Draft White Paper

2025

CARBON NEUTRALITY, CEQA, AND CLIMATE ACTION PLANNING

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AEP Climate Change Committee
2025 Draft White Paper
Carbon Neutrality, CEQA, and Climate Action Planning

Prepared by the AEP Climate Change Committee, this white paper serves as a crucial guide for navigating the complexities of California's carbon-neutrality goal, California Environmental Quality Act (CEQA) compliance, and climate action planning. It empowers interested parties to contribute effectively to California's ambitious climate goals, encouraging practitioners, experts, and agencies to adopt innovative strategies and methodologies for GHG emissions reduction.

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The views expressed in this paper are the personal opinions of the authors and do not represent the opinions or judgment of their respective firms, agencies, or of AEP. Furthermore, the views expressed in this paper do not constitute legal advice. CEQA lead agencies are advised to consult with their counsel before making any decisions as to thresholds or significance determinations concerning greenhouse gas emissions in their CEQA documents.

Comments

The AEP Climate Change Committee will be accepting and reviewing comments on the White Paper between April and June 2025. Comments provided may influence the Final White Paper, which will be published in the Summer of 2025.

EXECUTIVE SUMMARY

This white paper discusses CEQA and qualified Climate Action Plan (CAP) targets that are consistent with the California 2045 carbon neutrality target codified by Assembly Bill (AB)1279 and related implications for greenhouse gas (GHG) emissions analyses and mitigation.

Meeting aggressive 2045 reduction targets for projects or CAPs is highly challenging, particularly given that the State has not developed all of the measures that are called for in the State's current plan to meet GHG reduction goals, the "Scoping Plan,"[1] to enable the State to meet the 2045 target. A particular challenge concerns on-road vehicle emissions, given the ongoing challenges in reducing VMT with the post-pandemic slow recovery of transit, and a new federal administration intent on promoting fossil fuel vehicles at the expense of electric vehicles and denying California the ability to implement more stringent vehicle emission standards than national standards. Individual projects and jurisdictions do not control vehicle emission standards for passenger vehicles or for trucks. While the State is making progress on the Renewable Portfolio Standard and on ever more stringent requirements for energy efficiency and electrification of new buildings, there remains an enormous backlog of existing natural gas use in residential and commercial settings and poor energy efficiency that is very slow to change. Consequently, individual projects or individual jurisdictions are left to assess how they may be able to fill the "gap" between a 2045 target and what can realistically be achieved through State action with feasible project mitigation or local actions.

This white paper discusses various CEQA GHG emissions thresholds of significance and methodological approaches by project type that can be utilized for project-related CEQA compliance. The paper also discusses CAP targets from a qualified CAP that can enable CEQA tiering of future CAP projects as well as CEQA GHG emissions analysis streamlining for all future projects. Best practices are shared regarding steps and strategies for CAPs to demonstrate a local community's fair share of GHG emissions reduction and carbon sequestration in pursuit of the Statewide carbon neutrality target. Finally, a variety of mitigation options are recommended for use as either project-related CEQA GHG emissions mitigation measures or communitywide CAP GHG reduction measures.

Main Topics

- California's 2045 Carbon Neutrality Target and Legislative Framework
- Challenges in Meeting Aggressive 2045 Reduction Targets
- GHG Emissions Thresholds of Significance for CEQA Compliance

[1] The Scoping Plan is a statewide GHG reduction strategy developed by the California Air Resources Board (CARB) as required by AB 32 (2006), which outlines California's pathway to achieve its climate targets through regulations, market mechanisms, and other measures.

- Qualified CAP Targets and CEQA Tiering
- Methodological Approaches for Project-related CEQA Compliance
- Best Practices for CAP Demonstrations of Local GHG Reductions
- Recommended Mitigation Measures for CEQA

Conclusions

- Meeting California's 2045 carbon neutrality target is highly challenging due to incomplete State measures and external factors like federal vehicle emission standards.
- On-road vehicle emissions present significant hurdles, exacerbated by the slow recovery of transit post-pandemic and federal policies promoting fossil fuel vehicles.
- Individual projects and jurisdictions face limitations in controlling vehicle emission standards and addressing large-scale natural gas use and energy inefficiencies.
- CEQA practitioners can utilize various GHG emissions thresholds and methodological approaches to ensure project compliance.
- Qualified CAP targets enable streamlined CEQA GHG emissions analysis and tiering of future CAP projects.
- Implementing best practices for CAPs can effectively demonstrate a community's fair share of GHG reductions and carbon sequestration, supporting Statewide carbon neutrality goals.

Recommendations for CEQA Practitioners and Lead Agencies

- Adopt and integrate CEQA GHG emissions thresholds of significance tailored to project types.
- Utilize CAP targets from qualified CAPs for efficient CEQA tiering and analysis.
- Implement methodological approaches that align with State targets for emissions reductions.
- Employ best practices for CAP demonstration to showcase local efforts in GHG mitigation and carbon sequestration.
- Consider diverse mitigation options for both project-related CEQA measures and community-wide CAP actions.

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CHAPTER 1
State Target of Carbon Neutrality

California has set ambitious climate goals to reduce greenhouse gas emissions and achieve carbon neutrality. These goals are part of the State's broader commitment to address climate change and include specific targets for the years 2030 and 2045. By 2030, California aims to reduce greenhouse gas emissions to 40% below 1990 levels. By 2045, the State plans to achieve carbon neutrality, meaning it will remove as much carbon dioxide from the atmosphere as it emits.

These climate goals were set through legislation and Executive Orders. The California Global Warming Solutions Act of 2006 (AB 32) set the initial goal of reducing emissions to 1990 levels by 2020. SB 32, enacted in 2016, established the 2030 target, and in 2022, AB 1279, the California Climate Crisis Act, established a target to reduce statewide anthropogenic emissions by 85% below 1990 levels by 2045 and a carbon neutrality goal.

The State's goal is supported by additional legislative and executive actions. For example, EO N-79-20 set targets for the transportation sector including:

- 100% of in-State sales of new passenger cars and trucks will be zero-emission by 2035.
- 100% of medium- and heavy-duty vehicles will be zero-emission by 2045 for all operations where feasible, and by 2035 for drayage trucks.
- 100% of off-road vehicles and equipment will be zero-emission by 2035 where feasible.

The California Air Resources Board (CARB) updated its Scoping Plan in 2022, outlining the strategies and measures needed to meet the 2045 goals.

While the 85% emission reduction target (and previous GHG emission reduction targets under AB 32 and SB 32) focuses on reducing GHG emissions from the industrial, energy, and transportation sectors, the carbon neutrality goal expands the boundary to include all sources (in-State, including natural and working lands) and sinks (including out-of-State actions such as direct air capture).

According to the CARB 2022 Scoping Plan, a significant portion of the emission reductions will come from State actions. These include transforming the energy sector to rely more on renewable sources like wind and solar, increasing energy efficiency, electrifying transportation, and reducing emissions from industrial processes.

Natural and working lands (NWL), such as forests, agricultural lands, and wetlands, will also play a crucial role. These areas can act as carbon sinks, storing carbon dioxide from the atmosphere in soil, crops, and other vegetation. They can also be sources of emissions, including emissions from wildfires and activities related to agriculture. The Scoping Plan emphasizes the importance of managing these lands to enhance their carbon sequestration capabilities. However, because of existing farming practices and methane emissions from freshwater wetlands, this sector is expected to continue to be a net source of emissions through 2045 based on modeling in the Scoping Plan.

To achieve carbon neutrality by 2045, California will also rely on technological carbon removal approaches, including carbon capture, usage, and storage (CCUS) and direct air capture and storage (DAC). These technologies involve capturing carbon dioxide from large emissions sources or directly from the air and storing it underground or using it in industrial processes, such as oil recovery or cement production. While still in the early stages of development, DAC is considered a necessary component of the state's long-term strategy, necessary for California to be carbon neutral by 2045.

Direct air capture plant. Photo curtesy of Carbon Brief 2019.

CHAPTER 2
CEQA GHG Emissions Threshold Concepts

Lead agencies have discretion on establishing thresholds of significance so long as such thresholds are supported by substantial evidence. CEQA Guidelines Section 15064.7, *Thresholds of Significance*, identify that CEQA thresholds are "an identifiable quantitative, qualitative, or performance level of particular effect." The CEQA Guidelines goes further to describe the thresholds of significance as "a quantitative, qualitative, or performance requirement found in an ordinance, resolution, regulation, order, plan or other environmental requirement; adopted for the purpose of environmental protection; addresses the environmental effect caused by the project; and applies to the project under review." Based on this guidance, we offer the following threshold concepts for GHG emissions in light of long-term State emission reductions goals (as enacted through AB 1279) for projects in geographic areas where the Air District has not adopted thresholds of significance for land use projects. For projects located in areas where an Air District has adopted GHG emissions significance thresholds that are supported by substantial evidence, utilizing the adopted GHG thresholds may offer the most defensible approach to evaluating GHG emissions impacts under CEQA. However, as noted in the 2022 Scoping Plan, these thresholds can become outdated if they are not aligned with the State's increasingly ambitious GHG reduction goals.

Consistency with a GHG Reduction Plan

CEQA Guidelines Section 15183.5, *Tiering and Streamlining the Analysis of Greenhouse Gas Emissions*, allows for lead agencies to analyze and mitigate the significant effects of GHG emissions at a programmatic level. Pursuant to CEQA Guidelines Section 15183.5, later project specific environmental documents may tier from and/or incorporate by reference the GHG reduction plan, or climate action plan, so long as it includes the following plan elements:

- Quantified greenhouse gas emissions, both existing and projected over a specified time period, resulting from activities within a defined geographic area;
- A level, based on substantial evidence, below which the contribution to greenhouse gas emissions from activities covered by the plan would not be cumulatively considerable;
- Analysis of the greenhouse gas emissions resulting from specific actions or categories of actions anticipated within the geographic area;
- Specified measures or a group of measures, including performance standards, that substantial evidence demonstrates, if implemented on a project-by-project basis, would collectively achieve the specified emissions level;

- A mechanism to monitor the plan's progress toward achieving the level and to require amendment if the plan is not achieving specified levels;

- Adoption through a public process following environmental review.

For projects undergoing CEQA review where lead agencies have adopted an applicable GHG emissions reduction plan compliant with CEQA Guidelines Section 15183.5, demonstrating consistency with the plan may provide the most streamlined (i.e., qualitative) approach to evaluating GHG emissions. However, projects should follow best practices to ensure that the project and plan are adequately aligned.

To rely on a GHG reduction plan, a project must fall within the plan's evaluated emission sectors. If any of the project's emissions sources (including in the inventory and forecast) were not included in the GHG reduction plan, it may hinder project-level CEQA streamlining.

Similarly, project growth should be consistent with the growth forecast identified in the GHG reduction plan (i.e., population and employment). Projects that are consistent with the underlying land use and/or zoning would normally be consistent with the growth forecast in the GHG reduction plan. However, projects that require a General Plan Amendment may generate emissions that are not evaluated, and additional mitigation measures may be necessary.

For covered projects, the GHG evaluation should also demonstrate consistency with the mandatory and voluntary measures in the GHG reduction plan. A GHG reduction plan typically includes many mandatory and voluntary measures to achieve the local GHG reduction target. However, the GHG emissions forecast with state and local reductions may not assume that every voluntary measure would be implemented by every project within the lead agency's jurisdiction. Therefore, a covered project's environmental analysis should clearly identify mandatory measures and evaluate relevant voluntary measures applicable to the project.

