APPENDIX C-2

GLOBAL CLIMATE CHANGE EVALUATION

OTAY RANCH RESORT VILLAGE 13

MARCH 2019

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Global Climate Change Evaluation

for the

Otay Ranch Resort Village Specific Plan
ER-04-19-005, KIVA 3810-04-002

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Table of Contents

Executive Summary **1**

1.0 INTRODUCTION **1**

1.1 General Principles and Existing Conditions **5**

1.2 Sources and Global Warming Potentials of GHG **6**

1.3 Regulatory Framework **8**

1.3.1 National and International Efforts 8

1.3.2 State Regulations and Standards 11

1.3.3 Local Regulations and Standards 23

2.0 POTENTIAL CLIMATE CHANGE IMPACTS TO PROJECT SITE **30**

2.1 Existing Conditions **30**

2.2 Typical Adverse Effects **31**

2.3 California Climate Adaptation Strategy **33**

3.0 CLIMATE CHANGE SIGNIFICANCE CRITERIA **35**

4.0 GREENHOUSE GAS INVENTORY **37**

4.1 Existing Greenhouse Gas Emissions **37**

4.2 Construction Greenhouse Gas Emissions **37**

4.3 Operational Greenhouse Gas Emissions **37**

5.0 SUMMARY OF ENVIRONMENTAL DESIGN CONSIDERATIONS AND IMPACTS **41**

5.1 Project Greenhouse Gas Emissions **41**

5.2 Consistency with Applicable Plans **46**

6.0 CONCLUSIONS **51**

7.0 REFERENCES **52**

8.0 LIST OF PREPARERS, PERSONS AND ORGANIZATIONS CONTACTED **55**

Appendix A Calculation of GHGs from Vehicles
Appendix B CalEEMod Model Outputs
Appendix C Calculation of GHGs from Energy Use
Appendix D Calculation of GHGs from Solid Waste Disposal

List of Acronyms

APCD	Air Pollution Control District
AB	Assembly Bill
AB 32	Assembly Bill 32, Global Warming Solutions Act of 2006
AMSL	Above Mean Sea Level
ARB	Air Resources Board
ASTM	American Society of Testing and Materials
CAFE	Corporate Average Fuel Economy
CalEEMod	California Emissions Estimator Model
CAP	Climate Action Plan
CAPCOA	California Air Pollution Control Officers Association
CAT	Climate Action Team
CCAP	Center for Clean Air Policy
CCAR	California Climate Action Registry
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CH_4	Methane
CO	Carbon Monoxide
CO_2	Carbon Dioxide
CO_2e	Carbon Dioxide Equivalent
DWR	Department of Water Resources
EDCs	Environmental Design Considerations
EIR	Environmental Impact Report
EPA	U.S. Environmental Protection Agency
EV	Electric Vehicles
GCC	Global Climate Change
GHG	Greenhouse Gas
GGEP	Greenhouse Gas Emissions Policy
GGRP	Greenhouse Gas Reduction Plan
GP	General Plan
GWP	Global Warming Potential
HFCs	Hydrofluorocarbons
HOA	Homeowners' Association
IPCC	Intergovernmental Panel on Climate Change
LCFS	Low Carbon Fuel Standard
LEED	Leadership in Energy and Environmental Design
MT	Metric Tons
MMT	Million Metric Tons
MW	Megawatts
N_2O	Nitrous Oxide
NF_3	Nitrogen Trifluoride
NOx	Oxides of Nitrogen
OPR	State Office of Planning and Research
PFCs	Perfluorocarbons
PM	Particulate Matter

ROG	Reactive Organic Gas
RMP	Resource Management Plan
RPS	Renewable Portfolio Standards
S-3-05	Executive Order S-3-05
SANDAG	San Diego Association of Governments
SB	Senate Bill
SCAQMD	South Coast Air Quality Management District
SDCGHGI	San Diego County Greenhouse Gas Inventory
SDG&E	San Diego Gas & Electric
SF_6	Sulfur Hexafluoride
SRI	Solar Reflective Index
TDM	Transportation Demand Management
THC	Total Hydrocarbon
UNFCCC	United Nations Framework Convention on Climate Change
USBGC	U.S. Green Building Council
VMT	Vehicle Miles Traveled

Executive Summary

This report presents an assessment of potential global climate change impacts associated with the Otay Ranch Resort Village (proposed Project). The Project proposes to develop a resort; 1,881 single-family residences; 57 multi-family residences; a school; park and recreation amenities; a fire station; and, 40,000 square feet of retail uses. Under the optional development scenario, 20,000 square feet of retail uses and 57 multi-family residences would be replaced by 57 single-family residences.

Specifically, the report discusses the scientific, regulatory and policy developments surrounding global climate change; provides a quantitative inventory of the greenhouse gas (GHG) emissions that would result from Project implementation (construction and operation); evaluates the significance of the Project's GHG emissions; and, identifies feasible mitigation to ensure that the Project does not significantly impact the environment.

Table ES-1 presents the environmental design considerations (EDCs) that are part of the proposed Project and will serve to reduce GHG emissions. Table ES-2 presents regulatory compliance measures applicable to the proposed Project that will serve to reduce the Project's GHG emissions. And, Table ES-3 presents mitigation measures that are recommended for adoption to further reduce GHG emissions.

GHG emissions were calculated for the Project's estimated build-out year of 2030, accounting for the environmental design considerations, regulatory compliance measures and mitigation measures listed in Tables ES-1, ES-2 and ES-3. Tables ES-4a and ES-4b present the 2030 build-out year emissions for the proposed Project and Tables ES-5a and ES-5b present the 2030 build-out year emissions for the proposed Project's optional development scenario. Tables ES-4a and ES-5a present the emissions with incorporation of EDCs and regulatory compliance measures that result in quantifiable emissions reduction benefits; Tables ES-4b and ES-5b show the added emissions reduction benefits of the mitigation measures recommended for the proposed Project.

Without mitigation, the proposed Project's GHG emissions would result in a potentially significant impact due to the Project's incremental contribution to the cumulative issue of global climate change. As illustrated by the Project-specific emissions inventory data presented in this report, the Project would result in an increase in GHG emissions, as compared to the existing environmental setting. However, within implementation of the eight (8) mitigation measures recommended in this report, the proposed Project's GHG emissions would be reduced to net zero, thereby supporting a determination that the Project would not change the existing environmental setting. Because the proposed Project, with mitigation, would result in no net increase in GHG emissions, the proposed Project would not result in a significant impact to global climate change and would not make a cumulatively considerable contribution to global climate change.

Accordingly, the proposed Project's GHG direct and cumulative impacts would be ***less than significant*** with implementation of the recommended mitigation.

Table ES-1
Proposed Environmental Design Considerations to Reduce GHG Emissions

Strategy to Reduce GHG Emissions	Description	Emission Reduction	Basis for Emission Reduction
Building Design			
Natural Gas Fireplaces	The Project's residences would only utilize natural gas fireplaces; no wood burning fireplaces would be installed.	88% reduction in area source emissions.	CalEEMod Model
Solid Waste			
Curbside Recycling	The Project's residences and non-residential development would be served by curbside recycling in furtherance of the California Integrated Waste Management Act, the statewide policy goals of AB 341, and the County's General Plan and Strategic Plan to Reduce Waste. Additionally, the Project would comply with the reduction, re-use, and recycling requirements contained in the County's Recycling and Construction and Demolition Debris Recycling Ordinances.	None taken; however, the strategy would be consistent with state and local diversion rate goals.	Not Applicable
Water Conservation			
Water Conservation Plan	The Project includes a Water Conservation Plan that will reduce outdoor water usage by 30%, when compared to existing outdoor water usage for typical residential homes. The Water Conservation Plan will require compliance with the County's Water Conservation in Landscaping Ordinance (Model Landscape Ordinance) for all outdoor landscapes in the Project, including common areas, public spaces, parkways, medians, parking lots, parks, and all builder or homeowner installed private front and backyard landscaping. As such, the Water Conservation Plan goes beyond the County's Ordinance by applying to all landscaping installed in the Project. Consistent with the County's Model Landscape Ordinance, the Water Conservation Plan requires the use of a water allocation-based approach to landscape zones, use of drought-tolerant, low-water usage native plants, high-efficiency weather- or evapotranspiration-based irrigation controllers, soil moisture sensors, and drip emitters, soaker hose (e.g., netafim), or equivalent high-efficiency drip irrigation, and limitations on the use of natural turf in residential development to no more than 30% of the outdoor open space.	30% reduction in Project outdoor water use.	Water Conservation Plan

Table ES-2
Regulatory Compliance Measures to Reduce GHG Emissions

Strategy to Reduce GHG Emissions	Description	Emission Reduction	Basis for Emission Reduction
Energy Efficiency			
Renewable Portfolio Standard	Implementation of the 60% Renewable Portfolio Standard (RPS) by 2030.	The CalEEMod Model's default energy intensity factor is based on 2009 Power Utility Protocol data for San Diego Gas & Electric (SDG&E). SDG&E procured 10.2% of its electricity from renewable resources in 2009 (SDG&E 2012); therefore, the energy intensity has been reduced by an additional 49.8% to account for implementation of the 60% RPS.	Senate Bill (SB) 100
Water Conservation			
Low-Flow Fixtures	Indoor residential plumbing products would comply with the mandatory provisions of the 2016 CALGreen Code (Part 11 of Title 24), including future applicable updates to CALGreen.	Accounted for in the CalEEMod Model through selection of low-flow fixtures option.	CalEEMod Model
Building and Site Design			
2016 Building Energy Efficiency Standards (Part 6 of Title 24); 2016 CALGreen Code (Part 11 of Title 24)	Residential and non-residential buildings would be designed to comply with the standards promulgated in the 2016 Building Energy Efficiency Standards, as well as the 2016 CALGreen Code, including future applicable updates to these codes.	Energy use in single-family residences would be reduced as shown in ConSol's energy study.	Appendix C (ConSol); CEC 2015

