

APPENDIX A



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Greenhouse Gas Emissions Reduction Plan

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subject Oakland City Center T12 Office Project –GHG Emissions Reduction Plan

Introduction

This Greenhouse Gas (GHG) Emissions Reduction Plan (“GHG Plan”) presents GHG emissions inventory estimates for the Oakland City Center T12 Office Project (“Project” or “Proposed Project”) and identifies available GHG emissions reduction measures that the Project may implement to reduce GHG Emissions and Global Climate Change associated with the Proposed Project. This GHG Plan is prepared to comply with City of Oakland Standard Condition of Approval (SCA) “Greenhouse Gas Reduction Plan” (**GHG-1**) (as amended February 2016) identified in the 2016 Block T12 CEQA Analysis (CEQA Analysis) to which this GHG Plan is an appended.

This GHG Plan is required pursuant to SCA GHG-1 because the Project would exceed at least one of the BAAQMD Thresholds of Significance (specifically, more than 1,100 metric tons of CO₂e annually and is considered to be “Very Large Project¹ because it has over 250,000 square feet of floor space. The goal of the GHG Plan is to reduce GHG emissions by 36 percent below the Project’s “2005 business-as-usual”

¹ A “Very Large Project” is defined as any of the following:

- (A) Residential development of more than 500 dwelling units;
- (B) Shopping center or business establishment employing more than 1,000 persons or encompassing more than 500,000 square feet of floor space;
- (C) Commercial office building employing more than 1,000 persons or encompassing more than 250,000 square feet of floor space;
- (D) Hotel/motel development of more than 500 rooms;
- (E) Industrial, manufacturing, processing plant, or industrial park planned to house more than 1,000 persons, occupying more than 40 acres of land, or encompassing more than 650,000 square feet of floor area; or
- (F) Any combination of smaller versions of the above that when combined result in equivalent annual GHG emissions as the above.

baseline GHG emissions (as explained below) to help achieve the City’s goal of reducing GHG emissions, consistent with the goal of the City’s Energy and Climate Action Plan (ECAP adopted in 2012)

This GHG Reduction Plan includes, (a) a detailed GHG emissions inventory for the Project under a 2005 “business-as-usual” scenario with no consideration of Project design features, or other energy efficiencies; (b) an “adjusted” baseline GHG emissions inventory for the Project (at Buildout year 2019), taking into consideration energy efficiencies included as part of the Project (including the City’s Standard Conditions of Approval, proposed mitigation measures, Project design features, and other City requirements), and quantified additional GHG reduction measures available to further reduce GHG emissions beyond the adjusted GHG emissions; and (c) requirements for ongoing monitoring and reporting to demonstrate that the additional GHG reduction measures are being implemented.

The incorporation of assumptions and transportation demand management (TDM) vehicle trip reduction measures from the Oakland City Center T12 TDM Plan (TDM Plan) prepared by Fehr & Peers (February 2016) and included in Appendix C to the CEQA Analysis to which this GHG Plan is also appended is assumed to be part of the Project under item (b) above. TDM trip reductions identified in the TDM Plan can substantially reduce mobile source emissions generated of the Project, which are the most significant contributor. As presented in this GHG Plan, GHG emissions from the Proposed Project with incorporation of the TDM Plan result in a less than significant impact compared to the City’s significance thresholds for GHG emissions, which incorporate the Bay Area Air Quality Management District’s (BAAQMD) adopted CEQA Thresholds. However, pursuant to SCA GHG-1, the Project must still demonstrate achievement of a 36 percent reduction of GHG emissions compared to the 2005 business-as-usual baseline.

This GHG Plan presents a specific, quantified GHG Reduction Plan Program that includes a menu of applicable GHG emissions reduction measures identified to reduce the Project’s GHG emissions to the greatest extent practical and feasible. The GHG Plan will be implemented throughout the life of the Project in accordance with periodic compliance reporting, monitoring and funding requirements specified herein.

Summary of Impact Findings in this GHG Plan

Total adjusted GHG emissions resulting from the Proposed Project Buildout (2019) were estimated in this GHG Plan factoring in all emissions reduction components, including Project design features, applicable City SCAs (including TDM trip reduction measures), as well as applicable regulatory requirements. These emissions differ slightly from those presented in the CEQA Analysis to which this GHG Plan is appended (see Table GHG-1 in Section VI [CEQA Checklist] of the CEQA Analysis), predominantly because the emissions estimated herein assume implementation of these TDM trip reduction measures which were not assumed for the CEQA analysis. Assumptions from the TDM Plan and GHG Plan are considered part of the Proposed Project, since preparation and implementation of each Plan is required pursuant to the City SCAs. Therefore, this analysis assesses CEQA impact significance based on the Project’s GHG emissions with TDM trip reduction measures and baseline GHG emissions reduction measures incorporated.

While total Project GHG emissions of 4,353 MT of CO₂e per year would exceed the BAAQMD CEQA threshold of 1,100 MT of CO₂e annually, the results of 2.2 MT of CO₂e per year per capital of service population would not exceed the BAAQMD efficiency-based CEQA threshold of 4.6 MT of CO₂e per year per capital of service population. A significant impact occurs only if *both* thresholds are met or exceeded, therefore, the Project would result in a **less than significant** cumulative GHG emissions impact at Buildout since only one threshold is exceeded. (This is the same impact identified for the unadjusted baseline Project analyzed in the CEQA Analysis, which did not factor the TDM Plan.) GHG emissions reduction measures are identified to meet the 36 percent GHG reduction over 2005 business-as-usual as identified in the ECAP and SCA GHG-1. This analysis identifies that the Project must reduce its emissions by the 653 MT of CO₂e per year to meet the 36 percent GHG reduction. (See Table 2 in Section 5.)

Organization of the Plan

This GHG Plan is organized as follows:

Part A: GHG Emissions Inventory and Impacts (p. 4)

- 1.0 Discussion of GHG emissions background and CEQA Context (p. 4)
- 2.0 Identifies and discusses the emission sources that are included in the inventory, as well as other sources that are not included. (p. 5)
- 3.0 Identifies and discusses Project design features, applicable City Standard Conditions of Approval (including TDM measures), regulatory requirements, and General Plan policies and programs that would reduce GHG emissions from the Project. (p. 7)
- 4.0 Estimates the Project's "business-as-usual" 2005 GHG emissions inventory (considering construction and operations) in carbon dioxide equivalents (CO₂e), generally *excluding* the emissions reductions resulting from the considerations in Section 3.0, above. (p. 10)
- 5.0 Estimates the Project's "adjusted" 2019 buildout year GHG emissions, which *include* the emissions reductions resulting from the considerations in Section 3.0 against the CEQA thresholds of significance for GHG impacts. (p. 12)

Part B: Available GHG Reduction Measures and Reduction Plan Program (p. 16)

- 6.0 Describes potential emission reduction measures from the State Of California's Scoping Plan. (p. 16)
- 7.0 Describes potential emission reduction measures published by the California Air Pollution Control Officer Association (CAPCOA). (p. 20)
- 8.0 Describes a set of additional GHG reduction measures that could be implemented by the Project to further reduce GHG emission beyond "adjusted" emissions (described in Section 5.0 above) to achieve the required 36 percent GHG reduction over 2005 business-as-usual. (p. 24)

9.0 Presents the GHG Reduction Plan Program.(p. 28)

The information and analysis presented herein has been prepared by Chris Sanchez, ESA Senior Technical Associate, Air Quality/GHG; and Jeff Caton, P.E., LEED AP, Director, ESA Renewable Resources.

Part A: GHG Emissions Inventory and Impacts

1.0 Background and CEQA Context

The analysis presented herein is prepared consistent with both statewide and local guidance on the estimation and evaluation of GHG emissions relative to CEQA. These specifically include amendments adopted on March 18, 2010 to the *CEQA Guidelines* regarding GHG emissions. No significance threshold is included in the amendments; the *CEQA Guidelines* afford the customary deference provided to lead agencies in their analysis and methodologies. The Governor's Office of Planning and Research (OPR) emphasizes the need for a consistent threshold to analyze projects, specifies that the analyses should be performed based on the best available information, and that if a lead agency determines that a project may generate GHGs, the agency is responsible for quantifying estimated GHG emissions by type and source. The analysis in this GHG Plan is consistent with this guidance.

Local guidance includes the Air Quality CEQA Thresholds of Significance from the Bay Area Air Quality Management District (BAAQMD). In May of 2011 the BAAQMD adopted new Thresholds of Significance (2011 Thresholds) for GHG impacts. Subsequently, the Alameda Superior Court issued a stay and required the BAAQMD to conduct additional environmental review in connection with its adoption of the thresholds. In August 2013 the State Court of Appeal issued a full reversal of the Superior Court ruling, and then the California Supreme Court granted review of a portion of the case pertaining to whether CEQA requires review of the effects of the existing environmental on future residents or uses of a project. Although the California Supreme Court issued a final ruling, at the time of this analysis, BAAQMD has not formally readopted its GHG thresholds. Notwithstanding formal adoption, the 2011 Thresholds are based on substantial evidence provided by BAAQMD², and have been accepted by the City of Oakland for use in CEQA review. These thresholds represent the only quantitative thresholds formally proposed by a regulatory agency with jurisdiction over the Project. Additionally, a recent California Supreme Court decision in *Center for Biological Diversity v. California Department of Fish and Wildlife* (November 30, 2015, Case No. 217763) found that a lead agency may rely on existing numerical thresholds of significance for greenhouse gas emissions and cited one of the BAAQMD thresholds as an example.

In its June 2012 *CEQA Air Quality Guidelines*, BAAQMD is specific as to what sources of emissions should be considered relative to proposed CEQA GHG thresholds³ (Table 4-2: Guidance for estimating a

² Bay Area Air Quality Management District, *Revised Draft Options and Justification Report, California Environmental Quality Act Thresholds of Significance*, October 2009.

³ Bay Area Air Quality Management District, *California Environmental Quality Act Air Quality Guidelines*, Table 4-2: GHG Quantification Guidance Standard, page 4-6.
http://www.baaqmd.gov/~media/Files/Planning%20and%20Research/CEQA/Draft%20BAAQMD%20CEQA%20Guidelines_Dec%207%202009.ashx

Project's Operations GHG Emissions, page 4-6). In August of 2013, BAAQMD formally required that the CalEEMod model be used for all future CEQA analysis and no longer supported the use of the BAAQMD's Bay Area Greenhouse Gas Emissions Model (BGM) to estimate GHG emissions from land development of projects. As such, the Project's baseline GHG emissions inventory presented in this GHG Plan were calculated using the CalEEMod model and provides emissions data for the sources identified by BAAQMD in its most recent (2012) Guidelines and applies the significance thresholds developed by BAAQMD and adopted by the City of Oakland.

