



Guidance to Demonstrating Consistency with the Climate Action Plan

For Discretionary Projects Subject to CEQA

FORM P-31

City of Carlsbad
Development Services
Planning Division
1635 Faraday Avenue
Carlsbad, CA 92008

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1 INTRODUCTION

In September 2015, the City of Carlsbad adopted a [Climate Action Plan](#) (CAP) that outlines actions that the city will undertake to achieve its proportional share of state greenhouse gas (GHG) emissions reductions. The CAP is a plan for the reduction of GHG emissions in accordance with California Environmental Quality Act (CEQA) Guidelines Section 15183.5. Pursuant to CEQA Guidelines Sections 15064(h)(3), 15130(d), and 15183(b), a project's incremental contribution to a cumulative GHG emissions effect may be determined not to be cumulatively considerable if it complies with the requirements of the CAP.

In March 2019, the City Council adopted several ordinances aimed at reducing GHG in new construction and alterations to existing buildings. Projects requiring building permits will be subject to these ordinances, which address the following:

- Energy efficiency (Ord. No. CS-347)
- Solar photovoltaic systems (Ord. No. CS-347)
- Water heating systems using renewable energy (Ord. Nos. CS-347 and CS-348)
- Electric vehicle charging (Ord. No. CS-349)
- Transportation demand management (Ord. No. CS-350)

The CAP established a screening threshold of 900 metric tons carbon dioxide equivalent (MTCO₂e) per year for new development projects in order to determine if a project would need to demonstrate consistency with the CAP through the Consistency Checklist and/or a self-developed GHG emissions reduction program (Self-developed Program). Projects that are projected to emit fewer than 900 MTCO₂e annually would not make a considerable contribution to the cumulative impact of climate change, and therefore, do not need to demonstrate consistency with the CAP. Regardless of this screening threshold, all projects requiring building permits are subject to the above-referenced CAP ordinances. Such projects are therefore required to show compliance with the ordinances through submittal of a completed Consistency Checklist and shown on site plans and building plans.

For a proposed project that requests a land use change through a General Plan amendment, master plan/specific plan amendment, and/or zone change, a project-specific GHG emissions analysis as described in Section 4 of this guidance must be submitted as part of the discretionary permit application. If the study reveals the project to be more GHG-intensive as compared to that assumed for the existing land use designation, and the project's emissions would be at or above the screening threshold of 900 MTCO₂e, the project applicant would need to demonstrate compliance with the CAP ordinances through completion of a CAP Consistency Checklist (Checklist) and identify additional mitigation measures to offset the increase in emissions resulting from the land use change.

2 CLIMATE ACTION PLAN SUMMARY

The city's CAP contains a baseline inventory of GHG emissions for 2005, an updated baseline inventory for 2011, a business-as-usual (BAU) projection of emissions to 2035 (corresponding to the General Plan horizon year), a calculation of the city's targets based on a reduction from the 2005 baseline, and emission reductions with implementation of the CAP.

The city emitted a total of 630,310 MTCO₂e in 2005 and 705,744 MTCO₂e in 2011. Accounting for future population and economic growth, the city projects GHG emissions of 1,007,473 MTCO₂e in 2035. The CAP set a target to achieve a 15 percent reduction from the 2005 baseline by 2020 based on the recommendation by the California Air Resources Board (CARB). The CAP also includes a reduction target to reduce emissions below the 2005 baseline by 49 percent by 2035. Therefore, the city must

implement strategies that reduce emissions to 535,763 MTCO₂e in 2020 and 321,458 MTCO₂e in 2035. This data is shown in Table 1.

	2020	2035
2005 Baseline Emissions	630,310	630,310
Projected Emissions (Business-as-Usual)	818,895	1,007,473
City Target Emissions Levels	535,763	321,458
Forecast Community Emissions with CAP GHG Reduction Measures	419,962	269,637

By meeting the 2020 and 2035 targets, the city will meet the 2030 state goal identified in Senate Bill 32 and maintain a trajectory to meet its proportional share of the 2050 state target identified in Executive Order S-3-05. Future actions anticipated by the state and possible federal initiatives would reduce the need for local measures and help ensure broader participation in emission reduction efforts.