Table ES-2
Regulatory Compliance Measures to Reduce GHG Emissions

Strategy to Reduce GHG Emissions	Description	Emission Reduction	Basis for Emission Reduction
Transportation-Related Sources (Vehicles)			
Advanced Clean Cars	This regulation would reduce emissions from passenger vehicles by 19.5% by 2030, when compared the emissions reductions achieved by the Pavley standards.	Accounted for in EMFAC2014, which forms the platform for the CalEEMod Model's mobile source emissions estimates.	CalEEMod Model
Low Carbon Fuel Standard	This regulation is anticipated to achieve a 10% reduction in the carbon intensity of transportation fuels by 2020 and a 20% reduction by 2030.	No reduction assumed. Although the LCFS would reduce emissions from transportation fuels, EMFAC2014 – which forms the platform for the CalEEMod Model's mobile source emissions estimates – does not account for it.	CalEEMod Model
EV Plug-Ins	Dedicated circuits for electric vehicle plug-in facilities/stations would be installed in all residential garages and in non-residential areas per the 2016 California Green Building Standards Code (see Sections 4.106.4 and 5.106.5.3).	No reduction assumed.	N/A
Solid Waste			
Solid Waste Diversion	Project-wide curbside recycling for single-family, multi-family, resort, school, commercial, and retail establishments would be required in accordance with the California Integrated Waste Management Act (AB 939), and contribute towards achievement of AB 341's statewide 75% diversion policy.	75% diversion rate resulting in associated GHG emissions reductions. The calculations of emission reductions are based on CalRecycle data. Calculations are	County of San Diego 2016; CalRecycle 2016

Table ES-2 **Regulatory Compliance Measures to Reduce GHG Emissions**			
Strategy to Reduce GHG Emissions	**Description**	**Emission Reduction**	**Basis for Emission Reduction**
		provided in Appendix D.	

Table ES-3
Mitigation Measures to Reduce GHG Emissions

Mitigation Measure	Strategy to Reduce GHG Emissions	Description	Emission Reduction	Basis for Emission Reduction
Transportation-Related Sources (Vehicles)				
MM GCC-1	TDM Program for Residents, Students, Resort Guests and Employees	**TDM #1:** The Project shall provide a comprehensive trails network designed to provide safe bicycle and pedestrian access between the various phases, land uses, parks/open space, schools and the Village Core area. The trails network shall also provide connections to the various recreational trails and multi-modal facilities accessing the Project site. **TDM #2:** The Project shall provide bicycle racks along main travel corridors, adjacent to commercial developments, and at public parks and open spaces within the Project site. **TDM #3:** The Project shall coordinate with SANDAG's iCommute program to implement carpool, vanpool, and rideshare programs that are specific to the Project. **TDM #4:** The Project shall promote available websites providing transportation options for residents and businesses. **TDM #5:** The Project shall create and distribute a "new resident" information packet addressing alternative modes of transportation. **TDM #6:** The Project shall provide a "School Pool" program to coordinate school-related carpool activities with the local school district and SANDAG. As part of the program, dedicated parking spaces for the School Pool program will be provided at the Village Core area. **TDM #7:** The Project shall implement a "Walking School Bus" program, whereby neighborhood students are accompanied by a "chaperone" (e.g., parental supervision) to safely walk to	4.969 % reduction in Project VMT.	CAPCOA SDT-1, SDT-2, SDT-9, LUT-8, TRT-3, TRT-7 and TRT-10,; Appendix A (Chen Ryan)

Table ES-3
Mitigation Measures to Reduce GHG Emissions

Mitigation Measure	Strategy to Reduce GHG Emissions	Description	Emission Reduction	Basis for Emission Reduction
		and from the on-site elementary school. Relatedly, the Project also shall coordinate with the local school district to encourage the provision of bicycle storage facilities at the on-site elementary school. **TDM #8:** The Project shall implement traffic calming features throughout the Project site, as well as along Otay Lakes Road, to reduce motor vehicles speed and encourage walking and biking. Traffic calming features may include, but are not limited to: marked crosswalks, count-down signal timers, curb extensions, speed tables, raised crosswalks, raised intersections, median islands, tight corner radii, roundabouts or mini-circles, onstreet parking, planter strips with street trees, chicanes/chokers, and others.		
Energy Efficiency				
MM GCC-2	High-Efficiency Lighting in Multi-Family Residences and Non-Residential Buildings	The Project shall utilize high-efficiency interior lighting in multi-family residences and non-residential buildings that is designed to reduce lighting energy use by 15%. (High-efficiency lighting in single-family homes is accounted for within the Zero Net Energy modeling conducted by ConSol; see MM GCC-4.)	The CalEEMod Model assigns a 5.5% reduction in total energy use with the provision of high-efficiency lighting in multi-famly residences and non-residential buildings.	CalEEMod Model

Table ES-3
Mitigation Measures to Reduce GHG Emissions

Mitigation Measure	Strategy to Reduce GHG Emissions	Description	Emission Reduction	Basis for Emission Reduction
MM GCC-3	EnergyStar Appliances in Multi-Family Residences and Non-Residential Buildings	The Project shall install EnergyStar appliances in multi-family residences and non-residential buildings. (Energy Star applicances in single-family homes are accounted for within the Zero Net Energy modeling conducted by ConSol; see MM GCC-4.)	The CalEEMod Model assigns a reduction in total energy use based on the provision of EnergyStar clothes washers, dishwashers, fans and refrigerators.	CalEEMod Model
MM GCC-4	Zero Net Energy Single-Family Homes	The Project's single-family residences shall be designed to achieve Zero Net Energy, as defined by the CEC.	Based on calculations by ConSol (Appendix C), Zero Net Energy design will reduce the energy use within single-family residences and associated GHGs by 66%.	Appendix C (ConSol)
MM GCC-5	Beyond Code Efficiences in Multi-Family and Non-Residential Buildings	The Project's multi-family and non-residential buildings shall be designed to improve energy efficiency by 10% over the 2016 Building Energy Efficiency Standards (Part 6 of Title 24).	The GHG emissions from electricity and natural gas usage subject to Title 24 requirements will be reduced by 10%.	CalEEMod Model
MM GCC-6	Zero-Emission Vehicle Charging Infrastructure	Prior to the issuance of residential building permits, the Project applicant (or its designee) shall submit pertinent building plans and related application materials that demonstrate, to the satisfaction of San Diego County Planning & Development Services Department, the installation of : (a) dedicated 208/240 branch circuits in each garage of every residential unit, and (b) one Level 2 electric vehicle (EV) charging station in the garage in half of all residential units.	According to CAPCOA, use of electric or hybrid vehicles has a range of effectiveness in reducing GHG emissions from 0.4 to 20.3%. Conservatively, no emissions reduction value has been assigned to **M-GCC-6** due to estimation complexities.	N/A

Table ES-3 Mitigation Measures to Reduce GHG Emissions				
Mitigation Measure	**Strategy to Reduce GHG Emissions**	**Description**	**Emission Reduction**	**Basis for Emission Reduction**
		Prior to the issuance of non-residential building permits, the Project applicant (or its designee) shall submit pertinent building plans and related application materials that demonstrate, to the satisfaction of San Diego County Planning & Development Services Department, the installation of an additional ten (10) Level 2 EV charging stations within the non-residential parking areas located on the Project site.	However, the mitigation strategy provides important infrastructure-level support for the State's ZEV deployment objectives.	
Carbon Offsets				
MM GCC-7	Carbon Offsets – Construction Emissions	As to construction emissions, the Project applicant (or its designee) shall purchase and retire carbon offsets in a quantity sufficient to offset 100 percent of the Project's construction emissions (including sequestration loss from vegetation removal).	The Project shall obtain 37,973 MT of CO_2e credits and the optional development scenario shall obtain 37,973 MT of CO_2e credits prior to the County's issuance of the Project's first grading permit.	Tables ES-4b and ES-5b
MM GCC-8	Carbon Offsets – Operational Emissions	As to operational emissions, the Project applicant (or its designee) shall purchase and retire carbon offsets sufficient to offset, for a 30-year period, the operational GHG emissions from that incremental amount of development to net zero.	The Project applicant (or its designee) shall utilize one of the two following compliance options to secure the necessary carbon offsets, as allowed in CEQA Guidelines Section 15126.4(c)(3): (1) Prior to the issuance of the first building permit, the Project applicant (or its designee) shall provide evidence to the San Diego	Tables ES-4b and ES-5b

Table ES-3
Mitigation Measures to Reduce GHG Emissions

Mitigation Measure	Strategy to Reduce GHG Emissions	Description	Emission Reduction	Basis for Emission Reduction
			County Planning & Development Services Department (PDS) that is has obtained carbon offsets in the amount of 28,625 MT CO_2e per year multiplied by 30 years. The optional development scenario shall obtain carbon offsets in the amount of 28,567 MT CO_2e per year multiplied by 30 years. (2) Prior to the issuance of each increment of building permits for the phased development of the Project, the Project applicant (or its designee) shall provide evidence to PDS that it has obtained the amount of carbon offsets required for the increment of development being permitted for a 30-year period. The amount of carbon offsets required shall be based on and include operational GHG emissions as identified in the certified EIR. The	

Table ES-3
Mitigation Measures to Reduce GHG Emissions

Mitigation Measure	Strategy to Reduce GHG Emissions	Description	Emission Reduction	Basis for Emission Reduction
			application(s) for permit issuance shall include, as attachments, emissions calculation worksheets that identify the emissions reduction obligation of the increment of development being permitted and tracking tables that identify any previous carbon offsets purchased, as well as the amount of carbon offsets anticipated to be associated with the unbuilt, unpermitted portion(s) of the Project. Such application materials shall be to the satisfaction of the Director of PDS.	