2.0 GHG Emission Sources

2.1 GHG Emission Sources Included in the Inventory

Emissions included in the updated BAAQMD Guidelines and therefore included in the baseline GHG emissions inventory for the Project, if applicable, are:

- Area Source Emissions. These are direct emissions from sources that include natural gas combustion for heating, cooking, fireplaces, or boilers, as well as emissions from landscape maintenance equipment.
- Transportation Emissions. These are direct emissions from mobile sources including automobiles, trucks, motorcycles, and busses.
- Operational Electricity Consumption. These are indirect emissions emitted off-site via non-renewable, non-nuclear electricity generators as a result of increased electrical demand.
- Solid Waste Disposal Emissions. These are indirect emissions associated with waste generation. The non-residential uses at the development would generate waste. A large percentage of this waste would be diverted from landfills by waste reduction, recycling, and composting. Oakland currently diverts a large portion of its waste and has goals to even further reduce the amount of waste sent to a landfill. The remainder of the waste not diverted would be disposed of at a landfill. Landfills emit anthropogenic methane from the anaerobic breakdown of material.
- Operational Water Emissions (embedded energy). These indirect emissions are associated with the electricity used to convey water, due to increased water demand from the Project.
- Operational Wastewater (non-biogenic). The updated Guidelines define indirect emissions from wastewater treatment as including the GHG emissions associated with the electricity use in wastewater treatment and not the biogenic CO₂ process emissions⁴.

⁴ Bay Area Air Quality Management District, *California Environmental Quality Act Air Quality Guidelines*, page 4-7. http://www.baaqmd.gov/~media/Files/Planning%20and%20Research/CEQA/Draft%20BAAQMD%20CEQA%20Guidelines_Dec%207%202009.ashx

2.2 GHG Emission Sources Not Included in the Inventory

Emissions not included in the BAAQMD Guidelines, and therefore not included in the baseline GHG emissions inventory for the Project, are discussed below. These emissions may be considered in addition to those incorporated into the Project's baseline GHG emissions inventory discussed below in Sections 6.0 through 9.0.

- Permitted Stationary Source Equipment. Per BAAQMD, GHG emissions from permitted stationary source equipment are not to be assessed as part of the operational emissions of a land development project, but are instead to be directly compared to BAAQMD's 10,000 metric ton per year threshold for such equipment for the purposes of impact assessment relative to CEQA. GHG emissions from permitted stationary source equipment are not to be included in the project inventory that is used for comparison to either the BAAQMD's proposed threshold of 1,100 MT of CO₂e per year or the efficiency-based threshold of 4.6 MT of CO₂e per year per service population. The GHG analysis for the Project would likely include a backup diesel generator that would be a permitted stationary source.
- Vegetation Sequestration Change. This is the net change in CO₂ emissions resulting from vegetation change and its associated carbon sequestration. Given the urban location and excavated condition of the Proposed Project, a significant change in sequestration of CO₂ from vegetative sources would not occur.
- Fugitive Refrigeration Emissions. Refrigerant gases such as CFCs, HFCs, and HCFCs have a high global warming potential. Leaks of refrigeration gases were not quantified for the Project. At the entitlement stage of development, data necessary to estimate emissions (the pounds of charge of refrigerant for all air handling units) is not readily available.
- Life Cycle Emissions. Although there is no regulatory definition for "lifecycle emissions," the term is generally used to refer to all emissions associated with the creation and existence of a project, including emissions from the manufacture and transportation of component materials, and even emissions from the manufacture of the machines required to produce those materials. However, since it is impossible to accurately estimate the entire chain of emissions associated with any given project, lifecycle analyses are limited in effectiveness and meaning (relative to assessing or reducing Project-specific emissions for the CEQA analysis). The California Natural Resources Agency (CNRA) has stated that lifecycle analyses are not required under CEQA,⁵ and in December 2009 CNRA issued new energy conservation guidelines for EIRs that make no reference to lifecycle emissions.⁶ The CNRA's explained that: (1) There exists no standard regulatory definition for lifecycle emissions, and (2) Even if a standard definition for 'lifecycle' existed, the term might be interpreted to refer to emissions "beyond those that could be considered 'indirect effects'" as defined by CEQA

⁵ California Natural Resources Agency, 2009. *Final Statement of Reasons for Regulatory Action: Amendments to the State CEQA Guidelines Addressing Analysis and Mitigation of Greenhouse Gas Emissions Pursuant to SB97*, p. 71-72. http://ceres.ca.gov/ceqa/docs/Final_Statement_of_Reasons.pdf (accessed February 4, 2010).

⁶ State CEQA Guidelines, Appendix F. These new guidelines were part of amendments issued pursuant to SB97.

Guidelines, and therefore beyond what project managers are required to estimate and mitigate.⁷

- **Agricultural Emissions.** These are emissions from livestock, from fuel combustion associated with agricultural equipment operation, electricity use and fertilizer application. These sources were assumed not to be generated by the Proposed Project.
- **Off Road Equipment Emissions.** These are emissions from off-road equipment typically associated with equipment typically associated with industrial or large commercial land uses such as fork lifts, yard dogs and loaders. These sources were assumed not to be generated by the proposed office tower Project.

3.0 Project Design Features, City Standard Conditions of Approval, Regulatory Requirements, and General Plan Policies and Local Programs that Reduce GHG Emissions

There are many ways for a project to reduce its GHG emissions through its design, construction and operations. Local conditions of approval, policies, programs and regulatory requirements that apply to a project also combine to reduce project GHG emissions. Each of these components is considered part of the Proposed Project and is included in the estimate of the Project's baseline GHG emissions inventory as follows:

3.1 Project Design Features

- **CALGreen – Energy Performance Standard.** Required by the City of Oakland Green Building Ordinance (chapter 18.02 of the Oakland Municipal Code as well as per **SCA UTIL-4**), the project applicant shall comply with the requirements of the California Green Building Standards (CALGreen) mandatory measures and the applicable. Consequently, the Project will need to meet contemporary energy and design objectives by ensuring that the new building owners meet mandatory green building performance standard per CALGreen and provide the opportunity for the Project, as part of this GHG Plan, to exceed such standards where feasible. CALGreen requires that every new building constructed in California reduce water consumption by 20 percent, divert 50 percent of construction waste from landfills and install low pollutant-emitting materials. It also requires separate water meters for nonresidential buildings' indoor and outdoor water use, with a requirement for moisture-sensing irrigation systems for larger landscape projects and mandatory inspections of energy systems (e.g., heat furnace, air conditioner and mechanical equipment) for nonresidential buildings over 10,000 square feet to ensure that all are working at their maximum capacity and according to their design efficiencies. The effects of these energy and water saving features are incorporated into the baseline emission inventory for the Proposed Project.

⁷ California Natural Resources Agency, 2009. *Final Statement of Reasons for Regulatory Action: Amendments to the State CEQA Guidelines Addressing Analysis and Mitigation of Greenhouse Gas Emissions Pursuant to SB97*, p. 71. http://ceres.ca.gov/ceqa/docs/Final_Statement_of_Reasons.pdf (accessed February 4, 2010).

The Proposed Project intends to meet, at a minimum, LEED Silver standards and comply with the Green Building ordinance and requirements.

3.2 City Standard Conditions of Approval

City SCAs are incorporated and required as part of a proposed project and are adopted as conditions of approval and required of the project to help ensure less than significant impacts.

The following SCAs are required as part of a Proposed Project and adopted as conditions of approval to help reduce GHG emissions of the Project:

- SCA TRA-4 – Parking and Transportation Demand Management Plan. SCA TRA-4 requires the Project applicant to submit for review and approval by the City of Oakland Planning and Zoning Division a Transportation Demand Management (TDM) Plan containing strategies to reduce on-site parking demand and single occupancy vehicle (SOV) travel. In the GHG Plan, calculations of GHG reductions attributable to a TDM Plan) assumed 20 percent projected TDM trip reduction.
- SCA UTIL-1 – Waste Reduction and Recycling. SCA UTIL-1 requires the Project applicant to submit a Construction & Demolition Waste Reduction and Recycling Plan (WRRP) and an Operational Diversion Plan (ODP) for review and approval by the Oakland Public Works Agency. Chapter 15.34 of the Oakland Municipal Code outlines requirements for reducing waste and optimizing construction and demolition (C&D) recycling. Affected projects include all new construction and all demolition. This SCA essentially addresses reduction in construction-related emissions, which the City combines with the Project's operational emissions to assess against the significance thresholds for operational emissions, even though construction emissions are not a component of BAAQMD's Guidelines. Therefore, this SCA will contribute to reducing total emissions of the Project by reducing off-site disposal truck trips and/or trip lengths.
- SCA UTIL-3 – Recycling Collection and Storage Space. Requires the Project applicant to comply with the City of Oakland Recycling Space Allocation Ordinance (chapter 17.118 of the Oakland Planning Code). The Project drawings submitted for construction-related permits shall contain recycling collection and storage areas in compliance with the Ordinance. For nonresidential projects, at least two cubic feet of storage and collection space per 1,000 square feet of building floor area is required, with a minimum of ten cubic feet. Recycling and composting results in reduced GHG emissions from decomposition of wastes as well as reduces off-site disposal truck trips and/or trip lengths
- SCA UTIL-4 – Green Building Ordinance Requirements. Discussed above as a Project Design Feature.
- SCA AES-2 Landscape Requirements and Tree Replacement. SCAs address landscape requirements for frontages of commercial buildings and replacement of trees removed as part of a project. Projects are required to install one tree for every 25 feet of street frontage in cases sidewalks have adequate width. Additionally SCAs generally require the replacement

of native trees removed as part of a project. Together, these SCAs that maintain and increase landscaping and trees effect cooler climate, reduce excessive solar gain, and absorb CO₂e emissions over the minimum 2 years to construct of the Project.

- SCA AIR-1 Construction Related Air Pollution Controls. This SCA includes many measures which will reduce or limit the amount of GHG emitted during the construction processes including limitations on vehicle idling, preference over electricity over petroleum-based combustion equipment, and accelerated use of off-road equipment with emissions control.
- SCA GHG-1- GHG Reduction Plan. As previously discussed as the subject of this GHG Plan, SCA GHG-1 applies to certain projects that produce total GHG emissions that exceed the BAAQMD CEQA Thresholds. SCA GHG-1 requires the Project applicant to prepare the GHG Reduction Plan, presented herein, to increase energy efficiency and reduce GHG emissions to the greatest extent practical and feasible, but in no event less than the amount required to be below the BAAQMD CEQA Thresholds. As summarized above, consistent with SCA GHG-1, this GHG Reduction Plan includes a set of quantified GHG emissions reduction measures in addition to energy efficiencies included as part of the Project (including the City's SCAs, proposed mitigation measures, project design features, and other City requirements). SCA GHG-1 is presented in the detailed Project GHG emissions impact analysis further below and will reduce the GHG emissions of the Project.