The CAP accounts for GHG emission reductions that will be achieved through state and federal actions, and General Plan land use policies and mobility improvements. In addition, the CAP has identified the following local GHG reduction measures to achieve the 2035 target:

- ▲ Residential, commercial and industrial photovoltaic systems
- ▲ Building cogeneration
- ▲ Single-family, multi-family and commercial energy efficiency retrofits
- ▲ Commercial commissioning
- ▲ CALGreen building code
- ▲ Solar water heater/heat pump installation
- ▲ Efficient lighting standards
- ▲ Increased zero-emissions vehicle travel
- ▲ Transportation Demand Management (TDM)
- ▲ Citywide renewable projects
- ▲ Water delivery and conservation

The city’s ability to grow its population and economy while meeting the GHG reduction targets will require broad-based participation from the entire community. Everyone who lives, works, shops, or plays in the city contributes to the community’s GHG emissions, and everyone will need to be part of the solution. This includes new development that is anticipated in the city through 2035. The CAP is intended to achieve reductions from all sources and sectors, existing and new. This is emphasized by the fact that the city’s reduction targets are a reduction below baseline emissions. Therefore, GHG emissions in the city need to be reduced below existing levels while additional emissions are generated by growth through 2035. As such, new development can contribute its fair-share of GHG reductions by complying with CAP strategies, goals and actions that were determined to be applicable through the Checklist development process, or through a Self-developed Program. The following sections provide additional information about the steps for new development projects to demonstrate consistency with the CAP.

3 CEQA STREAMLINING PROVISIONS OF THE CLIMATE ACTION PLAN

The adopted CAP Section 5.3 “Project Review Thresholds and Checklist”, describes a screening threshold and associated size-based criteria to determine if a project would be subject to the provisions of the CAP. Projects that were required to show consistency with the CAP were able to follow one of two pathways as provided in the CAP document: 1) a Checklist Approach or 2) a Self-developed Program

Approach. However, since the city’s adoption of CAP ordinances described in Section 1, all development projects requiring building permits will now show CAP consistency through ordinance compliance. No additional screening or GHG studies are required, except in cases involving land use designation changes or when other unique circumstances warrant it, as determined by the City Planner through the CEQA process.

In most cases, compliance with CAP ordinances provide the CEQA streamlining path to allow project-specific environmental documents, if eligible, to tier from and/or incorporate by reference the CAP’s programmatic review of GHG impacts in their cumulative impact analysis. The city’s CAP meets the requirements under Section 15183.5 of the CEQA Guidelines as a qualified plan for the reduction of GHG emissions for use in cumulative impact analysis pertaining to development projects. The Checklist and/or Self-developed Program approach provide a streamlined review process for the GHG emissions analysis of proposed new development projects that are subject to discretionary review and trigger environmental review pursuant to CEQA.

3.1 PROJECT SCREENING THRESHOLDS

The CAP established a screening threshold of 900 MTCO_{2e}/year for new development projects in order to determine if a project would need to demonstrate consistency with the CAP through the Consistency Checklist and/or a Self-developed Program. Projects that require a land use designation change and that are projected to emit fewer than 900 MTCO_{2e} annually would not make a considerable contribution to the cumulative impact of climate change, and therefore, need only to comply with applicable CAP ordinances. Compliance will be evaluated through completion of the CAP Consistency Checklist and determined through issuance of building permits. Table 2 lists types and sizes of projects that correspond to the 900 MTCO_{2e} screening threshold. For project types not listed in this table, GHG analysis will be required if the project requires a land use designation change. Section 4 provides guidance on quantifying project emissions.

Project/Plan Type	Screening Threshold
Single-Family Housing	50 dwelling units
Multi-Family Housing	70 dwelling units
Office	35,000 square feet
Retail Store	11,000 square feet
Grocery Store	6,300 square feet

Source: CAPCOA 2008

Note: For project types not listed in this table, the need for GHG analysis and mitigation will be made on a project-specific basis, considering the 900 MTCO_{2e} screening threshold.

It should be noted that the 900 MTCO_{2e} level must be strictly applied as a screening threshold and is not intended to be a threshold of significance. In other words, projects that exceed this emissions level may not propose mitigation measures to reduce emissions below 900 MTCO_{2e}. If a project’s emissions are projected to be below 900 MTCO_{2e} after accounting for project design features, these features need to be explicitly defined in the project description.

For proposed projects requiring a land use designation change at or above the screening threshold of 900 MTCO_{2e}, applicants are required to complete the CAP Consistency Checklist, which is meant to provide a streamlined review process for proposed new development projects that are subject to discretionary review and require environmental review pursuant to CEQA. A properly completed Checklist documents how a proposed project complies with the CAP, and in so doing, demonstrates that

the project's contribution to climate change impacts is not cumulatively considerable. Additionally, a project requiring a land use designation change that is more GHG-intensive than the land use assumed under the CAP must use a Self-developed Program to identify additional GHG reducing measures to offset emissions resulting from the land use change.