Table ES-4a SUMMARY OF PROPOSED PROJECT'S ESTIMATED GREENHOUSE GAS EMISSIONS – 2030 (WITH EDCS AND REGULATORY COMPLIANCE MEASURES)				
Emission Source	**Annual Emissions (Metric tons/year)**			
	CO_2	**CH_4**	**N_2O**	**CO_2e**
Construction Emissions				
Construction Activities	37,491	8.0812	0.0000	37,695
Sequestration Loss	4,077	0.0000	0.0000	4,077
Sequestration Gain	-3,799	0.0000	0.0000	-3,799
Construction Total	**37,769**	**8.0812**	**0.0000**	**37,973**
Operational Emissions				
Area Sources	582	0.0328	0.0102	586
Energy Use	7,792	0.2133	0.1125	7,831
Water Consumption	426	3.6065	0.0881	543
Solid Waste Handling	238	14.0682	0.0000	590
Vehicles	24,212	1.1876	0.0000	24,241
Operational Sub-total	**33,250**	**19.1084**	**0.2108**	**33,791**
Global Warming Potential Factor	1	25	298	
Operational Total	**33,250**	**478**	**63**	**33,791**

Table ES-4b SUMMARY OF PROPOSED PROJECT'S ESTIMATED GREENHOUSE GAS EMISSIONS – 2030 (WITH MITIGATION)				
Emission Source	**Annual Emissions (Metric tons/year)**			
	CO_2	**CH_4**	**N_2O**	**CO_2e**
Construction Emissions				
Construction Activities	37,491	8.0812	0.0000	37,695
Sequestration Loss	4,077	0.0000	0.0000	4,077
Sequestration Gain	-3,799	0.0000	0.0000	-3,799
Construction Carbon Offsets – MM GCC-7	-37,769	-8.0812	-0.0000	-37,973
Construction Total	**0**	**0**	**0**	**0**
Operational Emissions				
Area Sources	582	0.0328	0.0102	586
Energy Use	3,845	0.0696	0.0728	3,868
Water Consumption	426	3.6065	0.0881	543
Solid Waste Handling	238	14.0682	0.0000	590
Vehicles	23,010	1.1286	0.0000	23,038
Operational Sub-total	**28,101**	**18.9057**	**0.1711**	**28,625**
Global Warming Potential Factor	1	25	298	
Operational Total	**28,101**	**473**	**51**	**28,625**
Operational Carbon Offsets – MM GCC-8				-28,625
Operational Total				**0**

Table ES-5a SUMMARY OF OPTIONAL DEVELOPMENT SCENARIO'S ESTIMATED GREENHOUSE GAS EMISSIONS – 2030 (WITH EDCS AND REGULATORY COMPLIANCE MEASURES)				
Emission Source	**Annual Emissions (Metric tons/year)**			
	CO_2	**CH_4**	**N_2O**	**CO_2e**
Construction Emissions				
Construction Activities	37,491	8.0812	0.0000	37,695
Sequestration Loss	4,077	0.0000	0.0000	4,077
Sequestration Gain	-3,799	0.0000	0.0000	-3,799
Construction Total	**37,769**	**8.0812**	**0.0000**	**37,973**
Operational Emissions				
Area Sources	582	0.0328	0.0102	586
Energy Use	7,839	0.2138	0.1136	7,878
Water Consumption	422	3.5682	0.0871	538
Solid Waste Handling	240	14.1951	0.0000	595
Vehicles	24,212	1.1876	0.0000	24,241
Operational Sub-total	**33,295**	**19.1975**	**0.2109**	**33,838**
Global Warming Potential Factor	1	25	298	
Operational Total	**33,295**	**480**	**63**	**33,838**

Table ES-5b
SUMMARY OF OPTIONAL DEVELOPMENT SCENARIO'S ESTIMATED GREENHOUSE GAS EMISSIONS – 2030 (WITH MITIGATION)

Emission Source	**Annual Emissions (Metric tons/year)**			
	CO_2	**CH_4**	**N_2O**	**CO_2e**
Construction Emissions				
Construction Activities	37,491	8.0812	0.0000	37,695
Sequestration Loss	4,077	0.0000	0.0000	4,077
Sequestration Gain	-3,799	0.0000	0.0000	-3,799
Construction Carbon Offsets – MM GCC-7	-37,769	-8.0812	-0.0000	-37,973
Construction Total	**0**	**0**	**0**	**0**
Operational Emissions				
Area Sources	582	0.0328	0.0102	586
Energy Use	3,787	0.0661	0.0728	3,810
Water Consumption	422	3.5682	0.0871	538
Solid Waste Handling	240	14.1951	0.0000	595
Vehicles	23,010	1.1286	0.0000	23,038
Operational Sub-total	**28,041**	**18.9908**	**0.1701**	**28,567**
Global Warming Potential Factor	1	25	298	
Operational Total	**28,041**	**475**	**51**	**28,567**
Operational Carbon Offsets – MM GCC-8				-28,567
Operational Total				**0**

1.0 INTRODUCTION

This report presents an assessment of potential global climate change impacts associated with the proposed Otay Ranch Resort Village Project. More specifically, the evaluation addresses the potential impacts of greenhouse gas (GHG) emissions associated with construction and operation of the proposed Project.

Project Setting

The Otay Ranch Resort Village is located northeast of Lower Otay Lake in the County of San Diego, in the Proctor Valley Parcel of the Otay Subregional Plan approximately one-quarter mile east of the City of Chula Vista. Access is provided via Telegraph Canyon Road which transitions into Otay Lakes Road, and forms the southern boundary of the Project site.

The proposed Project's approximate 1,869-acre planning area consists of a broad mesa sloping to the south, broken by several steep canyons draining from north to south. Portions of the relatively flat mesa extend north into the Jamul Mountains, becoming part of steeper slopes. Site elevations range from approximately 500 feet above mean sea level (AMSL) at the southern end of the property to approximately 1,500 feet AMSL in the northeastern portions. The Project area lies within the watershed of the Otay River, a westerly flowing stream which drains an area of approximately 145 square miles. The site is upstream of Savage Dam, which creates Lower Otay Lake. The Otay Ranch Resort Village site vegetation consists of native coastal sage scrub and grassland habitats disturbed by grazing. Some riparian vegetation occurs in drainage areas of the site.

The proposed Project is located at the interface of urban development and scenic open space. The Otay Valley Parcel of Otay Ranch, the EastLake Vistas residential community, the EastLake Woods residential community, and the U.S. Olympic Training Center compose the edge of urban development to the west. Lower Otay Lake, a recreational reservoir and water supply owned by the City of San Diego, is located to the south. Upper Otay Lake and the Birch Family Estate are located to the northwest. A temporary ultra-light gliding and parachuting airport is located at the eastern end of the Lower Otay Lake on City of San Diego property. An inactive quarry operation is located further to the east.

Proposed Development Plan

The land uses proposed by the Otay Ranch Resort Village are defined in Table 1 (Otay Ranch Resort Village Land Use Summary). The proposed land uses consist of single-family residential neighborhoods, a mixed use residential and commercial use neighborhood, a resort hotel with associated ancillary facilities, an elementary school site, a site for public safety facilities, open space, preserve land, and park and recreational uses.

- The proposed Project includes approximately 525.0 acres designated for 1,881 single-family detached homes. Five single-family neighborhoods are planned with average densities ranging from 3.2 to 4.4 dwelling units per acre.

- A multiple use neighborhood of 14.1 acres is proposed to contain 57 multi-family residential units and up to 20,000 square feet of commercial uses.

- Approximately 17.4 acres are identified for a resort hotel complex with a maximum of 200 guest rooms and up to 20,000 square feet of ancillary uses including meeting rooms, a conference center, offices, shops, and restaurants.

- The Specific Plan proposes to reserve a 2.1-acre public safety site for a fire station and a 10.0-acre elementary school site.

- Nine parks are planned on 28.6 acres, the largest of which is a 10.3 acre public neighborhood park site. The remaining parks range from 1.3 acres to 2.9 acres.

- The Otay Ranch Resort Village planning area also includes about 144 acres of open space and approximately 1,089 acres of preserve land. Open space generally consists of large manufactured slopes outside of neighborhoods and brush management areas. Preserve land is usually undisturbed lands or restored habitats set aside for dedication to the Otay Ranch Preserve Owner Manager in satisfaction of Otay Ranch Resource Management Plan (RMP) conveyance requirements.

- Internal circulation comprises about 39.0 acres of the planning area.

This analysis presented in this report addresses both the Project's proposed development scenario (as described above), and the optional development scenario, which would replace the 20,000 square feet of commercial uses and 57 multi-family residences located in the 14.1-acre multiple use neighborhood with 57 single-family residences.