3.3 General Plan Policies and City Programs

- Oakland General Plan LUTE. The LUTE is aimed at promoting use of public transit, bicycles and pedestrian travel. Any reduction of transportation-related GHG emissions are captured in the trip reduction associated with the TDM Plan.
- Oakland General Plan Open Space, Conservation and Recreation (OSCAR) Element. The OSCAR contains policies that (a) encourage the provision of open space, which increases vegetation area (trees, grass, landscaping, etc.) to effect cooler climate, reduce excessive solar gain, and absorb CO₂; (b) encourage stormwater management, which relates to the maintenance of floodplains and infrastructure to accommodate potential increased storms and flooding; and (c) encourage energy efficiency and use of alternative energy sources. Policies that address vegetation area have no impact on the emissions inventory as vegetative sequestration is not a component of BAAQMD's Guidelines Other policies regarding energy efficiency encourage and support energy efficiency but are not requirements under any implementation mechanism via the General Plan. They have resulted, however, in the implementation of the City of Oakland sustainability program discussed below.
- ECAP. In 2012, the City developed an Oakland Energy and Climate Action Plan (ECAP) to identify, evaluate and recommend prioritized actions to reduce energy consumption and GHG emissions in Oakland. The ECAP identifies energy and climate goals, clarifies policy direction, and identifies priority actions for reducing energy use and GHG emissions. Oakland developed its ECAP using a GHG reduction target equivalent to 36 percent below 2005 GHG emissions by 2020 (City of Oakland, Resolution No. 82129 C.M.S., 2009). The ECAP outlines a ten year plan including more than 150 actions that will enable Oakland to

achieve its 2020 reduction target. It also recommends a Three Year Priority Implementation Plan; a prioritized subset of actions, some of which apply to the Project, intended to capitalize on near term opportunities and lay the groundwork for long term progress.

- City of Oakland Sustainability Programs. The City has proactively adopted a number of sustainability programs in an effort to reduce the City’s impact on climate change. Oakland’s sustainability efforts are managed by the Oakland Sustainability Community Development Initiative and there are two main categories that relate to reducing GHG emissions from a development project: renewable energy and green building.

Renewable Energy. With regard to renewable energy, the City’s Sustainability Program has set a priority of promoting renewable energy with a particular emphasis on solar generation. The Program’s aggressive renewable energy goals include the following: 50 percent of city facilities entire electricity use from renewable sources by 2017; and 100 percent of the city’s entire electricity use from renewable sources by 2030. The City has some control over renewable energy percentages for buildings it operates by contracting its energy needs directly with the local utility. However, private building operators generally receive a standard energy mix from PG&E, and would not be required to contract for a higher percentage of renewables under this program as it only targets City facilities. PG&E had a 22.5 percent renewable energy mix goal in 2013 (compared to a 12 percent mix in 2007).

Green Building.(See CAL Green in Section 3.0, above.)

3.4 Regulatory Requirements

- AB 1493 and Amended “Pavley” Regulations. AB 1493 required the California Air Resources Board (CARB) to develop and adopt, by January 1, 2005, regulations that achieve “the maximum feasible reduction of GHGs emitted by passenger vehicles and light-duty trucks and other vehicles determined by CARB to be vehicles whose primary use is noncommercial personal transportation in the State. The CARB has adopted amendments to the Pavley regulations that reduce GHG emissions in new passenger vehicles from 2009 through 2016. The amendments, approved by CARB on September 24, 2009, are part of California’s commitment toward a nation-wide program to reduce new passenger vehicle GHGs from 2012 through 2016. The model used to estimate the Proposed Project’s GHG emissions for this analysis accounts for reductions of GHG resulting from implementation of Pavley standards.
- Low Carbon Fuel Standards (LCFS). On April 23, 2009 CARB approved the regulation to implement the LCFS. The LCFS will reduce GHG emissions from the transportation sector in California by about 16 million metric tons (MMT) in 2020. The model used to estimate the Proposed Project’s GHG emissions for this analysis accounts for reductions of GHG resulting from implementation of LCFS.

4.0 Baseline 2005 GHG Business-as-Usual Emissions Inventory

4.1 Construction-Related GHGs

2005 Total and Annualized Construction-generated GHG Emissions

The construction-generated GHG emissions of the Project include emissions of the principal GHGs (CO₂, CH₄ and N₂O). Estimated total construction emissions of the Project under the 2005 business-as-usual scenario, assuming construction equipment and vehicles that would have been used during the two-year construction period, is 2,543 MT CO₂e. These estimated emissions are greater than those estimated as part of the 2019 Adjusted GHG Project Inventory (as well as those estimated in the CEQA Analysis to which this GHG Plan is appended), primarily because of the improvements to both the available fleet of off-road equipment as well as on-road motor vehicles used by construction workers and vendors which has occurred in the intervening years between 2005, 2012 and today.

Construction emissions are annualized because the proposed operational GHG emissions thresholds are analyzed in terms of metric tons “per year.” Therefore, assuming a 40-year development life of the Project until it is demolished or remodeled for energy efficiency (which is the common standard currently used in practice) is approximately 64 MT CO₂e annually, over 40 years (see Table 1).

The BAAQMD Guidelines do not include a specific threshold or methodology for assessing construction-related GHG emissions for CEQA analysis. The City’s methodology adds the 40-year annualized construction-related GHG emissions to the Project’s total operational-related emissions, to assess construction-related GHG emissions against the BAAQMD thresholds. The 2005 business-as-usual scenario does not include characteristics that specifically contribute to it being consistent with AB 32 GHG reduction goals during construction.

4.2 Long-Term Operational GHGs

As introduced above, long-term operational GHG emissions associated with the Project include indirect emissions from mobile sources (motor vehicle trips), emissions from natural gas combustion used in non-residential buildings, emissions from electricity use in non-residential buildings (grid electricity), emissions from water conveyance and waste water treatment and conveyance, and emissions from area sources. Emissions from each of these sources, in addition to the construction-related emissions discussed above, are reported in Table 1, below.

2005 Business-as-Usual Operational GHG Emissions

Emissions calculated under the 2005 business-as-usual scenario do not factor in the Project’s design features, applicable City SCAs (including TDM), or regulatory requirements that have occurred subsequent to 2005 base year of the ECAP, which is why it is considered a “business-as-usual” approach. This approach does, however, assume the same Project assumptions that are the same regardless of year, such as the vehicle trip generation. The business-as-usual emissions are considered to demonstrate the emissions reductions that are attributable to measures incorporated as part of the Project and implementation of AB32 and the ECAP. As shown in Table 1, the total 2005 business-as-usual annual GHG emissions generated by the Project would be approximately 5,782 MT CO₂e per year.

**TABLE 1
2005 BUSINESS-AS-USUAL OPERATIONAL GHG EMISSIONS INVENTORY FROM THE PROPOSED PROJECT**

	Project Buildout Total CO₂e
Emission Source	
Area Source (Landscape Maintenance)	0.01
Natural Gas	643
Grid Electricity	1,844
Mobile Emissions (No TDM)	2,777
Solid Waste	253
Water & Wastewater Treatment & Conveyance	242
Total Business-as-Usual Operational Project GHG Emissions without Construction Emissions	5,718
Construction Emissions per Year (2,543 MT CO₂e annualized over 40 years)	63.6
Total Business-as-Usual Operational Project GHG Emissions with Construction Emissions	5,782
Total Business-as-Usual Operational Project GHG Emissions by Service Population^a	3.0^a

^a Total emissions divided by service population of 1,960 new employees for the Project at Buildout.

SOURCE: ESA, 2016

5.0 2019 Adjusted GHG Project Emissions Inventory

5.1 Construction-Related GHGs

Adjusted Total and Annualized Construction-generated GHG Emissions

The construction-generated GHG emissions of the Project include the principal GHGs (CO₂, CH₄ and N₂O) in metric tons of CO₂e, by construction year. An estimated total 1,983 MT CO₂e emissions from Project construction equipment and vehicles would have been emitted over the two years to construct the Project for 2019 Buildout.

5.2 Long-Term Operational GHGs

As introduced above, long-term operational GHG emissions associated with the Project include indirect emissions from mobile sources (motor vehicle trips), emissions from natural gas combustion used in non-residential buildings, emissions from electricity use in non-residential buildings (grid electricity), emissions from water conveyance and waste water treatment and conveyance, and emissions from area sources. Emissions from each of these sources, in addition to the construction-related emissions discussed above, are reported in Table 2, below.

Adjusted Operational GHG Emissions

Adjusted emissions calculated under the 2019 Buildout year assumes the Project's design features, applicable City SCAs (including TDM), and regulatory requirements that have occurred subsequent to the 2005 base year of the ECAP. As previously mentioned, these emissions differ slightly from those presented in the CEQA Analysis, predominantly because the emissions estimated herein assume implementation of these TDM trip reduction measures which were not assumed for the CEQA analysis. The adjusted emissions are considered to demonstrate the emissions reductions that are attributable to measures incorporated as part of the Project and implementation of AB32 and the ECAP. As shown in Table 2, the total 2019 adjusted annual GHG emissions generated by the Project would be approximately 4,353 MT CO₂e per year at Project Buildout.

**TABLE 2
UNADJUSTED 2019 OPERATIONAL GHG EMISSIONS INVENTORY FROM THE PROPOSED PROJECT**

	Project Buildout Total CO ₂ e
Emission Source	
Area Source (Landscape Maintenance)	0.01
Natural Gas	490
Grid Electricity	1,569
Mobile Emissions (with TDM)	1,759
Solid Waste	253
Water & Wastewater Treatment & Conveyance	231
Total Adjusted Operational Project GHG Emissions without Construction Emissions	4,303
Construction Emissions per Year (1,983 MT CO₂e annualized over 40 years)	49.6
Total Adjusted Operational Project GHG Emissions with Construction Emissions	4,353
Total Adjusted Operational Project GHG Emissions by Service Population^a	2.2^a
Percent Reduction over 2005 Business-as-Usual Emissions	24.7%
Further Emission Reduction Required to Achieve 36% Reduction	653

^a Total emissions divided by service population of 1,960 new employees for the Project at Buildout.