3.2 DEMONSTRATING CONSISTENCY WITH THE CLIMATE ACTION PLAN

The CAP identifies two fundamental ways a project can demonstrate consistency with CAP GHG reduction measures and actions: the Checklist approach and the Self-developed Program approach. The CAP Consistency Checklist provides direction about CAP ordinance measures to be incorporated in individual projects, which will be used during the normal development review and building permit processes. The Self-developed Program will supplement the CAP Consistency Checklist in cases where a project requires a land use designation change that would result in a more GHG-intensive use or when other unusual circumstances warrant it. Utilizing the Checklist alone or in combination with the Self-developed Program, identified project features that help a project meet the provisions of the CAP shall then become part of project conditions of approval.

3.2.1 Land Use Consistency

The first step in the CAP Consistency Checklist assesses a project's consistency with the growth projections and land use assumptions made in the CAP. If a project is consistent with the projections in the CAP, its associated growth in terms of GHG emissions was accounted for in the CAP's BAU projection and within the scope of the CAP's analysis and program of measures that contribute towards reducing overall city GHG emissions below identified GHG targets. As discussed in the Final Environmental Impact Report for the General Plan Update (GPU FEIR), if a project is consistent with the CAP, it would result in less than significant GHG emissions and would not result in a cumulatively considerable GHG impact.

If a project is consistent with the existing General Plan land use designation(s), it can be determined to be consistent with the CAP projections and can move forward to Step 2 of the Checklist. However, not all projects that are inconsistent with existing General Plan land use and zoning designations would be inconsistent with the CAP's projections. For example, if a project includes a General Plan land use plan amendment, master plan/specific plan, and/or zoning designation amendment that would result in an equivalent or less GHG-intensive project when compared to the existing designations, it would still be within the projections assumed in the CAP and can move forward to Step 2 of the Checklist. Estimated GHG emissions under the existing and proposed designations would need to be provided to support this conclusion. Emissions must be quantified using the methodology described in Section 4 below.

If a land use and/or zoning designation amendment results in a more GHG-intensive project, and project emissions are at or above the screening threshold, the project is required to offset the increase in emissions over existing designations in accordance with the recommended methodologies in Section 4, and demonstrate consistency with applicable CAP ordinances.

3.2.2 Climate Action Plan Reduction Measures Consistency

The CAP identifies specific goals and actions supporting each GHG reduction measure. These actions include a combination of ordinances, programs, incentives, outreach, and education activities. As CAP implementation occurs, each action will be assessed and monitored.

As described in the CAP, there is an existing framework of federal, state, regional, and local policies and regulations that contribute to reducing GHG emissions. The CAP shows that reductions from existing

regulations, in combination with additional General Plan policies and actions, would not be adequate to meet established targets. Local actions that reduce emissions from both the built environment and new development would be necessary. The CAP includes targets that relate to a percent reduction in GHG emissions below baseline levels. While the city will achieve reductions outlined in the CAP through capital programming, incentives, awareness and education, and planning processes and ordinances, new development can do its fair share in helping the city achieve its targets by incorporating measures consistent with the CAP. This also provides new development with the benefit of using CEQA streamlining provisions for addressing its GHG impacts.

CHECKLIST APPROACH

Based on the foregoing, the intent of the CAP Consistency Checklist is to demonstrate compliance with adopted CAP ordinances. The Checklist will be updated by the city as needed to incorporate new GHG reduction techniques or to comply with later amendments to the CAP, local ordinances, or state or federal law. If the CAP monitoring process (see CAP Chapter 5) reveals the need for further reductions to stay on track to meet reduction targets, the Checklist may be updated to include additional applicable measures for new development.

The CAP is the city's adopted policy document to reduce GHG emissions. Reduction measures and actions in the CAP were evaluated through the CAP development process and represent the most relevant and effective pathway to achieving established targets, as determined by the city. As such, the city requires project applicants to use the CAP Consistency Checklist to show consistency with the CAP ordinances and avail themselves of its streamlining benefits. The Checklist approach would not require quantification of GHG emissions and reductions from each measure because the city's CAP has performed the analysis at a programmatic level. However, project applicants would still need to quantify design parameters to demonstrate compliance with CAP ordinances referenced in the Checklist (e.g., kilowatts [kW] of solar photovoltaics [PV] or number of electric vehicle [EV] charging spaces). Project applicants that use the Self-developed Program approach would need to quantify reductions from proposed measures that are in addition to a required Checklist measure. Details on the Self-developed Program approach are provided in the following section.

SELF-DEVELOPED PROGRAM APPROACH

With the adoption of CAP ordinances, the city expects most projects will achieve CAP consistency through the Checklist (CAP ordinance compliance) approach only. The Self-developed Program approach is to be used only when land use designation changes are proposed, or when other unique circumstances warrant it, as determined by the City Planner through the CEQA process. In such rare cases, an applicant may propose to modify or substitute an alternate measure for a CAP Checklist measure, as long as it does not conflict with the relevant CAP ordinance and it can be demonstrated that the modified or alternate measure achieves the same (or greater) quantitative reduction as the Checklist requirement. Project applicants would still need to complete the entire Checklist (i.e., Steps 1 and 2) and comply with all other applicable CAP ordinances to the extent feasible. Furthermore, the Self-developed Program approach may not be used to avoid complying with CAP ordinances, nor is it available to ministerial-only (i.e., building permits) projects.