Net Zero Approach

The most conservative quantitative metric for evaluating GHG emissions impacts under CEQA is the Net Zero emissions threshold. In the context of CEQA, a Net Zero approach is defined as a no net increase threshold from baseline conditions, or a 'no impact' threshold. Achieving Net Zero emissions is equivalent to saying that a proposed project would not result in any contribution to GHG emissions impacts. This threshold is a very conservative approach under CEQA because CEQA Guidelines Section 15064.4(b)(1) is not intended to imply a zero net emissions threshold of significance; and caselaw makes clear there is no 'one molecule rule' in CEQA.[2] Despite this, the 2022 Scoping Plan identifies that absent an

[2] California Natural Resources Agency. 2009, December. Final Statement of Reasons for Regulatory Action. Amendments to the State CEQA Guidelines Addressing Analysis and Mitigation of Greenhouse Gas

adequate, geographically specific GHG reduction plan (or thresholds), Net Zero may be appropriate for some projects.[3] As a result, the Net Zero approach remains one of the most defensible thresholds for CEQA assessment, particularly for projects already preparing and EIR. However, achieving Net Zero at a project level may not be possible, resulting in significant unavoidable impacts under CEQA, and necessitating a Statement of Overriding Considerations. Projects may not be able to offset all emissions onsite (e.g., redevelopment or onsite mitigation) and there are jurisdictional limitations to implementing regional offset projects. The feasibility of applying and meeting a Net Zero threshold, therefore, depends on whether voluntary offsets are considered to be an effective tool mitigating global GHG emissions impacts. Offsets as mitigation is discussed in more detail in Chapter 4 of this paper.

Quantitative Efficiency Metric (New)

Efficiency-based CEQA thresholds are another quantitative threshold approach for evaluating GHG emissions impacts of land use projects. Efficiency-based metrics were once commonplace threshold in CEQA documents until their use was called into question following recent caselaw, including the Newhall ranch case [*Center For Biological Diversity, et al. v. California Department of Fish and Wildlife (*commonly called "Newhall Ranch") (2015) 62 Cal.4th 204.] and more recently the "Golden Door" case [*Golden Door Properties, LLC v. County of San Diego/Sierra Club, LLC v. County of San Diego* (2018) 27 Cal.App.5th 892.]. The Newhall Ranch ruling questioned the use of a state reduction target below business as usual as a CEQA project-level significance threshold without supporting substantial evidence as to why this was appropriate. Wording in the ruling quoting the California Attorney General led some to suggest that new development may need more reductions than the state as a whole, but others noted that this was not part of the actual ruling. The Golden Door ruling questioned the use of an efficiency threshold that was based on state data only, suggested that local data should be used to derive an efficiency threshold, and also suggested that thresholds need to account for variations between different types of development. While some jurisdictions continued to develop and use efficiency thresholds, many CEQA lead agencies shied away from their use due to these two rulings.

However, its use may increase once again as a 2023 court case [T*sakopoulos Investments v. County of Sacramento (2023) 95 Cal. App. 5th 280*] clarified under what specific parameters a lead agency may craft acceptable efficiency-based GHG thresholds for use in CEQA. Sacramento County's GHG thresholds were based on local data and are sector-specific, which the court found to be based on substantial evidence, and not raising the issues at stake in either Newhall Ranch case or the Golden Door case. Furthermore, the Tsakapoulos ruling stated that individual projects do not have to reduce emissions more

Emissions Pursuant to SB 97. https://resources.ca.gov/CNRALegacyFiles/ceqa/docs/Final_Statement_of_Reasons.pdf

[3] California Air Resources Board. 2022, December 15. 2022 Climate Change Scoping Plan for Achieving Carbon Neutrality. Append D, Local Actions.

than the economy as a whole reasoning that this was a not an actual finding in the Newhall Ranch ruling.

Consistency with the Scoping Plan–Best Management Practice Approach

As identified above, Section 15064.7 of the CEQA Guidelines identifies that thresholds of significance may be a performance requirement found in plan adopted for the purpose of environmental protection. The California Air Resources Board's (CARB) Scoping Plan meets this definition as it is the State's plan for achieving the GHG reduction goals of AB 1279.

Appendix D of the 2022 Scoping Plan clarifies how the plan can apply to CEQA projects for lead agencies in the state. CARB's Scoping Plan identified three "Priority Areas" that projects should focus on:

- Building Decarbonization
- Transportation Electrification
- VMT Reduction

Projects that are consistent with the Priority Areas may be consistent with the performance requirements identified in the Scoping Plan; and therefore, have less than significant impacts under CEQA. Appendix D of the Scoping Plan provides examples of how residential projects should be designed to ensure that lead agencies are providing their fair share of GHG emissions reductions to align with the state reductions in the Scoping Plan.

Consistency with the Priority Areas in the Scoping Plan is essentially a performance approach for evaluating GHG emission impacts. The performance-based approach requires implementation of Best Management Practices (BMP). In air quality terms this is akin to requiring the best available control technology for the land use available at the time of analysis.[4] Using this performance-based approach, new projects would be required to apply BMPs for the land use type that would reduce GHG emissions to the extent practicable.

Scoping Plan Appendix D Attributes

For residential and mixed-use development projects, CARB recommends demonstrating that these land use development projects align with State climate goals. These projects should be based on the attributes of land use development that reduce operational GHG emissions while simultaneously advancing fair housing.

[4] Under the National and California Clean Air Act (CAA), installation of new, modified, relocated, or replacement equipment which results in an increase of air pollution emissions are required to install Best Available Control Technology (BACT) to control air pollutant emissions.

According to CARB, the following attributes that accommodate growth in a manner consistent with the GHG and equity goals of SB 32 and AB 1279:

- Transportation Electrification
    - Provides EV charging infrastructure that, at a minimum, meets the most ambitious voluntary standards in the California Green Building Standards Code at the time of project approval.
- VMT Reduction
    - Is located on infill sites that are surrounded by existing urban uses and reuses or redevelops previously undeveloped or underutilized land that is presently served by existing utilities and essential public services (e.g., transit, streets, water, sewer).
    - Does not result in the loss or conversion of the State's natural and working lands;
    - Consists of transit-supportive densities (minimum of 20 residential dwelling units/acre), or is in proximity to existing transit stops (within a half mile), or satisfies more detailed and stringent criteria specified in the region's Sustainable Communities Strategy (SCS);
    - Reduces parking requirements by:
        - Eliminating parking requirements or including maximum allowable parking ratios (i.e., the ratio of parking spaces to residential units or square feet); or
        - Providing residential parking supply at a ratio of <1 parking space per dwelling unit; or
        - For multifamily residential development, requiring parking costs to be unbundled from costs to rent or own a residential unit.
    - Provides at least 20 percent of the units as affordable to lower-income residents;
    - Results in no net loss of existing affordable units.
- Building Decarbonization
    - Uses all electric appliances without any natural gas connections and does not use propane or other fossil fuels for space heating, water heating, or indoor cooking.

CARB 2022 Scoping Plan Appendix D identifies that projects with the attributes above clearly have a less than significant GHG emission impact and are given the *Golden Ticket* (emphasis added) to streamline their GHG emissions impact analysis under CEQA.

Residential/Commercial/Institutional Project Attributes

CARB's BMP approach in Appendix D of the Scoping Plan only looked at residential and mixed-use development projects, creating a gap for other land use project types. This white paper evaluates project attributes (or BMPs) that would be applicable for the most common land use types that would align other residential and non-residential projects with State climate goals. Our analysis is based in part on review of other Air Districts' evaluation of performance standards in light of climate goals established under SB 32 and AB 1279, including the Bay Area Air Quality Management District (BAAQMD) and the Sacramento Metropolitan Air Quality Management District (Sacramento Metropolitan AQMD).

BAAQMD conducted an assessment of the project design features needed to align with the state's carbon neutrality goals in their 2022 *GHG Justification Report,* excluding industrial projects.[5] The GHG Justification Report identified what would be required of new land use development projects to achieve California's long-term climate goal of carbon neutrality by 2045. Sacramento Metropolitan AQMD identified similar mandatory best management practices for new development. Table 1 provides a summary of the thresholds adopted by these two Air Districts.

Table 1 Adopted Air District Thresholds for Project-Level GHG Emissions Impacts

Sacramento Metropolitan AQMD	**Bay Area AQMD**

• Tier 1: BMPs Required for all Projects
  ○ BMP 1: No natural gas: Projects shall be designed and constructed without natural gas infrastructure.
  ○ BMP 2: Electric vehicle ready: Projects shall meet the current CALGreen Tier 2 standards, except all EV Capable spaces shall instead by EV Ready.
• Tier 2: BMP Required for Large or Inefficient Projects (Projects exceeding 1,100 MT/year and not meeting OPR's technical memo for VMT efficient projects)
  ○ BMP 3: 15% reduction in VMT per worker or VMT per capita compared to existing average VMT per capita for the county, or for the jurisdiction if a more local SB 743 target has been established.
	Building Energy:
	a. Building Decarbonization: Projects shall be designed and constructed without natural gas infrastructure.
	b. No Wasteful Energy. The project will not result in any wasteful, inefficient, or unnecessary energy usage as determined by the analysis required under CEQA.
	• Transportation.
	a. VMT Reduction. VMT reductions consistent with the California Climate Change Scoping Plan or meet a locally adopted Senate Bill 743 VMT target.
	b. Transportation Electrification. Achieve compliance with off-street electric vehicle requirements in the most recently adopted version of CALGreen Tier 2.

5 BAAQMD. 2022, April. GHG Justification Report. https://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqa-thresholds-2022/justification-report-pdf.pdf?la=en

The analyses conducted by BAAQMD and Sacramento Metropolitan AQMD to support use of these thresholds identified key design elements that would need to be incorporated into the project to lay the foundation for achieving carbon neutrality by 2045. While there is no current requirement to achieve carbon neutrality for each new project, projects constructed now should be designed to have the ability to be carbon neutral. For building energy use, this would include the ability to switch from natural gas to electric power and eliminate inefficient or wasteful energy usage. Electric-only developments support California's transition away from fossil fuel–based energy sources and will bring the project's GHG emissions associated with building energy use down to zero as the State's electric supply becomes 100 percent carbon free, as required by SB 100 (2018).

For transportation sources, there is no requirement to have 100 percent zero emission (ZE) or near-zero emission (NZE) vehicles. However, projects would need to be VMT-efficient and be designed to provide sufficient electric vehicle (EV) charging infrastructure to support the shift to ZE in the future. The California Green Building Standards code (CALGreen) identifies increasing more ambitious voluntary measures (Tier 1 and Tier 2) for EV charging for residential and non-residential land uses. Projects that achieve the most aggressive EV charging requirements (Tier 2) would be consistent with the state's goals. To ensure a project has a high VMT efficiency, it should achieve the Senate Bill 743 (SB 743) transportation targets adopted by the lead agency.

Pursuant to this evaluation, a new land use development project being built today needs to incorporate the following design elements to do its "fair share" of implementing the goal of carbon neutrality by 2045 and would need to include the following:

- Project Design Elements
    - *Building Energy*. Prohibit natural gas appliances or natural gas plumbing.
    - *Energy Use*. Demonstrate that the project will not result in any wasteful, inefficient, or unnecessary energy usage as determined by the analysis required under CEQA Section 21100(b)(3) and Section 15126.2(b) of the State CEQA Guidelines.
- Transportation Requirements
    - *VMT Efficiency*. Achieve a reduction in project-generated vehicle miles traveled (VMT) below the regional average consistent with the current version of the California Climate Change Scoping Plan (currently 15 percent) or meet a locally adopted Senate Bill 743 VMT target, reflecting the recommendations provided in the Governor's Office of Planning and Research's Technical Advisory on Evaluating Transportation Impacts in CEQA.
    - *EV Charging*. Achieve compliance with off-street electric vehicle requirements in the most recently adopted version of CALGreen Tier 2.

If a project is designed and built to incorporate these design elements, then it will contribute its portion of what is necessary to achieve California's long-term climate goals—its "fair share"—and an agency reviewing the project under CEQA can conclude that the project will not make a cumulatively considerable contribution to global climate change. If the project does not incorporate these design elements, then it should be found to make a significant climate impact because it will hinder California's efforts to address climate change (BAAQMD 2022).

Density and Affordability Requirements – Residential Projects

Neither BAAQMD nor Sacramento Metropolitan AQMD identify affordability as a project attribute required to ensure less than significant impacts. Appendix D of the Scoping Plan includes project attributes for density and affordability based on the ranking criteria for Housing Elements by the California Department of Housing and Community Development (HCD) that achieve a high level of affordable housing. CARB included the density and affordability attributes because of the high value the State places on housing availability and the connection between housing availability to VMT reductions. Lead agencies may want to consider these additional attributes when evaluating consistency with the 2022 Scoping Plan.

