potential to result in physical changes to the environment, and is subject to some degree of discretionary approval by governmental agencies (AQMD, 2011). According to statute, the main purposed of CEQA are as follows:

- To "inform governmental decision makers and the public about the potential significant environmental effects of proposed activities."
- To "identify ways that environmental damage can be avoided or significantly reduced."
- To "prevent significant, avoidable damage to the environment by requiring changes when the governmental agency finds the changes to be feasible."
- To ensure that a governmental agency "discloses to the public the reasons why it approved a project…if significant environmental effect are involved." (Barbour & Teitz, 2005).

CEQA's main purpose, aside from informing the public and decision makers about the potential environmental impacts of proposed projects, is to minimize environmental damage through the consideration of project alternatives and identification and implementation of mitigation measures, where feasible. Given CEQA's purpose, the environmental review process occurs before development begins. Lead agencies under CEQA are typically public agencies, such as local government agencies, but can also be private developers, and are required to carry out the CEQA requirements. The Lead Agency is responsible for deciding on and preparing the most suitable type of environmental document needed to satisfy CEQA, which include initial studies (IS), negative declarations (ND), and environmental impact reports (EIRs). Several environmental topic areas are discussed and analyzed in an environmental document. These range in length and depth of analysis based on the project and potential for adverse environmental impacts. The most in-depth analysis required is the EIR. Figure 1 outlines the CEQA process from project development to project approval.

Figure 1: CEQA Process Flow Chart



Source: Adapted from the California Environmental Resources Evaluation System, http://www.energy.ca.gov/lng/documents/CEQA_FLOW_CHART.PDF

CEQA applies to all projects in California that need to obtain discretionary approval from a government agency (such as a permit), and that may result in a substantial direct or indirect (reasonably foreseeable) physical change in the environment. Physical development projects, as well as city and county General Plan updates require at least some form of environment review pursuant to CEQA (unless an exemption applies). Projects requiring environmental review under CEQA must first be analyzed for potential significant impacts to determine what level of environmental review is necessary. If significant effects appear to result from project implementation, a more substantial review must be conducted, in the form of an EIR. In an EIR lead agencies are required to examine project alternatives, and feasible mitigation measures to lessen the severity of the significant environmental effects of the project. The CEQA Guidelines explain the objectives, criteria, and procedures of CEQA for use by the lead agency during the creation and completion of environmental documents pursuant to CEQA, such as EIRs (California Natural Resources Agency, 2007).

Over the course of its life, CEQA has attracted much controversy. Opponents charge that the CEQA process actually impedes smart development and hurts the economy through its high costs and time-consuming procedural processes. In 1990, the mean cost for preparing an EIR was around $38,000 (Landis, Pendall, Olshansky, & Huang, 1995). Today, it can cost anywhere from $200,000 to millions of dollars, contingent upon the size and complexity of the project (Akin, Gump, Hauer, 2012). More recently, additional issues concerning CEQA processes discouraging smart urban and infill development have been raised (Barbour & Teitz, 2005). Furthermore, others charge that CEQA is stifling infill and transit-oriented development (TOD), leading to urban sprawl and ultimately more cars on the road (Climate Plan, 2011). Much of this is due to the use of obsolete metrics or flawed modeling techniques for analyzing potential impacts, such as using level of service (LOS) to assess transportation-related impacts. Using this metric often results in reduced density in mixed-use development projects, as well as roadway infrastructure improvements that support automobile use over other modes of transit. As a result of these issues and several others, CEQA has undergone much debate and several reforms since adoption.

When CEQA was originally adopted, an analysis of project-level GHGs was not required. Given the link between GHGs and climate change (EPA, 2014; IPCC, 2007), and the purpose of CEQA to preserve and improve the condition of California's environment (OPR, 2014),

California lawmakers recognized the need to analyze project-level GHG emissions under CEQA. The passage of Senate Bill 97 (SB 97) in 2007 tasked the Office of Planning and Research (OPR) to create, and the Natural Resources Agency to approve, a new assessment in the CEQA Guidelines requiring the analysis of GHG emissions. By the end of 2009, the CEQA Guidelines were updated and included a new analysis within its framework; an assessment of project-related GHG emissions during CEQA review. According to the OPR, the CEQA Guideline amendments provided the following direction:

> "Lead agencies must analyze the greenhouse gas emissions of proposed projects, and must reach a conclusion regarding the significance of those emissions. (See CEQA Guidelines § 15064.4.)
>
> When a project's greenhouse gas emissions may be significant, lead agencies must consider a range of potential mitigation measures to reduce those emissions. (See CEQA Guidelines § 15126.4(c).)
>
> Lead agencies must analyze potentially significant impacts associated with placing projects in hazardous locations, including locations potentially affected by climate change. (See CEQA Guidelines § 15126.2(a).)
>
> Lead agencies may significantly streamline the analysis of greenhouse gases on a project level by using a programmatic greenhouse gas emissions reduction plan meeting certain criteria. (See CEQA Guidelines § 15183.5(b).)
>
> CEQA mandates analysis of a proposed project's potential energy use (including transportation-related energy), sources of energy supply, and ways to reduce energy demand, including through the use of efficient transportation alternatives. (See CEQA Guidelines, Appendix F)."

In early 2010, the GHG emissions analysis required under SB 97, and associated amendments to the CEQA Guidelines, became effective (OPR, 2011).

The assessment of climate impacts and GHG emissions in EIRs is relatively new, and little research exists examining the effectiveness of the GHG emissions analysis requirements. In quantifying project-level construction and operational GHG emissions, and developing associated mitigation measures, there is an opportunity for projects under CEQA to contribute

significantly to reducing emissions and reaching the GHG emissions reduction goal pursuant to AB 32. With the recent CEQA amendments, climate change and GHG emissions are now addressed within local governments and planning agencies, who can play a major role in achieving significant emissions reductions (Drummond, 2010). However, there has been some push back from agencies claiming that climate change impacts are not adequately addressed, and several EIRs have received comments questioning the legitimacy of their cumulative analysis of GHG emissions (Gerrard, 2008).

CEQA reform has, and continues to be, a contentious and ever evolving topic involving multiple and varied stakeholders, ranging from the public, private developers, to local agencies. More reform is needed to improve the effectiveness of this environmental law, and potentially push it further to integrate it with other environmental policies in California and beyond. There is an opportunity to help reach the GHG emissions reduction target set forth in AB 32 through the environmental review process. In this paper I will examine the opportunity to integrate CEQA and AB 32 to provide more efficient CEQA process and increase GHG emissions reduction toward meeting the target set for 2020 under AB 32.

2. AB 32 – Climate Change Scoping Plan Summary

Pursuant to AB 32, CARB and the Climate Action Team (CAT) drafted the Scoping Plan, which was approved by CARB in late 2008. The Scoping Plan outlines how the State plans to meet the GHG emissions reduction target for 2020. In the Scoping Plan, CARB proposes several strategies to reduce GHG emissions, including the development of regulations, market mechanisms (such as cap-and-trade), and other actions. The suite of actions aim to preserve the natural environment, create jobs, reduce our dependence on fossil fuels, stimulate renewables, and improve public health in California (Adams et al., 2008).