A Self-developed Program requires applicants to quantify their GHG emissions in 2035, consistent with the CAP horizon year, and estimate reductions from the Checklist measure(s) that they propose to replace with alternate measures. The city's recommended methodology to perform this analysis is provided in Section 4. In contrast, the Checklist approach does not require quantification of emissions and reduction measures as the city's CAP has performed this analysis at a programmatic level. Thus, the Checklist approach is more efficient and affords the maximum streamlining benefits for development projects. The city strongly encourages the use of the Checklist as the preferred method to show CAP

compliance. The Self-developed Program is a more time- and labor-intensive process, both for the applicant and the city, and is thus to be used only under the limited circumstances described above.

Appendix E to the CAP provides a non-exclusive list of potential mitigation measures that can be applied at the project level through the Self-developed Program. Other measures not listed in the Appendix may be considered, provided that their effectiveness in reducing GHG emissions can be demonstrated. The type, character, and level of mitigation would depend on the project type, size, location, context, and other factors. The availability of mitigation measures can change over time as well, with new technologies, building materials, building design practices, and other changes. Therefore, in developing project-specific reductions measures, the city recommends that a project applicant refer to current guidance from CAPCOA, CARB, the Governor's Office of Planning and Research (OPR), the California Attorney General, and the San Diego Association of Governments (SANDAG) to determine applicable mitigation measures and estimate their effectiveness. The remaining sections of this Guidance outline ways applicants can quantify project-specific GHG emissions, including reduction strategies not identified in the CAP.

4 QUANTITATIVE GREENHOUSE GAS GUIDANCE

4.1 QUANTIFYING PROJECT-SPECIFIC GHG EMISSIONS

Quantifying project-specific GHG emissions is necessary under the following circumstances: 1) to determine whether a project exceeds the screening threshold as described in Section 3.1 and proposes a land use or uses inconsistent with the growth assumptions underlying the CAP, as described in Section 3.2.1; or 2) when other unique circumstances warrant a Self-developed Program approach to supplement or substitute for CAP ordinance compliance through the Checklist-only approach. Direct and indirect emissions of GHGs from the project, area- and mobile-source emissions, and indirect emissions from in-state energy production and water consumption (energy for conveyance, treatment, distribution, and wastewater treatment), must be quantified and disclosed in the application. One-time, temporary GHG emissions (such as vegetation clearing, site preparation and construction), as well as operational emissions must be included.

4.1.1 Methods of Analysis

While there are a number of analytical tools available to estimate project-level GHG emissions, the city strongly recommends using the latest version of the California Emissions Estimator Model (CalEEMod), a free, publicly-available computer model developed for the California Air Pollution Control Officers Association (CAPCOA) in collaboration with various air quality districts throughout the state. Alternative supplemental tools may be used in consultation with the city, as long as they are representative of project conditions and can be substantiated.

Operational GHG emissions from a land use development project can be calculated using a variety of sources and modeling tools. CARB's emissions factor model, EMFAC 2014, can be used to estimate annual carbon dioxide (CO₂) and methane (CH₄) emissions from vehicle miles travelled (VMT) generated by the project. VMT-related emissions should be based on project trip generation rates, supported by a project-specific traffic study (if available) or representative rates from SANDAG (if no project study data are available) (SANDAG 2002). Trip distances used to estimate VMT should also be representative of the project. EMFAC 2014 is CARB's latest update to the EMFAC model series and takes into account effects of future policies and economic forecasts. Mobile-source emissions can also be estimated using the emission factors provided in CalEEMod (which are based on the EMFAC 2014 database) and the CalEEMod User Guide, alongside estimates of project-generated vehicle trips and total VMT.

Emissions from natural gas combustion used for space heating, water heating, and fireplaces can be estimated based on the project-specific consumption levels, using GHG emission factors contained in CalEEMod. Emissions from landscape maintenance equipment can be estimated using the applicable module in CalEEMod (South Coast Air Quality Management District [SCAQMD] 2017).

Indirect emissions associated with electricity consumption (i.e., CO₂, nitrous oxide [N₂O], and CH₄) can be calculated in CalEEMod based on utility emission factors for San Diego Gas and Electric (SDG&E). GHG emissions from water consumption and wastewater treatment can be estimated based on the volume of water that would be required by the project and energy intensity factors for water supply in southern California published by the California Energy Commission (CEC) and incorporated into CalEEMod (CEC 2006:2). Indirect GHG emissions associated with the quantity of solid waste generated by the land uses can be estimated using the applicable module in CalEEMod and project-specific waste disposal information, if available.