The density and 20 percent affordability requirements set a high bar for affordability for residential projects that may not be achievable by most residential or mixed-use projects. Because a performance-based approach to evaluating GHG emissions impacts should be achievable for most projects, this white paper also evaluated how lead agencies could evaluate consistency with the state's housing goals to achieve the Priority Attribute for VMT reductions:

- **Consistency with a Certified Housing Element.** Projects within jurisdictions that have a "substantially compliant" housing element that has met or exceeded its share of regional housing need for the types of housing the project would provide (Gov't Code 65589.5[d][1]) may not need to meet the density or 20 percent affordable housing requirement so long as the CEQA document can substantiate that the proposed project would contribute to the jurisdiction's regional housing needs.

- **VMT Offsets for Housing Density and Inclusionary Housing Requirements.** For projects in jurisdictions without a substantially compliant housing element, the VMT reductions from the difference in density and/or 20 percent inclusionary housing requirement should be quantified to determine the potential additional GHG emissions offsets needed.

Industrial/Warehouse Projects

BMPs to date have addressed typical land use development, specifically residential, mixed-use, and commercial land uses. Currently, there are no industrial or warehouse BMPs established by an expert agency within California. Because CEQA GHG thresholds have

been challenging for over a decade and because BMPs are being successfully applied in CEQA analyses, the AEP Climate Change Committee developed a subgroup to understand what industrial/warehouse BMPs would be appropriate. The key actions for our subgroup were to review current warehouse-specific best practices and typical mitigation measures and discuss with industry stakeholders to understand feasibility and constraints. We spoke with various stakeholders including industrial/warehouse developers (both big and small), energy experts, architects, and EV charging experts, and we extend our appreciation to these experts for sharing their valuable insight.

The following industrial/warehouse BMPs are recommendations as a result of this research effort and should not be applied as requirements in CEQA analysis, but considerations to feasibly reduce GHG emissions from industrial projects. The recommendations are grouped into four categories: Site Design – Building Energy, Site Design – Transportation and Equipment, Site Design – Urban Heat Island, and Tenant/Operator Commitments. For recommended BMPs, sources and notes were added to provide additional context.

Of note, BMPs are a moving target and work best when regularly reviewed and updated as appropriate to reflect current technology and ensure progress beyond code compliance (e.g., every 5 years). BMPs also need to be feasible, while stringent, else they provide no functionality. The recommendations provided below reflect a current plan based on what is feasible today while pushing the envelope to support future GHG reduction goals.

Recommendations

Site Design – Building Energy

Building Electrification: Project structures shall be designed and constructed without natural gas. This element does not apply to emergency backup power or project features outside of the building envelope.

> ***Sources:*** *BAAQMD, SMAQMD, and CARB*

Solar Power (or another on-site source). Projects shall be designed to include on-site distributed generation technologies (e.g., solar, wind) that generate sufficient power to match 100% of the Project's annual average building energy budget, as defined by the California Energy Code (i.e., space-conditioning, indoor lighting, mechanical ventilation, service water heating, and covered process loads). No exceptions shall be sought under Title 24, Part 6, Section 140.10.

> ***Source:*** *Based on developer feedback and consultant professional experience (not regulations). This approach is also consistent with the California Energy Commission's Integrated Energy Policy Report forecasting for 2030 and beyond.*

Solar Power. Projects shall be designed to include on-site distributed generation technologies (e.g., solar, wind) that generate sufficient power to match 100% of the Project's annual average building energy budget, as defined by the California Energy Code

(i.e., space-conditioning, indoor lighting, mechanical ventilation, service water heating, and covered process loads). No exceptions shall be sought under Title 24, Part 6, Section 140.10.

> ***Source:*** *Based on developer feedback and consultant professional experience (not regulations). This approach is also consistent with the California Energy Commission's Integrated Energy Policy Report forecasting for 2030 and beyond.*

Battery Storage. Provide a battery storage system with a rated energy and power capacity per the current California Building Energy Efficiency Standards and based on the annual power generation from any on-site distributed generation technologies. *No exceptions may be sought under Section 140.10(b).*

> ***Source:*** *Research and code review.*

Electrical Room Sizing. To ensure that warehouse electrical rooms are sufficiently sized to accommodate the potential need for additional electrical panels, either a secondary electrical room shall be provided in the building, or the primary electrical room shall be sized 25% larger than is required to satisfy the service requirements of the building or the electrical gear shall be installed with the initial construction with 25% excess demand capacity.

> ***Source:*** *City of Fontana Ordinance (verbatim), AG Warehouse Best Practices (including the 25%).*

Warehouse Dock Seal Doors. Exterior loading dock doors that are adjacent to conditioned or indirectly conditioned spaces shall have dock seals or dock shelters installed at the time of permitting. *(CALGreen Tier 2)*

> ***Source:*** *CALGreen Tier 2. Consultant project experience.*

Recommendations – Site Design – Transportation and Equipment

Onsite Equipment Infrastructure. Project should provide dedicated charging infrastructure to support electric-power onsite equipment (e.g., cargo-handling equipment).

> ***Source:*** *Consultant project experience (typical Project Design Feature or Mitigation Measure).*

Employee Light-Duty Vehicle Electric Vehicle Chargers. For employee parking spaces, provide Electric Vehicle Charging Stations and Electric Vehicle Capable spaces per CALGreen Non-Residential Voluntary Tier 2 Standards.

> ***Source:*** *BAAQMD, revised to specify only chargers and capable (not clean air vehicle designated).*

Note: *Fontana Ordinance has "At least 10% of all passenger vehicle parking spaces shall be electric vehicle (EV) ready, with all necessary conduit and related appurtenances installed. At least 5% of all passenger vehicle parking spaces shall be equipped with working Level 2 Quickcharge EV charging stations installed and operational, prior to building occupancy."*

In consideration: ZEV requirements for operational light-duty fleets

Truck Electric Vehicle Chargers and Infrastructure:

- **Conduit.** At buildout, provide one EV-capable space equipped with four 4-inch empty conduit for every 250,000 square feet of single building warehouse space (rounding up) to provide truck EVCS to meet future needs. Location of conduit is at discretion of the developer (e.g., truck trailer parking spaces or docking stations).

  Notes: *No circuitry required*

  Example: *1,000,000 square foot warehouse would require 4 truck EV-capable spaces.*

  Source: *AEP CCC professional experience.*

- **Truck Electric Vehicle Charging Stations.** At buildout, for facilities 500,000 square feet and over, for each 500,000 square feet of single building warehouse space (rounding up), include one truck EVCS. (e.g., 1,000,000 square foot warehouse would require two truck EVCS).

  Exemption: An exemption can be granted if the local utility provider cannot support projected electricity demand, the local utility provider can support projected electricity demand but at an exorbitant cost and infrastructure updates, and/or if alternative technology is available that achieves the same GHG emission reduction.

- **Additional Requirements for Domiciled Trucks.** At tenant operation, if there are domiciled heavy-duty trucks (Class 7 and 8), the tenant/operator of the facility shall be required to provide electric charging facilities on site sufficient to charge all electric trucks domiciled on the site, and such facilities shall be made available for all electric trucks that use the facility, to the extent the applicable utility authorizes and has capacity to support.

  Domiciled on site" means the vehicle is either (i) parked or kept overnight at the facility more than 70% of the calendar year or (ii) dedicated to the facility site (defined as more than 70% of the truck routes during the calendar year that start at the facility site even if parked or kept elsewhere).

  Source: *AEP CCC professional experience and understanding.*

- **Transport Refrigeration Unit Plug-Ins.** 100% of the loading dock doors that have the potential to serve the refrigerated warehouse space shall have electric plug-in units to allow for TRU plug-ins, as applicable.

  Sources: *AG Warehouse Best Practices. City of Fontana Ordinance, City of Redlands Ordinance, City of Perris Good Neighbor Guidelines*.

- **Zero-Emissions Transport Refrigeration Units**: Trucks serving the site shall use TRUs and auxiliary power units that are electric plug-in capable and shall provide a notice on the lease or title to all new tenants or owners to use TRUs and auxiliary power units that are electric plug-in capable.

Recommendations – Site Design – Urban Heat Island

Trees. Trees shall be installed in automobile parking areas to provide at least 35% shade cover of passenger vehicular parking areas within fifteen years. Trees shall be planted that can meet this requirement. Consider exempting the tree cover requirements for parking areas If parking is covered by solar canopies.

> ***Source:*** *AG Warehouse Best Practices (including the 35% and 15 years). Revised to specify passenger areas to avoid planting requirements in truck courts, which is not feasible/best practice*.

Cool Surfaces. Cool surface treatments shall be added to all drive aisles and parking areas, or such areas shall be constructed with a solar-reflective cool pavement such as concrete.

> ***Source:*** *City of Fontana Ordinance (verbatim), AG Warehouse Best Practices similar*.

Recommendations – Tenant/Operator Commitments

Idling Time Restriction. Anti-idling signs indicating a 3-minute diesel truck engine idling restriction shall be posted along entrances to the site and in the dock areas and shall be strictly enforced by the facility operator. A sign shall be posted with a phone number to provide complaints if non-compliance is suspected.

> ***Source:*** *AG Warehouse Best Practices (including 3 minutes) (other city/county guidelines reference 5 minutes). Consultant project experience (typical PDF or MM)*.

Transport Refrigeration Unit Plug-In Use. Truck operators with TRUs shall be required to utilize electric plug-in units when at loading docks if capable.

> ***Sources:*** *AG Warehouse Best Practices, City of Perris Good Neighbor Guidelines*.

Offroad Equipment. For all onsite interior and exterior equipment (e.g., forklifts and yard trucks), tenant/operator of the Project shall only use electric-power, hydrogen fuel cell, or other zero-emission equipment.

> ***Sources:*** *AG Warehouse Best Practices, City of Fontana Ordinance, City of Perris Good Neighbor Guidelines, County of Riverside Good Neighbor*.

Solar Power (or Another On-Site Renewable Energy Source) at Tenant Operation. Future tenant improvements to the Project shall include distributed generation technologies (e.g., solar, wind) that generate sufficient power to match 100% of the additional annual average building energy budget, as defined by the California Energy Code (i.e., space-conditioning, indoor lighting, mechanical ventilation, service water heating, and covered process loads), resulting from those proposed tenant improvement(s). No exceptions shall be sought under Title 24, Part 6, Section 140.10.

Considerations For Truck Electrification

The AEP Climate Change Committee met with industry experts including electrical engineers, logistics developers, and staff from the California Air Resources Board with the purpose of determining what is currently feasible for heavy duty truck fleet electrification. During these meetings it became clear quickly into the research effort process that the key topics were electrification and EV trucks chargers. There are numerous considerations and considerable challenges associated with electrifying warehouse emission sources, which are summarized below for considerations in applying or revising warehouse BMPs.

Support for including EV truck chargers at individual warehouse site. Support for including EV truck chargers at warehouse sites include that truck electrification is a key part of CARB's Scoping Plan to achieve carbon neutrality. Another key reason is establishing infrastructure helps alleviate range anxiety, which can lead to quicker EV truck adoption.

Reasons to not include EV truck chargers at individual warehouse site. Challenges associated with EV truck changing include technology, commercial availability, scheduling logistics and business model, the future of hub-charging, and utility cost structure. Each of these challenges are expanded on below.

> **Technology.** EV could be difficult in long haul trucks due to charging time and weight restrictions. Truck batteries weigh 4,000 pounds each and each truck requires two batteries. Given weight restrictions on roads, this means trucks may not be able to travel with full trailers. There are no currently limited long-distance charging stations, which would be required every 200 miles on long distances. We are currently in the early stages of technology adoption. EV may not become the dominant technology for some truck types (like long haul). Hydrogen is being explored as an alternative for longer distances because they are lighter trucks and they are faster to refill versus electricity, but they require substantial refueling infrastructure (pipes or additional trucks to supply hydrogen). In addition, while light-duty vehicle chargers have

been relatively standardized, there are still differences in truck charges models today that raise questions on what technology charger to purchase and install, especially if the technology becomes dated before the trucks are employed.