SOURCE: ESA, 2016

Assumptions and Estimated Adjusted Buildout 2019 Operational GHG Emissions, by Source

- Mobile Source (Motor Vehicle) Emissions.** The Proposed Project consists of high-density commercial development located within walking distance of public transportation, designed to minimize the use and impacts of private automobiles. The Project mobile source emissions would result from the typical daily operation of motor vehicles by employees, customers and vendors.

Vehicle trip generation from the Proposed Project is based on information from the transportation analysis by Fehr & Peers. Trip reductions used to assess GHG emissions reflect a trip reduction of 43 percent based on City of Oakland Transportation Impact Study Guidelines for development in an urban environment within 0.5 miles of a BART station.

Total Buildout of the Proposed Project would result in a net increase of 5,046 standard vehicle trips per day over existing conditions without any vehicle trip reductions; which would reduce to 2,876 standard vehicle trips per day with adjustments recommended by City of Oakland Transportation Impact Study Guidelines. The proposed 20% reduction of vehicle trips estimated in the TDM Plan would further reduce these trips to 2,301 trips per day.

Emissions for vehicle trips were calculated using the CalEEMod computer model. Trip generation rates of the CalEEMod were adjusted to reflect the Project-specific vehicle trip generation presented in the Transportation analysis. The calculation used the model default vehicle trip lengths specific to urban areas of Alameda County in the San Francisco Bay Area Air Basin.

CO₂, CH₄ and N₂O emissions were calculated in CalEEMod from motor vehicle trips based on trip generation of the transportation analysis and trip lengths and other data in the CalEEMod model that has been vetted by BAAQMD. CalEEMod also calculates CH₄ and N₂O emissions in terms of CO₂e by multiplying them by their respective global warming potential (GWP). CalEEMod also takes into account emissions reductions that would result from the implementation of Pavley GHG standards and the LCFS.

The resulting total Project mobile source emissions at total Project Buildout are estimated to be approximately **1,759 MT CO₂e per year at Buildout** with adjustments recommended by City of Oakland Transportation Impact Study Guidelines and implementation of the required TDM Plan.

- Project Natural Gas Combustion Emissions. GHG emission estimates from natural gas were calculated using CalEEMod. The Project-related natural gas GHG emissions are estimated to be 490 MT CO₂e per year.
- Indirect Project Electrical GHG Emissions. Non-residential buildings require electricity for space and water heating, air conditioning, lighting, and plug-in outlets. GHGs are indirectly emitted as a result of electrical service required for a Proposed Project. GHGs are emitted during the generation of electricity from fossil fuels. When electricity is used in a building, a portion of the electricity is typically generated off site at a power plant, while the remaining percentages are generated by renewable resources such as hydroelectric dams. The relative percentages of renewable and non-renewable resources vary from year-to-year based on the magnitude of available water flows at hydroelectric dams and other source variables. Currently, electricity provided by the standard PG&E grid invariably represents indirect emissions of GHGs from the combustion of fossil fuels. PG&E maintains annual records on the percentage of electricity from renewable and non-renewable resources and, using this data, calculates a 5-year rolling average annual emission factor (CO₂e emission rate per kilowatt of electricity generated) for its sources.

CalEEMod was used to calculate GHG emissions by inputting the most recent (November 2014) rolling five year average published by PG&E.

Project electrical GHG emissions were calculated based on energy demand estimates for commercial buildings contained in CalEEMod. The Proposed Project will construct the buildings to mandatory CALGreen standards as well as 2013 Title 24 standards. Because CalEEMod assumes compliance with 2008 Title 24 standards, Title 24 electricity demand was adjusted down 25% to reflect the increased efficiency from 2008 Title 24 to 2013 Title 24 requirements as estimated by the California Department of Energy. The resulting net Project-related electrical GHG emissions are estimated to be **1,569 MT CO₂e per year at Buildout**.

- Water and Wastewater Treatment and Conveyance. The Project GHG inventory includes emissions associated with drinking water and wastewater supply and treatment. In general, the majority of these emissions are indirect emissions associated with the energy used to convey, treat, and distribute water and wastewater. Additional emissions from wastewater treatment include CH₄ and N₂O, which are emitted directly from wastewater treatment processes.

The amount of electricity required to treat and supply water is a function of water use. CalEEMod estimates water use based on land use type.

In total, all municipal of water and wastewater treatment and conveyance for the Project is expected to produce **231 MT CO₂e annually at Buildout**.

- Solid Waste. The updated BAAQMD Air Quality Guidelines specifically identify emissions from solid waste as an element to be included in a GHG inventory for comparison to their proposed GHG significance thresholds. For solid waste, CalEEMod uses the emission factors compiled by CALrecycle to estimate GHG emissions.

CalEEMod uses the U.S. EPA WARM Model emission rates for mixed solid waste decomposition. CalEEMod calculates the net increase in GHG emissions from the increase in solid waste generation of the Proposed Project to be **253 MT CO₂e per year at Buildout**.

- Area Sources. Area source emissions stem from hearths (including gas fireplaces, wood-burning fireplaces, and wood-burning stoves) and small mobile fuel combustion sources such as lawnmowers and other landscape maintenance equipment. For commercial development with no hearth facilities, such as the Proposed Project, area source emissions of GHG would be entirely due to landscape maintenance equipment.

For the Proposed Project, the CalEEMod model indicates practically no quantifiable change in GHG emissions from landscape equipment. The increase of area source emissions in the Project GHG inventory is approximately **0.01 MT CO₂e per year at Buildout**.

Comparison of 2005 Business-as-Usual Emissions and 2019 Adjusted Emissions

The difference in the 2005 business-as-usual GHG emissions (Table 1) and the 2019 adjusted GHG emissions (Table 2) of the Project generally demonstrates the extent of emissions reduction that is attributable to measures incorporated with the Project.

At Buildout, the total annual adjusted GHG emissions generated by the Project, assuming TDM reduction (4,353 MT CO₂e shown in Table 2), is approximately 1,429 MT CO₂e per year less than the Project's estimated 2005 business-as-usual emissions (5,782 MT CO₂e shown in Table 1). This is a reduction of approximately 25 percent.

The most substantial reductions achieved with the 2019 adjusted emissions are associated with motor vehicle emissions - primarily on implementation of Pavley GHG standards, the LCFS, and the TDM trip reductions - none of which are assumed in the 2005 business-as-usual emissions. Substantial reductions also occur for indirect electricity emissions given the Project's adherence to mandatory CALGreen and 2013 Title 24 standards, which is not assumed in the business-as-usual (as discussed in the assumptions above).

5.3 Impacts of Operational GHG Emissions

Based on the applicable significance thresholds, the Project would have a significant impact on the environment if it would produce total emissions more than 1,100 metric tons of CO₂e annually *and* more than 4.6 metric tons of CO₂e per service population annually, or conflict with an applicable plan, policy, or regulation adopted for the purposes of reducing greenhouse gas emissions.

The impact are evaluated based on the Project assuming TDM trip reductions since implementation of the TDM Plan (per SCA TRA-4) is considered part of the Project.

To summarize from Table 2, assuming the 20 percent TDM reduction, the Project's total annual GHG emissions at Buildout is approximately 4,353 MT CO₂e, which exceeds the 1,100 MT CO₂e per year threshold. However, the resulting 2.2 MT CO₂e per year per capita of service population does not exceed the 4.6 MT CO per year threshold. Therefore, at Buildout, the Project would have a **less than significant** cumulative GHG impact because it would not meet or exceed both the 1,100 MT CO₂e per year threshold *and* the 4.6 MT CO₂e per year service population threshold.

For comparison, Table 1 shows that assuming no TDM reduction or other emissions reducing regulatory factors, total annual GHG emissions of the 2005 business-as-usual scenario would be approximately 5,782 MT CO₂e, which exceeds the 1,100 MT CO₂e per year threshold. However, the 3.0 MT CO₂e per year per capita of service population at Buildout of the 2005 business-as-usual scenario, assuming no TDM, also does not exceed the 4.6 MT CO per year threshold. Therefore, the GHG impact at Buildout, assuming no TDM reduction, would also be less than significant.

Part B: Available GHG Reduction Measures and Reduction Plan Program

This Part B of the GHG Plan identifies and assesses the feasibility of emissions reduction measures to identify “additional” measures that may be implemented to reduce GHG emissions beyond the adjusted Project’s GHG emissions assessed in Section 5.0 of this document, pursuant to SCA GHG-1.

Multiple current sources were consulted for preparation of this GHG Plan, including the State of California’s Climate Change Scoping Plan (December 2008) and first Update (May 2014), the State Attorney General’s web site, and the California Air Pollution Control Officer Association’s (CAPCOA) document on Quantifying Greenhouse Gas Mitigation Measures (August 2010). While each is discussed in the following sections, this analysis focuses on measures identified in the latest CAPCOA document and presents a best-professional effort to identify available emissions reduction strategies and does not assume to be exhaustive in its scope.

6.0 GHG Reduction Measures Identified in the Climate Change Scoping Plan of the California Air Resources Board

CARB’s Scoping Plan includes 39 Recommended Actions (qualitative measures), some of which are considered to have potential application to the Proposed Project. These particular measures relate to transportation, electricity and natural gas use, and green building design. Each of these measures is evaluated below for its applicability to the Proposed Project, its emissions reduction potential, and for its inclusion in the Proposed Project as currently designed.

6.1 Transportation

CARB’s Scoping Plan identifies nine transportation-related recommended actions. **Action T-1** concerns improvements to light-duty vehicle technology for the purposes of reducing GHG emissions (Pavley Standards). This action focuses on legislating improved controls for vehicle manufacturers and would not generally be considered applicable to the Proposed Project. However, it is reasonably anticipated that vehicles utilized by the Proposed Project would be subject to the new Pavley regulation. CalEEMod took into account emissions reductions that would result from the implementation of the Pavley Standards, therefore this action does not represent an additional reduction measure available to the City and Project applicant.

Action T-2 concerns implementation of a LCFS. To reduce the carbon intensity of transportation fuels, CARB is developing a LCFS, which would reduce the carbon intensity of California’s transportation fuels by at least ten percent by 2020 as called for by Governor Schwarzenegger in Executive Order S-01-07. LCFS will incorporate compliance mechanisms that provide flexibility to fuel providers in how they meet the requirements to reduce GHG emissions. Implementation of such a standard is not within the purview of a development project and this action does not represent an additional reduction measure available to the City and Project applicant. CalEEMod took into account emissions reductions that would result from the implementation of the LCFS.