The loss in sequestered carbon can also be estimated in CalEEMod using the vegetation module. This would account for the types and amounts of vegetation that would be removed permanently because of construction and operation of the proposed project. Total one-time GHG emissions from the loss in carbon sequestration can then be amortized over the operational life of the project and considered in combination with on-going operational emissions. Accounting for the loss in sequestered carbon in this way allows for the evaluation of whether ongoing operation of the proposed land uses would be efficient enough to “recoup” the former sequestration of these one-time emissions.

For all emissions sources listed above, default CalEEMod assumptions may be used if project-specific data are not available. Modeling data and results are subject to city review and approval, and applicants should provide substantial evidence for estimated emissions and underlying assumptions in the technical analysis.

Please discuss with City of Carlsbad staff if applicant desires to use other GHG modeling tools before performing analysis.

OPERATIONAL EMISSIONS

In order to determine if reduction measures not included in the CAP will achieve the same levels of GHG reductions as Checklist measures, operational GHG emissions for the project should be calculated as a first step using CalEEMod for the year 2035 (i.e., the horizon year of the CAP). As mentioned above, CalEEMod is the modeling tool recommended by the city. Direct and indirect emissions from the project should be estimated using the most recent version of CalEEMod (currently Version 2016.3.2) in accordance with the [CalEEMod User's Guide](#). CalEEMod was designed with default assumptions supported by substantial evidence to the extent available at the time of programming. The functionality and content of CalEEMod is based on fully adopted methods and data. However, CalEEMod was also designed to allow the user to change the defaults to reflect site- or project-specific information, when available, provided that the information is supported by substantial evidence. If the user chooses to modify any defaults, an explanation will be required in the “Remarks” box found at the bottom of the screen to justify and support the modification before the user is able to proceed to the next screen. Modifications to defaults and the explanations are noted in the model output report. Comments in the “Remarks” box are also included in the report and alert reviewers of modifications to the defaults. Comments are instructive because they show the user’s justification for the modifications, which allows the reviewers the ability to determine whether or not the modifications are appropriate and sufficiently justified.

The city generally recommends using the default values in CalEEMod to the extent detailed information about the project is not known at the time of analysis. However, where available, project-specific information (e.g., land-use specifications of the project, results of traffic study, and predicted water usage) should be used. The same assumptions about end uses or occupants made for purposes of other studies (such as traffic or parking) should also be used for GHG quantification, to the extent feasible. For

example, if an application for an industrial building assumes a certain mix of warehousing, manufacturing and/or office uses for parking requirement purposes, that same mix of uses should be input into the GHG model. Any changes in assumptions should be made clear in the project application and/or GHG study.

As a first step, all project information should be input into CalEEMod, and annual emissions generated for 2035 without any mitigation, or reduction measures, included. This unmitigated run of GHG emissions will serve as the baseline against which reduction measures can be estimated and compared. Depending on the type of reduction measure(s) chosen, multiple CalEEMod runs may be needed to show exact GHG reductions by emissions source and reduction measure. All operational GHG emissions shall be reported in units of MTCO₂e per year. One-time GHG emissions (such as in carbon sequestration loss) and temporary emissions (such as related to site preparation and construction) shall be amortized over the life of the project, typically 30 years (South Coast Air Quality Management District 2008).

When quantifying project GHG emissions for purposes of determining whether a project is within the 900 MTCO₂e screening threshold, the project's first full operational year shall be input into CalEEMod, rather than the CAP 2035 horizon year. For example, if a project is expected to be built and occupied by the beginning of 2019, then the CalEEMod operational year will be 2019. Also, for screening purposes, when a proposed project is replacing or expanding an existing use, two model runs are required (one for the existing use, and one for the replacement or expanded use) in order to determine the net GHG impact of the proposed project. In such cases, the CalEEMod operational year will be the same for both modeling scenarios.

QUANTIFYING LEGISLATIVE AND REGULATORY REDUCTIONS

Applicants may account for certain legislative and regulatory GHG reductions in their modeling if they are not already built into the CalEEMod model. Because the city's CAP sets a 2008 baseline, certain legislation and regulations that would be implemented through the 2035 horizon year have been accounted for in CAP projections and could therefore be applied to project emissions. The city's GHG forecast accounts for a variety of legislative actions that will reduce future emissions from the city, in conjunction with local action. Common legislative reductions include improved vehicle fuel efficiency standards, Title 24 Building Energy Efficiency Standards, Renewables Portfolio Standard (RPS), Pavley Clean Car Standards, and Low Carbon Fuel Standard (LCFS). Additionally, the CAP estimates GHG reductions resulting from assumed future rising gasoline prices.