A draft of the Scoping Plan Update (draft plan) was published and posted to the CARB website on February 10, 2014. Given the scale of the challenge California is faced with, participation by residents and business owners throughout California will be necessary. In recognizing this, CARB and CAT have engaged with the public and a variety of stakeholders in several ways to elicit input on technical issues and specific policy measures. Over 40,000 people commented on the draft plan, and several workshops and webcasts were held throughout the State. The draft plan is a result of input from representatives from essentially every sector in California.

The draft plan offers new strategies and recommendations that are an extension of those laid out in the initial Scoping Plan, and focuses and prioritizes CARB's climate change related actions for the next five years. The Final Scoping Plan Update is slated for release in May 2014 (CARB, 2014). According to the Scoping Plan (2008), key recommendations for achieving significant GHG emissions reductions include:

- "Expanding and strengthening existing energy efficiency programs as well as building and appliance standards;
- Achieving a statewide renewable energy mix of 33 percent;
- Developing a California cap-and-trade program that links with other Western Climate Initiative partner programs to create a regional market system;
- Establishing targets for transportation-related GHG emissions for regions throughout California, and pursuing policies and incentives to achieve those targets;
- Adopting and implementing measures pursuant to existing State laws and policies, including California's clean car standards, goods movement measures, and Low Carbon Fuel Standard; and
- Creating targeted fees, including a public goods charge on water use, fees on high global warming potential gases, and a fee to fund the administrative costs of the State's long term commitment to AB 32 implementation."

Since releasing the Scoping Plan, CARB has been working to implement these key recommendations to help meet the GHG emissions reduction target. One such program is California's cap-and-trade program, which became effective in early 2012. CARB collaborated with the WCI to help develop an effective cap-and-trade program in California. California, along with Utah, Oregon, Arizona, Washington, Montana, New Mexico, and the Canadian provinces of British Columbia, Manitoba, Ontario, and Quebec, make up the Western Climate Initiative (WCI). The WCI has been collaborating to develop a combined cap-and-trade program that would be part of a greater effort to reduce regional GHG emissions on a larger scale. WCI's recommendations for a successful cap-and-trade program were published in 2008. CARB has been working with the WCI and welcomes their recommendations for implementing a cap-and-trade program, as cap-and-trade is a cost-effective method to realize significant GHG emissions reductions from a variety of sectors. The WCI aims to reduce regional GHG emissions by 15 percent below levels in 2005 by 2020, approximately equal to AB 32's goal.

The following is an in-depth summary of recommended actions included in the Scoping Plan that have the potential to be integrated into CEQA analysis.

2.1 California Cap-and-Trade Program

One of the major strategies CARB is implementing to help meet the requirements of AB 32 is a California cap-and-trade program. Under the requirements of AB 32, any decrease in GHG emissions used for compliance purposes must be "real, permanent, quantifiable, verifiable, enforceable, and additional" (HSC section 38562(d)(1) and (2)). The cap-and-trade program was developed in collaboration with the WCI and sets a cap for the total amount of GHG emissions a particular industry can emit, covering approximately 85 percent of all sources of GHG emissions in California. The program is designed to be flexible such that individual GHG producers can develop their own, cost-effective strategies for compliance. Additionally, allowance permits are tradable, thus creating an incentive to reduce GHG emissions below allowable levels. The cap has been designed to continue to decrease emissions by reducing the cap by 3 percent each year (CARB, 2011). Ultimately, the total emissions from capped sources combined with those from uncapped sources are required to be below the AB 32 goal for 2020. Table 2 illustrates respective BAU emissions level projected for the year 2020 and the preliminary 2020 emissions limit under the cap for each covered sector.

Table 2: Sector Responsibilities Under California's Cap-and-Trade Program (MMTCO2e in 2020)

Sector	Projected 2020 BAU Emissions		Preliminary 2020 Emissions Limit under Cap-and-Trade Program
	By Sector	Total	
Transportation	225	512	365
Electricity	139		
Commercial and Residential	47		
Industry	101		

Source: Scoping Plan, 2008.

As can be seen in Table 2, the preliminary cap for covered industries is 365 MMTCO2e in 2020. The transportation sector is responsible for the majority of GHG emissions in California. Additionally, there is significant potential for major emissions reduction from this industry through increased full efficiency in vehicles as well as promoting more mixed-use urban development to decrease daily VMT.

CARB is also required to develop measures to curtail "leakage." Leakage refers to emissions resulting from industries that move out of state to avoid regulation, such as stringent emissions limits, to locations where no such policy exists. Through collaboration with the WCI, as well as strong reporting and enforcement rules, CARB doesn't expect leakage to be a potential issue, and doesn't expect GHG emissions to exceed given limits.

In order for cap-and-trade to work there must be a mechanism in place to set and quantify emissions for each GHG producing entity. Emissions allowances are used to set emissions limits for covered sectors. Allowances can be sold through auction, allocated freely, or dedicated as a reward for early actions to incentivize behavior. One option would be to provide allowances to local governments and developers to help encourage improved land use planning. Allowances could also be allotted to encourage energy efficiency and green building techniques into new development projects. Such projects would likely undergo separate environmental review under CEQA, and those that actively pursue better land-use planning, such as dense, infill development, could be granted allowances under AB 32. These allowances could be linked to the GHG analysis under CEQA and work to streamline the environmental review process.

Offsets from individual projects can be used to meet GHG regulatory requirements under AB 32. Offsets are GHG emissions reductions from entities not covered under an emissions cap, whose ownership can be transferred to regulated entities looking for low-cost emissions reduction options. Emissions reductions associated with a given project must be quantified using a methodology approved by CARB in order to qualify as an offset, and the reductions must be certifiable to confirm the reductions truly occurred and that they are not double-counted within the program. The rigorous measurement and enforcement protocols also ensure that the reductions are additional, meaning in excess of what would have likely occurred without the project. The issue of additionality is a major challenge of establishing the legitimacy of a given offset project (Adams et al., 2008). There is an opportunity to integrate CEQA and AB 32 by allowing GHG mitigations associated with CEQA projects to be a part of the carbon-offset program. This option, as well as others integrating CEQA into AB 32 to achieve greater GHG emissions reductions and improve the environmental review process will be discussed in detail later in this paper.

2.2 Energy Efficiency

Another key strategy that is instrumental in reaching GHG emissions reduction under AB 32 is energy efficiency standards. According to the Scoping Plan, there are several key energy efficiency strategies that are part of the overall approach to reduce GHG emissions, as illustrated in Table 3.

Table 3: Key Energy Efficiency Strategies Outlined in the AB 32 Scoping Plan (grouped by type)

Type of Strategy	Energy Efficiency Strategies
Cross-cutting Strategy for Buildings	"Zero Net Energy" building
Codes and Standards Strategies	More stringent building codes and appliance efficiency standards
	Broader standards for new types of appliances and for water efficiency
	Improved compliance and enforcement of existing standards
	Voluntary efficiency and green building targets beyond mandatory codes
Strategies for Existing Buildings	Voluntary and mandatory whole-building retrofits for existing buildings
	Innovative financing to overcome first-cost and split incentives for energy efficiency, on-site, renewable, and high efficiency distributed generation
Existing and Improved Utility Programs	More aggressive utility programs to achieve long-term savings
Other Needed Strategies	Water system and water use efficiency and conservation measures
	Local government programs that lead by example and tap into local authority over planning, development, and code compliance
	Additional industrial and agricultural efficiency initiatives
	Providing real time energy information technologies to help consumers conserve and optimize energy performance

Source: Scoping Plan, 2008.