Table 1
Otay Ranch Resort Village Land Use Summary

Land Use	Acres	Units
Single Family Residential[1]		
R-1	248.7	796
R-2	55.9	211
R-3	90.2	401
R-4	74.0	263
R-5	55.8	210
Single Family Total	525.1	1,881
Mixed Use		
MU[2]	14.1	57
Mixed Use Total	14.1	57
Residential Total	539.1	1,938
Parks		
P-1	2.9	
P-2	1.7	
P-3	2.3	
P-4	2.2	
P-5	10.3	
P-6	2.4	
P-7	2.9	
P-8	1.3	
P-9	2.6	
Parks Total	28.6	
Resort		
Resort[3]	17.4	
Resort Total	17.4	
Public Uses		
Public Safety (Fire Station)	2.1	
Elementary School	10.0	
Public Uses Total	12.1	
Open Space & Preserve		
Open Space	143.6	
Preserve	1,089.0	
Open Space & Preserve Total	1,232.9	
Circulation		
Circulation	39.0	
Circulation Total	39.0	
TOTAL	**1,869.0**	**1,938**

[1] Single Family Residential includes residential streets and internal slopes.
[2] Multiple Use includes up to 20,000 square feet of commercial use.
[3] Resort includes up to 200 rooms and up to 20,000 square feet of ancillary uses.
[4] Open Space includes manufactured slopes outside of neighborhoods and associated residential manufactured slopes.

1.1 General Principles and Existing Conditions

Global climate change (GCC) refers to changes in average climatic conditions on Earth as a whole, including temperature, wind patterns, precipitation and storms. Global temperatures are moderated by naturally occurring atmospheric gases, including water vapor, carbon dioxide (CO_2), methane (CH_4) and nitrous oxide (N_2O), which are known as GHGs. These gases allow solar radiation (sunlight) into the Earth's atmosphere, but prevent radiative heat from escaping, thus warming the Earth's atmosphere. Emissions from human activities, such as electricity production and vehicle use, have elevated the concentration of these gases in the atmosphere.

GCC may result from natural factors/processes, and/or human activities that change the composition of the atmosphere and alter the surface and features of land. For example, historical records indicate that global climate changes have occurred in the past due to natural phenomena (e.g., ice ages). Recent data indicate that, due to human (i.e., anthropogenic) influence, the current global conditions differ from past climate changes in rate and magnitude. The State of California has been at the forefront of developing solutions to address potential anthropogenic impacts to GCC.

The United Nations Intergovernmental Panel on Climate Change (IPCC) constructs emission trajectories of GHGs needed to stabilize global temperatures and climate change impacts. The IPCC has concluded that a stabilization of GHGs at 400 to 450 ppm CO_2 equivalent concentration is required to keep global mean warming below 3.6º Fahrenheit (2º Celsius), which is assumed to be necessary to avoid dangerous climate change (Association of Environmental Professionals 2007).

State law defines greenhouse gases as any of the following compounds: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF_6), and nitrogen trifluoride (NF_3) (California Health and Safety Code Section 38505(g)). CO_2, followed by CH_4 and N_2O, are the most common GHGs that result from human activity.

1.2 Sources and Global Warming Potentials of GHG

As discussed further below, the sources of GHG emissions, each GHG's global warming potential (GWP), and the atmospheric lifetime of GHGs are all important variables to be considered in the process of calculating carbon dioxide equivalent (CO_2e) emissions for discretionary land use projects that require a climate change analysis.

The State of California's Air Resources Board (ARB) compiles a GHG inventory of statewide anthropogenic GHG emissions and sinks. The current inventory covers the years 1990 to 2014, and is summarized in Table 2. When accounting for GHGs, emissions are expressed in terms of CO_2e and are typically quantified in metric tons (MT) or millions of metric tons (MMT).

Table 2
State of California GHG Emissions by Sector

Sector	Total 1990 Emissions ($MMTCO_2e$)	Percent of Total 1990 Emissions	Total 2016 Emissions ($MMTCO_2e$)	Percent of Total 2016 Emissions
Agriculture	23.4	5%	33.8	8%
Commercial	14.4	3%	15.2	3%
Electricity Generation	110.6	26%	68.6	16%
Forestry (excluding sinks)	0.2	<1%	N/A	N/A
Industrial	103.0	24%	89.6	21%
Residential	29.7	7%	24.2	6%
Transportation	150.7	35%	169.4	39%
High-GWP Gases	N/A	N/A	19.8	5%
Recycling and Waste	N/A	N/A	8.8	2%
Forestry Sinks	(6.7)	N/A	N/A	N/A

Source: California Greenhouse Gas Emission Inventory – 2018 Edition, https://www.arb.ca.gov/cc/inventory/data/data.htm, CARB 2018.

GHGs have varying GWPs. The GWP is the potential of a gas or aerosol to trap heat in the atmosphere; it is the "cumulative radiative forcing effect of a gas over a specified time horizon resulting from the emission of a unit mass of gas relative to a reference gas" (EPA 2006). The reference gas for GWP is CO_2; therefore, CO_2 has a GWP of 1. The other main GHGs that have been attributed to human activity include CH_4, which has a GWP of 25, and N_2O, which has a GWP of 298 (ARB 2017). (The GWP values used in this report are sourced to the Fourth Assessment Report (2007) of the Intergovernmental Panel on Climate Change.) Table 3 presents the GWP and atmospheric lifetimes of the GHGs that are regulated by the State of California.

Table 3
Global Warming Potentials and Atmospheric Lifetimes of GHGs

GHG	Formula	100-Year Global Warming Potential	Atmospheric Lifetime (Years)
Carbon Dioxide	CO_2	1	Variable
Methane	CH_4	25	12
Nitrous Oxide	N_2O	298	114
Sulfur Hexafluoride	SF_6	22,800	3,200
Hydrofluorocarbons	HFCs	124 to 14,800	1 to 100
Perfluorocarbons	PFCs	7,390 to 12,200	10,000 to 50,000
Nitrogen Trifluoride	NF_3	17,200	740

Source: California's 2017 Climate Change Scoping Plan, ARB 2017

The primary, human-caused source of CO_2 is the combustion of fossil fuels (coal, oil, natural gas, gasoline and wood). Data from ice cores indicate that CO_2 concentrations remained steady prior to the current period for approximately 10,000 years. Concentrations of CO_2 have increased in the atmosphere since the industrial revolution.

CH_4 is the main component of natural gas and also arises naturally from anaerobic decay of organic matter. Human-caused sources of natural gas include landfills, fermentation of manure and cattle farming. Human-caused sources of N_2O include combustion of fossil fuels and industrial processes such as nylon production and production of nitric acid.

Other GHGs are present in trace amounts in the atmosphere and are generated from various industrial or other uses.

1.3 Regulatory Framework

1.3.1 Federal and International Efforts

GCC is being addressed at both the international and federal levels. In 1988, the United Nations and the World Meteorological Organization established the IPCC to assess the scientific, technical, and socioeconomic information relevant to understanding the scientific basis for human-induced climate change, its potential impacts, and options for adaptation and mitigation. The most recent reports of the IPCC have emphasized the scientific consensus that real and measurable changes to the climate are occurring, that they are caused by human activity, and that significant adverse impacts on the environment, the economy, and human health and welfare are unavoidable.

On March 21, 1994, the United States joined a number of countries around the world in signing the United Nations Framework Convention on Climate Change (UNFCCC). Under the Convention, governments agreed to gather and share information on GHG emissions, national policies, and best practices; launch national strategies for addressing GHG emissions and adapting to expected impacts, including the provision of financial and technological support to developing countries; and cooperate in preparing for adaptation to the impacts of GCC.

Clean Air Act. In *Massachusetts v. Environmental Protection Agency* (2007) 549 U.S. 497, the U.S. Supreme Court held that the U.S. Environmental Protection Agency (EPA) has authority under the Clean Air Act to regulate CO_2 emissions if those emissions pose an endangerment to the public health or welfare.

In 2009, the EPA issued an “endangerment finding” under the Clean Air Act, concluding that GHGs threaten the public health and welfare of current and future generations and that motor vehicles contribute to GHG emissions. These findings provide the basis for adopting national regulations to mandate GHG emission reductions under the Clean Air Act.

To date, the EPA has exercised its authority to regulate mobile sources that reduce GHG emissions via the control of vehicle manufacturers, as discussed below.

The EPA also has adopted standards that set a national limit on GHG emissions produced from new, modified, and reconstructed power plants, and has issued the Clean Power Plan, which is targeted toward the reduction of carbon emissions from existing power plants. The Clean Power Plan requires states to develop and implement plans that ensure that the power plants in their state – either individually, together or in combination with other measures – achieve interim performance rates over the period of 2022 to 2029 and final performance rates, rate-based goals or mass-based goals by 2030. In February 2016, the U.S. Supreme Court stayed implementation of the Clean Power Plan pending judicial review. Additionally, in March 2017, President Donald Trump's Executive Order on Energy Independence directed the EPA to undertake a review of the Clean Power Plan; and, in October 2017, the EPA issued its proposal to repeal the Clean Power Plan. On August 21, 2018, the EPA proposed the Affordable Clean Energy (ACE) rule which would establish emission guidelines for states to develop plans to address greenhouse gas emissions from existing coal-fired power plants. The ACE rule would replace the 2015 Clean Power Plan, which EPA has proposed to repeal because it exceeded EPA's authority. The Clean Power Plan was stayed by the U.S. Supreme Court and has never gone into effect.

Federal Vehicle Standards. In response to the U.S. Supreme Court ruling discussed above, the Bush Administration issued Executive Order 13432 in 2007 directing the EPA, the Department of Transportation, and the Department of Energy to establish regulations that reduce GHG emissions from motor vehicles, non-road vehicles, and non-road engines by 2008. In 2009, the National Highway Traffic Safety Administration issued a final rule regulating fuel efficiency and GHG emissions from cars and light-duty trucks for model year 2011; and, in 2010, the EPA and National Highway Traffic Safety Administration issued a final rule regulating cars and light-duty trucks for model years 2012–2016.

