2.2 GREENHOUSE GAS EMISSIONS

2.2.1 Setting

Setting information with respect to this issue remains unchanged from the certified Final EIR. Please refer to Section 4.6.1 of the Final EIR for a full description of the setting related to Greenhouse Gas Emissions.

2.2.2 Impact Analysis

a. Methodology and Significance Thresholds. The significance thresholds are the same as those used in the certified Final EIR, but are repeated in this document for clarity. Based on Appendix G of the *State CEQA Guidelines*, impacts related to GHG emissions from the project would be significant if the project would:

1. *Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment; and/or*
2. *Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.*

The vast majority of individual projects do not generate sufficient GHG emissions to directly influence climate change. However, physical changes caused by a project can contribute incrementally to cumulative effects that are significant, even if individual changes resulting from a project are limited. The issue of climate change typically involves an analysis of whether a project's contribution towards an impact would be cumulatively considerable. "Cumulatively considerable" means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, other current projects, and probable future projects (*State CEQA Guidelines*, Section 15355).

City of San Luis Obispo Climate Action Plan. For future projects, the significance of GHG emissions may be evaluated based on locally adopted quantitative thresholds, or consistency with a regional GHG reduction plan, such as the City's Climate Action Plan. The Climate Action Plan, adopted in 2012, serves as the City's qualified GHG reduction plan because it contains the following required plan elements:

- Community-wide GHG emissions inventory and "business-as-usual" forecast of 2020 community-wide GHG emissions;
- GHG reduction targets consistent with AB 32 (i.e. a level, based on substantial evidence, below which the contribution to greenhouse gas emissions from activities covered by the plan would not be cumulatively considerable);
- Analysis of local and state policies and actions that may impact GHG emissions within the jurisdiction;
- Quantification of GHG reduction measures demonstrating that, if implemented, the GHG reduction targets will be met;
- Implementation and monitoring strategy and timeline; and
- Adequate environmental review of the Climate Action Plan.

Incorporation of these plan elements allows the Climate Action Plan to be used in the cumulative impacts analysis of later projects. As described in the Climate Action Plan, to analyze a project's consistency with the Climate Action Plan, "the environmental document for each project must identify those requirements specified in the Climate Action Plan that apply to the project, and if those requirements are not otherwise binding or enforceable, should be incorporated as mitigation measures applicable to the project" (*State CEQA Guidelines*, Section 15183.5b). The City is in the process of developing a mitigation matrix for projects that exceed specified GHG thresholds. The matrix will include quantifiable Climate Action Plan reduction measures consistent with SB 97 direction. For this analysis, the project's consistency with the Climate Action Plan is analyzed qualitatively against the applicable implementation strategies contained in the Climate Action Plan.

SLOAPCD CEQA Thresholds. The City of San Luis Obispo has not adopted GHG emissions thresholds for use in CEQA documents. In March 2012, the SLOAPCD adopted CEQA thresholds for GHG emissions. Based on the adopted SLOAPCD guidance, the following three quantitative thresholds may be used to evaluate the level of significance of GHG emissions impacts for residential and commercial projects:

1. *Qualified GHG Reductions Strategies. A project would have a significant impact if it is not consistent with a qualified GHG reduction strategy that meets the requirements of the State CEQA Guidelines. If a project is consistent with a qualified GHG reduction strategy, it would not have a significant impact; OR,*
2. *Bright-Line Threshold. A project would have a significant impact if it exceeds the "bright-line threshold" of 1,150 metric tons CO_2E/year; OR,*
3. *Efficiency Threshold. A project would have a significant impact if the efficiency threshold exceeds 4.9 metric tons of CO_2E/service population/year. The service population is defined as the number of residents plus employees for a given project.*

The efficiency threshold is specifically intended to avoid penalizing large-scale plans or projects that incorporate emissions-reducing features and/or that are located in a manner that results in relatively low vehicle miles traveled. The City of San Luis Obispo Climate Action Plan, adopted in 2012, serves as the City's qualified GHG reduction plan. Therefore, the project's contribution to cumulative GHG impacts would be cumulatively considerable if it is inconsistent with the Climate Action Plan. For informational purposes, the project's GHG emissions per service population are also quantified.

Methodology. Calculations of CO_2, CH_4, and N_2O emissions are provided to identify the magnitude of potential project effects. The analysis focuses on CO_2, CH_4, and N_2O because these make up 98.9 percent of all GHG emissions by volume (IPCC, 2007) and are the GHG emissions that the project would emit in the largest quantities. Fluorinated gases, such as HFCs, PFCs, CFCs, and SF_6, which are primarily associated with industrial processes, were also considered for the analysis. However, because the project is a residential/commercial development, the quantity of fluorinated gases would not be significant. Emissions of all GHGs are converted into their equivalent GWP (Global Warming Potential) in terms of CO_2 (CO_2e). Calculations are based on the methodologies discussed in the California Air Pollution Control Officers Association (CAPCOA) *CEQA and Climate Change* white paper (January 2008) and included the use of the California Climate Action Registry (CCAR) General Reporting Protocol (January 2009).

GHG emissions associated with the project were calculated using the California Emissions Estimator Model (CalEEMod) version 2016.3.1[1] (see Appendix A for calculations).

Operational Emissions. CalEEMod provides operational emissions of CO_2, N_2O, and CH_4. Emissions from energy use include electricity and natural gas use. The emissions factors for natural gas combustion are based on EPA's AP-42 (*Compilation of Air Pollutant Emissions Factors*) and CCAR. Electricity emissions are calculated by multiplying the energy use times the carbon intensity of the utility district per kilowatt hour (CalEEMod User Guide, 2016). The default electricity consumption values in CalEEMod include the California Energy Commission (CEC)-sponsored California Commercial End Use Survey (CEUS) and Residential Appliance Saturation Survey (RASS) studies.