Additional specific energy efficient systems that could be incorporated into new development include solar water heating and combined heat and power (CHP). The California Public Utilities Commission (CPUC) adopted the *California Long Term Energy Efficiency Strategic Plan* (Strategic Plan) in 2008 (California Public Utilities Commission, 2008). Practical implementation strategies for the energy efficiency standards outlined in Table 3 are discussed in the Strategic Plan. These include partnerships between the utilities, private entities, the State, and other market players for the Strategic Plan to prove successful. Integration into

development projects under CEQA could be another option to achieve great efficiency while improving GHG emissions reductions under CEQA.

Again, this technique could translate easily to development projects under CEQA. Streamlining under CEQA could be granted for development projects that employ energy efficiency and green building into construction and operation. Allowances and offsets used in cap-and-trade could also be provided to local governments employing these techniques, incentivizing energy efficiency further.

2.3 Regional Transportation-Related GHG Targets

Another strategy outlined in the Scoping Plan to reduce GHG emissions is focused on the transportation sector. According to CARB, the transportation sector accounts for approximately 40 percent of all GHG emissions. Cars and light trucks are responsible for the majority of such emissions, contributing approximately 75 percent to the total emissions from the transportation sector. Thus significant savings can be realized with implementation of new policies that would increase fuel efficiency and reduce VMT of personal vehicles. One mechanism to help reach regional transportation-related GHG targets is the Sustainable Communities and Climate Protection Act of 2008 (SB 375). SB 375 asserts that even with new mileage standards for personal vehicles (cars and light trucks) and improved lower carbon fuels, "it will be necessary to achieve significant additional GHG reductions from changed land-use patterns and improved transportation." SB 375 was signed into law in 2008, and directs CARB to set regional targets designed to limit GHG emissions from personal vehicles for forecast years 2020 and 2035. CARB was required to work with Metropolitan Planning Organizations (MPOs) in developing these targets by late 2010. MPOs conduct regional transportation planning in major cities and, to receive federal transportation dollars, are required to develop regional transportation plans (RTPs). The RTPs reflect transit priorities laid out in city and county general plans, and allow public input into the planning process (Adams et al., 2008). In addition to RTPs, MPOs are required to prepare a sustainable communities strategy (SCS) to reach the regional target set by CARB under SB 375. MPOs then use the land use and transportation patterns that make up the framework of the SCS and

incorporate it into the RTP. Streamlining of CEQA applies to projects that are consistent with the SCS and reach the GHG reduction target set for their respective region (Adams et al., 2008).

GHG reduction targets were established for each of the regions covered by an MPO, which will be reviewed and updated periodically, as needed (CARB, 2014). Table 4 shows the final approved GHG emission reduction targets for each of the MPO regions.

Table 4: Approved Regional GHG Emission Reduction Targets

MPO Region	Targets*	
	2020	2035
SCAG	-8	13
MTC	-7	-15
SANDAG	-7	-13
SACOG	-7	-16
8 San Joaquin Valley MPOs	-5	-10
6 Other MPOs		
Tahoe	-7	-5
Shasta	0	0
Butte	+1	+1
San Luis Obispo	-8	-8
Santa Barbara	0	0
Monterey Bay	0	-5

* Targets are expressed as percent change in per capita GHG emissions relative to 2005

Source: Scoping Plan, 2008.

According to the Institute for Local Government (2011), three components to help attain emissions reduction targets under SB 375 include the following:

- Altering and improving transportation patterns and investments at the regional level through regional transportation plans (RTPs);
- using the regional housing needs assessment (RHNA) process and the housing element of local general plans to integrate regional housing, transportation, and land use decisions; and
- providing incentives to streamline the environmental review process for local development projects that assist in meeting GHG reduction targets.

SB 375 integrates regional transportation planning with housing needs in attempt to reduce personal vehicle trips. Furthermore, by allowing streamlined environmental review for qualifying CEQA projects, incentives are created encouraging TOD projects. (Institute for Local Government, 2011). The relationship between SB 375 and CEQA will be discussed in more detail later in this paper.

Local governments maintain city and countywide general plans, which can influence the design and siting of new development, and thus can play a significant role in reducing passenger vehicle GHG emissions. Encouraging mixed-use infill development and enhancing public transit service, combined with regional planning efforts and integration of SCSs, will be instrumental in reaching regional GHG reduction targets (Adams et al., 2008). A study from UC Berkley (2008) found a 0.4 to 7.7 percent reduction in VMT over a 10-year horizon resulting from improved land-use patterns and public transit policies, taking projected population growth into account (Rodier, 2009). The study also found the benefits of new transit and land-use policies have the potential to significantly reduce GHG emissions, by almost 40 MMTCO2e. Even greater GHG reductions are possible with additional measures and policies aimed at reducing VMT. Furthermore, reduction of VMT has a variety of benefits beyond reducing GHG emissions, including cleaner air, improved mobility options (biking, walking, etc.), enhanced recreation, employment, and housing options all in close proximity to one another, and an overall improved quality of life.

2.4 Green Building Strategy

GHG emissions resulting from energy use (electricity, water, natural gas, etc.) in homes and commercial buildings contribute almost a quarter of California's GHG emissions, placing second behind the transportation sector (Adams et al., 2008). Table 5 illustrates the varied environmental impacts of the building sector.

Table 5: Building Sector Impacts

Aspects of Build Environment	Consumption	Environmental Effects	Ultimate Effects
Siting	Energy	Waste	Harm to human health
Design	Water	Air pollution	Environmental Degradation
Construction	Materials	Indoor pollution	Loss of resources
Operation	Natural Resources	Heat islands	
Maintenance		Stormwater runoff	
Renovation		Noise	
Deconstruction			

Source: EPA, 2012. Available at: http://www.epa.gov/greenbuilding/pubs/about.htm.

As illustrated in Table 5, the impacts of the building sector are vast, and continue to be detrimental even after construction is complete. Green building is one of the strategies outlined in the Scoping Plan to assist in achieving significant GHG emissions reductions.

According to the EPA, green building is "creating structures and using processes that are environmentally responsible and resource-efficient throughout a buildings life-cycle from siting, to design, construction, operation, maintenance, renovation, and deconstruction" (EPA, 2014). Incorporating green building practices into new development, and retrofitting existing buildings, has the ability to significantly reduce GHG emissions from the building sector. By tackling emissions through resource and energy efficiency, and building design and siting, green-building techniques can have far-reaching and synergistic effects. Furthermore, by improving building and energy efficiency, green buildings reduce operating costs and end up saving money in the long-term. Table 6 illustrates actions identified in the Scoping Plan to reduce GHG emissions from residential and commercial buildings.

Table 6: Measures to Reduce GHG Emissions from Buildings (from the Scoping Plan)

Measure	Description	2020 Reductions (MMTCO2e)
Green Building Standards Code	Consistent mandatory provisions for all building types	2.9
Beyond Code	Encourage voluntary efforts to go beyond mandatory code requirements	3.6
Existing Building Retrofits	Retrofit existing State, school, residential and commercial buildings	20
Total		26

Source: CARB, 2014. Available at: http://www.arb.ca.gov/cc/greenbuildings/greenbuildings.htm.