In 2010, President Obama issued a memorandum directing these same agencies to establish additional standards regarding fuel efficiency and GHG reduction, clean fuels, and advanced vehicle infrastructure. In response to this directive, the EPA and National Highway Traffic Safety

Administration proposed stringent, coordinated federal GHG and fuel economy standards for model years 2017–2025 light-duty vehicles. The standards are projected to achieve 163 grams/mile of CO_2 in model year 2025, on an average industry fleet-wide basis, which is equivalent to 54.5 miles per gallon (mpg) if this level were achieved solely through fuel efficiency. The final rule was adopted in 2012 for model years 2017–2021.

In 2018, the USEPA and NHTSA proposed to amend certain existing fuel economy and GHG emissions standards for passenger cars and light trucks and establish new standards, covering model years 2021 through 2026. Compared to maintaining the post-2020 standards now in place, the 2018 proposal would increase U.S. fuel consumption by about half a million barrels per day (2–3 percent of total daily consumption, according to the Energy Information Administration) and would impact the global climate by 3/1000th of one degree Celsius by 2100. California and other states have stated their intent to challenge federal actions that would delay or eliminate GHG reduction measures and have committed to cooperating with other countries to implement global climate change initiatives. Thus, the timing and consequences of the 2018 federal proposal are speculative at this time.

In addition to the regulations applicable to cars and light-duty trucks described above, in 2011, the EPA and National Highway Traffic Safety Administration announced fuel economy and GHG standards for medium- and heavy-duty trucks for model years 2014–2018. The standards for CO_2 emissions and fuel consumption are tailored to three main vehicle categories: combination tractors, heavy-duty pickup trucks and vans, and vocational vehicles. According to the EPA, this regulatory program will reduce GHG emissions and fuel consumption for the affected vehicles by 6%–23% over the 2010 baselines.

In August 2016, the EPA and National Highway Traffic Safety Administration announced the adoption of the phase two program related to the fuel economy and GHG standards for medium- and heavy-duty trucks. The phase two program applies to vehicles with model year 2018 through 2027 for certain trailers, and model years 2021 through 2027 for semi-trucks, large pickup trucks, vans and all types of sizes of buses and work trucks. The final standards are expected to lower carbon dioxide emissions by approximately 1.1 billion MT and reduce oil consumption by up to two billion barrels over the lifetime of the vehicles sold under the program.

Energy Independence and Security Act. The Energy Independence and Security Act of 2007 facilitates the reduction of national GHG emissions by requiring the following:

- Increasing the supply of alternative fuel sources by setting a mandatory Renewable Fuel Standard (RFS) that requires fuel producers to use at least 36 billion gallons of biofuel in 2022;
- Prescribing or revising standards affecting regional efficiency for heating and cooling products, procedures for new or amended standards, energy conservation, energy efficiency labeling for consumer electronic products, residential boiler efficiency, electric motor efficiency, and home appliances;
- Requiring approximately 25 percent greater efficiency for light bulbs by phasing out incandescent light bulbs between 2012 and 2014; requiring approximately 200 percent greater efficiency for light bulbs, or similar energy savings, by 2020; and
- While superseded by the EPA and NHTSA actions described above, (i) establishing miles per gallon targets for cars and light trucks and (ii) directing the NHTSA to establish a fuel economy program for medium- and heavy-duty trucks and to create a separate fuel economy standard for trucks.

Additional provisions of this Act address energy savings in government and public institutions, promote research for alternative energy, additional research in carbon capture, international energy programs, and the creation of "green jobs."

1.3.2 State Actions

Executive Orders and Legislation Establishing Overarching State Climate Policies

Executive Order S-3-05. In 2005, former Governor Schwarzenegger signed Executive Order S-3-05, which established the following GHG emission reduction goals for California: (1) by 2010, reduce GHG emissions to 2000 levels; (2) by 2020, reduce GHG emissions to 1990 levels; and (3) by 2050, reduce GHG emissions to 80 percent below 1990 levels.

Assembly Bill 32. Assembly Bill (AB) 32, the California Global Warming Solutions Act of 2006, was enacted after considerable study and expert testimony before the Legislature. The heart of AB 32 is the requirement that statewide GHG emissions be reduced to 1990 levels by 2020 (Health & Safety Code, §38550). In order to achieve this reduction mandate, AB 32 requires the ARB to adopt rules and regulations in an open public process that achieve the maximum technologically feasible and cost-effective GHG reductions.

In response to the adoption of AB 32, in 2007, the ARB approved a statewide limit on the GHG emissions level for year 2020 consistent with the determined 1990 baseline. The ARB's adoption of this limit is in accordance with Health & Safety Code section 38550.

Further, in 2008, the ARB adopted the *Climate Change Scoping Plan: A Framework for Change* (*Scoping Plan*) in accordance with Health & Safety Code section 38561. The *Scoping Plan* establishes an overall framework for the measures that will be adopted to reduce California's GHG emissions for various emission sources/sectors to 1990 levels by 2020.

In 2014, the ARB adopted the *First Update to the Climate Change Scoping Plan: Building on the Framework* (*First Update*).[1] The stated purpose of the *First Update* is to "highlight California's success to date in reducing its GHG emissions and lay the foundation for establishing a broad framework for continued emission reductions beyond 2020, on the path to 80 percent below 1990 levels by 2050."[2] The *First Update* found that California is on track to meet the 2020 emissions reduction mandate established by AB 32. The *First Update* also noted that California could reduce emissions further by 2030 to levels squarely in line with those needed to stay on track to reduce

[1] Health & Safety Code section 38561(h) requires the ARB to update the Scoping Plan every five years.
[2] ARB, First Update (May 2014), p. 4.

emissions to 80 percent below 1990 levels by 2050 if the State realizes the expected benefits of existing policy goals.[3]

In conjunction with the *First Update*, the ARB identified “six key focus areas comprising major components of the State’s economy to evaluate and describe the larger transformative actions that will be needed to meet the State’s more expansive emission reduction needs by 2050.”[4] Those six areas are: (1) energy; (2) transportation (vehicles/equipment, sustainable communities, housing, fuels, and infrastructure); (3) agriculture; (4) water; (5) waste management; and, (6) natural and working lands. The *First Update* identifies key recommended actions for each sector that will facilitate achievement of the 2050 reduction target.

Based on the ARB’s research efforts, it has a “strong sense of the mix of technologies needed to reduce emissions through 2050.”[5] Those technologies include energy demand reduction through efficiency and activity changes; large-scale electrification of on-road vehicles, buildings and industrial machinery; decarbonizing electricity and fuel supplies; and, the rapid market penetration of efficient and clean energy technologies.

In December 2017, the ARB adopted *California’s 2017 Climate Change Scoping Plan* . The *2017 Scoping Plan* addresses the statewide emissions reduction target established pursuant to Senate Bill (SB) 32 and Executive Order B-30-15, as discussed below. The *2017 Scoping Plan* includes continuation of the Cap-and-Trade Program through 2030, and incorporates a Mobile Source Strategy (also developed by the ARB) that is intended to increase zero emission vehicle fleet penetration and establish a more stringent Low Carbon Fuel Standard target by 2030.

When discussing project-level GHG emissions reduction actions and thresholds in the *2017 Scoping Plan*, the ARB states “[a]chieving no net additional increase in GHG emissions, resulting in no contribution to GHG impacts, is an appropriate overall objective for new development.”[6]

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[3] Id. at p. 34.
[4] Id. at p. 6.
[5] Id. at p. 32.
[6] ARB, 2017 Scoping Plan (November 2017), p. 101.

However, the ARB also recognizes that "[a]chieving net zero … may not be feasible or appropriate for every project … and the inability of a project to mitigate its GHG emissions to net zero does not imply the project results in a substantial contribution to the cumulatively significant environmental impact of climate change under CEQA."[7] To the extent that a project's CEQA analysis recommends mitigation to reduce GHG emissions, the ARB "recommends that lead agencies prioritize on-site design features that reduce emissions, especially from VMT, and direct investments in GHG reductions within the project's region that contribute potential air quality, health, and economic co-benefits locally."[8]

2015 State of the State Address. In his January 2015 inaugural address, Governor Brown identified key climate change strategy pillars, including: (1) reducing today's petroleum use in cars and trucks by up to 50 percent; (2) increasing the amount of electricity derived from renewable sources from one-third to 50 percent; (3) doubling the energy efficiency savings achieved at existing buildings and making heating fuels cleaner; (4) reducing the release of methane, black carbon, and other short-lived climate pollutants; (5) managing farm and rangelands, forests and wetlands so they can store carbon; and (6) periodically updating the State's climate adaptation strategy. As discussed below, the second and third pillars have been codified via legislation (SB 350).

Executive Order B-30-15. In April 2015, Governor Brown signed Executive Order B-30-15, which established the following GHG emission reduction goal for California: by 2030, reduce GHG emissions to 40 percent below 1990 levels. This reduction goal subsequently was codified through the enactment of SB 32 (see discussion below). This Executive Order also directed all state agencies with jurisdiction over GHG-emitting sources to implement measures designed to achieve the new interim 2030 goal, as well as the pre-existing, long-term 2050 goal identified in Executive Order S-3-05 (see discussion above). Additionally, the Executive Order directed the ARB to update its Scoping Plan (see discussion above) to address the 2030 goal.

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[7] Id. at p. 102.
[8] Id. at p. 102.