Action T-3 addresses regional transportation targets for reducing GHG emissions. SB 375 requires CARB to develop, in consultation with MPOs, passenger vehicle GHG emissions reduction targets for 2020 and 2035 by September 30, 2010. It sets forth a collaborative process to establish these targets, including the appointment by CARB of a Regional Targets Advisory Committee to recommend factors to be considered and methodologies for setting GHG emissions reduction targets. SB 375 also provides incentives – relief from certain CEQA requirements for development projects that are consistent with regional plans that achieve the targets. The Proposed Project is within a priority development area identified in the Plan Bay Area, which is the Sustainable Communities Strategy developed pursuant to SB375. The Project contains no residential land uses and therefore does not qualify as a “transit priority project” under Section 15183.5(c) of CEQA. However, the Proposed Project has prepared and will implement measures to reduce VMT – measures that are part of the TDM Plan required by SCA TRA-4.

As indicated in the TDM Plan, in urban areas with high transit availability, robust TDM programs have been shown to reduce vehicle trips by as much as 80 percent and an average range of 20-50 percent.⁸ The TDM Plan targets 20 percent trip reductions at Buildout. The TDM Plan specifies mandatory TDM measures to reach the 20% vehicle trip reduction target, further reducing GHG emissions from the Project. These mandatory measures and their estimated reduction are provided below in Table 3.

⁸ CAPCOA, 2010. *Quantifying Greenhouse Gas Mitigation Measures*. Pages 58-60.

TABLE 3
MANDATORY TDM MEASURES ACHIEVING 20 PERCENT VEHICLE TRIP REDUCTION
 (From Project TDM Plan)

Mandatory Measure	Estimated Trip Reduction
Provide Payment to AC Transit (Completed)	NA ²
Infrastructure Improvements (Recommendations TRA-2 thru TRA-4)	NA ²
Designate On-Site Car-Share Spaces	1%
Coordinate to Provide Bike-Share Station	NA ²
Parking Management	5%
Alternative Work Schedule/Flexible Hours/ Telecommuting	<1%
Transit Fare Subsidy	10% ³
Pre-tax Commuter Benefit	NA ¹
Carpool and Ride-Matching Assistance	2%
Preferential Parking for Carpoolers	2%
Bicycle Facility Monitoring	NA ²
Guaranteed Ride Home	NA ²
TDM Coordinator	NA ²
TDM Marketing and Employee Education	2%
Total	20%

1. The focus of the CAPCOA document is reductions to VMT but the research used to generate the reductions also indicates vehicle trip reductions are applicable as well. For the purposes of this analysis the VT reduction is assumed to equal the VMT reduction. See the cited CAPCOA research for more information and related information on page 8 of the BAAQMD *Transportation Demand Management Tool User's Guide* (June 2012)
2. The effectiveness of this strategy cannot be quantified at this time. This does not necessarily imply that the strategy is ineffective. It only demonstrates that at the time of the CAPCOA report development, existing literature did not provide a robust methodology for calculating its effectiveness. In addition, many strategies are complementary to each other and isolating their specific effectiveness may not be feasible.
3. Assuming a subsidy of \$3.00 per employee per day.

Sources: Fehr & Peers, 2016.

The TDM Plan also includes a Program for monitoring, evaluation, and enforcement.

Action T-4 is concerned with vehicle efficiency measures. The California Integrated Waste Management Board (CIWMB) with various partners continues to conduct a public awareness campaign to promote sustainable tire practices. CARB is pursuing a regulation to ensure that tires are properly inflated when vehicles are serviced. Because the Proposed Project would not involve the operation of fleet vehicles, this action does not represent an additional reduction measure available to the City and Project applicant.

Actions T-5 and T-6 addresses electrification of ships at ports and port operations and is not applicable to the Proposed Project. Therefore, this action does not represent an additional reduction measure available to the City and Project applicant.

Action T-7 requires addresses existing trucks/trailers to be retrofitted with the best available technology and/or CARB-approved technology. This action does not represent an additional reduction measure available to the City and Project applicant.

Action T-8 focuses on hybridization of medium- and heavy-duty vehicles. The implementation approach to Action T-8 is to adopt a regulation and/or incentive program that reduces GHG emissions by encouraging hybrid technology as applied to vocational applications that have significant urban, stop-and-go driving, idling, and power take-off operations in their duty cycle. Such applications include parcel delivery trucks and vans. This action does not represent an additional reduction measure available to the City and Project applicant.

Action T-9 concerns implementation of a high speed rail (HSR) system. This action does not represent an additional reduction measure available to the City and Project applicant.

6.2 Electricity and Natural Gas

Action E-1, together with **Action GB-1** (Green Building), aims to reduce electricity demand by increased efficiency of Utility Energy Programs and adoption of more stringent building and appliance standards. Elements of this action include encouraging construction of zero net energy (ZNE) buildings and implementation of passive solar design. In addition to employing on-site electricity generation, a ZNE building must either replace natural gas with renewable energy for space and water heating, or compensate for natural gas use by generating surplus electricity for sale on the state's electricity grid. The Project proposes to construct the proposed towers consistent with the updated CALGreen building code standards which will become effective in January 2011. Compliance with mandatory CALGreen standards was accounted for in the inventory presented in Table 2. The Proposed Project also will meet a minimum of LEED Silver certification which will include many facets of the CalGreen requirements. The intent of compliance with mandatory CALGreen standards is generally consistent with the objectives of Action E-1 and GB-1. However, the Proposed Project does not currently include any form of on-site electricity generation. Consequently, on-site power generation represents a potential additional reduction measure.

Action E-2 encourages an increase in the use of combined heat and power (CHP) use, or co-generation, facilities. California has supported CHP for many years, but market and other barriers continue to keep CHP from reaching its full market potential. Increasing the deployment of efficient CHP will require a multi-pronged approach that includes addressing significant barriers and instituting incentives or mandates where appropriate. Co-generation would not be applicable to the Project site as it would require a constant need for steam that is absent. This action does not represent an additional reduction measure available to the City and Project applicant.

Action E-3 concerns Renewable Portfolio Standards for utilities and does not apply to development projects. Therefore, the Proposed Project would not conflict with the recommended measure.

Action E-4 strives to promote solar generated electricity. As discussed with respect to Action E-1, the proposed Project does not currently include any form of on-site electricity generation. Consequently, on-site power generation represents a potential additional reduction measure.

7.0 GHG Reduction Measures Identified in the California Air Pollution Control Officers Association (CAPCOA) Quantifying Greenhouse Gas Mitigation Measures Document

The Proposed Project’s design elements, applicable SCAs, non-CEQA Recommendations, and CEQA mitigation measures, may be compared to the list of specific mitigation measures developed by the CAPCOA in its document, *Quantifying Greenhouse Gas Mitigation Measures* (CAPCOA, 2010). Table 4 presents an itemized list of the primary mitigation measures and potential trip reduction (in terms of vehicle miles traveled [VMT]) identified in the CAPCOA document and identifies how each may relate to Proposed Project elements.⁹ The State Attorney General has also published a list of various “measures that may reduce the global warming related impacts of a project.” (California Dept. of Justice, 2009) These measures are generally included in CAPCOA’s more extensive listing of GHG mitigations and are not repeated.

**TABLE 4
CAPCOA-IDENTIFIED GHG REDUCTION MEASURES**

Mitigation Measure	Description	Potential Reduction Estimate	Existing or proposed by the project?
MM BE-1	Exceed Title 24	0.2 to 10 percent	Yes – is indicated in the Project sponsor’s LEED Silver Application to date.
MM BE-2	Install Programmable Thermostat Timers	Non-quantified BMP	No – This measure represents a means by which further GHG emissions reductions may be realized.
MM BE-3	Third Party HVAC Commissioning	No quantification – Enhances BE-1	Yes – Indicated in the Project sponsor’s LEED Silver Application to date.
MM BE-4	Install Energy Efficient Appliances	Quantification for residential and grocery only	Yes – Assumed as part of CalGreen requirement
MM BE-5	Install Energy Efficient Boilers	1.2 to 18.4 percent	Possibly – Could be captured under Project sponsor’s LEED Silver Application to date as part of basic commissioning and minimum energy performance requirements.
MM LE-1	Install Higher Efficiency Public Street and Area Lighting	16 to 40 percent of lighting energy	No – This measure represents a means by which further GHG emissions reductions may be realized.
MM LE-2	Limit Outdoor Lighting Requirements	Non-quantified BMP	No – This measure represents a means by which further GHG emissions reductions may be realized.
MM LE-3	Replace Traffic Lights with LED Traffic Lights	90 percent reduction in traffic light energy	Not applicable to commercial building.
MM AE-1	Establish Onsite Renewable or Carbon-Neutral Energy Systems- Generic	0 percent – 100 percent	No – This measure represents a means by which further GHG emissions reductions may be realized.

⁹ The focus of the CAPCOA document is reductions to VMT but the research used to generate the reductions also indicates vehicle trip reductions are applicable as well. The TDM Plan identified reductions in terms of “vehicle trip” (VT) reduction. For the purposes of both the GHG Plan and TDM Plan analyses, the VT reduction is assumed to equal the VMT reduction. (See the cited CAPCOA research for more information and related information on page 8 of the BAAQMD Transportation Demand Management Tool User’s Guide, June 2012).