Commercial Availability. While technology is always evolving and the market responds appropriately, at the time of the research and outreach effort, some quotes for new electric trucks were 12 to 24-months and it was estimated that electric trucks are not yet available in quantifies to replace the fleet in Southern California. New electric trucks are also more expensive that diesel trucks, which can add up for fleet owners.

Scheduling Logistics and Business Model. Who controls the truck fleet is a valid question for warehouse projects, which may not be known at the CEQA stage given that many warehouse projects are spec and the future tenant is unknown. It is common that third parties operate the trucks, which leads to little operational control for the warehouse operator. The typical warehouse business model assumes the amount of time to fuel a diesel truck, which may be around 15 minutes, compared to the amount of time to charge an electric truck, which may be a minimum of 1.5 hours to reach 80% depending on the technology. During our conversations with warehouse operators, it was expressed that daily business needs to be conducted on one charge meaning that a truck needs to travel from origin to destination and back to the origin in one charge else an operator would not currently schedule the trip route. In addition, with truck charging stations being currently limited and focused near major transport hubs and ports, not all travel routes have charging options along or nearby the route.

Public Hub Charging or Private Onsite Charging. There are uncertainties regarding the future of charging and if public hub charging or private on-site charging will be the preferred option for the industry. While the concept of hub charging has many advantages, there are still feasibility challenges. For example, a tremendous amount of power is required for hub-charging, and it is questionable how many sites within California can currently meet the electricity demand without additional infrastructure such as a substation. The suitable location for hub charging is dependent on entitlement and infrastructure, but predominantly available power. In highly urban and developed areas, land parcels large enough may be difficult to find. For areas where large parcels are available, they may lack the infrastructure and power distribution to serve large charging facilities. While hub charging has been demonstrated to be feasible, appropriate siting is a hurdle for rapid development of a hub charging to meet the needs for the goods distribution system within the State.

For on-site charging, the technology has not been determined yet if chargers will be plug-ins at doors or need to be a unit a truck can pull through, but, in either scenario, the ability to serve a site will be dependent on the power that is available to the site. A potential undesirable outcome is that builders may install expensive infrastructure that may never be used, which can be wasteful and detract from available energy in the utility area.

Utility Cost Structure. Electric utilities can subsidize the cost of transformers based on planned energy usage from a building. However, if the amount of electricity anticipated is not used, the utility companies can require that the building owner reimburse the utility for the unused power. As noted above, many warehouse developments are spec, meaning that the future tenant and use is unknown; therefore, there is a potential unforeseen expense for trying to guess how much power truck charging will require for a speculative development based on the current utility cost structure.

Electric Grid Constraints and Cost. Currently, there are substantial concerns about electric grid capacity to charge multiple electric trucks at individual sites. This concern is anticipated to be alleviated in the future as it is key to meeting State carbon neutrality goals; however, it presents a significant challenge for today. In addition, there is the potential for substantial cost associated with transmission infrastructure (e.g., high-voltage lines, substations) to meet power demand for electric truck charging. The amount of power demand on day one of occupancy compared to a future new tenant occupancy can also change.

Uncertainties About Future Adoption. Finally, there are considerable uncertainties about if electric trucks will be the predominant truck solution in the future that would yield reduced GHG and criteria air pollutant emissions. Considering the complexities explored during their research and outreach effort, a one-size-fits-all approach may not be a reasonably foreseeable outlook.

Downside of BMP Approach

While BMPs or key land use attributes have been successfully applied and are serving as a viable GHG threshold option in CEQA, as with most GHG thresholds, this it not a one-size-fits-all solution. The BMP threshold approach works best when they are tailored to specific land uses, but there will always be unique land uses that BMPs will not apply to, so it will not work for every project. A disadvantage of BMPs is that they can get outdated as GHG emissions are a moving target and building code updates often require GHG reduction strategies we previously considered were beyond requirements. The inflexibility of many BMP thresholds may not incentivize achieving them and can result in significant and unavoidable impacts that could otherwise be avoided. Lastly, as of the writing of this White Paper, recent BMPs have not been specifically tested in case law yet, which may reflect a generally positive reception to the approach, but also that they are untested.

Plan-Level GHG Thresholds

Plan-level CEQA documents, such as general plans, should consider the quantitative thresholds identified in AB 1279, which is an 85 percent reduction in anthropogenic direct emissions by 2045 from 1990 levels. Please refer to Chapter 3, quantified CAP Targets, as the thresholds applicable for climate action planning would also be applicable for general plans.

CHAPTER 3
Qualified CAP Targets

Local CAPs to Accomplish GHG Reduction Fair Share

Local and regional governments, including cities, counties, and councils of governments, play a crucial role in assisting the State in achieving the 2030 and 2045 reduction goals through climate action planning representing their fair share contribution of overall needed State GHG emissions reduction. In order to mitigate communitywide GHG emissions associated with a city- or countywide general plan update and demonstrate fair share of Statewide reduction, municipalities often require the adoption and implementation of a CEQA-qualified communitywide GHG reduction plans or CAPs as part of their general plan update CEQA analysis and determination. In addition, municipalities often prepare CAPs to simply provide a reduction plan related to GHG emissions and corresponding global climate change at a local level.

Climate action plans (CAPs) and climate action and adaptation plans (CAAPs) have the ability to assist local government in protecting the health and welfare of the communities. Local governments can customize GHG reductions to fit within the character and context of the communities they serve. CAPs and CAAPs also provide localized co-benefits to local government operations and the community.

Local agencies have discretion in how they approach the development of a Climate Action Plan (CAP). CAPs may also include an adaptation component in which case they may be characterized as a Climate Action and Adaptation Plan (CAAP). An agency may choose to prepare a “CEQA-Qualified” CAP or CAAP that involves meeting the standards in CEQA Guidelines Section 15183.5 and offers the benefit of streamlining the GHG analysis of subsequent projects. Alternatively, agencies may prepare a policy document that outlines their vision and overall strategy to achieve GHG reductions. There is no legislative or statutory requirement for an agency to prepare a CAP/CAAP or specifically a CEQA-Qualified plan, therefore, agencies make decisions on the appropriate pathway based on their growth patterns, available resources, and other needs.

As noted above, CEQA-Qualified CAPs facilitate streamlined environmental review of GHG emissions for subsequent projects consistent with the CAP. CEQA Guidelines allow flexibility in how consistency with a CAP is determined. Generally, if a project is consistent with the growth projections underlying a CAP’s GHG forecast and if it incorporates all applicable CAP strategies and measures, it can be determined to be consistent with the CAP. A CEQA-Qualified CAP and streamlining framework, such as a consistency checklist, can offer predictability and certainty in the GHG assessment of projects for project proponents. Because universally applicable GHG thresholds do not exist in most parts of California, a CEQA-Qualified CAP can be a viable option for high-growth jurisdictions that

anticipate processing a large number of development projects on an ongoing basis. This can be even more critical given the State's long-term GHG reduction goals and the potentially litigious nature of the issue of GHGs in California. On the other hand, CEQA review for a CAP can introduce the risk of litigation into the process. Preparing and processing CEQA documents is a resource-intensive process, and some jurisdictions may choose to allocate such resources to CAP implementation or other GHG reduction programs. In addition, for jurisdictions that process a wide variety of projects, it may be challenging to develop a single consistency checklist that applies to all project types. The utility of a CEQA-Qualified CAP may be limited in those cases. CEQA-qualified CAPs may also be better positioned to receive state funding and technical support.

Agencies may choose to prepare a non-CEQA-Qualified CAP that is aimed at identifying policies to reduce GHGs. It is recommended that these CAPs still follow best practices for quantifying baseline emissions, emission projections, and quantification of potential emission reductions from policies in the CAP. The policy framework can inform the agency's workplan and budgeting process to implement individual measures or actions that meet the intent of identified policies. This approach can provide agencies with more flexibility to focus on policy levers that are within their influence or control. Such a CAP would not provide streamlining benefits for future development. Future development projects would need to assess GHG emissions individually. While projects could not use the CAP for streamlining, a non-qualified CAP still provides the jurisdiction with important information about its emissions and a menu of policies that developers may use for project planning that have been vetted with local decision-makers. In addition, if a CAP follows best practices for emissions quantification, the robust underlying data can be used to develop local GHG thresholds of significance that can be used for projects' analyses.

A key takeaway of this section is that the type of CAP to develop is at a jurisdiction's discretion. The factors outlined above should be considered in making this determination. Agencies may also choose a path and determine that an adjustment is needed based on local factors. Ultimately, because there is no legislative or regulatory requirement to prepare a CEQA-Qualified CAP, agencies should choose an option that maximizes their resources and benefits the community.

Finally, CAPs and CAAPs have the ability to streamline the CEQA GHG emissions analysis for new or remodeled development projects if the CAP or CAAP meets the criteria laid out in CEQA Guidelines Section 15183.5.

Establishing CAP Baselines (GHG Inventories)

GHG emission inventories are developed to provide a baseline from which GHG emission reductions can be measured. These inventories provide information on the sources of GHG emissions, including the magnitude of each source type and diversity of sources within the jurisdictional area of the CAAP. GHG source identification is integral in the development of reduction measures. GHG emission inventories also provide a baseline on which reduction targets are developed, and success (or the lack thereof) in reducing

emissions is monitored. Finally, GHG emission inventories provide a baseline on which forecasts of GHG emission growth into the future is developed for the CAP. There are three types of inventories found within CAPs, which are production-based inventories, consumption-based inventories, and nature-based inventories.

Production-Based Inventories

Production-based inventories are inventories of GHG emissions focused on the sources that generate GHG emissions within the direct or indirect control of a local jurisdiction. Production-based inventories follow the same format and many of the same sources of emissions that CARB has developed for the State. Because of this, production-based inventories are consistent with State reduction goals, which allows local jurisdictions to develop CAP reduction targets consistent with State reduction goals.

There are two types of production-based inventories within CAPs, municipal inventories and community-wide inventories. Municipal inventories have a limited focus of emission sources associated with city or county owned and/or operated buildings and facilities, vehicles, equipment, employee commutes and other activities associated with the operation of the local jurisdiction.

Community-wide inventories consist of GHG emissions associated with sources within the communities that the city or county has jurisdictional control. These typically include residential, commercial, institutional, and industrial land uses and the infrastructure that connects those land uses. Note that there is a significant overlap between municipal inventories and community-wide inventories. Typically, a city will have all of its buildings, facilities, and activities occurring within the same jurisdictional area as the community. Therefore, community-wide inventories will include the entirety of the municipal inventory for cities. On average municipal inventories make up approximately one to two percent of the community-wide inventory of emissions.

Consumption-Based Inventories

CAPs always include production-based GHG inventories, which focus on emissions produced within an established geographic boundary, like a city or county.[6] These inventories help establish an emissions baseline and inform emissions projections in future years. GHG reduction targets are also typically set relative to a baseline inventory to align with the State's 40% and 85% reduction goals for 2030 and 2045, respectively.

Consumption-based GHG inventories (CBIs) account for emissions based on the consumption of goods and services by a population, regardless of where those goods and services are produced. This approach tracks the carbon footprint of all the activities associated with consumption within a given area, including production, transportation, use, and disposal of products. This inventory type is similar to a lifecycle assessment,

6 Plus, imported energy related emissions.

wherein the emissions of the "life" of the good or service are evaluated, regardless of where those emissions occur. This approach provides a more comprehensive picture of the emissions generated from the jurisdiction, rather than only those generated within its borders. Conducting a consumption-based inventory may be useful to complement the production-based inventory and can lead to more effective climate policies, greater consumer awareness, and a more equitable distribution of climate responsibility. Integrating these inventories into CAPs enhances the comprehensiveness of climate action strategies and promotes global emission reductions.