While legislative reductions can be applied, it is important that applicants understand what current models already include. For example, the 2016 version of CalEEMod made a number of changes to update default data, legislation, and regulations (SCAQMD 2017). The newest version of CalEEMod now includes the 2016 update to the Title 24 Building Energy Efficiency Standards. The new 2019 Title 24 building energy efficiency standards (which will go into effect on January 1, 2020) may be included in the modeling by manually changing the CalEEMod inputs if the project is to be built after January 1, 2020. Future reductions can also be applied to account for adopted statewide targets under the RPS to reach a 33 percent renewable mix in statewide electricity generation by 2020, 50 percent by 2026 and 60 percent by 2030. It is important to note that a number of fleet-related legislative reductions have already been accounted for in standard models such as EMFAC 2014 and CARB's OFFROAD 2011 and should not be double counted. This data is also incorporated into the latest version of CalEEMod. Fleet-related reductions accounted for in CalEEMod defaults includes the Advanced Clean Car Standards and an improving electric vehicle mix based on EMFAC2014.

See Appendix A for a more detailed list of legislation and regulations that applicants may include in their project applications and/or GHG studies.

COMPARATIVE ANALYSIS FOR LAND USE CHANGES

For a proposed project that requests a land use change through a General Plan amendment, master plan/specific plan amendment, and/or zone change, a project-specific GHG emissions analysis must be submitted as part of the discretionary permit application. The intent of the analysis is to determine if the proposed change(s) would be more GHG-intensive as compared to the existing land use designation. The analysis should report emissions under the two scenarios: existing and proposed designations. Emissions may be quantified using the methods described above with a few specific considerations. The analysis for the two scenarios should be consistent in assumptions to the extent reasonable. Any legislative reductions applied to the proposed project's emissions must also be applied to the existing designation analysis, provided the same sources of emissions are expected in both cases. In addition, any project features that may have a benefit regardless of land use types must be included in both scenarios. For example, if a site is located in proximity to a transit stop, the land uses under the existing and proposed designations may derive a benefit from it. The reductions must be applied in both scenarios in such cases, taking into account land use-specific assumptions. Other input values in CalEEMod should also be based on land use-specific information to the extent feasible. For example, if trip generation rates for both existing and proposed designations are available from a site-specific traffic study, those rates must be used in the analysis. In the absence of site-specific data, CalEEMod default values may be used in consultation with the Carlsbad Planning Division staff.

4.1.2 Quantifying New Reduction Measures

GHG reduction measures in proposed development projects that are not included in the CAP Consistency Checklist must be quantified. CalEEMod provides methods to estimate effectiveness of proposed mitigation measures. These mitigation measures are based on GHG reduction quantification guidance from CAPCOA and cover the land use, transportation, energy, water and solid waste sectors. Table 3 provides a summary description for select mitigation measures in CalEEMod that are not included in the CAP. This list is not meant to be all-inclusive and all measures may not be available in the city. Other measures may be considered at the city's discretion if they are deemed applicable to the project, and do not overlap or conflict with CAP measures. Further clarification on measures can be found in [CalEEMod User's Guide](#) and the [CAPCOA Measures guidance document](#). The model applies the sectorial and global maximum reduction values (or caps) based on the project setting and combination of mitigation measures selected for the project; therefore, the usual reductions listed for each measure cannot simply be summed to determine total project emission reductions. It should be noted that while CalEEMod is the most widely used tool for this purpose and is recommended by the city to use, project applicants may choose to estimate reductions outside of CalEEMod, as long as substantiation is provided for city review.

For every GHG emission reduction measure included, the city recommends that the explanation be as detailed as possible. The replacement measure(s) shall:

- ▲ Clearly identify who is responsible for implementation, funding, monitoring, enforcement, and any required maintenance activities.
- ▲ The applicant shall also explain why the measure(s) will be effective in reducing emissions, why each measure is considered feasible, and (if permissible) which CAP ordinance requirement it is replacing.
- ▲ The applicant's analysis must also provide sufficient evidence that the Checklist measure being replaced is truly infeasible¹ for the project, and why the substituted measure is equally as effective.

¹ As defined by CEQA Guidelines Article 20, Section 15364.