As shown in Table 6, CARB estimates that by 2020 the most significant GHG reductions will occur from retrofitting existing buildings (20 MMTCO2e). Emissions will be reduced by approximately 6 MMTCO2e between mandatory green building standards and voluntary efforts. Thoughtful building siting (i.e., near public transit) could work in tandem with other transportation and land use strategies, and help to achieve greater GHG emissions reductions under AB 32 and complement CEQA requirements.

3. CEQA and Climate Change

Integrating climate change analysis into CEQA's requirements is a logical and valuable progression. Given that the environmental assessment of climate change is still relatively new to CEQA, little is known to what extent it is serving it's purpose. Below I will discuss the development of GHG analysis under CEQA, and examine its usefulness in reducing GHG emissions. I will also consider the value of the transportation and energy analyses in achieving significant GHG emissions reductions.

3.1 Overview of GHG Analysis

SB 97 was signed in August 2007, and sent a signal that climate change is significant and should be acknowledged in CEQA. Guidelines for the assessment of GHG emissions developed by the OPR in 2009 were certified and adopted by the Resources Agency in 2010; thus requiring an analysis of GHG emissions in CEQAs environmental review process (Tholen et al., 2008).

Lead agencies are tasked with determining whether the GHG related impacts of their project would be potentially significant, less than significant with mitigation, less than significant, or have no impact. Determining significance can be extremely difficult and convoluted for entities acting as lead agencies. Regional air districts typically offer guidance to local lead agencies when addressing climate impacts in their CEQA projects (Tholen et al., 2008). Additionally, OPR developed a technical advisory suggesting useful mitigation measures, computer models, and other ways to address climate change pursuant to CEQA. Other resources include the Office of the Attorney General's Environment and Public Health division, the California Air Pollution Control Officers Association's (CAPCOA), and the Bay Area Air Quality Management District's (BAAQMD) CEQA Guidelines (OPR, 2011). CAPCOA has developed several resources, including *CEQA & Climate Change, Model Policies for Greenhouse Gas Emissions in General Plans,* and *Quantifying Greenhouse Gas Mitigation Measures*. All of these resources help local governments quantify and evaluate GHG emissions. The BAAQMD CEQA Guidelines provides quantified significance thresholds for GHG emissions, as well as additional tools and resources to evaluate GHG (OPR, 2011).

The following sections will more specifically describe climate change and GHG-related assessments that are required under CEQA for development projects qualifying for the EIR level of analysis.

3.2 Analysis of CEQA's Guidance Related to Climate Change

3.2.1 Traffic and Transportation Analysis

The traffic and transportation analysis under CEQA focuses on policy consistency, level of service (LOS) standards, and access as primary indicators of significant environmental impacts. In Appendix G of the Guidelines, the thresholds for significance are as follows:

- "Would the project conflict with an applicable plan, ordinance or policy establishing a measure of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including, but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?
- Conflict with an applicable congestions management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?

- Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?
- Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?
- Result in inadequate emergency access?
- Conflict with adopted policies, plans, or programs regarding public transit, bikeways, or pedestrian facilities, or otherwise substantially decrease the performance or safety of such facilities?" (CEQA Guidelines, 2014).

Historically, lead agencies have used LOS to determine whether a project would result in a significant impact under CEQA (San Francisco Planning Department, 2013). Additionally, local and regional plans and policies regarding transportation and traffic often revolve around LOS. LOS is a metric quantifying delay on a given roadway or intersection. LOS uses a scale from A-F, A being the best, free-flowing conditions, and F representing significant congestions and delay (Roth, 2009). Many local policies require all roadways and intersections to operate at LOS C or higher. Table 7 describes the quantitative and qualitative description for each LOS letter grade at signalized intersections. The delay measurement is taken during the peak 15 minutes of evening rush hour (Highway Capacity Manual, 2010).

Table 7: Summary of Average Control Delay Per Vehicle (in seconds) for Signalized Intersections

LOS Letter Grade	Average Delay (seconds/vehicle)	Description of motorist perception
A	< 10	Free-flow traffic: "good" LOS
B	10.1-20	Reasonable free-flow
C	20.1-35	Stable but unreasonable, delays begin to occur
D	35.1-55	Borderline "bad" LOS
E	55.1-80	"Bad" LOS: long queues
F	> 80	Unacceptable: very high delay, congestion

Source: Highway Capacity Manual, 2010.

Although LOS is a relatively simple and straightforward measure for describing circulation conditions, which allows for comparisons between existing and projected conditions, it can lead to urban sprawl and vehicle dominated transportation infrastructure. If a lead agency determines through its environmental review that an intersection will slip from LOS C to LOS D with project build out, the agency will develop mitigation measures to reduce this impact. Mitigation measures of this sort often entail road widening, decreasing pedestrian and bicycling

facilities, and improving signal timing, thus promoting personal vehicle use. In other cases, when dealing with new residential or mixed-use developments, another way to reduce impacts associated with LOS to a less-than-significant level is by decreasing the number of housing units or square feet of commercial use. LOS is thus improved by reducing the number of people using the proposed project site, and in turn, using the adjacent roadways and intersections. However, reducing the density of such development is inefficient, and leads to more urban sprawl, increased VMT, and ultimately more transportation-related GHG emissions. Jeffrey Tumlin, Principal for Nelson Nygaard, a transportation and land use consulting firm, was quoted as saying "In my practice, the single greatest promoter of urban sprawl, and the single greatest obstacle to transit oriented development and infill development is the transportation analysis conventions under CEQA, the California Environmental Quality Act, LOS" (Roth, 2009).

LOS and other transportation thresholds under CEQA really miss the mark by not taking VMT into account. There is a tremendous opportunity to reform the traffic and transportation analysis to improve land use patterns and ultimately GHG emissions that could help reach the goals of AB 32. I will discuss transportation related CEQA reform and recommendations at the end of this paper.

3.2.2 Energy Conservation

Included in the CEQA Guidelines amendments pursuant to SB 97 is the requirement of lead agencies to analyze a projects potential energy use (Appendix F). This includes energy supply, transportation-related energy use, and ways to reduce the energy demand of a given project (OPR, 2011). Again it is at the discretion of the lead agency to determine how best to describe the potential construction and operational energy use of a proposed project, and make significance determinations of the potential energy-related impacts. The guidance provided in the CEQA Guidelines is even less clear than for the other environmental topic areas discussed here, and included in Appendix G of the CEQA Guidelines. The CEQA Guidelines state "potentially significant energy implications of a project shall be considered in an EIR to the extent relevant and applicable to the project." It then goes through a laundry list of potential energy-related topics that can be discussed in various sections of the EIR, again at the discretion of the lead agency. The emphasis of such review and analysis, pursuant to the

CEQA Guidelines, is to avoid or reduce inefficient, wasteful, and unnecessary consumption of energy (Public Resources Code section 21100(b)(3)). However, little guidance is provided on how to determine if energy consumption is inefficient, wasteful, or unnecessary, and lead agencies may defer to the California Building Energy Efficiency Standards for more defined direction.

Determining the significance of project related energy use and consumption is a difficult task, particularly for lead agencies that aren't experts in the field. Recommendations to improve the existing Energy Conservation analysis under CEQA will be discussed under Recommendations for CEQA Reform later in this paper.