Mitigation Measure	Description	Potential Reduction Estimate	Existing or proposed by the project?
MM AE -2	Establish Onsite Renewable or Carbon-Neutral Energy Systems – Solar Power	0 percent – 100 percent	No – This measure represents a means by which further GHG emissions reductions may be realized.
MM AE-3	Establish Onsite Renewable or Carbon-Neutral Energy Systems – Wind Power	0 percent – 100 percent	Not Feasible for tower commercial building
MM AE-4	Combined Heat and Power System	0 percent – 46 percent of electrical power	No – This measure represents a means by which further GHG emissions reductions may be realized.
MM LUT-1	Increase Density	0.8 to 30 percent reduction in VMT	Yes – Project is high density commercial use proximate to major transit
MM LUT -2	Increase Location Efficiency	46 percent of trip generation	Yes – The Transportation Section in the CEQA Checklist states that the site is located approximately 0.25 mile of the 12 th Street BART station. AC Transit provides bus service to the Project site.
MM LUT-3	Office/ Mixed Use Density	9 to 30 percent reduction in VMT	Yes – Project provides office and retail use proximate to transit with bicycle and pedestrian access.
MM LUT-4	Increase Destination Accessibility	0.5 percent – 5 percent	Yes - Operational features include retail space.
MM LUT-5	Increase Transit Accessibility	0.5 to 25 percent reduction in VMT	Yes – The location of the Project also increases the potential for pedestrians to walk and bike to nearby transit destinations and therefore reduces the VMT; trip reduction is incorporated in the transportation analysis (vehicle trip generation) in the CEQA Checklist.
MM LUT-6	Affordable Housing Component	0.04 percent –1.26 percent in VMT	Not Applicable – Project is not residential.
MM LUT-7	Orient toward non-Auto Corridor	0.25 to 0.5 percent reduction in VMT	Yes – Project is designed around an existing transit, bicycle, and pedestrian corridor encourages alternative mode use. Trip reduction is incorporated in transportation analysis in the CEQA Checklist.
MM LUT-8	Proximity to bike path/bike lanes	0.625 percent reduction in VMT	Yes – Per the City of Oakland Bicycle Master Plan there is one Class 2 and three Class 3 bike routes within one quarter mile of the Project site including MLK Jr. Way.
MM STD-1	Provide Pedestrian Network Improvements	0 to 2 percent reduction in VMT	Yes - The Project proposes bulbouts at the crosswalks crossing Martin Luther King Jr. Way at 11th and 12th Streets, as part of Recommendation TRA-2 identified in the TDM Plan and CEQA Checklist. ^a
MM STD-2	Provide Traffic Calming Measures	0.25 to 1 percent reduction in VMT	Not applicable to commercial office building located in an urban area.
MM STD-3	Implement Electric Vehicle Network	0.5 to 12.7 percent reduction in VMT	Not applicable to commercial office building located in an urban area.
MM STD-4	Create Urban Non-motorized Zones	None provided	Yes – Project is high density commercial use in a CBD proximate to major transit which is assumed in Project's trip generation in the CEQA Checklist.
MM STD-5	Incorporate Bike Lane Street Design	None provided	Not Applicable to commercial tower building

Mitigation Measure	Description	Potential Reduction Estimate	Existing or proposed by the project?
MM STD-6	Bike Parking Non-residential	None provided	Yes – Municipal Code Chapter 17.117 requires new development to provide both short-term (i.e., bicycle racks) and long-term bicycle parking (i.e., lockers or indoor storage) per SCA TRA-2 (as part of the final development permit) the applicant shall submit for review and approval of the Planning and Zoning Division, plans that show bicycle storage and parking. Also, the TDM Plan identifies “bicycle facilities” as a TDM measure to be implemented as part of the Project and contribute to a 20 percent trip reduction. ^a
MM STD-7	Bike Parking Residential	None provided	Not applicable to commercial building
MM STD-8	Preferential Parking for EVs/CNG Vehicles	Grouped Strategy with MM STD-3	Partially – Preferential parking is required by CALGreen section 5.106.5.2. However, installation of electric vehicle charging stations represents a means by which further GHG emissions reductions may be realized.
MM STD-9	Dedicate Land for Bike Trails	Grouped Strategy with MM LUT-9	Not applicable to commercial building
MM PDT-1	Minimum Parking	5 percent – 12.5 percent reduction in VMT	Yes – The Proposed Project would have a parking demand shortfall of 736 spaces at Buildout per the Transportation Section of the 2016 CEQA Checklist. With implementation of the TDM Plan, a combination of TDM measures to achieve a 20 percent trip reduction will reduce the parking demand shortfall to 548 spaces (188-space reduction) (as reported in the TDM Plan), since fewer cars will be coming to the Project site. The Project does not propose to reduce parking supply. No parking is required for the Project by Code.
MM PDT-2	Unbundle Parking Costs from Property Costs	2.6 percent – 13 percent reduction in VMT	Yes – Standard practice in CBD. Unbundling separates parking from property costs, requiring those who wish to purchase parking spaces to do so at an additional cost from the property cost (commercial lease).
MM PDT-3	Implement Market Price Public Parking (on-street)	1 percent – 30 percent reduction in VMT	Not applicable to private project.
MM PDT-4	Require Residential Area Parking Permits	Grouped Strategy with MM PPT-1	Not applicable to non-residential project
MM TRT-1 through TRT-3	Implement Commute Trip Reduction Program	1 percent – 6.2 percent reduction in VMT	Yes – TDM Plan identifies “Carpool/Ride-Matching Assistance” and “Preferential Parking for Carpoolers” (combined, 2%), as well as “TDM Marketing and Education” (2%) as mandatory TDM measures.
MM TRT-4	Implement Subsidized or Discounted Transit Program	0.3 percent – 20 percent reduction in VMT	Yes – The TDM Plan identifies “Transit Fare Subsidy” as a mandatory measure (10%). The TDM Plan also identifies “Increased Transit Subsidy” as an “additional strategy” that the Project could implement for possible further trip reduction.
MM TRT-5	End of trip facilities (i.e., showers and lockers)	Grouped Strategy with MM TRT-1	Yes – The TDM Plan identifies “bicycle/shower facilities” as part of Recommendation TRA-4 to be implemented as part of the Project. ^a
MM TRT-6	Telecommuting and Alternative Work Schedules	0.7 percent – 5.5 percent reduction in VMT	Yes – TDM Plan identifies alternative work schedule/flexible hours.

Mitigation Measure	Description	Potential Reduction Estimate	Existing or proposed by the project?
MM TRT-7	Implement Commute Trip reduction Marketing	0.8 percent –4.0 percent reduction in commute VMT	Yes – TDM Plan implements TDM outreach and education
MM TRT-8	Implement Preferential Parking Program	Low	Yes – This required by CALGreen section 5.106.5.2.
MM TRT-9	Implement Car-sharing Program	0.4 percent –0.7 percent reduction in commute VMT	Yes – TDM Plan implements on-site car-sharing
MM TRT-11	Employ Employer-Sponsored Vanpool/Shuttle	0.3 percent –13.4 percent reduction in commute VMT	No applicable to commercial site within 0.25 mile of BART station and multiple AC Transit lines
MM TRT-12	Implement Bike Sharing Programs	Grouped Strategy with MM STD-5 and Lut-9	Yes – TDM Plan implements BikeShare Station
MM TRT-14	Price Workplace Parking	0.1 percent –19.7 percent reduction in commute VMT	<p>Potential Measure: The TDM Plan identifies “Parking Management” as a mandatory measure (5%). This includes charging for all parking spaces in the building unless noted in other strategies, removing the cost of parking from the lease agreements, and setting the fee for monthly, daily, and/or hourly parking the same as or higher than other nearby garages.</p> <p>The TDM Plan also identifies “Increased Parking Fee” as an “additional strategy” that the Project could implement for possible further trip reduction.</p>
MM TRT-15	Implement Employee Parking “Cash-out”	0.6 percent –7.7 percent reduction in commute VMT	<p>No. The Project could require employers to offer employee parking “cash-out.” The term “cashout” is used to describe the employer providing employees with a choice of forgoing their current subsidized/free parking for a cash payment equivalent to the cost of the parking space to the employer.</p>
MM TST-1 through MM TST-6	Transit System improvements	0.02 percent –8.2 percent reduction in commute VMT	Not applicable to commercial site within 0.25 mile of BART station and multiple AC Transit lines
MM RPT-1 through RPT-4	Road Pricing Management	7.9 percent –45 percent reduction in GHG	Not applicable to commercial building project
MM VT-1 through VT-3	Vehicles	Dependent	Not applicable to commercial building project with no significant fleet vehicles
MM WSW-1 and WSW-2	Use Reclaimed/Gray Water	Up to 100% of outdoor water	Yes – Per Project sponsor’s LEED scorecard, purple pipe will be plumbed into building
MM WUW-1	Install Low Flow Water Fixtures	20 percent of indoor residential water use	Yes – Required by CalGreen,
MM WUW-2	Adopt a Water Conservation Strategy	Dependent	Yes – Water efficient landscaping is indicated in the Project sponsor’s LEED Silver Application.
MM WUW-3	Design Water Efficient Landscapes	0 to 70 percent of outdoor water use	Yes – Water efficient landscaping is indicated in the Project sponsor’s LEED Silver Application.
MM WUW-4	Use Water-Efficient Landscape Irrigation Systems	6.1 percent of outdoor water use	Yes – Water efficient landscaping is indicated in the Project sponsor’s LEED Silver Application.
MM WUW-5	Reduce Turf and Landscapes in Lawns	Dependent	Yes – Water efficient landscaping is indicated in the Project sponsor’s LEED Silver Application.
MM WUW-6	Plant Native or Drought-Resistant Trees and Vegetation	Dependent	Yes – Water efficient landscaping is indicated in the Project sponsor’s LEED Silver Application.

Mitigation Measure	Description	Potential Reduction Estimate	Existing or proposed by the project?
MM A-1 Through MM A-3	Landscaping Equipment	1 percent	No. Potential Measure by which further GHG emissions reductions may be realized
MM SW-1	Institute or Extend Recycling and Composting Services	Dependent	No - While LEED requires provision of an easily-accessible dedicated area or for the collection of storage materials for recycling for the entire building, there are no operational project recycling goals. Operational recycling goals represent a potential additional reduction measures.
MM SW-2	Recycle Demolished Construction Material	Dependent	Not applicable – no structures on site
MM MISC-1	Off-Site Mitigation Fee Program/ Offset Purchase	Moderate	No. A potential additional measure by which further GHG emissions reductions may be realized. The project sponsor may enter into one or more contracts to purchase voluntary carbon credits from a qualified GHG emissions broker.

^a Per the TDM Plan, the effectiveness of this strategy cannot be quantified at this time. This does not necessarily imply that the strategy is ineffective. It only demonstrates that at the time of the 2010 CAPCOA report development, existing literature did not provide a robust methodology for calculating its effectiveness; CAPCOA has not issued updates as of this GHG Plan. In addition, many strategies are complementary to each other and isolating their specific effectiveness may not be feasible.

SOURCE: CAPCOA, 2010.

8.0 Additional GHG Reduction Measures Available to Further Reduce GHG Emissions of the Proposed Project

As required by SCA GHG-1 (GHG Reduction Plan), Table 5 provides “additional GHG reduction measures available to further reduce GHG emissions” beyond the adjusted GHG emissions of the Project. Table 5 lists GHG reduction measures identified in Sections 6.0 and 7.0 (Table 4) that are not already fully assumed as part of the Project and that are therefore considered “additional” measures. “Additional Strategies” identified in the TDM Plan as those that the Project should consider necessary to meet the required trip reduction goal if necessary after implementation of the mandatory TDM measures (Table 3, above), are also identified; these strategies align with the CAPCOA mitigation measures. Each measure in Table 5 is described below in Section 8.1.