Table 3 List of CalEEMod Mitigation Measures Applicable to Reducing GHG Emissions

Measure #	Measure Name	Measure Description
CalEEMod Traffic Tab: Land Use & Site Enhancement Measures		
LUT-6	Integrate Below Market Rate Housing	Incorporates affordable housing
CalEEMod Traffic Tab: Neighborhood Enhancement Measures		
SDT-3	Implement NEV Network	Project provides a viable NEV network
CalEEMod Traffic Tab: Transit Improvement Measures		
TST-1	Provide BRT System	Establish a Bus Rapid Transit line with permanent operational funding stream
TST-3	Expand Transit Network	Establishes or enhances bus line with permanent operational funding stream
TST-4	Increase Transit Frequency	Reduces headways of existing transit

Table 3 List of CalEEMod Mitigation Measures Applicable to Reducing GHG Emissions

Measure #	Measure Name	Measure Description
CalEEMod Energy Tab: Building Energy Measures		
BE-1	Exceed Title 24 Standards	Use less energy than required by Title 24, latest edition
BE-4	Energy Efficient Appliances	Use appliances more energy efficient than standard models
CalEEMod Energy Tab: Alternative Energy Measures		
AE-1	Onsite Renewable Energy	Establish on-site renewable energy. (No Ozone Precursor reductions if NOx intensity is higher than electric utility.)
CalEEMod Water Tab: Water Conservation Strategy		
WUW-2	Apply Water Conservation Strategy	Reduce indoor and outdoor water use
CalEEMod Water Tab: Water Supply		
WSW-1	Use Reclaimed Water	Project utilizes non-potable water
CalEEMod Water Tab: Indoor Water Use		
WUW-1	Install Low-Flow Bathroom Faucet	Reduce Indoor water use with low-flow fixtures
	Install Low-Flow Kitchen Faucet	
	Install Low-flow Toilet	
	Install Low-flow Shower	
CalEEMod Water Tab: Outdoor Water Use		
WUW-5	Reduce Turf in Landscapes and Lawns	Use less turf than normal projects
WUW-4	Use Water-Efficient Irrigation Systems	Install a smart irrigation control system
WUW-3	Water Efficient Landscape	Plant native or drought-resistant trees and vegetation
CalEEMod Solid Waste Tab		
SW-1	Institute Recycling and Composting Services	Project Recycles, Reduces, and Reuses
Notes: Reflects measures in CalEEMod V 2016.3.2		
BRT = Bus Rapid Transit, ITE = Institute of Transportation Engineers, NEV = Neighborhood Electric Vehicle		
Any measures incorporated into a Self-developed Program must be above and beyond regulatory requirements and CAP Consistency Checklist measures, if applicable. For example, a project may include onsite renewable energy systems that exceed the requirements of the Checklist. In that case, GHG reductions that are additive to Checklist requirements should be quantified.		
Source: CAPCOA 2017b		

CALEEMOD MITIGATION MEASURE EXAMPLES

This section provides a demonstration of how to utilize CalEEMod to quantify GHG reductions from certain mitigation measures. The first example shows how mitigation in CalEEMod can expand upon commitments outlined in the CAP, while the second is an example of a measure not included in the CAP for new development projects. Each example includes information about the specific reductions that might be achieved by the measure. Measures in this section have been substantiated through research identified by a comprehensive literature review including [CAPCOA's Measures guidance document](#). Applicants may research and develop additional measures, in consultation with the city, that would achieve reductions that are both quantifiable and substantiated.

Alternative Energy 1: Onsite Renewable Energy

Measure Description: The measure can be used when a proposed project would generate electricity onsite using renewable or carbon-neutral power systems which displaces electricity use normally supplied by the local utility, and would expand upon current CAP ordinance requirements regarding inclusion of solar photovoltaic (PV) systems in residential, commercial, or industrial projects. Life of an on-site project is

assumed to be 20 years. Implementation of this alternate measure would assume that the amount of renewable energy exceeds the amounts cited in the CAP Checklist (i.e., Step 2 Question 1).

Applicability for GHG: The measure would apply to any land use that uses electricity.

Reduction Potential: Zero to 100 percent electricity use.

Example: A commercial development has proposed to generate 90% of its electricity needs through an undetermined mix of renewable energy on-site. Because the city’s CAP ordinance states that up to 80 percent of a nonresidential project’s energy use must come from solar PV, the incremental reduction beyond the 80 percent requirement may be credited towards the project to achieve additional required GHG reductions or to substitute for other CAP ordinance requirements. The applicant must first report the amount of emissions that would result if 80 percent of energy use were from renewable sources. The applicant would then have to run the same model, applying the 90 percent renewable generation and take the difference between the two runs to get the incremental change from the proposed measure. To apply this mitigation, the applicant would first select the box “On-site renewable energy” as well as “% of Electricity Use Generated” and type “80” or “90” into the associated field. See image below for more detail.