3.2.3 GHG Emissions Analysis

As discussed previously, GHG analysis under CEQA is relatively new. Guidelines for assessing GHGs in CEQA's environmental review documents were formally adopted by the Resources Agency in 2010. Appendix G of the CEQA Guidelines offers suggested issues that should be addressed in an EIR related to GHG emissions. The CEQA Guidelines (2014) suggests the following discussion areas for project-related GHG emissions:

- "Would the project generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment?
- Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of GHGs?" (CEQA Guidelines, 2014).

The suggested topic areas provided in the CEQA Guidelines related to GHGs are relatively vague and guidance related to determining significance is minimal. The CEQA Guidelines do not provide specific methodologies or quantitative significance thresholds for assessing potential project-related GHG impacts. Such determinations are left at the discretion of the lead agencies; however, agencies are encouraged to adopt significance thresholds for determining significance under CEQA. Thresholds of significance are quantitative limits that are set and are a bright line for determining significance of an impact. Essentially, if a project emits GHGs in excess of the set threshold then its impacts are considered significant, and the development of feasible mitigation measures is required. If GHG emissions are found to be below the threshold, then a less than significant determination would be made and no mitigation would be required. CEQA requires public disclosure of significant impacts, and

mitigation to the extent feasible to reduce such impacts (Office of Planning and Research, 2008).

Determining significance under CEQA is one of the most difficult undertakings of the GHG analysis in an EIR. Often lead agencies defer to local and regional agencies for determining significance, such as regional air districts. The OPR has developed the first of several technical advisories offering guidance and resources for lead agencies in addressing climate change related topic areas in EIRs. Table 8 lists several modeling tools that can be used by lead agencies to estimate project-level GHG emissions.

Table 8: Technical Resources/Modeling Tools to Estimate GHG Emissions

Tool	Availability	Scope Local/Regional	Scope Transportation/Buildings	Data Input Requirements	Data Output
URBEMIS	Download Public Domain (free)	Local project level	Transportation Some building (area source) outputs Construction	Land use information Construction, area source, and transportation assumptions	CO2 (lbs./day) Mitigation impacts
Clean Air and Climate Protection (CACP) Software	Download Available to public agencies (free)	Local project level	Buildings Communities Governments	Energy Usage Waste generation and Disposal Transportation fuel usage or VMT	CO2e (tons/year)
Sustainable Communities Model (SCM)	Custom model	Regional Scalable to site level	Transportation Buildings Neighborhoods Master planned communities	Location and site specific information Transportation assumptions On-site energy usage	CO2 (any quantity over time)
Internet-accessed Planning for Community Energy, Economic and Environmental Sustainability I-PLACES	Web-based Small access fee Full model now available in 8 CA counties	Regional Scalable to site level	Transportation Housing Land Use Buildings Energy Economics	Parcel level land use data (ability to work with less data) Project-level data for alternative comparisons	CO2 (any quantity over time)
Climate Action Registry Reporting On-Line Tool	Web-based Available to Registry members	Regional, scalable to entity and facility level	General Reporting and Certification Protocols (transportation and	Mobile source combustion (VMT or fuel usage) Stationary combustion (fuel usage)	Each GHG and CO2e (tons/year)

Tool	Availability	Scope Local/Regional	Scope Transportation/Buildings	Data Input Requirements	Data Output
(CARROT)	General Public can view entity reports		buildings/facilities) Specific protocols for some sectors	Indirect emissions (electricity usage)	
EMFAC	Download Public Domain (free)	Statewide Regional (air basin level)	Transportation emission factors	Travel activity data to calculate CO2 from projects	CO2 and methane (grams/mile) emission factors

Source: OPR, 2008.

As shown in Table 8, a variety of resources are available to lead agencies to estimate GHG emissions. CARB is in the process of developing statewide significance thresholds for GHG emissions. Until statewide thresholds are developed, lead agencies should be consistent with their analysis for all projects, and the analysis should be based on the best and most recent information and guidance available (Office of Planning and Research, 2008).

GHG analysis under CEQA is not straightforward and several methods are employed to assess and quantify GHG emissions. One study reviewed the GHG analysis of 14 DEIRs and found all of them to be insufficient in addressing climate related impacts. Specifically, the projected VMT levels and operational GHG emissions were found to be inaccurate. Overall, the projects located in higher density areas had better analysis and incorporated more advantageous mitigation measures. All 14 of the DEIRs used URBEMIS 2007 to quantify GHG emissions and project-related VMT. Population density in the vicinity of the project sites was not accounted for in the model, and reduced VMTs and GHGs were predicted for projects located in low-density areas rather than in higher-density developments, which goes against published literature (Kowshal, 2012).

Predicting GHG emissions and determining significance is a complex task, especially for lead agencies that aren't particularly well versed in such analyses. Recommendations to improve the GHG analysis under CEQA will be discussed in more depth under Recommendations for CEQA Reform.

3.2.4 Cumulative Impact Analysis

An EIR is also required to assess cumulative impacts if a proposed project's impacts could be "cumulatively considerable" when taken in context with other previous, current, or future projects. The CEQA Guidelines define "cumulative impacts" as "two or more individual effects which, when considered together, are considerable or…compound or increase other environmental impacts" (Guidelines Section 15355). If a proposed project wouldn't contribute to a cumulative impact, the EIR is not required to discuss the issue further. If the project is found to contribute to a "cumulatively considerable" impact, additional discussion and analysis is required. A project's incremental effects can be "cumulatively considerable" even when its individual effects are limited (Guidelines Sections 15064(h)(1), 15065(a)(3), 15355(b)). Simply put, an EIR may not be excused from cumulative analysis just because none of its individual impacts are found to be significant. This determination and subsequent analysis of cumulative impacts is considered by some to be one of the trickiest requirements of CEQA, and it is often the cumulative section that is challenged in court (Gordon & Herson, 2011).

According to Gordon and Herson (2011), the following two-step approach is best to adequately assess cumulative impacts:

- The EIR should determine whether the proposed project, when considered in tandem with other previous, current, and future projects, would result in any significant cumulative impacts.
- If it is determined that the combined effects would behave a cumulative significant impact, the EIR should determine whether the proposed project's incremental effect is "cumulatively considerable" and thus significant.

Beyond determining the individual significance of GHG emissions, lead agencies must also determine if those emissions could be "cumulatively considerable" and thus significant. CEQA allows the use of previously approved mitigation measures that have appropriately assessed and mitigated GHG emissions to no longer be significant as an avenue to avoid or reduce the cumulative impact of a projects GHG emissions (Office of Planning and Research, 2008).

3.3 History and Context of CEQA Reform

Since its adoption in 1970, CEQA has faced continued criticism and controversy. Environmentalists, developers, local planners, and others complain that CEQA obstructs smart urban planning, the economy, and may be harmful to the environment. Special interest groups

can abuse CEQA for political gain by slowing or halting projects through litigation (CEQA Working Group, n.d.). Additionally, CEQA has been criticized for encouraging discrete, project-by-project analysis, which inhibits comprehensive, long-range planning efforts (Barbour & Teitz, 2005; Olshansky, 1996). City and county general plans[1] typically set the stage for local, project-level CEQA review. However, limited integration between general plans and the CEQA process occurs as several general plans are out-of-date and thus not an effective guide for planning (Landis, Pendall, Olshansky, & Huang, 1995; Olshansky, 1996a). Another major complaint about CEQA is that its requirements are vague and inconsistent, leading to fears of litigation. In response, lead agencies may provide more discussion than is required, leading to repetitive and/or redundant documentation. A number of CEQA professionals have indicated that uncertainty regarding key requirements given the lack of guidance provided by the CEQA Guidelines is a major issue. In a survey conducted in 2001, respondents revealed that they aren't particularly confident in the thresholds for significance they use, and worry about legal defensibility (Sevier & Hatfield, 2001). In light of the many criticisms, only modest reforms to CEQA have occurred thus far (Barbour & Teitz, 2005). The history and evolution of CEQA reform to present day is discussed in the following sections.