Consumption-based inventories (CBIs) are not required in a CAP. If consumption-based inventories are included, they should be clearly presented as a supplemental or complementary section. This ensures that production-based inventories remain the core focus, consistent with the California Air Resources Board (CARB) standards. However, including CBIs allows jurisdictions to highlight opportunities for broader behavioral or policy changes, such as reducing consumption, supporting circular economies, and promoting sustainable purchasing by residents, companies, and municipalities.

As an example, The Yolo County Climate Action and Adaptation Plan (CAAP) Update includes a CBI that is separate from the production-based inventories. In this example, the CBI shows various emission sources per household within the unincorporated County area. The CBI is not included in the forecasting or target setting for the CAAP Update. Rather, the CBI for Yolo County is used to inform residents of their own carbon footprint. In addition, the Yolo County CAAP Update includes reduction measures focused on educating households on how they can reduce their carbon footprint. Using a CBI in this way and keeping it separate from the production-based inventories allows the County to implement, monitor, and compare progress to the reduction targets associated with the production-based inventories consistent with Statewide strategies and goals, and at the same time, provides the residents of the County a way to evaluate and reduce their own carbon footprint using the CBI and CBI education programs as their guide.

For more information on consumption-based inventories, please see the 2017 AEP White Paper titled "Lifecycle CEQA CAPs: Production, Consumption and Lifecycle Greenhouse Gas Inventories: Implications for CEQA and Climate Action Plan."

Nature-Based (Natural and Working Lands) Inventories

Nature-based inventories are a relatively new set of inventories that CAPs may include. The 2022 Scoping Plan introduced the concept when it recommended that local jurisdictions take inventory of emission sources and sinks associated with natural and working lands under their jurisdictional control. The concept was to review the carbon sequestration potential of crops and orchards within agricultural land uses (working lands) and sequestration potential of natural lands as well as emissions sources such as freshwater wetlands. The goal is to preserve and enhance the sequestration potential of natural and working lands.

Overview of CAP Target Setting

This section provides an overview of legislation, case law, and resources informing GHG reduction targets for climate action planning, methodologies for setting CAP targets, and considerations given the State's long-term net zero GHG emissions goal.

Target Standards for Qualified CAPs

For a CAP to be deemed "qualified" pursuant to CEQA, it must include a target that meets several criteria. Beginning with requirements under CEQA, CEQA Guidelines Section 15183.5(b)(1) states that a CAP must set a target which represents a cumulatively significant contribution to GHG emissions, based on substantial evidence ("Establish a level, based on substantial evidence, below which the contribution to greenhouse gas emissions from activities covered by the plan would not be cumulatively considerable.")

But how can one know whether a target represents a level of cumulative significance? What metrics can an agency or practitioner use to judge whether a target identifies a level of GHG emissions that CEQA would consider cumulatively considerable? One reliable option is to pick a target that "aligns" with or is "consistent with" State targets. The CEQA Guidelines specifically state that a lead agency may consider consistency with state goals and strategies to determine whether a project's GHG emissions are significant, provided substantial evidence supports the analysis of how those state goals and strategies address the project's incremental contribution. (§15064.4(b)(3): "In determining the significance of impacts, the lead agency may consider a project's consistency with the State's long-term climate goals or strategies, provided that substantial evidence supports the agency's analysis of how those goals or strategies address the project's incremental contribution to climate change and its conclusion that the project's incremental contribution is not cumulatively considerable.")

The relevant State climate goals and targets are: 1) SB 32, which identifies a single 2030 target of 40 percent below 1990 levels; and 2) AB 1279, which identifies two targets for 2045: a reduction in direct anthropogenic emissions that is 85 percent below 1990 levels, and carbon neutrality. A qualified CAP should select a 2030 target that aligns with SB 32 and a 2045 target that aligns with AB 1279. A CAP that does this would also align with CARB's 2022 Scoping Plan. What does "align with" mean in this context? A CAP must correlate local conditions to statewide targets. For most CAPs, this means setting the same targets as the state or adjusting the targets to consider a local baseline different from 1990 (since many jurisdictions do not have a reliable 1990 GHG inventory).

The California Supreme Court has upheld the use of GHG emission targets that are based on CARB's Scoping Plan in determining the significance of project impacts, provided the environmental document demonstrates how the project's emissions reductions correlate to the state goal. Center for Biological Diversity, 62 C4th at 223; and Golden Door Props. v County of San Diego (2018) 27 CA5th 892. See also Golden Door Props. v County of San Diego (2018) 27 CA5th 892. The CEQA Guidelines similarly state that a lead agency may

consider consistency with state goals and strategies, provided substantial evidence supports the analysis of how those state goals and strategies address the project's incremental contribution. §15064.4(b)(3). Consequently, lead agencies and practitioners seeking to rely on state plans or studies should consider whether some correlation to local conditions must be provided as part of the analysis.7 In this context, to "correlate" means that a CAP should consider several factors to adequately adjust statewide targets: 1) the GHG emissions sectors over which the jurisdiction has authority to regulate, control, or substantially influence, relative to the full suite of statewide GHG emissions sectors; 2) the year(s) for which local GHG emissions inventories and projections are available; 3) emissions intensities of local emissions sectors, compared to statewide intensities; and 4) the historical rate of growth and future projected growth in GHG emissions within the jurisdiction. Each consideration is discussed in detail below.

A local jurisdiction may select GHG emissions sectors over which it has authority to regulate, control, or substantially influence, when considering CAP targets. A qualified CAP need not include GHG emissions from sources over which the local jurisdiction has no control, such as large stationary sources like electricity power plants regulated by Cap-And-Trade, aircraft emissions regulated by the FAA, or military emissions regulated by the Department of Defense. A CAP may adjust its targets to apply only to the CAP's "covered" sectors, based on sector-specific goals and targets specified by the state, such as in CARB's 2022 Scoping Plan.

A CAP may need to adjust its targets to reflect a baseline that differs from the State's baseline of 1990 levels. This is because a local jurisdiction may not have a reliable 1990 GHG inventory or back-cast of emissions. As such, a CAP may adjust a baseline such as 2005 or 2010 levels to a 1990-level-equivalent using statewide trends data in sector-specific emissions rates when considering #1 above. For example, Statewide emissions in 2005 were approximately 11 percent higher than in 1990, so SB 32's 2030 target of 40 percent below 1990 levels is roughly equivalent to 46 percent below 2010 levels.[8]

A jurisdiction may want to adjust its local target to reflect a particular emissions intensity, such as one correlated with statewide targets. For example, SB 32's 2030 target is 258.6 MMTCO2e, which is approximately 6.6 MTCO2e per statewide population based on the latest 2030 projections.[9] A CAP may include an emissions intensity target instead of a target based on a jurisdiction-wide baseline like 1990 or 2005 levels. However, care should be taken to adjust for local emissions sectors, as discussed in #1 above.

A jurisdiction may want to consider its historical growth in development, population, and employment when considering a target; similarly, it may want to consider its future growth in these metrics when setting a target. This is because the jurisdiction may have

7 Practice Under the California Environmental Quality Act (2d ed. Cal. CEB 2023) §20.81A

8 California Air Resources Board, 2023. *California Greenhouse Gas Inventory for 2000-2021 — by Category as Defined in the 2008 Scoping Plan.* December 13. Available at California Greenhouse Gas Inventory for 2000-2021 – by Category as Defined in the 2008 Scoping Plan. Accessed February 2024.

9 State of California Department of Finance, 2023. *P-1: State Population Projections (2020-2060)*. July. Available at https://dof.ca.gov/forecasting/demographics/projections/. Accessed February 2024.

substantially different growth projections from the state. For example, a jurisdiction with very little past and future projected growth may need a lesser reduction compared to 1990 levels than statewide targets if California's projections outpace those of the jurisdiction. Conversely, a jurisdiction with historical and future projected growth in population, employment, and economic activity (i.e., GHG emissions) that outpace California may need a greater reduction compared to 1990 levels than statewide targets to account for such increased growth.

Net Zero

AB 1279 expanded the State's climate action goals to achieve net zero carbon emissions or be "carbon neutral" and ensure that statewide anthropogenic emissions (e.g., emissions from burning fossil fuels, land use development) are reduced to at least 85% below 1990 levels by 2045. The 2022 CARB Scoping Plan lays out a plan to achieve carbon neutrality through reducing anthropogenic emissions except in some of the hardest to reduce sectors (such as industrial uses) and then increasing carbon capture and sequestration (CCS) from industry and electric sectors, carbon dioxide removal (CDR) from natural and working lands (NWL) and direct air capture (DAC), and bioenergy with CCS (BECCS).

There is great diversity among California cities and counties. Many cities lack substantial natural and working lands, which are centered in rural portions of the state. Industrial uses are focused in certain specific cities and corridors, such as the refineries along the northern part of San Francisco Bay and the Alameda Corridor associated with the Ports of Long Beach and Los Angeles in southern California. Consequently, the opportunities for CCS for industry and CDR from NWL are not evenly distributed across the many California jurisdictions. Furthermore, the regulatory regime for industrial uses and for natural and working lands is very different than that for residential and commercial land uses. There is state and even federal regulation of large industrial sources, and most local jurisdictions leave regulation of their emissions to the state and the federal government. Agricultural use, as a general rule, in most parts of the state, is by right and few, if any, local jurisdictions are willing to regulate agricultural use in any controlling way. Timberland is primarily regulated at the state level. Thus, many cities and counties with industrial use and natural and working lands, are not politically able or willing to mandate CCS or CDR from NWL. A number of counties have been willing to work with agriculture in a cooperative way, supporting voluntary practices to increase CDR from farmland and rangeland, but these voluntary measures are less certain in their ability to guarantee specific amounts of GHG reductions. Given the current federal environment, the state government is the primary actor in requiring CCS from industry and electric sectors and CDR from NWL.

Consequently, the relevant goal for local climate action plan from AB 1279 is the goal for an 85% reduction below 1990 levels by 2045. Some jurisdictions, for example LA County and the City of San Francisco in their latest CAPs, have adopted a net zero goal for 2045. However, the focus of their plans is actually on achieving 85% reduction in anthropogenic emissions with more of an aspirational goal for achieving net-zero emissions by 2045.

This does not mean that jurisdictions should not do what they can within their ability to help move toward net-zero emissions, such an increasing carbon sequestration within the NWL within their jurisdictions, likely through voluntary measures, or assisting industry and electric sectors when adopting CCS (though the regulatory means will likely from the state)/

85 Percent below 1990 Levels

As described above, it is recommended that CAPs include a 2045 target aligned with the State target of 85% below 1990 levels. Only a few local jurisdictions have actual 1990 GHG inventories and thus most jurisdictions will need to estimate their 2045 target using a proxy year for 1990 emissions in order to establish the 85% reduction target. The most common approach is to establish a proportional target using the jurisdictional emissions corresponding to a year in which state GHG emissions were approximately the same as 1990 emissions as shown in Example One.

Example One

- CARB established that the goal for AB 32, which was to return GHG emissions to 1990 levels (which CARB identified was 431 MMTCO2e) to 2020 levels.

- The state's GHG emissions in 2013, 2014, and 2015 were 431.4 MMTCO2e, 428.1 MMTCO2e, and 426.8 MMTCO2e, respectively. 2013 was the year with GHG emissions closest to the established 1990 level, but 2014 and 2015 were within 1 percent of the 2013 level.

- Consequently, a jurisdiction could select one of these three years as a base year roughly equivalent to 1990. Imagine that the City of Santa Carla's emissions are 200,000 MTCO2e fin 2013.

- If the jurisdiction has an inventory for one of those years, than a 2045 target would be 85% below the GHG emissions for that year. In this example, the 2045 target for Santa Carla would be 30,000 MTCO2e.

- If the jurisdiction does not have inventory for one of those three years, it could backcast or forecast from the inventory for its closest year to one of those years, using local socioeconomic data such as population, households, employment, or other metrics.