Emissions associated with area sources, including consumer products, landscape maintenance, and architectural coating were calculated in CalEEMod and utilize standard emission rates from the California Air Resources Board, U.S. EPA, and emission factor values provided by the local air district (CalEEMod User Guide, 2016).

Emissions from waste generation were also calculated in CalEEMod and are based on the IPCC's methods for quantifying GHG emissions from solid waste using the degradable organic content of waste (CalEEMod User Guide, 2016). Waste disposal rates by land use and overall composition of municipal solid waste in California was primarily based on data provided by the California Department of Resources Recycling and Recovery (CalRecycle).

Emissions from water and wastewater usage calculated in CalEEMod were based on the default electricity intensity from the CEC's 2006 Refining Estimates of Water-Related Energy Use in California using the average values for Northern and Southern California.

For mobile sources, CO_2 and CH_4 emissions were quantified in CalEEMod. Because CalEEMod does not calculate N_2O emissions from mobile sources, N_2O emissions were quantified using the California Climate Action Registry General Reporting Protocol (January 2009) direct emissions factors for mobile combustion (see **Appendix A** for calculations). Estimates of vehicle trips associated with the proposed development are based on peak hour trip generation rates from the project Traffic Impact Study (refer to Section 4.12 of the certified Final EIR as updated in Section 2.4 of this SEIR, *Transportation/Traffic* and Appendix B of the SEIR). The trip generation rates in the TIS are based on the Institute of Transportation Engineers 9th Edition *Trip Generation Manual*, and also account for reductions expected from the mixed use and pedestrian-oriented characteristics of the project, including internal capture and pass-by trips. The estimate of total daily trips associated with the proposed project was based on the standard Institute of Transportation Engineers (ITE) vehicle trip rates and was calculated and extrapolated to derive total annual mileage in CalEEMod. Emission rates for N_2O emissions were based on the vehicle mix output generated by CalEEMod and the emission factors found in the California Climate Action Registry General Reporting Protocol.

[1] The current version of CalEEMod is 2016.3.2. This analysis uses the previous version 2016.3.1 for consistency with the emissions estimates provided in the certified FEIR. Version 2016.3.2 does not include substantial methodological changes from version 2016.3.1, including emissions factors. Therefore, the results from version 2016.3.1 reflect appropriate and up-to-date methodologies and emissions factors, and results from this version of CalEEMod are appropriate for analyzing project emissions.

Construction Emissions. Although construction activity is addressed in this analysis, CAPCOA does not discuss whether any of the suggested threshold approaches adequately address impacts from temporary construction activity. As stated in the *CEQA and Climate Change* white paper, "more study is needed to make this assessment or to develop separate thresholds for construction activity" (CAPCOA, 2008). Nevertheless, air districts such as the SLOAPCD (2012) have recommended amortizing construction-related emissions over the life of the project; SLOAPCD suggests the life of a project is typically 50 years for residential projects and 25 years for commercial projects. The project includes both commercial and residential uses; therefore, to provide a conservative estimate of construction emissions, emissions were amortized over the shorter lifetime duration of 25 years.

Construction of the project would generate temporary GHG emissions primarily as a result of operation of construction equipment on-site, as well as from vehicles transporting construction workers to and from the project site and heavy trucks to export earth materials offsite. Site preparation and grading typically generate the greatest amount of emissions due to the use of grading equipment and soil hauling. Re-grading of the project site would require approximately 248,000 cubic yards (cy) of import. Off-site hauling of import materials was included in the emissions modeling. This analysis assumes that soil would be imported to the site during each phase and, as exact import volumes per phase are unknown, total import was divided between phases proportionally by phase acreage. CalEEMod provides an estimate of emissions associated with the construction period, based on parameters such as the duration of construction activity, area of disturbance, and anticipated equipment used during construction.

Service Population. The service population is defined as the number of residents plus employees for a given project. Development of the project would add an estimated 1,293 residents to the City (546 new single family and multi-family dwelling units x 2.29 people/unit and 34 new affordable units x 1.25 people/unit).[2] In addition, based on employment generation rates for retail, hotel, and office uses from the SLOAPCD's *CEQA Air Quality Handbook* (SLOAPCD 2012), the project would result in a net increase of approximately 842 new employees.[3] Therefore, the total service population would be 2,135 persons.

b. Project Impacts and Mitigation Measures. As described above, the revised construction timing does not include any changes to the overall buildout of the San Luis Ranch Specific Plan. Annualized project GHG emissions, which are based on full buildout of the Specific Plan, would remain unchanged. Therefore, impacts related to GHG emissions (**Impact GHG-1** in the Final EIR) would be less than significant (**Class III**), consistent with the findings of the FEIR. **Appendix A** includes updated modeling related to greenhouse gas emissions.

[2] Persons per household from City's Land Use and Circulation Element Appendix I Water Supply Assessment (page 9), as referred to in SB610 Water Supply Assessment – San Luis Ranch prepared by Cannon (2016; Appendix M).
[3] Based on the following rates: 0.64 employees per 1,000 square feet for proposed 200 room hotel (290,400 square feet from CalEEMod results, see Appendix A); 2.52 employees per 1,000 square feet for proposed 150,000 square feet of office space; and 1.39 employees per 1,000 square feet for proposed 200,000 square feet regional retail (SLOAPCD 2012).