It is anticipated that further GHG emissions reduction than that quantified in Table 2 of this document could be achieved through implementing a combination of the available additional measures in Table 5. Possible additional and feasible reduction measures that could be considered for the Project are not limited to those listed in Table 5; given the evolving nature of GHG emissions reduction strategies and technologies. However, there is some uncertainty involved with the identification and effectiveness of available strategies. Further, additional measures may become feasible (or less so) as the Project is developed in greater detail.

An estimated range of possible emissions reduction is presented for some of the additional measures where it is meaningful. For other measures, a quantifiable emissions reduction cannot be reasonably estimated given the need for Project detail or programming that is not yet established, or because any quantifiable emissions reductions are so minimal (substantially less than zero) they are considered insubstantial.¹⁰ However, the available additional measures are still identified for possible implementation by the Project to ensure emissions reduction to the greatest extent practical and feasible. Also, an individual assessment of the feasibility and applicability are also identified for each of the additional reduction measures in Table 5.

8.1 Summary Descriptions of Additional GHG Reduction Measures

**TABLE 5
ADDITIONAL GHG REDUCTION MEASURES IDENTIFIED FOR
POTENTIAL IMPLEMENTATION BY THE PROPOSED PROJECT**

Mitigation Measure	Description	CO₂e Emissions Reduction Estimate Range
CAPCOA MM BE-2	Install Programmable Thermostat Timers	Insubstantial BMP
CAPCOA MM LE-1	Install higher efficiency public street and area lighting	16 to 40 percent of lighting energy
CAPCOA MM LE-2	Limit Outdoor Lighting Requirements	Non-quantified BMP
CAPCOA MM AE-1	Establish Onsite Renewable or Carbon-Neutral Energy Systems-Generic	0 percent – 100 percent
CAPCOA MM AE-2	Establish Onsite Renewable or Carbon-Neutral Energy Systems –solar power	0 percent – 100 percent
CAPCOA MM AE-4	Combined Heat and Power System	0 percent – 46 percent of electrical power
CAPCOA MM STD-8	Installation of Electric Vehicle Charging Stations	0.5 percent – 12.7 percent reduction in VMT
CAPCOA MM TRT-4	Subsidized or Discounted Transit Program (Increased) ^a	0.4 percent –0.7 percent reduction in commute VMT ^b
CAPCOA MM TRT-9	Implement Car-sharing Program (Expanded to Encourage/Subsidize Membership) ^a	0.4 percent –0.7 percent reduction in commute VMT ^b
CAPCOA MM TRT-12	Implement Bike Sharing Programs (Expanded to Implement/Subsidize Membership) ^a	^b
CAPCOA MM TRT-14	Price Workplace Parking (Increased) ^a	0.1 percent –19.7 percent reduction in commute VMT ^b
CAPCOA MM TRT-15	Implement Employee Parking “Cash-out”	0.6 percent –7.7 percent reduction in commute VMT
CAPCOA MM A-1	Landscaping Equipment	1 percent
CAPCOA MM SW-1	Institute or Extend Recycling and Composting Services	Dependent
CAPCOA MM MISC-1	Off-Site Mitigation Fee Program/ Offset Purchase	Up to 100 percent of GHG

^a Identified as an “Additional Strategy” that the Project should consider to achieve the required TDM goals.

^b Per the TDM Plan, the effectiveness of this strategy cannot be quantified at this time. This does not necessarily imply that the strategy is ineffective. It only demonstrates that at the time of the 2010 CAPCOA report development, existing literature did not provide a robust methodology for calculating its effectiveness; CAPCOA has not issued updates as of this GHG Plan. In addition, many strategies are complementary to each other and isolating their specific effectiveness may not be feasible.

¹⁰ Measures identified as “insubstantial” could still be implemented, even though the emissions reduction would be minimal and the reductions are not specified in the Final GHG Reduction Plan Program.

CAPCOA Mitigation Measure BE-2: Programmable Thermostats. Programmable thermostat timers allow users to easily control when the HVAC system will heat or cool a certain space, thereby saving energy. CAPCOA cites an estimate the savings of this measure to be \$100 per year. Based on a commercial electrical rate of 0.18 dollars per kw-hr represents approximately 556 kw-hr per year or about 0.13 MT/year of CO₂e.

CAPCOA Mitigation Measure LE-1: Install Higher Efficiency Public Street and Area Lighting. Lighting sources contribute to GHG emissions indirectly, via the production of the electricity that powers these lights. Public street and area lighting includes streetlights, pedestrian pathway lights, area lighting for parks and parking lots, and outdoor lighting around public buildings. Lighting design should consider the amount of light required for the area intended to be lit. Lumens are the measure of the amount of light perceived by the human eye. Different light fixtures have different efficacies or the amount of lumens produced per watt of power supplied. This is different than efficiency, and it is important that lighting improvements are based on maintaining the appropriate lumens per area when applying this measure. Installing more efficacious lamps will use less electricity while producing the same amount of light, and therefore reduces the associated indirect GHG emissions.

CAPCOA Mitigation Measure AE-1: Establish Onsite Renewable or Carbon-Neutral Energy Systems-Generic. Using electricity generated from renewable or carbon-neutral power systems displaces electricity demand which would ordinarily be supplied by the local utility. Different sources of electricity generation that local utilities use have varying carbon intensities. Renewable energy systems such as fuel cells may have GHG emissions associated with them. Carbon-neutral power systems, such as photovoltaic panels, do not emit GHGs and will be less carbon intense than the local utility.

CAPCOA Mitigation Measure AE-2: Establish Onsite Renewable or Carbon-Neutral Energy Systems-Solar Power. Using electricity generated from photovoltaic (PV) systems displaces electricity demand which would ordinarily be supplied by the local utility. Since zero GHG emissions are associated with electricity generation from PV systems, the GHG emissions reductions from this mitigation measure are equivalent to the emissions that would have been produced had electricity been supplied by the local utility.

CAPCOA Mitigation Measure MM AE-4: Combined Heat and Power System. For the same level of power output, combined heat and power (CHP) systems utilize less input energy than traditional separate heat and power (SHP) generation, resulting in fewer CO₂ emissions. In traditional SHP systems, heat created as a by-product is wasted by being released into the environment. In contrast, CHP systems harvest the thermal energy and use it to heat onsite or nearby processes, thus reducing the amount of natural gas or other fuel that would otherwise need to be combusted to heat those processes. In addition CHP systems lower the demand for grid electricity, thereby displacing the CO₂ emissions associated with the production of grid electricity.

CAPCOA Mitigation Measure MM SDT-8: Installation of Electric Vehicle Charging Stations. To create an Neighborhood Electric Vehicle (NEV) network, the Project could implement the necessary infrastructure, including NEV parking, charging facilities, striping, signage, and educational tools.

CAPCOA Mitigation Measure MM E-4: Energy Star Roof. As more detail about the Project is developed, the Project could utilize energy efficient and/or light-colored roofing materials over substantial roof area for additional emissions reductions.

CAPCOA Mitigation Measure MM TRT-4: Implement Subsidized or Discounted Transit Program (Increased). At a level beyond that implemented as a mandatory measure in the TDM Plan, the Project's building management could encourage tenants to increase the transit subsidy provided to employees. Alternatively, the building management can include a specific number of transit passes with each lease agreement.

CAPCOA Mitigation Measure MM TRT-9: Implement Car-sharing Program (Expanded). In addition to the mandatory measure in the TDM Plan to designate on-site car-share spaces, the Project's building tenants could achieve increased usage of car-share by encouraging tenants to fully or partially pay for their employees' yearly membership fee and insurance associated with car-sharing.

CAPCOA Mitigation Measure MM TRT-12: Implement Bike-sharing Program (Expanded). In addition to the mandatory measure in the TDM Plan to coordinate the provision of a bike-share station, the Project's building tenants could achieve increased usage of bike-share by encouraging tenants to fully or partially pay for their employees' yearly membership fee and insurance associated with bike-sharing.

CAPCOA Mitigation Measure TRT-14: Price Workplace Parking. The Project could implement workplace parking pricing at its employment centers. This may include: explicitly charging for parking for its employees, implementing above market rate pricing, validating parking only for invited guests, not providing employee parking and transportation allowances, and educating employees about available alternatives. Though similar to the Employee Parking "Cash-Out" strategy below, this strategy focuses on implementing market rate and above market rate pricing to provide a price signal for employees to consider alternative modes for their work commute.

CAPCOA Mitigation Measure TRT-15: Implement Employee Parking "Cash-out". The project could require employers to offer employee parking "cash-out." The term "cashout" is used to describe the employer providing employees with a choice of forgoing their current subsidized/free parking for a cash payment equivalent to the cost of the parking space to the employer.

CAPCOA Mitigation Measure A-1: Electric Yard Equipment Compatibility. This measure would require provision of electrical outlets at building exterior areas. CAPCOA indicates that this measure has a low reduction score and does not quantify any emissions reduction related to this measure. Consequently, this measure is suggested to be implemented but no quantifiable reduction in GHG emissions can reliably be estimated.

CAPCOA Mitigation Measure SW-1: Institute or Extend Composting or Recycling Services. The transport and decomposition of landfill waste and the flaring of landfill gas all produce GHG emissions. Decomposition of waste produces methane, a GHG which has a global warming potential over 20 times that of CO₂. The transport of waste from the site of generation to the landfill produces GHG emissions from the combustion of the fuel used to power the vehicle. Choosing waste management practices which reduce the amount of waste sent to landfills will reduce GHG emissions. Strategies to reduce landfill waste include increasing recycling, reuse, and composting, and encouraging lifestyle choices and office practices which reduce waste generation.

CAPCOA Mitigation Measure MISC-2: Offset Purchase. This analysis considers Offset Purchase (CAPCOA Mitigation Measures MISC-2) to be a potentially feasible measure within the timeframe of the Project, given (1) that the Project is anticipated to be operational in approximately 2019, given the potential for implementation of this measure to have a “Moderate/High” reduction estimate. The Project Sponsor may enter into one or more contracts to purchase voluntary carbon credits from a qualified GHG emissions broker. CEQA Guidelines Section 15126.4 (c), adopted March 18, 2010 expressly provides for this as mitigation to reduce GHG emissions.