- Imagine that Santa Carla did not have an inventory for 2013 to 2015, but did an inventory in 2017 and had 220,000 MTCO2e GHG emissions. Assume that population and employment were nominally 10% higher than in 2013, then a backcast to 2013 would be 200,000 MTCO2e and then the 2045 target would be 85% below that level or 30,000 MTCO2e.

Given the anomalous economic and activity conditions during the COVID-19 pandemic, inventories from 2020 or 2021 should not be used as the basis of target setting or backcasting GHG emissions to an earlier year. For jurisdictions who do not have a GHG inventory until after 2022, a different approach could be used as shown in Example 2

Example Two

- Identify the state's GHG target for 2045, which is 85% below 431 MMTCO2e, or 64.7 MMTCO2e.

- Identify the base year for the jurisdiction's latest inventory and the emissions for that year. For this example, assume Santa Carla has 2022 GHG emissions of 180,000 MMTCO2e.

- Identify the state's GHG emissions for the base year and the reductions needed to meet the 2045 target. For 2022, state emissions were 371.1 MMTCO2e. In order to meet the AB 1279 reduction target, state emissions would have to be reduced by 82.6% to meet the 2045 target.

- Apply the percent reduction (in this example 82.6%) to the Santa Carla's inventory to identify a 2045 equivalent goal of 30,000 MTCO2e.

While the examples above all ended up with the same 2045 goal, in reality, there would likely be some differences depending on which method is used. However, the importance is not to derive the "perfect" 2045 target (perfection is unattainable), but rather to establish an approximate goal by which to measure the jurisdiction's progress to supporting meeting the overall state targets for GHG reductions.

Role of Sequestration in Natural and Working Lands

The California legislature has acknowledged that natural and working lands (NWLs) are critical to the state's climate goals and ability to achieve carbon neutrality. Executive Order (EO) N-82-20 directed the California Natural Resources Agency (CNRA) to develop the *Natural and Working Lands Climate Smart Strategy* as a framework to advance the carbon neutrality goal through nature-based solutions. Further, under direction of AB 1757, the CNRA, in collaboration with CARB, other state agencies, and expert advisory committee (EAC), developed targets for natural carbon sequestration and nature-based climate solutions to reduce GHG emissions in support of state goals. In response to EO N-82-20 and AB 1757, the 2022 Scoping Plan proposed a target of -4% total carbon stock change by 2045 from baseline 2014 conditions within the state's NWLs (CARB 2022).

While it's clear that NWLs present unique opportunities to achieve the state's long-term climate goals, CARB modeling conducted for the 2022 Scoping Plan indicates that these lands are projected to be a net source of emissions (i.e., releasing more CO_2 emissions than they store) through 2045. Decrease in California's NWL carbon stocks are historically driven by human activities, such as land use change, and natural disturbances, such as wildfire and drought. To ensure the state's NWL sector becomes a reliable sink of carbon (i.e., sequestering and storing more atmospheric CO_2 than released), requires increased pace and scale of climate smart land management (CARB 2022).

AB 1757 EAC reports that actions implemented in the NWL sector can result in more immediate, durable emissions reductions for less expense than any other sector. The EAC projects that over the next 10 years, the state can reduce CO_2 emissions by approximately 250-400 MMT through management, restoration, and conservation of the state's NWLs (AB 1757 EAC 2023). Inclusion of these approaches within local climate action plans can therefore be a cost-effective way to supplement GHG emission reduction strategies and demonstrate support for the state's NWL goals.

The core approaches for achieving reductions from the NWL sector (i.e., management, restoration, and conservation) are discussed below, with recommendations for including the approaches within local climate action plans.

Land Management

Land management approaches are those that manipulate the existing landscape to improve ecological function, in this case to support carbon sequestration and/or storage. The 2022 CARB Scoping Plan indicates that reaching the NWL target will require increasing climate smart forest, shrubland, and grassland management by 2.3 million acres a year and climate smart agricultural practices by at least 78,000 acres per year (CARB 2022). Below are example land management actions and recommendations to support sequestration in local climate action plans.

- **Fire Management.** Forests account for a third of the state and comprise approximately 85% of the state's natural carbon stores. However, over the past century, fire exclusion, resulting in unnatural catastrophic wildfires has changed forest landscapes to reliable carbon sources. CARB modeling indicates that over the next two decades, forests will continue to lose carbon due to climate change stressors and wildfire. Priority strategies for forest ecosystems include fire and fuels management, and focused reforestation in areas where intense fires have limited natural regeneration (EAC 2023).
- Prescribed burns
- Managed natural wildfire
- Managed grazing
- Pest Management
- Invasive Species Control
- Soil Health/Climate smart Ag

Local Partners and Tools

- CDFA's Farmer and Rancher-Led Climate Change Solutions
- Healthy Soils Program

- Comet-planner
- Comet-Farm
- USDA NRCS Conservation Practice Standards
- Forest Carbon Plan
- Regional Forest and Fire Capacity Program
- Regional Conservancies

Restoration

Restoration refers to actions that restore landscapes to natural or historical ecological function through manipulation of the physical, chemical, or biological characteristics of a site, and may include revegetation with native plantings. CARB indicates that reaching the proposed NWL target will require restoration of at least 60,000 acres of the Sacramento-San Joaquin River Delta wetlands and increase in annual investment of urban tree planting by at least 200% by 2045 (CARB 2022). Recommendations for local actions to support carbon sequestration through restoration efforts include the following.

- Urban Tree Planting
- Wetland Restoration

Local Partners and Tools

- Local Habitat Conservation Plans
- Regional Conservancies
- Forest Carbon Plan

Conservation

Conservation practices involve land use planning and policy to avoid and minimize the conversion of carbon-dense NWL land cover types to those with less carbon sequestration potential. To reach the proposed NWL target, CARB indicates that the state must conserve at least 8,000 acres of croplands annually and must cut conversion of deserts and sparsely vegetated lands by at least 50% annually from current conditions (CARB 2022). Recommended conservation actions for implementation at the local level include the following.

- Easements
- Zoning

- Parks and Open Space Expansion

Local Partners and Tools

- CPAD
- CCED
- Regional Conservancies
- 30 x 30

Pathway to 2045 Targets

Demonstrated plan to reach interim year target on trend to carbon neutrality/85% below 1990:

- Trend should be at least linear; faster than linear (exponential / log) would be better given it's harder to reduce that last 30% than the first 70%
- Need target year for 2030
- Other years could be 2035 and/or 2040
- Need quantification – supporting evidence – math – that this is possible with specific performance goals, and those performance goals are committed to

Commitment to implement measures post interim year to support carbon neutrality/85% below 1990:

- Commitment needs to be to revisit measures and implementation every few years
- Update inventory, forecast, CAP, etc.
- Future CAP would include 2045 target once it's closer, more reliable to model, and more feasible to attain

CHAPTER 4
Mitigation Options

Onsite Mitigation

It is widely recognized as best practice in CEQA to maximize project-generated GHG emissions reductions on site as the first step in mitigating potential GHG emissions impacts. On-site reductions are preferred because each project maximizes GHG emissions reductions associated with their land use, and implementation and enforceability are generally easier.

The CAPCOA GHG Reduction Handbook[10] provides an extensive list of GHG reduction measures including 39 transportation measures, 24 energy measures, 7 water measures, 3 solid waste measures, 1 lawn and landscaping measures, 4 construction measures, 6 natural and working land measures, 7 refrigerants measures, and 4 miscellaneous measures.

The discussion below highlights the CAPCOA GHG reduction measures that are considered common in CEQA analyses currently *and additional strategies beyond CAPCOA*.

Building Energy

There is a great deal of opportunity to substantially reduce GHG emissions from energy consumption through measures that target energy efficiency improvements/reduced natural gas consumption, renewable energy generation, and building electrification. GHG emissions from building energy is commonly the second greatest source of emissions from a land use development project (behind transportation) and this source area is one that can be substantially reduced or even eliminated through the combination of building electrification and provision of onsite renewable energy. Common building energy mitigation includes the following:

- E-2. Require Energy Efficient Appliances
- E-10-B. Establish Onsite Solar Power Renewable Energy Systems (above regulation)
- E-11. Procure Electricity from Lower Carbon Intensity Power Supply (note that there are commonly opt-out options)
- E-15. Require All-Electric Development.
- E-16. Require Zero Net Energy Buildings.

[10] Available here: https://www.airquality.org/ClimateChange/Documents/Final%20Handbook_AB434.pdf

Transportation

Transportation remains one of the most challenging emission sources to make meaningful GHG emission reductions due to the need to change personal behavior as well as site location constraints. However, as transportation is commonly the predominant source of GHG emissions from land use development projects, there is also a great potential to reduce emissions, and this source area should be a focus when evaluating what reduction measures are feasible. Measures that promote transit and alternative transportation, support use of alternatively fueled vehicles, or encourage land use planning practices that reduce vehicle trips and vehicle miles traveled (VMT) can reduce the project's overall GHG emissions.

One of the best advice for identifying feasible VMT reduction measures is to work with the transportation expert on your project. VMT is tricky to reduce in some project geographical contexts, so including strategies to support electrification of vehicles should also be considered.

Common transportation mitigation includes the following:

- T-5/T-6. Implement Commute Trip Reduction Program (voluntary or mandatory)
- T-14. Provide Electric Vehicle Charging Infrastructure
- T-18. Provide Pedestrian Network Improvement

Water

Measures that reduce water demand, increase water use efficiency, and/or use a less energy-intensive water source are typical water GHG reduction strategies, which include:

- W-1. Use Reclaimed Non-Potable Water
- W-4. Require Low-Flow Water Fixtures
- W-5. Design Water-Efficient Landscapes
- W-7. Adopt a Water Conservation Strategy

Waste

Solid waste reduction measures focus on requiring alternative waste management pathways, such as recycling and composting, to increase landfill waste diversion, and include:

- S-1. Institute of Extend Recycling Services
- S-2. Implement Organics Diversion Program

- S-3. Require Edible Food Recovery Program Partnerships with Food Generators

Lawn and Landscaping

Measures that promote zero-emission landscaping equipment over conventional fossil fuel-powered counterparts. CAPCOA includes one lawn and landscaping measure: LL-1. Replace Gas-Powered Landscape Equipment with Zero-Emission Landscape Equipment.

Natural and Working Lands/ Carbon Sequestration

Measures that enhance the sequestration capacity of natural lands or reduce the intensity of emissions from working lands. The most common sequestration strategy in CEQA analyses is planting of trees and analyses can use i-Tree as recommended by CalEEMod. Mitigation options that may apply to a project depending on land use type include the following:

- N-1. Create New Vegetated Open Space
- N-2 Expand Urban Tree Planting
- N-3. Implement Management Practices to Improve the Health and Function of Natural and Working Lands
- N-8. Agricultural Equipment Efficiency

Construction

Measures that promote efficient construction management practices or alternatively fueled construction equipment.

- C-1-A. Use Electric or Hybrid Powered Equipment
- C-1-B. Use Cleaner-Fuel Equipment

Offsite Mitigation

Offsite mitigation is a feasible and legally defensible strategy for mitigating a project's GHG emissions, provided it is carefully designed to meet CEQA mitigation requirements. There are considerable challenges with offsite mitigation, as discussed below. While onsite mitigation is generally preferred and prioritized, offsite mitigation (including the use of offsets) remains valid. Offsite mitigation can complement onsite efforts, especially when achieving additional reductions onsite becomes technically or economically infeasible.

Rationale Supporting Appropriate Use of Offsite Mitigation

CEQA does not mandate that onsite measures must be exhausted before considering offsite options. CEQA Guidelines Section 15126.4(c) states that "*Measures to mitigate the*

significant effects of greenhouse gas emissions may include… Off-site measures, including offsets that are not otherwise required, to mitigate a project's emissions"). However, offsite mitigation, including offsets, must be enforceable, verifiable, and additional, and the lead agency must not defer determinations of offset adequacy. *Golden Door Props., LLC v County of San Diego* (2020) 50 CA5th 467, 506.