2016 State of the State Address. In his January 2016 inaugural address, Governor Brown identified a statewide goal to bring per capita GHGs down to two tons per person. The origin of this goal is the Global Climate Leadership Memorandum of Understanding (Under 2 MOU), which established limiting global warming to less than two degrees Celsius as the guiding principle for the reduction of GHG emissions by 2050. The parties to the Under 2 MOU have agreed to pursue emissions reductions consistent with a trajectory of 80 to 95 percent below 1990 levels by 2050 and/or achieve a per capita annual emissions goal of less than two metric tons by 2050. The Under 2 MOU has been signed or endorsed by 127 jurisdictions (including California) that represent 27 countries and six continents.

Senate Bill 32, and Assembly Bill 197. Enacted in 2016, SB 32 codifies the 2030 emissions reduction goal of Executive Order B-30-15 by requiring the ARB to ensure that statewide GHG emissions are reduced to 40 percent below 1990 levels by 2030.

SB 32 was coupled with a companion bill: AB 197. Designed to improve the transparency of the ARB's regulatory and policy-oriented processes, AB 197 created the Joint Legislative Committee on Climate Change Policies, a committee with the responsibility to ascertain facts and make recommendations to the Legislature concerning statewide programs, policies and investments related to climate change. AB 197 also requires the ARB to make certain GHG emissions inventory data publicly available on its web site; consider the social costs of GHG emissions when adopting rules and regulations designed to achieve GHG emission reductions; and, include specified information in all Scoping Plan updates for the emission reduction measures contained therein.

Executive Order B-55-18. As issued in September 2018, Executive Order B-55-18 establishes a new statewide goal "to achieve carbon neutrality as soon as possible, and not later than 2045, and achieve and maintain net negative emissions thereafter." This executive order directs the ARB to "work with relevant state agencies to ensure future Scoping Plans identify and recommend measures to achieve the carbon neutrality goal."

Energy-Related Sources

Renewable Portfolio Standard. California's Renewable Portfolio Standard requires retail sellers of electric services to increase procurement from eligible renewable energy resources to 33 percent of total retail sales by 2020. As amended in 2015 by SB 350, retail sellers of electric services must increase procurement from eligible renewable energy resources to 40 percent of total retail sales by 2024, 45 percent of total retail sales by 2027, and 50 percent of total retail sales by 2030. As most recently amended in 2018 by SB 100, retail sellers of electric services must increase procurement from eligible renewable energy resources to 44 percent of total retail sales by 2024, to 50 percent of total retail sales by 2026, to 52 percent of total retail sales by 2027, and to 60 percent of total retail sales by 2030. SB 100 also established a new policy goal that calls for eligible renewable energy resources and zero-carbon resources to supply 100 percent of electricity retail sales by December 31, 2045.

Building Energy Efficiency Standards (Title 24). Title 24, Part 6, of the California Code of Regulations regulates the design of building shells and building components. The standards are updated periodically to allow for consideration and possible incorporation of new energy efficiency technologies and methods. The California Energy Commission's (CEC) 2016 Building Energy Efficiency Standards became effective on January 1, 2017. The 2019 Building Energy Efficiency Standards will continue to improve upon the 2016 Standards for new construction of, and additions and alterations to, residential and nonresidential buildings. The 2019 Standards have been adopted and will become effective on January 1, 2020.

The California Public Utilities Commission, CEC, and the ARB also have a shared, established goal of achieving Zero Net Energy (ZNE) for new construction in California.

The ZNE goal generally means that new buildings must use a combination of improved efficiency and renewable energy generation to meet 100 percent of their annual energy need, as specifically defined by the CEC:

"A ZNE Code Building is one where the value of the energy produced by on-site renewable energy resources is equal to the value of the energy consumed annually by the building, at the level of a single 'project' seeking development entitlements and building code permits, measured using the [CEC]'s Time Dependent Valuation (TDV) metric. A ZNE Code Building meets an Energy Use Intensity value designated in the Building Energy Efficiency Standards by building type and climate zone that reflect best practices for highly efficient buildings."[9]

In addition to the CEC's efforts, in 2008, the California Building Standards Commission adopted the nation's first green building standards. The California Green Building Standards Code (Part 11 of Title 24) are commonly referred to as CALGreen, and establish voluntary and mandatory standards pertaining to the planning and design of sustainable site development, energy efficiency, water conservation, material conservation, and interior air quality. The mandatory standards require the following:

- Mandatory reduction in indoor water use through compliance with specified flow rates for plumbing fixtures and fittings;
- Mandatory reduction in outdoor water use through compliance with a local water efficient landscaping ordinance or the California Department of Water Resources' Model Water Efficient Landscape Ordinance;
- Sixty five (65) percent of construction and demolition waste must be diverted from landfills;
- Mandatory inspections of energy systems to ensure optimal working efficiency;
- Inclusion of electric vehicle charging stations or designated spaces capable of supporting future charging stations; and,
- Low-pollutant emitting exterior and interior finish materials, such as paints, carpets, vinyl flooring, and particle boards.

CALGreen is periodically amended; the most recent 2016 standards became effective on January 1, 2017. The CALGreen 2019 standards will continue to improve upon the 2016 standards for

[9] CEC, 2015 Integrated Energy Policy Report (2015), p. 41.

new construction of, and additions and alterations to, residential and nonresidential buildings. The CALGreen 2019 standards will go into effect on January 1, 2020.

Appliance Energy Efficiency Standards (Title 20). The CEC periodically amends and enforces Appliance Efficiency Regulations contained in Title 20 of the California Code of Regulations. The regulations establish water and energy efficiency standards for both federally-regulated appliances and non-federally regulated appliances. The most current Appliance Efficiency Regulations, dated January 2017, cover 23 categories of appliances (e.g., refrigerators; plumbing fixtures; dishwashers; clothes washer and dryers; televisions) and apply to appliances offered for sale in California.

Mobile Sources

Pavley Standards. AB 1493 required the ARB to adopt regulations to reduce GHG emissions from non-commercial passenger vehicles and light-duty trucks for model years 2009–2016, which are often times referred to as the "Pavley I" standards. The ARB obtained a waiver from the EPA that allows for implementation of these regulations notwithstanding possible federal preemption concerns.

Low Carbon Fuel Standard. Executive Order S-1-07 requires a 10 percent or greater reduction in the average fuel carbon intensity for transportation fuels in California regulated by the ARB by 2020.[10] In 2009, the ARB approved the Low Carbon Fuel Standard regulations, which became fully effective in April 2010. The regulations were subsequently re-adopted in September 2015 in response to related litigation. In 2018, the ARB adopted an update to the regulations that requires a 20 percent reduction in the carbon intensity of transportation fuels by 2030.

Advanced Clean Cars Program. In 2012, the ARB approved the Advanced Clean Cars (ACC) program, a new emissions-control program for model years 2017–2025. (This program is sometimes referred to as "Pavley II.") The program combines the control of smog, soot, and GHGs

[10] Carbon intensity is a measure of the GHG emissions associated with the various production, distribution and use steps in the "lifecycle" of a transportation fuel.

with requirements for greater numbers of zero-emission vehicles. By 2025, when the rules will be fully implemented, new automobiles will emit 34 percent fewer GHGs.

Senate Bill 375. The Sustainable Communities and Climate Protection Act of 2008 (SB 375) coordinates land use planning, regional transportation plans, and funding priorities to reduce GHG emissions from passenger vehicles through better-integrated regional transportation, land use, and housing planning that provides easier access to jobs, services, public transit, and active transportation options.[11] SB 375 specifically requires the Metropolitan Planning Organization (MPO) relevant to the Project area (here, the San Diego Association of Governments [SANDAG]) to include a Sustainable Communities Strategy in its Regional Transportation Plan that will achieve GHG emission reduction targets set by the ARB by reducing vehicle miles traveled from light-duty vehicles through the development of more compact, complete, and efficient communities.

For the area under SANDAG's jurisdiction, including the Project site, the ARB adopted regional targets for reduction of mobile source-related GHG emissions by 7 percent for 2020 and by 13 percent for 2035. (These targets are expressed by the ARB as a percent change in per capita GHG emissions relative to 2005 levels.) In 2018, the ARB adopted updated SB 375 targets that will apply to SANDAG's next plan update cycle. Those targets include a 15 percent reduction in per capita GHG emissions by 2020, and a 19 percent reduction in per capita GHG emissions by 2035. These updated targets will apply to SANDAG's next, prospective planning cycle. At that time, SANDAG will review all the general plan changes that have occurred in cities and counties within its regional area and account for those changes in its Sustainable Community Strategy.

Pursuant to Government Code Section 65080(b)(2)(K), a Sustainable Communities Strategy does not: (i) regulate the use of land; (ii) supersede the land use authority of cities and counties; or (iii) require that a city's or county's land use policies and regulations, including those in a general plan, be consistent with it.

[11] ARB, First Update (May 2014), pp. 49-50.

Zero Emission Vehicles. Zero emission vehicles (ZEVs) include plug-in electric vehicles, such as battery electric vehicles and plug-in hybrid electric vehicles, and hydrogen fuel cell electric vehicles.

In 2012, Governor Brown issued Executive Order B-16-2012, which calls for the increased penetration of ZEVs into California's vehicle fleet in order to help California achieve a reduction of GHG emissions from the transportation sector equaling 80 percent less than 1990 levels by 2050. In furtherance of that statewide target for the transportation sector, the Executive Order also calls upon the ARB, CEC and the California Public Utilities Commission to establish benchmarks that will: (1) allow over 1.5 million ZEVs to be on California roadways by 2025, and (2) provide the State's residents with easy access to ZEV infrastructure.