9.0 GHG Reduction Plan Program

9.1 GHG Emissions Reduction Targets

The goal of the GHG Reduction Plan is to increase energy efficiency and reduce GHG emissions from the proposed Project to the greatest extent practical and feasible, but in no event less than the amount required to be less than the applicable significance threshold as adopted by the BAAQMD and consistent with the 36% reduction over the 2005 baseline goal of the ECAP. In other words, the GHG Plan is also intended to result in 100 percent emissions reduction of total operational GHG emissions over the threshold of significance. The target reduction in terms of MT CO₂e of are as follows:

For Buildout, GHG emissions reduction measures beyond those included as part of the Project (discussed in Section 3.0) are identified to be combined to reduce the Proposed Project’s **653 MT CO₂e exceedance** of the ECAP reduction goal.¹¹

9.2 Feasible Measures and Emissions Reductions for the Project

This GHG Plan Program is intended to ensure implementation of a set of emissions reduction measures by the Project Applicant (or other responsible party) during development and operation of the Project. This Program specifies performance measures that the Project shall meet by implementing any one or more of the measures discussed above that offer substantial, quantifiable emissions reductions.

The GHG reduction measures shown in Table 5 are identified as measures available for potential implementation by the Proposed Project. However, other measures may be identified and approved by the City over the life of the Project; those listed in Table 5 are not intended to preclude use of other measures.

¹¹ Total annual GHG emissions at Project Buildout is 12.030 MT CO₂e compared to the 1,100 MT CO₂e threshold (see Table 4).

GHG emissions reductions resulting from measures that the Project Applicant may implement at another offsite location, would also be credited to the Project's emissions reductions. Emissions reductions are estimated for each measure and a total provided based on reasonable operational assumptions about the Project. The Project Applicant, new employers of the Project after it is operational, shall implement a combination of the GHG reduction measures shown in Table 5, without limitation, except as limited in use of Offset Purchase (CAPCOA MM Misc-2) to preclude the Project Applicant from achieving the target reduction in GHG emissions solely through Offset Purchase.

For purposes of estimating, the minimum reduction for each measure that provides a quantifiable reduction range (in Table 5) is assumed, otherwise no estimate is reported. As a result, the potential reductions shown in Table 5 are expected to be less than what actual reductions could occur. The estimated emissions reduction that could be achieved by the GHG Plan Program in Table 5 would be sufficient to achieve the **653 MT CO₂e exceedance** of the ECAP's 36 percent reduction goal given that offsets could be acquired to achieve the calculated shortfall of the remaining measures.

9.3 Implementation, Reporting, Monitoring and Funding

To implement an approved GHG Reduction Plan for the City Center T-12 Office Project, the applicant/sponsor shall adhere to the following, in addition to the requirements of SCA GHG-1:

- a) **Refined GHG Reduction Measures Program.** Prepare and submit to the City Planning Director or his/her designee for review and approval a refined GHG Reduction Plan program (Table 5, Program of Feasible, Effective GHG Reduction Measures for the Project), that specifies and quantifies GHG reduction measures identified in, but not limited to, Table 5 of this GHG Plan, that the Project will implement.

Potential additional GHG reduction measures to be considered include, but are not be limited to, measures recommended in BAAQMD's latest CEQA Air Quality Guidelines, the California Air Resources Board Scoping Plan Update (December 2014), the California Air Pollution Control Officers Association (CAPCOA) Quantifying Greenhouse Gas Mitigation Measures Document (August 2010), the California Attorney General's website, and Reference Guides on Leadership in Energy and Environmental Design (LEED) published by the U.S. Green Building Council.

The proposed additional GHG reduction measures must be reviewed and approved by the City Planning Director or his/her designee. The types of allowable GHG reduction measures include the following (listed in order of City preference): (1) physical design features; (2) operational features; and (3) the payment of fees to fund GHG-reducing programs (i.e., the purchase of "offset carbon credits," pursuant to item "b" below).

The allowable locations of the GHG reduction measures include the following (listed in order of City preference): (1) the project site; (2) off-site within the City of Oakland; (3) off-site within the San Francisco Bay Area Air Basin; (4) off-site within the State of California; then (5) elsewhere.

- b) **Offset Carbon Credits Guidelines.** For GHG reduction measures involving the purchase of offset carbon credits), evidence of the payment/purchase shall be submitted to the City Planning Director or his/her designee for review and approval prior to completion of the project.

As with preferred locations for the implementation of all GHG reductions measures, the preference for offset carbon credit purchases include those that can be achieved as follows (listed in order of City preference): (1) within the City of Oakland; (2) within the San Francisco Bay Area Air Basin; (3)

within the State of California; then (4) elsewhere. The cost of offset carbon credit purchases shall be based on current market value at the time purchased and shall be based on the Project's operational emissions estimated in the 2016 CEQA Checklist (to which the GHG Reduction Plan is appended) or subsequent approved emissions inventory, which may result in emissions that are higher or lower than those estimated in the GHG Plan for the Project.

- c) **Plan Implementation and Documentation.** For physical GHG reduction measures to be incorporated into the design of the Project, the measures shall be included on the drawings submitted for construction-related permits. For operational GHG reduction measures to be incorporated into the Project, the measures shall be implemented on an indefinite and ongoing basis beginning at the time of Project completion.

For physical GHG reduction measures to be incorporated into off-site projects, the measures shall be included on drawings and submitted to the City Planning Director or his/her designee for review and approval and then installed prior to completion of the subject project. For operational GHG reduction measures to be incorporated into off-site projects, the measures shall be implemented on an indefinite and ongoing basis beginning at the time of completion of the subject Project.

- d) **Compliance, Monitoring and Reporting.** Upon City review and approval of the refined GHG Reduction Plan program, the applicant/sponsor shall satisfy the following requirements for ongoing monitoring and reporting to demonstrate that the additional GHG reduction measures are being implemented. The GHG Reduction Plan requires regular periodic evaluation over the life of the Project (generally estimated to be at least 40 years) to determine how the Plan is achieving required GHG emissions reductions over time, as well as the efficacy of the specific additional GHG reduction measures identified in the Plan.

Implementation of the additional GHG reduction measures and related requirements shall be ensured through the Project applicant/sponsor's compliance with a Mitigation Monitoring and Reporting Program, as will be implemented through Conditions of Approval adopted for the Project.

Generally, starting two years after the City issues the first Certificate of Occupancy for the Project, the Project applicant/sponsor shall prepare each year of the useful life of the Project an Annual GHG Emissions Reduction Report (Annual Report), subject to the City Planning Director or his/her designee for review and approval. The Annual Report shall be submitted to an independent reviewer of the City Planning Director's or his/her designee's choosing, to be paid for by the Project applicant/sponsor (see *Funding*, below), within two months of the anniversary of the Certificate of Occupancy.

The Annual Report shall summarize the Project's implementation of GHG reduction measures over the preceding year, intended upcoming changes, compliance with the conditions of the Plan, and include a brief summary of the previous year's Annual Report results (starting the second year). The Annual Report shall include a comparison of annual Project emissions to the baseline emissions reported in this GHG Plan.

The GHG Reduction Plan shall be considered fully attained when Project emissions are less than one applicable numeric BAAQMD CEQA Thresholds, as confirmed by the City Planning Director or his/her designee through an established monitoring program and consistency with the reduction targets of the ECAP are achieved. Monitoring and reporting activities will continue at the City's discretion, as discussed below.

- e) **Funding.** Within two months after the Certificate of Occupancy, the Project applicant/sponsor shall fund an escrow-type account or endowment fund to be used exclusively for preparation of Annual

Reports and review and evaluation by the City Planning Director or his/her designee, or its selected peer reviewers. The escrow-type account shall be initially funded by the Project applicant/sponsor in an amount determined by the City Planning Director or his/her designee and shall be replenished by the Project applicant/sponsor so that the amount does not fall below an amount determined by the City Planning Director or his/her designee. The mechanism of this account shall be mutually agreed upon by the Project applicant/sponsor and the City Planning Director or his/her designee, including the ability of the City to access the funds if the Project applicant/sponsor is not complying with the GHG Reduction Plan requirements, and/or to reimburse the City for its monitoring and enforcement costs.

- f) ***Corrective Procedure.*** If the third Annual Report, or any report thereafter, indicates that, in spite of the implementation of the GHG Reduction Plan, the Project is not achieving the GHG reduction goal, the project applicant/sponsor shall prepare a report for City review and approval, which proposes additional or revised GHG measures to better achieve the GHG emissions reduction goals, including without limitation, a discussion on the feasibility and effectiveness of the menu of other additional measures (Corrective GHG Action Plan). The Project applicant/sponsor shall then implement the approved Corrective GHG Action Plan.

If, one year after the Corrective GHG Action Plan is implemented, the required GHG emissions reduction target is still not being achieved, or if the Project applicant/owner fails to submit a report at the times described above, or if the reports do not meet City requirements outlined above, the City Planning Director or his/her designee may, in addition to its other remedies, (a) assess the Project applicant/sponsor a financial penalty based upon actual percentage reduction in GHG emissions as compared to the percent reduction in GHG emissions established in the GHG Reduction Plan; or (b) refer the matter to the City Planning Commission for scheduling of a compliance hearing to determine whether the Project's approvals should be revoked, altered or additional conditions of approval imposed.

The penalty as described in (a) above shall be determined by the City Planning Director or his/her designee and be commensurate with the percentage GHG emissions reduction not achieved (compared to the applicable numeric significance thresholds)

In determining whether a financial penalty or other remedy is appropriate, the City shall not impose a penalty if the Project applicant/sponsor has made a good faith effort to comply with the GHG Reduction Plan.

The City would only have the ability to impose a monetary penalty after a reasonable cure period and in accordance with the enforcement process outlined in Planning Code Chapter 17.152. If a financial penalty is imposed, such penalty sums shall be used by the City solely toward the implementation of the GHG Reduction Plan.

- g) ***Timeline Discretion and Summary.*** The City Planning Director or his/her designee shall have the discretion to reasonably modify the timing of reporting, with reasonable notice and opportunity to comment by the applicant, to coincide with other related monitoring and reporting (e.g., for a TDM Plan) required for the Project.

- *Fund Escrow-type Account for City Review:* Certificate of Occupancy plus 2 months
- *Submit Baseline Inventory of "Actual Adjusted Emissions":* Certificate of Occupancy plus 1 year
- *Submit Annual Report #1:* Certificate of Occupancy plus 2 years

- *Submit Corrective GHG Action Plan* (if needed): Certificate of Occupancy plus 4 years (based on findings of Annual Report #3)
- *Post Attainment Annual Reports*: Minimum every 3 years and at the City Planning Director's or his/her designee's reasonable discretion

References

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California Air Pollution Control Officers Association (CAPCOA), *CEQA & Climate Change, Evaluating and Addressing Greenhouse Gas Emissions from Projects Subject to the California Environmental Quality Act*, January 2008.

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