3.3.1 Evolution of CEQA Reform

Historically, discussions around CEQA reform have intensified alongside economic downturns and mounting growth pressures. CEQA's scope was broadened during the early 1970's by both the courts and state legislature. By 1976 this trend was changing, and CEQA was modified to allow the selection of any alternative so long as it avoided adverse environmental impacts, rather than requiring selection of the "best" alternative. In 1983, then California Governor Deukmejian was looking for ways to reduce some of the regulatory requirements of CEQA in response to an economic recession the State was facing. A number of modest reforms that

[1] Each city and county adopts a General Plan to guide the short- and long-term growth and land development of their community

aimed to limit judicial challenges, streamline planning through tiering[2], and reduce procedural requirements were adopted (Barbour & Teitz, 2005; Landis et al., 1995). Essentially, these tiering provisions encourage "front-loading" environmental review at the long-range community planning scale that can then guide and simplify subsequent review of individual projects included in the long-range planning document. An example of this would be completing an EIR in conjunction with a local Specific Plan[3] so that future development outlined in the Specific Plan would be exempt from additional environmental review (Barbour & Teitz, 2005).

During the mid and late 1980's California was experiencing substantial growth, which prompted CEQA reform that aimed to increase public review and enforce mandated mitigation measures. In 1989 notification and public comment period requirements were established thus improving public participation in local planning and development (Barbour & Teitz, 2005; Landis et al., 1995). The 1990's brought increasing growth and another recession; CEQA reform was again a central issue. Several bills were introduced during this time calling for more thoughtful and coordinated policies related to growth, as well as new streamlining measures to trim down the environmental review process (Olshansky, 1996). Several modest versions of earlier suggestions for CEQA reform passed in 1993 and 1994; however, amidst a recession, growth management reform had lost momentum. Among the new reforms was a tiering provision, called the Master Environmental Impact Report (MEIR). This reform called for more in-depth and stringent analysis up-front in the environmental review process, while also highlighting the subsequent streamlined benefits that would occur (Barbour & Teitz, 2005). More recent CEQA reform specifically linked to climate change is discussed below.

3.3.2 Recent Reform Linked to Climate Change

More recent CEQA reform has worked toward achieving smart land use patterns through streamlining the environmental review process for infill development projects. High-density,

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[2] The process of tiering allows simpler, more streamlined environmental review for projects already covered in a more general, previously approved EIR. Tiered EIRs can incorporate by reference discussions in the prior EIR that are applicable to the project undergoing review.

[3] A specific plan guides the actual implementation of the priorities outlined in a city's General Plan.

mixed-use developments can help to ultimately decrease project-related construction and operational GHG emissions by reducing transportation-related GHG emissions. However, significant opportunity exists to achieve even greater reductions in GHG emissions that could directly contribute to reaching the GHG emissions target set forth in AB 32. The following discussion will provide an overview of recent climate change related reforms to CEQA.

Senate Bill 375

SB 375 aids in reaching the 1990 GHG emissions goal under AB 32 by targeting reductions in transportation related GHG emissions in California. In 2010, after providing regional GHG emission reduction targets to each of the 18 MPOs[4] in California, CARB directed MPOs to include a SCS in the next RTP[5] update. A SCS provides a roadmap for accommodating future regional growth through land use and transportation planning. It also lays out how MPOs plan to reduce regional transportation related GHG emissions through integrated land use, transportation, and housing planning within their given jurisdictions. Once an MPO adopts the SCS, it is submitted to CARB for review to see if it is likely to achieve the regional GHG emissions reduction target set by CARB under SB 375. If denied by CARB, the MPO then must either revise the SCS, or develop an "alternative planning strategy" (APS) that would meet the target. The APS must provide additional land use planning strategies, transportation measures, and investments that would achieve the regional GHG target if implemented (Institute for Local Government, 2011).

SB 375 also integrates the following three important city and county planning processes: The RTP, the RHNA, and the Housing Element of local city/county general plans. This encourages a more coordinated planning process to improve growth patterns and ultimately reduce transportation related GHG emissions. Additionally, SB 375 allows cities and counties to streamline the environmental review process under CEQA for development projects that are consistent with the adopted SCS. These projects are referred to as "transit priority projects"

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[4] A MPO is an agency with regional jurisdiction that weighs in on transportation funding decisions and planning for cities with 50,000 or more residents. There are 18 MPOs in California.

[5] An RTP is a long-term plan providing the framework for a region's transportation system. Typically they plan over a 30-year horizon and are updated every five years.

(TPPs). This provision was created to incentivize the development of projects that reduce local and regional VMT and associated GHG emissions. The law provides for partial or full exemption from CEQA review for TTPs consistent with the SCS (Institute for Local Government, 2011). In so doing, cities and counties are encouraged to update their general plan to be consistent with its SCS, thereby further incorporating improved sustainability policies into land use planning at the local level. In order to be eligible for exemption as a TPP under SB 375, the project must:

- Include residences in at least 50 percent of the development;
- Contain 20 units or more per acre;
- Be located no more than a half mile from major transportation corridor or transit stop; and
- Be consistent with an accepted SCS or APS.

To qualify for total exception from CEQA review, as a minimum the TPP must meet the following requirements:

- Sufficient existing utilities are in place to serve the project;
- Meet strict efficiency standards related to water and energy use;
- Have no impact on any wetland or wildlife areas;
- Have no effect to any identified historic resources;
- Include affordable housing or pay a fee, or provide at least 5 acres of public open space per 1,000 residents; and
- Not exceed a total size of 200 residences or eight acres.

A TPP that is consistent with all of the above requirements may proceed without any further environmental review, and is known as a "sustainable communities project." A TPP may qualify for a partial exception resulting in streamlined review under CEQA if all of the above criteria are not met. If the TPP incorporates all feasible mitigation measures, best practices, standards, and other criteria contained in previously written applicable environmental review documents, it may likely be eligible for streamlined environmental review under CEQA called a "sustainable communities assessment." The sustainable communities assessment is an abbreviated environmental review that isn't required to analyze a project's cumulative, growth inducing, or other project-specific impacts from personal automobile trips on GHG emissions or on the regional transportation network. Additionally, the lead agency is no longer required

to analyze reduced residential density alternatives to address impacts related to transportation.[6] Similar to other environmental documents under CEQA, the lead agency is required to:

- "Adopt findings that all potentially significant or significant effects required to be identified in the initial study have been identified and analyzed; and
- With respect to each significant effect, find that changes or alternations have been required in or incorporated into the project that avoid or mitigate the significant effects to a level of insignificance." (14 Cal. Cod of Regs. Section 15074).

In addition to meeting the above criteria, the sustainable communities assessment also must go through a similar public review process as full environmental review documents under CEQA (see figure 1).