In its *First Update,* the ARB recognized that the light-duty vehicle fleet "will need to become largely electrified by 2050 in order to meet California's emission reduction goals."[12] Accordingly, the ARB's ACC program – summarized above – requires about 15 percent of new cars sold in California in 2025 to be a plug-in hybrid, battery electric or fuel cell vehicle.[13] Further, one of the elements of SB 350 (2015) – the Clean Energy and Pollution Reduction Act –establishes a statewide policy for widespread electrification of the transportation sector, recognizing that such electrification is required for achievement of the State's 2030 and 2050 reduction targets (see Public Utilities Code section 740.12). The ARB's *2017 Scoping Plan* also identified, as an element of its framework to achieve the statewide 2030 emissions reduction target codified by SB 32, the objective to put 4.2 million zero emission and plug-in hybrid light-duty electric vehicles on the road by 2030.

In 2018, Governor Brown also issued Executive Order B-48-18, which served to launch an eight-year initiative to accelerate the sale of ZEVs through a mix of rebate programs and infrastructure improvements. The Executive Order also sets a new ZEV target of five million EVs in California by 2030 and includes funding for multiple state agencies, including the CEC (in order to increase

[12] Id. at p. 48.
[13] Id. at p. 47.

charging infrastructure) and the ARB (in order to provide rebates for the purchase of new ZEVs and incentives for low-income customers).

The proliferation of zero emission vehicles is being supported in multiple ways. For example, California is incentivizing the purchase of ZEVs through implementation of the Clean Vehicle Rebate Project (CVRP), which is administered by a non-profit organization (The Center for Sustainable Energy) for the ARB and currently subsidizes the purchase of passenger near-zero and zero emission vehicles. Additionally, CALGreen requires new residential and non-residential construction to be pre-wired to facilitate the future installation and use of electric vehicle chargers (see Section 4.106.4 and Section 5.106.5.3 of 2016 CALGreen Standards for the residential and non-residential pre-wiring requirements, respectively). As a final example, in January 2017, San Diego Gas & Electric Company (SDG&E) applied to the California Public Utilities Commission for authority to implement numerous programs intended to accelerate the electrification of the transportation sector. SDG&E's application includes, but is not limited to, proposals to: (i) install up to 90,000 charging stations at single-family homes throughout the company's service area; (ii) install charging infrastructure at various park-and-ride locations; (iii) provide incentives for electric taxis and shuttles; and, (iv) provide educational programs and financial incentives for the sale of electric vehicles.

Also of note is AB 1236 (2015), as enacted in California's Planning and Zoning Law, which requires local land use jurisdictions to approve applications for the installation of electric vehicle charging stations, as defined, through the issuance of specified permits unless there is substantial evidence in the record that the proposed installation would have a specific, adverse impact upon the public health or safety, and there is no feasible method to satisfactorily mitigate or avoid the specific, adverse impact. The bill requires local land use jurisdictions with a population of 200,000 or more residents to adopt an ordinance, by September 30, 2016, that creates an expedited and streamlined permitting process for electric vehicle charging stations, as specified. Prior to this statutory deadline, in August 2016, the County Board of Supervisors adopted Ordinance No. 10437 (N.S.) adding a section to its County Code related to the expedited processing of electric vehicle charging stations permits consistent with AB 1236.

Water Sources

In response to an ongoing drought in California, Executive Order B-29-15 (April 2015) set a goal of achieving a statewide reduction in potable urban water usage of 25 percent relative to water use in 2013. The Executive Order includes specific directives that set strict limits on water usage in the State, and many of the directives have since become permanent water-efficiency standards and requirements. In response to this Executive Order, the California Department of Water Resources modified and adopted a revised version of the Model Water Efficient Landscape Ordinance that, among other changes, significantly increases the requirements for landscape water use efficiency and broadens its applicability to include new development projects with smaller landscape areas.

Solid Waste Sources

The California Integrated Waste Management Act of 1989, as modified by AB 341, requires each jurisdiction's source reduction and recycling element to include an implementation schedule that shows: (1) diversion of 25 percent of all solid waste by January 1, 1995, through source reduction, recycling, and composting activities; (2) diversion of 50 percent of all solid waste on and after January 1, 2000; and (3) diversion of 75 percent of all solid waste on or after 2020, and annually thereafter. The California Department of Resources Recycling and Recovery (CalRecycle) is required to develop strategies, including source reduction, recycling, and composting activities, to achieve the 2020 goal.

CalRecycle published a discussion document, entitled *California's New Goal: 75 Percent Recycling*, which identified concepts that would assist the State in reaching the 75 percent goal by 2020. Subsequently, in August 2015, CalRecycle released the *AB 341 Report to the Legislature*, which identifies five priority strategies for achievement of the 75 percent goal: (1) moving organics out of landfills; (2) expanding recycling/manufacturing infrastructure; (3) exploring new approaches for State and local funding of sustainable waste management programs; (4) promoting State procurement of post-consumer recycled content products; and, (5) promoting extended producer responsibility.

1.3.3 Local Regulations and Standards

San Diego Forward. In October 2015, and in accordance with the requirements established by SB 375 (discussed above), SANDAG adopted *San Diego Forward: The Regional Plan*. The plan establishes a planning framework and implementation actions that increase the region's sustainability and encourage "smart growth while preserving natural resources and limiting urban sprawl."

In December 2015, the ARB accepted SANDAG's GHG emissions quantification determination for the *San Diego Forward* plan and found that it would meet the regional reduction targets adopted by the ARB in furtherance of SB 375 (see ARB Executive Order G-15-075).

General Plan Update. The County's General Plan Update (County of San Diego 2011) provides smart growth and land use planning principles designed to reduce vehicle miles traveled (VMT) and GHG emissions. As discussed in the General Plan Update, climate change and GHG reduction policies are addressed in plans and programs in multiple elements of the General Plan. The strategies for reduction of GHG emissions in the General Plan Update are as follows:

- Strategy A-1: Reduce vehicle trips generated, gasoline/energy consumption, and greenhouse gas emissions.
- Strategy A-2: Reduce non-renewable electrical and natural gas energy consumption and generation (energy efficiency).
- Strategy A-3: Increase generation and use of renewable energy sources.
- Strategy A-4: Reduce water consumption.
- Strategy A-5: Reduce and maximize reuse of solid wastes.
- Strategy A-6: Promote carbon dioxide consuming landscapes.
- Strategy A-7: Maximize preservation of open spaces, natural areas, and agricultural lands.

The General Plan Update also includes climate adaptation strategies to deal with potential adverse effects of climate change. The climate adaptation strategies include the following:

- Strategy B-1: Reduce risk from wildfire, flooding, and other hazards resulting from climate change.
- Strategy B-2: Conserve and improve water supply due to shortages from climate change.
- Strategy B-3: Promote agricultural lands for local food production.
- Strategy B-4: Provide education and leadership.

The County has also implemented a number of outreach programs such as the Green Building Program, lawn mower trade-in program, and reduction of solid waste by recycling to reduce air quality impacts as well as GHG emissions.

The County General Plan's Conservation and Open Space Element includes policies that are designed to reduce the emissions of criteria air quality pollutants, emissions of GHGs, and energy use in buildings and infrastructure, while promoting the use of renewable energy sources, conservation, and other methods of efficiency. The proposed Project is consistent with the following applicable General Plan Goals, as described in Appendix B of the proposed Project's Draft EIR.

- General Plan Goal COS-1, Inter-Connected Preserve System
- General Plan Goal COS-2, Sustainability of the Natural Environment
- General Plan Goal COS-14, Sustainable Land Development
- General Plan Goal COS-15, Sustainable Architecture and Buildings
- General Plan Goal COS-16, Sustainable Mobility
- General Plan Goal COS-17, Sustainable Solid Waste Management
- General Plan Goal COS-18, Sustainable Energy
- General Plan Goal COS-19, Sustainable Water Supply
- General Plan Goal COS-20, Governance and Administration

Climate Action Plan. In February 2018, the County's Board of Supervisors adopted a Climate Action Plan (CAP) that serves as a guide to reduce GHG emissions in the unincorporated communities of San Diego County. The adopted CAP includes six chapters: (1) Introduction; (2) Greenhouse Gas Emissions Inventory, Projections, and Reduction Targets; (3) Greenhouse Gas Reduction Strategies and Measures; (4) Climate Change Vulnerability, Resiliency, and Adaptation; (5) Implementation and Monitoring; and, (6) Public Outreach and Engagement. The CAP sets the following County-specific GHG reduction targets: by 2020, a 2 percent reduction from 2014 levels; by 2030, a 40 percent reduction from 2014 levels; and, by 2050, a 77 percent reduction from 2014 levels. The CAP is designed to achieve those targets through the implementation of multiple strategies and measures applicable to five general categories of GHG emission sources: (1) Built Environment and Transportation; (2) Energy; (3) Solid Waste; (4) Water and Wastewater; and, (5) Agriculture and Conservation.

In March 2018, lawsuits were filed by numerous environmental organizations and a business entity challenging the County's adoption of the CAP. In December 2018, the San Diego Superior Court ruled that the County failed to comply with CEQA when adopting the CAP, and directed the County to set aside the approvals of the CAP and the related certification of the Supplemental EIR. In January 2019, the County decided to proceed with an appeal of the trial court's decision, and that appeal is still pending at the time of the publication of this document.