GHG emissions don't result in a local impact; they contribute to a global impact. Consequently, emissions reductions at another location can have a mitigation value similar to that if the reduction were onsite. While onsite mitigation is important and generally preferred, it can also be very expensive, and allowing flexibility to use offsite mitigation can ensure that cost-effective and technically feasible GHG reduction strategies are implemented.

Offsite mitigation is feasible and proven to reduce GHG emissions. Senate Bill (SB) 7, which re-enacts and expands the CEQA streamlining provisions for "environmental leadership development projects" (ELDPs) that were originally adopted in the 2011 Jobs and Economic Improvement Through Environmental Leadership Act (Assembly Bill [AB] 900), requires no net increase in GHG emissions. Most, if not all, the qualifying AB 900 and SB 7 projects rely on offsite mitigation to help them meet the no net increase goal. The Newhall Ranch GHG Reduction Plan to reduce project emissions to net zero levels was certified by the California Department of Fish and Wildlife and accepted/endorsed by CARB. This plan will result in a net zero/no net increase for a large-scale, master-planned community in Los Angeles County via, in part, direct reduction activities and offsite mitigation, including voluntary offset credits.

Offsite mitigation measures can be particularly attractive in cases where marginal reductions from onsite measures become disproportionately expensive, compared to more cost-effective offsite reductions. For example, achieving the last 20-25 percent of GHG reduction onsite to meet net zero goals may come at an excessively high cost, making offsite options a more practical and cost-effective alternative.

In the 2022 Scoping Plan, CARB supports the use of offsite mitigation as a viable CEQA mitigation pathway. In Appendix D, Local Actions, CARB "encourages project applicants and local governments to use local and non-local off-site GHG mitigation approaches (including carbon offset credits) consistent with CEQA's requirements." CARB also recommends implementing local or regional GHG mitigation first rather than immediately pursuing voluntary market-based offsets. However, CARB did not provide a scientific rationale to support the state's priority for onsite and local offsite mitigation over non-local offsite mitigation. CARB's rationale appears to be a policy preference for local and in-state GHG reductions to provide co-benefits to Californian's and to capture emission reductions within the geographic boundaries of the Scoping Plan. Because GHGs are well distributed in the atmosphere and lead to a global impact, the location of GHG emission reductions has no bearing on a project's climate change impact under CEQA.

There are many policy reasons as to why onsite mitigation may be desired, including local air pollution co-benefits, local economic growth and employment, environmental justice, local control, and so forth. Some lead agencies may also believe they have reduced control or legal enforceability over the use of offsite mitigation, especially when the mitigation projects are in areas outside of their jurisdiction (such as in a neighboring city or county). The primary challenge for developing offsite mitigation programs is cost. Given the high cost of developing GHG reduction projects in many parts of California, there is a large shortage of available local offsets. Thus, the choice between far away offsets vs local offsets is often a choice between far away offsets vs. nothing at all (and with it, a significant and unavoidable CEQA finding).

Offsite Mitigation Approaches

Several approaches to offsite mitigation can be included in a CEQA document or in a CAP.

Direct Offsite Investment

Projects can directly invest in local or regional GHG reduction initiatives, such as reforestation, clean energy projects, or transit electrification. Each approach described below must meet CEQA requirements for mitigation measures. These offsite mitigation measures cannot be part of the project description, must address a significant adverse impact, must not be deferred, and must be enforceable.

GHG Mitigation Fees

A local or regional jurisdiction could implement a GHG mitigation fee program. Project applicants could pay a GHG mitigation fee based on the amount of GHG emissions produced by the project over the selected threshold, and then the local or regional jurisdiction would use those fees to fund GHG reduction measures in the area. CARB supports the idea of local mitigation fees in the 2022 Scoping Plan: "To help remove barriers to employing these types of mitigation, lead agencies may wish to consider developing a local mitigation bank that enables project applicants to fund such projects in exchange for being credited with the resulting GHG reductions in their CEQA analyses."[11]

Like any other mitigation, such measures must not be required by any other federal, state, regional, or local mandate to provide "additional" reductions. In other words, any offsite mitigation measure must not be otherwise required and would not have occurred at that time but for the requirement to mitigate a project's GHG impacts (see Criteria for Offsite Mitigation below for additional discussion). To date, there have been no specific GHG mitigation fee programs adopted by local jurisdictions in California. However, several jurisdictions have developed VMT Mitigation Programs that are funded by VMT mitigation fees. Those programs would also address GHG emissions associated with project VMT.

[11] California Air Resources Board, 2022. *2022 Scoping Plan for Achieving Carbon Neutrality*. Appendix D: Local Actions. Available at: https://ww2.arb.ca.gov/our-work/programs/ab-32-climate-change-scoping-plan/2022-scoping-plan-documents. Accessed: March 2025.

Statewide Carbon Bank

The AEP Climate Committee has supported the concept of a Statewide Carbon Bank that could operate as a recipient of GHG mitigation funds to support implementations of GHG reductions not already mandated otherwise. A statewide bank could have access to a broader range and scale of GHG reduction opportunities than any local or regional scheme, which could lead to greater effectiveness and lower costs.

Voluntary Market Carbon Offsets

The voluntary carbon offset market has existed for approximately three decades. The market has responded to demands for GHG reduction primarily from the private sector, either to meet sustainability targets or to meet project-level mitigation needs. There are also regulated carbon offset markets, such as the California cap and trade system, and RGGI on the east coasts, but those markets are not open to the general public because they are only open to the specific regulated entities covered by those regulated regimes. Consequently, a project seeking offsets for CEQA purposes cannot buy offsets from the California cap and trade system. Instead, there are several voluntary carbon offset registries that vet carbon offsets using established protocols and link up buyers and sellers. There are also many independent brokers that do the same thing. There are offset projects in California, across the U.S., and overseas. The voluntary market is not regulated by any public entity but is rather self-regulated through the protocols that registries develop and implement. However, many of the registries are also active in the regulated market and public entities, such as CARB utilize registries they have accepted to implement offset provision of regulatory compliance.

Criteria for Offsite Mitigation

Offsite mitigation, including offsets, should meet the following six criteria:

1. **Real**: GHG reductions are estimated using conservative, comprehensive, and scientifically valid accounting. Unintended effects, known as “leakage,” must be accounted for.
2. **Additional**: GHG reductions must be additional to any that would have occurred in the absence of project payment for the offsite mitigation or offset and are not a result of existing laws or regulations.
3. **Permanent**: GHG reductions must persist for a defined length of time (lifetime of the project or longer) and account for expected reversals.
4. **Verifiable**: For GHG offsets, GHG reductions must result from activities that have been verified on an “ex-post” basis – they have already occurred. However, for direct offsite mitigation for a type of GHG credit called “forward mitigation unit”, the reductions will need for be verified on an “ex ante” basis. Verification should require third-party review of monitoring data for a project to ensure the data are complete and accurate.
5. **Quantifiable:** The ability to accurately measure and calculate the GHG reduction relative to a project baseline in a reliable and replicable manner for all GHG emission sources and sinks included within the boundary of the carbon offset project, while accounting for uncertainty and leakage.
6. **Enforceable**: GHG reductions must be owned by a single entity and be backed by a legal instrument or contract that defines exclusive ownership to avoid double-counting.

These six criteria are based on the definition in 17 California Code of Regulations §95802 for GHG offsets used in the California Cap and Trade System, which also adds the term "quantifiable" which is covered by the definition of "real" above. The Climate Action Reserve Offset Program Manual also defines these terms.

These criteria ensure that offsite mitigation (including offsets) has already resulted in or will result in GHG emission reductions. Therefore, an offsite mitigation can be just as real and reliable a means of reducing GHG emissions as any other action or mitigation measure, including onsite measures such as EV charging stations, rooftop solar panels, and electrifying fossil fuel infrastructure. In fact, as is the case for GHG offset credits, offsite mitigation measures can sometimes be *more* reliable in reducing emissions than onsite actions because they have already occurred in the past, were created through rigorous accounting criteria, have been verified by an independent third-party, and are subject to continued monitoring and legal enforcement through a binding contract which may actually exceed the monitoring and enforcement mechanisms of some onsite GHG reduction measures.

Types of Offsite Mitigation

There are myriad types of offsite mitigation so they cannot all be summarized here. Instead, a selected list of potential offsite measures is provided below to present a range of potential options. There are many other potential offsite measures not listed below.

Residential Retrofits

Retrofits of existing residences is a viable offsite mitigation strategy because there are no statewide mandates to force a homeowner to retrofit their house. This includes energy efficiency retrofits and building electrification, such as installing a heat pump. There are requirements for upgrading certain aspects of homes when doing remodels, but they only apply to the remodeled portion. This means there are many homes that are far less efficient than new homes across the states. While there have been some federal, state, and utility programs and subsidies for retrofits, the funding is limited and does not defray the full costs of whole building retrofits, particularly for HVAC systems.

With the state's renewable and zero-carbon electricity portfolio getting cleaner over time, there is a declining benefit in terms of GHG emissions in making electricity use more efficient, as ultimately the grid is required to be 100 percent renewable in 2045 per SB 100. However, energy-efficient use of electricity can help to reduce GHG emissions in the near-term and can also save the homeowner (or the renter) on energy costs now. The biggest GHG benefit for residential retrofits comes from electrification of homes using natural gas (or other fossil fuels, like propane), but replacement of furnaces, hot water heaters, and appliances can be expensive. However, there is ample information available from prior programs to draw on to estimate the benefits of building electrification for GHG emission reduction.

Nonresidential Retrofits

Similarly, retrofits of existing nonresidential buildings, such as commercial or institutional building types, is also an opportunity. Nonresidential buildings are more diverse than residential buildings and thus have a more diverse energy portfolio. Similar to residential retrofits, building electrification/fuel switching is also going to be the most beneficial retrofit strategy. The scale of retrofits is larger than an individual home, and given the variety of the nonresidential building stock, one must perform individual building assessments to estimate GHG reductions.

Renewable Energy / Storage

Implementing additional renewable energy generation and/or storage installations for residential, commercial, or institutional energy needs where there aren't existing local, regional, or state mandates or readily available funding sources, can provide additional GHG reductions for the duration of the installation. Storage systems, which today primarily consist of battery storage, can expand the effective amount of delivered electricity of intermittent systems (like solar and wind) by providing additional electricity in the hours outside of their dominant production periods (for example daytime for solar). As noted above for building retrofits, local renewable electricity generation will provide a declining GHG reduction benefit over time due to the state's renewable and zero-carbon electricity portfolio getting cleaner over time.

Offsite EV Charging and EV Subsidies

The State's EV charging infrastructure has a long way to go to provide abundant and affordable opportunities for all Californians to fully utilize EVs. According to the CEC[12] there are insufficient EV chargers in disadvantaged neighborhoods and multifamily housing settings, which becomes another barrier (in addition to EV cost) to broader EV use. There are some established methods[13] for estimating the GHG benefits of installing additional EV chargers that can be used but the benefits will vary depending on location. In addition, providing subsidies for EV purchases can be a valid offsite mitigation measure. For example, both the Newhall Ranch Project and the Centennial Specific Plan include EV subsidies for project residents and offsite residents to purchase EVs for personal use.[14]

Like all mitigation, EV charging infrastructure and vehicle subsidies / purchase incentives can only be credited as valid offsite mitigation if they are not part of a current requirement, plan, or funding source.

[12] EV charging in Low-Income and Disadvantaged Communities. California Energy Commission Launches $38 Million Project for EV Charging in Low-Income and Disadvantaged Communities

[13] See Methods in the CAPCOA Handbook. https://www.airquality.org/ClimateChange/Documents/Handbook%20Public%20Draft_2021-Aug.pdf. Also see VERRA VM0038 Methodology for Electric Vehicle Charging Systems: https://verra.org/wp-content/uploads/imported/methodologies/VM0038-Methodology-for-Electric-Vehicle-Charging-Systems-v1.0-18-SEP-2018.pdf

[14] County Supervisors green light Newhall Ranch projects

Active Transportation

Funding active transportation improvements, such as bicycle and pedestrian paths and connections, can reduce GHG emissions compared to the use of personal vehicles, particularly when it enables efficient connections between land uses (like homes and schools). Active transportation also provides many benefits beyond reducing GHG emissions, such as human health (due to exercise), community cohesion, and safety. However, in general, the cost-effectiveness of active transportation measures in reducing GHG emissions is often lower compared to other measures. Also, active transportation improvements take time to develop, so the most efficient approach in identifying potential mitigation options is to find unfunded existing plans for active transportation improvements that cities and counties may have already developed. Mitigation that supports diversion of vehicle trips to pedestrian and bicycle trips can also be used as VMT mitigation under CEQA.