By offering full and partial exemption from CEQA, SB 375 encourages smart land use development projects that are consistent with a region's SCS or APS (Institute for Local Government, 2010).

Senate Bill 743

Senate Bill 743 (SB 743) was adopted on September 27, 2013 by California Governor Jerry Brown. SB 743 follows in the footsteps of SB 375 by encouraging smart land use and transportation decisions, thereby decreasing VMT and overall GHG emissions, as mandated by AB 32. SB 743 modifies the CEQA analysis requirements related to aesthetics and parking for urban infill development projects. Further, SB 743 eliminates auto delay, including LOS, as a measure of traffic impacts in transit priority areas (TPA).[7]

According to SB 743 "aesthetics and parking impacts of residential, mixed-use residential or employment center project on an infill site within a TPA shall not be considered significant impacts on the environment." In order to be granted this exemption the following criteria must be met:

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[6] Cal. Pub. Res. Code Section 21155.2.

[7] A TPA is a designated area located no more than one-half mile from an existing or planned major transportation hub or stop.

- The development project is located in a TPA;
- The development project is on a designated infill site; and
- The development project is either a residential development, some sort of mixed-use residential development, or a development devoted to employment.[8]

Thus, SB 743 incentivizes smart land use development projects, which ultimately lead to fewer personal automobile VMTs and reduced GHG emissions.

As previously discussed under traffic and transportation analysis pursuant to CEQA, LOS is a metric frequently used my lead agencies to assess the potential significant impacts of land use development projects. LOS analysis is inherently flawed; it encourages the expansion of roadway infrastructure, discourages infill development, and unfairly burdens new development to mitigate the cumulative effects of previous development projects and existing traffic levels. SB 743 stipulates that "automobile delay, as described solely by level of service or similar measures of vehicular capacity or traffic congestion shall not be considered a significant impact on the environment pursuant" to CEQA. SB 743 further directs OPR to develop alternative criteria for assessing traffic and transportation impacts, and to circulate a draft of the new criteria by July 1, 2014. Furthermore, SB 743 requires the OPR to revise the significance criteria used in assessing transportation impacts for projects within TPAs to encourage the "…reduction of GHG emissions, the development of multimodal transportation networks, and a diversity of land uses." These changes are expected to be adopted by the Secretary of the Natural Resources Agency, and come into effect sometime in 2015 (San Francisco Planning Department, 2013).

Lastly, SB 743 changes some of the mandates associated with infill opportunity zones (IOZs) to encourage develop within these areas. Local governmental agencies were granted the authority to designate IOZs under Senate Bill 1636 (passed in 2002). Roadways within IOZs are excused from LOS related requirements pursuant to congestion management code (California Government Code, Section 65089). SB 1636 mandated that IOZs must be located in compact, mixed-use areas with plentiful transit options. The law also prohibited the designation of IOZs after 2009 and reversed any IOZ where no development took place within 4 years of designation. SB 743 supports IOZs by removing the 4-year time limit for

[8] San Francisco Planning Department. 2013.

development, and re-allows IOZ designations for land within TPAs or within ½ mile of high quality transit corridor identified in an adopted SCS (San Francisco Planning Department, 2013).

The following section will offer recommendations for further CEQA reform that would decrease GHG emissions, ultimately helping to achieve the GHG target set forth under AB 32.

4. Recommendations for CEQA Reform to Achieve Goals Pursuant to AB 32

As previously discussed, there is tremendous opportunity to improve a variety of aspects of CEQA analysis to reduce GHG emissions and help to integrate CEQA with AB 32. There are several options for integrating CEQA into AB 32 and visa versa to achieve greater GHG emissions reductions and improve the environmental review process. Some of these options (previously identified) include: improved streamlining for smart land use development projects, better GHG analysis guidance and streamlining, improved transportation analysis, and expanded CEQA streamlining for projects that incorporate other energy efficiency and other green building measures. Furthermore, integrating the carbon-offset market with CEQA could help to improve the effectiveness of GHG mitigation measures and provide much needed funding for such projects. Possible integration of the carbon-offset market under AB 32, as well as options for streamlining CEQA and specific potential CEQA reforms are discussed further in the following sections.

4.1 Carbon Offsets and CEQA Projects

Given the global nature of climate change and GHG emissions, the carbon-offset program is a useful mechanism for reducing GHG emissions under AB 32. Some argue "emitters regulated under AB 32 should be allowed to receive offset emissions credits in return for investments in transportation-related land use mitigation projects required by CEQA." (Malaczynski & Duane, 2009). This would be beneficial for all parties involved; increased funding would be funneled to projects employing effective GHG mitigation techniques, thus leading to improved mitigation and ultimately reduced GHG emissions, and regulated entities are provided with a cost effective method to meet the requirements pursuant to AB 32. The carbon-offset program under AB 32 could be expanded to include qualifying mixed-use, infill development CEQA

projects that would reduce VMT and associated GHG emissions from BAU. This would fund and further incentivize smart land use development projects. However, GHG emissions reductions would have to be quantified, verifiable, and enforceable. This would have to be a comprehensive and coordinated effort between the lead agency, CARB, OPR, and a third party, such as an MPO or other regional agency.

Implementing a carbon-offset program that includes projects under CEQA would take a combined effort, but the benefits are significant and would help to direct funds to smart land use development and thus reduce project related GHG emissions. Regulated entities under AB 32's cap-and-trade program could meet their regulatory obligations while funding CEQA projects that reduce project-related GHG emissions, thus contributing to overall GHG emissions reduction in California.

Implementing a carbon-offset program that includes CEQA projects would also supplement SB 375 by "allocating greater financial resources toward implementation of the Sustainable Communities Plans developed under SB 375." (Malaczynski & Duane, 2009). Private industries would be essentially funding projects that are consistent with SCSs, thus making SCS development more attractive, and further incentivizing CEQA project consistency.

Broadening the scope of the carbon-offset program to include CEQA projects would help fund projects that greatly reduce GHG emissions. This would help to incentivize incorporating GHG reduction into project design and development, thus reducing overall GHG emissions associated with new development. This would help to bridge the gap that currently exists between CEQA and AB 32, and get California closer to reaching the GHG emissions reduction target set forth under AB 32.

4.2 CEQA Streamlining

In order to further encourage smart land use development and help reduce GHG emissions, streamlining under CEQA should be expanded to apply to additional types of sustainable development projects than those that are already covered under SB 375 and 743. Integration of energy efficiency and green building techniques into development projects under CEQA would help achieve greater efficiency while improving GHG emissions reductions under CEQA. According to EPA (2013), buildings account for 30 percent of total GHG emissions in the US.

Streamlining under SB 375 could be expanded to include CEQA projects that employ energy efficiency and green building techniques into construction and operation that effectively cut down on GHG emissions. Such options for increasing energy efficiency in new development have been outlined in the Scoping Plan, as illustrated in Table 3, and could be incorporated into new development projects. Furthermore, offsets used in California cap-and-trade could be expanded to include local projects employing these techniques, thereby incentivizing energy efficiency and green building further and providing a funding mechanism to implement such techniques.

Providing incentives, such as streamlined CEQA review and potential funding, for employing energy efficiency and green building techniques would help to promote these practices, thereby reducing GHG emissions, and ultimately helping to reach the 1990 emissions limit pursuant to AB 32.