Screenshot of Mitigation Measure AE-1 in CalEEMod

The screenshot shows the 'Mitigation' section of the CalEEMod software. The 'Energy' tab is selected. Under 'Alternative Energy', the 'On-site Renewable Energy' checkbox is checked, and the '% of Electricity Use Generated' is set to 90. A table of 'Energy Efficient Appliances' is shown with the following data:

Appliance Type	Land Use Subtype	% Improvement
ClothWasher		30
DishWasher		15
Fan		50
Refrigerator		15
*		

The 'Remarks' field at the bottom contains the text: 'AE-1: Proposed to generate 90% of electricity needs through an undetermined mix of renewable energy on-site.'

Reference: See measure AE-1 on page 125 of the [CAPCOA’s Measures guidance document](#).

Water Supply 1: Using Reclaimed Water

Measure Description: A proposed project using this measure must calculate the amount of reclaimed water used instead of new potable water supplies for outdoor water uses or other non-potable water uses. A lower amount of energy is needed to collect, treat, and redistribute reclaimed water compared to new potable water supplies. The applicant must commit to using a percentage of reclaimed water and provide

the total amount of reclaimed and non-potable water to be used by the project. If indoor reclaimed water uses are anticipated, indoor and outdoor usage for the project must be documented separately for use of this measure in CalEEMod. Water demand should be calculated prior to calculating water supply reductions. Project water demand (indoor and outdoor) calculated for the project in CalEEMod's Operational Water and Wastewater tab should be compared to project applicant calculations for water demand. CalEEMod may be modified to reflect project specific water demand calculations rather than using the default calculations.

Applicability for GHG: This measure is applicable to all land use types across all project settings (urban, suburban, etc.). Outdoor water use is primarily expected to benefit from this measure.

Reduction Potential: Zero to 40 percent of GHG from outdoor or non-potable water uses.

Example: If the proposed project will use 50 million gallons of water a year for outdoor use and commits to using 25 million gallons of reclaimed water for outdoor use as mitigation, the applicant may select the "Use Reclaimed Water" checkbox and may type "50" in the field titled "% Outdoor Water Use." See image below for more detail.

Screenshot of Mitigation Measure WSW-1 in CalEEMod

Mitigation

Construction Traffic Area Energy Water Solid Waste

*The mitigation should be applicable to land use project evaluated.
Remarks box should contain percent reduction justification.

Import csv

Water Conservation Strategy

* Cannot be used with other water mitigation strategies

Apply Water Conservation Strategy [WUW-2]

% Reduction Indoor 0

% Reduction Outdoor 0

Water Supply

Use Reclaimed Water [WSW-1]

% Indoor Water Use 0

% Outdoor Water Use 50

Use Grey Water [WSW-2]

% Indoor Water Use 0

% Outdoor Water Use 0

Indoor Water Use

Install Low-flow Bathroom Faucet [WUW-1]

% Reduction in flow 32

Install Low-flow Kitchen Faucet [WUW-1]

% Reduction in flow 18

Install Low-flow Toilet [WUW-1]

% Reduction in flow 20

Install Low-flow Shower [WUW-1]

% Reduction in flow 20

Outdoor Water Use

Turf Reduction [WUW-5]

Turf Reduction Area (acres) 0

% Reduction turf 0

Use Water-Efficient Irrigation Systems [WUW-4]

% Reduction 6.1

Water Efficient Landscape [WUW-3]

MAWA (gal/yr) 0

ETWU (gal/yr) 0

Remarks

WSW-1: the proposed project will commit to using 50% reclaimed water in gallons per year for outdoor use.

<< Previous Next >>

Reference: See Measure WSW-1 on Page 332 of the [CAPCOA's Measures guidance document](#)

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APPENDIX A: LIST OF LEGISLATIVE AND REGULATORY REDUCTIONS

Below is a list of legislative and regulatory reductions that applicants could apply to their modeling, along with reductions that are already being accounted for in the newest version of CalEEMod 2016. Application will be reviewed on a case-by-case basis.

Note: This list will be updated and refined, as needed, to reflect changes in legislation and regulations, and future updates to CalEEMod.

Allowed Reductions

State Legislation/Regulation	Reduction Amount	Notes
2019 Title 24 (T24) Building Energy Efficiency Standards	Varies based on building type and energy source (CEC 2018)	2019 T24 effective 1/1/2020. Reduction may be applied only to T24 component of electricity and gas use in CalEEMod.
Renewables Portfolio Standard (RPS)	33% by 2020, 50% by 2026, 60% by 2030	Reductions should be taken after accounting for 2019 T24 energy efficiency reduction. Reduction may also be applied to water-related energy use.
Incremental increase in solid waste diversion	25%	Difference between AB 341 and AB 939.

Reductions Already Accounted for in CalEEMod (Version 2016.3.2)

State Legislation/Regulation	Notes
2016 T24 Building Energy Efficiency Standards	
Advanced Clean Car Standards	