Transit Infrastructure and Subsidies

Transit support can also be an option for GHG emissions reductions. Transit infrastructure improvements, such as new rail lines, tend to be highly expensive and take a long time to be implemented, such that they are often not an available mitigation strategy for anything but the very largest of developments. Transit subsidy programs are often more scalable as a mitigation measure. Rail transit has had a particularly slow recovery from the COVID-19 ridership collapse, but many bus systems have recovered or exceeded their pre-COVID ridership levels and thus transit subsidy for bus use may be more effective as mitigation. Transit effectiveness is highly dependent on location and thus transit mitigation should be in collaboration with transit providers to identify the most beneficial areas of transit improvement. Depending on the project location, transit mitigation could be very far away from the project if local transit conditions are far less favorable than other locations in the region. Mitigation that supports expanded transit can also be used as VMT mitigation under CEQA.

Carbon Sequestration

There are many potential opportunities to increase carbon sequestration in natural and working lands across the state. In natural lands where vegetation cover has been previously removed and won't revegetate naturally (such as due to prior agricultural practices, land use or catastrophic fire that results in type conversation), replanting of appropriate native vegetation can increase carbon sequestration. Restoration of degraded peat lands has substantial GHG benefits due to the high amounts of carbon sequestered in peat. Recreation or restoration of salt marsh can also increase sequestration. Freshwater wetland restoration can increase carbon sequestration but can also increase methane and the site-specific net value for reducing GHG emissions can vary. In working lands, such as cropland, there are a number of practices, including carbon farming and low-till or no-till, that can increase the amount of soil carbon retained compared to practices such as deep ripping. There are also opportunities to increase soil sequestered on grazed land through supplemental manure fertilizer.

Challenges of Offsite Mitigation

Offsite mitigation poses several challenges. A primary concern with offsite mitigation is ensuring that the emission reductions are real, permanent, verifiable, and enforceable. This is especially important because the owner or developer of the offsite mitigation project is typically different from the developer of the CEQA project itself, which introduces potential legal and practical complexities. Offsite measures must be as enforceable as onsite mitigation and this requires the use of legally binding agreements, permit conditions, and contracts between the parties involved. Such contracts and agreements are necessary to ensure that GHG reductions are verifiable and permanent, that the responsibility for achieving those reductions is clearly delineated between the multiple parties involved, and that there is a mechanism of legal enforcement (with penalties for non-compliance or breach of contract) between the lead agency or project developer and the offsite mitigation project owner.

Another challenge is a general mistrust of offsite mitigation. Critics often view offsite measures as a way for developers to "buy their way out" of their environmental responsibilities, shifting the burden of GHG reductions away from the project site and the local community. This perception can erode public trust in the project's environmental integrity because stakeholders may feel that offsite actions do not deliver direct, tangible GHG emission reductions and other co-benefits to the area most impacted by the project. Although offsite mitigation is allowed by CEQA, and CARB supports the use of offsite mitigation to avoid statements of overriding considerations, it may be important from a community support perspective to demonstrate that feasible onsite mitigation has been exhausted before turning to offsite reductions.

Direct off-site mitigation with defined specific programs or projects will generally be more acceptable than mitigation allowing the use of voluntary carbon offsets, which have been and continue to be the subject of controversy. The *Golden Door (2020)* case underscores the importance of ensuring that offsets meet stringent standards for enforceability, additionality, verifiability, and permanence. In the opinion of the court, the mitigation measure (M-GHG-1), had specific failings including the lack of clear protocols, insufficient safeguards to ensure offsets were real and additional, and improper deferral of mitigation decisions with unspecified criteria to determine[15]. Additionality poses a key concern. In *Golden Door*, the court of appeal concluded that M-GHG-1 did not require reductions to be additional[16] To address these concerns, offsite mitigation must meet additionality standards through contract requirements or other legally binding agreements, just as

[15] The court in Golden Door also engaged in skepticism about international carbon offsets based on specific allegations of some carbon offset projects with difficulties and the court implied that the County should have limited the number of international offsets allowed to be used as project mitigation. While it is fair to insist that offset meet strict criteria, as described above, it is egregious and uninformed to assert that all international offsets are somehow questionable based on problems this some.

[16] The court noted," There is another significant deficiency in M-GHG-1. Under cap-and-trade, GHG emission reductions must be additional "to any greenhouse gas emission reduction otherwise required by law or regulation, and any other greenhouse gas emission reduction that otherwise would occur." (§ 38562, subd. (d)(2).) And there is nothing else in M-GHG-1's text that requires additionality… the County highlights one of M-GHG-1's most significant flaws—offset credits under M-GHG-1 need not be additional"

voluntary market offset credits do. Contracts should include the same or similar additionality standards as voluntary offset registry protocols. The AEP Climate Change Committee addressed the Golden Door ruling in greater detail in the AEP Monitor Article from summer 2020, entitled "Open the Golden Door to International Carbon Credits!"

To avoid potential pitfalls, we recommend that CEQA or CAP practitioners contemplating the use of offsets should make sure to address the following four points:

1. **Accredited Registries.** Ensure that the GHG credits allowed in your document are created through accredited carbon registries. A CARB-approved registry is advised (given the legal state of things) though not required from a scientific or regulatory standpoint.

2. **Objective Criteria.** Although the carbon registries utilize robust accounting protocols for all GHG credits created for their platforms, and these protocols require the six objective criteria listed above, we advise that you identify and define each criterion. These criteria are defined in 17 CCR §95802 and also by the individual offset registries.

3. **Performance Standards.** Provide clear, well-defined, and objective performance standards for determining the number and scope of GHG credits. Make it abundantly clear how many credits are needed and when. For a CEQA project, this may be based on achieving a specific significance threshold or thresholds for different milestone years.

4. **Discuss Location.** As noted above, the location of GHG credits is irrelevant from a scientific standpoint, provided that the credits are created and purchased through an accredited carbon registry which uses stringent protocols. However, if as *Golden Door Properties, LLC, v. County of San Diego* and the long line of preceding litigation against San Diego County has taught us anything, it is that there is much controversy over the location issue. We therefore advise that you prioritize feasible onsite project design features, onsite mitigation measures, and feasible local GHG emission reduction programs before using GHG credits. Your strategy will necessarily be unique to your local conditions, lead agency priorities, and area policy preferences.

A valid GHG credit is one that meets the fundamental criteria of valid protocols. The success of prior GHG credit creation and use and the validation protocols are your "substantial" evidence under CEQA that GHG credits, done correctly, are valid CEQA mitigation.

For offsite mitigation, we recommend that points 2, 3, and 4 above be applied. In addition, we recommend that offsite mitigation projects follow the following process.

- **Quantification:** Project applicants shall provide evidence to the lead agency showing that the offsite project(s) proposed achieve the amount of GHG emissions reductions required. Examples of such evidence include applicable methodologies associated with the GHG emissions reductions, quantification calculations, and supporting documentation.

- **Standards:** Project applicants must demonstrate, with substantial evidence, that all six of the offsite project standards are met: *real, permanent, quantifiable, verifiable, enforceable*, and *additional*.
- **Enforcement:** Project applicants shall obtain all necessary permits and approvals for implementation of the offsite project implementation and such materials shall be submitted to the lead agency for review and approval before project approval.
- **Timing:** Project applicants shall submit documentation to the lead agency identifying the quantity of GHG emissions reductions required by the offsite project over a specific time frame to be identified (e.g., before project approval or permit issuance, over the course of buildout of the project).
- **Monitoring**: Project applicants shall submit regular reports documenting the offsite project's achieved GHG emissions reductions over a specified time period (such as the previous or current calendar year).

Electric Island: E-Truck charging stations. Photo Curtesy of greencarreports.com 2022.

CHAPTER 5
Conclusion

In conclusion, there are many challenges related to GHG emissions analysis, climate action planning and mitigation. The AEP Climate Change Committee has developed and published this white paper to serve as a crucial guide for navigating the complexities of California Environmental Quality Act (CEQA) compliance and climate action planning. It empowers stakeholders to contribute effectively to California's ambitious climate goals, encouraging practitioners, experts, and agencies to adopt innovative strategies and methodologies for GHG emissions reduction.

Lead Agencies under CEQA are ultimately responsible for GHG emissions, their sources, and mitigation to reduce the impacts of climate change. Concerning project level analysis, be sure that the GHG emissions being analyzed are directly or indirectly attributable to the project. For planning level analysis, including the development of a specific plan, climate action plan, or during the General Plan update, include all sources of emissions attributable at the community-scale within the boundaries that the Lead Agency has either direct or indirect jurisdictional control. Follow the advice given in this white paper concerning how to analyze and mitigate GHG emissions.

AB 1279 requires the state as a whole to achieve net-zero on or before 2045. However, this does not mean that projects or plans will need to achieve net-zero. AB 1279 has two broad strategies for achieving net-zero. The first strategy is to reduce anthropogenic GHG emissions by 85 percent compared to the 1990 baseline by 2045. The second strategy is to increase carbon sequestration through changes in how we manage natural and working lands and provide mechanical removal from the atmosphere including long-term storage (geologic sequestration or other means of storage) of carbon dioxide. This combination of the two broad strategies results in net carbon neutrality.

The first strategy within AB 1279 (i.e. reducing GHG emissions by 85 percent compared to 1990 levels by 2045) is an appropriate goal for nearly all projects and plans being reviewed by Lead Agencies. The second strategy within AB 1279 (i.e. sequestration and mechanical removal such that carbon neutrality is achieved) is not an appropriate or feasible goal for most projects or plans. Therefore, unless there are unusual circumstances, consider the 85 percent reduction of GHG emissions by 2045 an appropriate goal at a community-wide planning level, and for the development of GHG thresholds at the project level.

The courts have created many challenges in mitigating GHG emissions to less than significant levels during CEQA review of development projects and plans. But have hope! This white paper provides you with guidance in adequately analyzing, reducing and mitigating GHG emissions. It provides you with a roadmap in using appropriate thresholds during CEQA analysis and reduction targets for CAPs. Use the guidance in this white paper and the works cited as substantial evidence backing up your CEQA analysis.

For climate action planning, use the guidance within this white paper to assist in choosing appropriate GHG reduction targets and reduction strategies. Note that unless a local jurisdiction has a significant amount of natural and working lands under its jurisdictional control, it is not possible to achieve a net-zero reduction target. Natural and working lands need to be included in significant carbon sequestration strategies in order to achieve net-zero. Urbon forest plans are good for urbanized locations, but they will not provide the level of sequestration needed to achieve net-zero.

If a local jurisdiction has a significant amount of natural and working lands under its jurisdictional control, the AEP Climate Change Committee strongly recommends inventorying natural and working lands to see if there is a reasonable possibility of achieving net-zero by altering the way these lands are managed. Only then should a local jurisdiction consider a net-zero reduction target.

Note that project compliance with a "qualified" CAP or CAAP has been reviewed by the courts and considered a legally adequate way of analyzing GHG emissions during CEQA review. This is as close to a "safe harbor" legally as you can get within CEQA. Therefore, if a Lead Agency has an adopted CEQA "qualified" CAP or CAAP, use it in your CEQA analysis of projects.

Finally, do not be discouraged! While the analysis of GHG emissions in CEQA may be a daunting task, this white paper provides you with the guidance needed to persevere.

Reducing GHG emissions to 85 percent below 1990 levels by 2045 is an important goal to achieve. This goal at a project and planning level assists the State in achieving net carbon neutrality. We must reduce GHG emissions if we are to stabilize the climate and reduce climate change impacts for our children and grandchildren.