4.3 CEQA Guidelines Reform Recommendations

4.3.1 GHG Analysis

As existing, the CEQA Guidelines defer to the lead agency to determine if a project would generate GHG emissions, either directly or indirectly, which could have a significant impact on the environment. Lead agencies are encouraged to develop significance thresholds, and often use thresholds developed by regional air districts. The lack of clear guidance results in inconsistent GHG analyses across projects. The variety of modeling tools available (see table 8) also introduce uncertainties, don't offer clear guidance, and may result in inaccurate and misleading information. As previously discussed, Kowshal (2012) found inaccurate and misleading GHG modeling results after reviewing 14 DEIRs for mixed-use development projects in California.

Given the global nature of climate change, statewide thresholds of significance should be developed and utilized in the analysis of GHG emissions. Clear, concise, and consistent thresholds would create a baseline in which all projects could be compared. In order to help realize the GHG emissions reduction goal set forth in AB 32, the significance thresholds should be stringent and apply during both construction and operational phases of projects. Additionally, specific and coordinated mitigation measures should be developed, which should

include quantification of emissions reduced. Moreover, offsets could be incorporated as a feasible mitigation option. Lead agencies whose project result in significant unavoidable GHG impacts could purchase offsets to help alleviate emissions elsewhere and fund other GHG emissions reducing projects, as long as those emissions reductions are quantified, verifiable, and significant.

With clearer guidance, specific significance thresholds, and specified mitigation options, uncertainties and miscalculations associated with the GHG analysis under CEQA could be significantly reduced, and greater GHG reductions could be achieved.

4.3.2 Energy Conservation Analysis

Currently, the CEQA Guidelines require that EIRs include an assessment of the potential energy impacts of a proposed project. The CEQA Guidelines provides an extensive list of optional discussion topics that can be placed throughout the document. This can often be confusing for lead agencies to determine which energy-related topics should be discussed and analyzed, and where in the document (EIR) the discussion should be placed.

The ultimate goal of the energy analysis is to decrease overall energy consumption, decrease dependence on fossil fuels, and to increase reliance on renewable energy resources. In order to make the analyses more straightforward for lead agencies, the energy analysis should be incorporated into Appendix G, the Environmental Checklist Form. Here, potential thresholds to help determine the significance of impacts related to energy could be developed. This would provide clearer direction to lead agencies when analyzing the potential energy impacts of a proposed project. Furthermore, specific mitigation measures to decrease energy consumption associated with particular projects could be developed. These could include incorporating green building techniques and energy efficiency measures. Projects incorporating such measures could then be considered for participation in the carbon-offset program described above. This would help to encourage green building by introducing additional financial support for such actions.

In order to improve the analysis of energy related impacts of a given project, the CEQA Guidelines should incorporate a streamlined and specific energy analysis as it does for other environmental topic areas. Implementation of increased projects that incorporate green building and energy efficiency measures would help to reduce GHG emissions.

4.3.3 Traffic and Transportation Analysis

As previously discussed, LOS has been a widely used metric to assess potential transportation related impacts resulting from new development projects under CEQA. Using LOS for this purpose has been found to be inefficient and can lead to urban sprawl and roadway infrastructure serving automobiles over pedestrians, cyclists, and other forms of alternative transportation. In this way it has likely resulted in increased VMT and associated GHG emissions.

With the passage of SB 743 in late 2013, CEQA analysis requirements related to aesthetics and parking for urban infill development projects was modified, and vehicle delay, described only by LOS or a similar metric of automobile roadway capacity or traffic levels, cannot result in a significant impact under CEQA. In so doing, SB 743 encourages smart land use and transportation decisions, which act to decrease VMT and overall GHG emissions. SB 743 further directs OPR to develop alternative criteria for assessing traffic and transportation impacts, which should become effective sometime in 2015 (San Francisco Planning Department, 2013). As such, SB 743 sets reform related to the traffic and transportation analysis under CEQA in the right direction, and finally does away with LOS as a metric for determining impact significance.

SB 743 is the first step toward improving the traffic and transportation analysis under CEQA to reduce overall GHG emissions by removing LOS as a significance threshold. Putting a larger emphasis on reducing VMT through the CEQA environmental review process is crucial to help California achieve the GHG emissions limit pursuant to AB 32, because VMTs contribute greatly to GHG emissions in California. SB 375 began to reconcile the VMT gap in GHG assessment and regulation under CEQA through its streamlining options for TPPs. In order to further encourage VMT reducing land use projects, such projects could be incorporated again into the carbon-offset program in California. This would help to fund and incentivize VMT-reducing projects. Integration of the carbon-offset program into CEQA, along with updated

criteria for assessing traffic and transportation impacts (currently under development), would significantly help to reduce VMT and associated GHG emissions in California, thus helping to reach the GHG emissions limit set forth under AB 32.

5. Conclusions

Since adoption in 1970, CEQA has been highly controversial and undergone several reforms, particularly alongside economic downturns and increased growth pressures peppered throughout California history. With the passage of SB 97 in 2007, CEQA began requiring lead agencies to examine GHG emissions resulting from projects, and develop feasible mitigation techniques. This particular reform created an opportunity to contribute significantly in achieving AB 32's GHG emissions reduction goals in California. To help projects reduce their GHG emissions, an appropriate, legitimate, and accurate analysis of GHG emissions at the project-level must be developed. Additional reforms to CEQA could expand upon recent reforms, such as SB 375 and 743, and thus increase the scope of the statute and encourage more infill development projects, boost the incorporation of green building and energy efficiency techniques, decrease VMTs, and reduce overall GHG emissions. Expanded streamlining for VMT-reducing and energy efficient development projects would also serve to incentivize such projects, which would in turn reduce overall GHG emissions.

There remains substantial potential to integrate CEQA and AB 32 further to achieve considerable GHG emissions reductions. One such opportunity is to expand the carbon-offset program, which is part of the broader cap-and-trade program in California developed under AB 32. Extension of this program to include CEQA projects, both as offsets and potential mitigation opportunities, would serve to increase financial incentives for developing smart land use and TOD projects by private developers, and local and state agencies.

Further research into the specific mechanism and processes involved in linking AB 32 and CEQA to generate verifiable, GHG reductions that can be used as offsets is needed. This will likely call for a combined effort between OPR, CARB, local governments, and regional transportation and air quality agencies. Given that OPR is developing new significance criteria and guidance for traffic and transportation analysis under CEQA, research should focus on identifying new, effective metrics that could determine significance while promoting smart land use planning. This would encourage dense urban development projects and high quality transit

corridors that incorporate public transit, and bicycling and pedestrian facilities. Additionally, more research in needed to accurately quantify GHG emissions at the project level, and to identify well-informed, statewide significance thresholds for GHG emissions.

Future research should also focus on the actual emissions reductions CEQA streamlining has produced under SB 375 and 743. Quantification would be useful to identify progress toward reaching the emissions reduction goal under AB 32, made through CEQA, and help illuminate the benefits of such streamlining. Finally, moving forward, research needs to focus on additional ways CEQA can be integrated into AB 32, and other environmental policies in California. Attempting to improve CEQA from a narrow and limited perspective will not be as effective as broadening the discussion of CEQA reform to include a more comprehensive set of ideas and solutions from a variety of stakeholders to address climate and growth concerns as we head into the future.

6. References

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