Of relevance to this analysis, the CAP was adopted following issuance of the Notice of Preparation for the proposed Project's EIR. In light of the temporal relationship between the CAP's development and this EIR, and because litigation over the CAP was reasonably foreseeable and imminent based on prior challenges, this EIR does not rely upon or use the CAP or otherwise streamline its environmental analysis based on the CAP. Instead, the EIR uses significance thresholds derived from Appendix G of the CEQA Guidelines, and is informed by CEQA Guidelines Section 15064.4. Notably, CEQA Guidelines Section 15064.4 does not require that the County have an adopted or judicially-validated CAP in place in order to analyze, determine, and mitigate the effects of the proposed Project's GHG emissions.

While the CAP's streamlining tools are not used in this analysis, it is noted that – under the County's CAP-related *Guidelines for Determining Significance: Climate Change* and *Appendix A: Final Climate Action Plan Consistency Review Checklist* (*CAP Consistency Checklist*) – the proposed Project would be consistent with the growth projections and land use assumptions made in the CAP. This consistency determination stems from the fact that the Project proposes development that does not exceed the land use density and intensity of that assigned to the Project site under the Otay Ranch GDP/SRP approvals issued in 1993. Because the proposed Project would not result in a more GHG intensive project than that allowed by existing land use designations, the proposed Project would not be required to achieve net zero GHG emissions under the CAP's implementing framework, but would need to implement each of the design-related reduction measures contained in the CAP Consistency Checklist.

1.3.3 Carbon Markets

Carbon markets – both regulatory and voluntary – are a venue for the buying, selling and trading of carbon credits.

California Cap-and-Trade Program. In October 2011, the ARB approved the Cap-and-Trade Program (Cal. Code Regs., tit. 17, §§ 95800-96022) pursuant to AB 32, with compliance obligations that became effective in 2013 for large electric power and industrial plants, and in 2015 for fuel distributors (including transportation fuel and natural gas). California's Cap-and-Trade Program regulates the emissions of these GHG emitters, which are responsible for about 85 percent of the State's total GHG emissions inventory. As described by the ARB:

> "Cap-and-trade is a market based regulation that is designed to reduce [GHGs] from multiple sources. Cap-and-trade sets a firm limit or cap on GHGs and minimize[s] the compliance costs of achieving AB 32 goals. The cap will decline approximately 3 percent each year beginning in 2013. Trading creates incentives to reduce GHGs below allowable levels through investments in clean technologies. With a carbon market, a price on carbon is established for GHGs. Market forces spur technological innovation and investments in clean energy. Cap-and-trade is an

environmentally effective and economically efficient response to climate change."[14]

In the Cap-and-Trade Program, the State regulates the quantity of emissions by determining, in advance, how many allowances to issue — i.e., setting the "cap." Each allowance is essentially a permit issued by the State authorizing a certain quantity of GHG emissions. There are only a finite number of allowances, ensuring that covered entities may only lawfully emit a certain quantity of GHGs. If a covered entity wishes to emit carbon, it must obtain allowances to authorize those emissions.

Notably, entities regulated by the Cap-and-Trade Program have direct operational control of the long-term GHG emissions from the source profile, whereas land use developers do not have continuing control and authority over many (if not all) of the sources (e.g., homeowners decide when to turn appliances on and off; business owners decide their hours of operation). It also is noted that covered entities (e.g., fuel refineries) regulated by the Cap-and-Trade Program are not required to achieve a net zero GHG emissions level. Rather, such entities are subject to a declining GHG emissions cap that gradually and incrementally reduces emissions from the regulated emissions-generating activities. Covered entities are permitted to emit a certain, positive quantity of GHG emissions.

Importantly, the Cap-and-Trade Program has been designed to provide a firm cap, ensuring that the 2020 statewide emissions limit identified by the ARB will *not* be exceeded.[15] Thus, for the emission sources covered by the Program, which are nearly all of the sources associated with land use development projects (see Land Use-Related GHG Emissions Sources Covered by Cap-and-Trade Program, below), compliance with AB 32's 2020 mandate is assured by the Cap-and-Trade Program.[16]

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[14] ARB, Cap-and-Trade Program webpage at http://www.arb.ca.gov/cc/capandtrade/capandtrade.htm.
[15] ARB, Scoping Plan (December 2008), pp. 30-31.
[16] San Joaquin Valley Air Pollution Control District (SJVAPCD), APR – 2025, CEQA Determinations of Significance for Projects Subject to [ARB]'s GHG Cap-and-Trade Regulation (June 2014) ["all GHG emission increases resulting from the combustion of any fuel produced, imported and/or delivered in California are

Voluntary Markets. Like a stock or equity that represents a unit of ownership in a company, a carbon credit represents a unit of GHG emissions reductions. Each credit is essentially a certification that a certain quantity of GHG emissions have been avoided, prevented, or sequestered.

A carbon credit "project" may receive carbon credits for specific reductions in GHG emissions that occur as a result of a specific project activity. Examples of project activities that generate carbon credits include reforestation, the capture and destruction of methane emissions from livestock, or clean-burning cook stove replacement projects. A project can only receive offset credits if the project developer demonstrates what is known as the "environmental integrity" of the project.

The most common and generally accepted way for project applicants to demonstrate the environmental integrity of an offset project is by complying with an established, standards-based "protocol." A "protocol" is a method of measuring emission reductions. A standards-based protocol accomplishes that fundamental goal by establishing the baseline emissions condition for a given activity and then providing the project developer a specific, defined methodology to quantify and verify emissions reductions that occur over and above that baseline condition.

Offset credits are issued by a neutral, third-party "registry" (e.g., Climate Action Reserve) that has undertaken the responsibility of certifying that the emissions reductions have occurred. In what is known as the "voluntary market," registries review projects and issue recognized offset credits.

Under CEQA Guidelines Section 15126.4(c)(3)-(4), a project's GHG emissions can be reduced by "[o]ff-site measures, including offsets that are not otherwise required" and "[m]easures that sequester greenhouse gases." Therefore, the CEQA Guidelines allow projects to reduce GHG

mitigated under Cap-and-Trade … Therefore, GHG emission increases caused by fuel use (other than jet fuels) are determined to have a less than significant impact on global climate change under CEQA"].
South Coast Air Quality Management District (SCAQMD) has taken a similar position on stationary source projects under its permitting jurisdiction; see, e.g., the Final Negative Declaration (2014) for the Ultramar Inc. Wilmington Refinery Cogeneration Project (SCH No. 2012041014) and the Draft EIR (2015) for the Breitburn Santa Fe Springs Blocks 400/700 Upgrade Project (SCH No. 2014121014).

emissions by relying on voluntary market offsets that are not otherwise required, as well as other off-site and sequestration measures that result in GHG reductions.

Relatedly, in the *2017 Scoping Plan*, the ARB stated that, "Where further project design or regional investments are infeasible or not proven to be effective, it may be appropriate and feasible to mitigate project emissions through purchasing and retiring carbon credits."[17] The ARB also has approved AB 900 "environmental leadership" projects, which are provided certain CEQA streamlining benefits, based on determinations that such projects can use carbon offsets to achieve GHG neutrality, as required by Public Resources Code Section 21183(c).

Information regarding the use of offsets in the context of CEQA also is available in Section IX of the State-approved "Newhall Ranch Greenhouse Gas Reduction Plan." Section IX of that Plan outlines various protocols and standards that should be followed in order for a registry and the offsets it issues to qualify as effective CEQA mitigation.

[17] Appendix B of the *2017 Scoping Plan* provides that CEQA lead agencies should consider: (1) requiring projects to purchase carbon credits from credible offset registries, and (2) encouraging projects to select local and California-only carbon credits, where available.

2.0 POTENTIAL CLIMATE CHANGE IMPACTS TO PROJECT SITE

2.1 Existing Conditions

The Project site is currently undeveloped and includes disturbed areas and native vegetation, consisting mainly of coastal sage scrub and grassland. Natural vegetation and soils temporarily store carbon as part of the terrestrial carbon cycle. Carbon is assimilated into plants as they grow and then dispersed back into the environment when they die. Therefore, there are two existing sources of carbon storage at the Project site: natural vegetation and soils.

It is difficult to assess net changes in carbon storage associated with the proposed Project, but carbon sequestration rates for native vegetation in the Otay Ranch region are relatively low in comparison to heavily vegetated areas such as forests. For example, according to the USEPA (http://www.epa.gov/sequestration/rates.html), riparian areas are estimated to sequester from 0.1 to 0.3 metric tons of CO_2e per acre per year in comparison to forests, which are estimated to sequester 0.6 to 2.6 metric tons of CO_2e per acre per year. Native vegetation in the Otay Ranch region, which consists mainly of scrub, would be expected to provide a low level of carbon sequestration. Thus, the key issue is the balance between the loss of natural vegetation and future carbon storage associated with Project-related landscaping and revegetation of developed areas.

Of relevance also are changes in fire regime. Specifically, carbon in natural vegetation areas is likely to be released into the atmosphere through wildfire every 20 to 150 years, whereas carbon in landscaped areas likely will be protected from wildfire. The balance between these factors will influence the long-term carbon budget on the site.

The majority of carbon within the Project site is stored in the soil. Soil carbon accumulates from inputs of plant and animal matter, roots, and other living components of the soil ecosystem (e.g., bacteria, worms, etc.). Soil carbon is lost through biological respiration, erosion, and other forms of disturbance. Overall, soil carbon moves more slowly through the carbon cycle, and it offers greater potential for long-term carbon storage. Field observations suggest that urban soils can sequester relatively large amounts of carbon. And, observations from across the United States suggest that warmer and drier climates (such as southern California) may have slightly higher soil organic matter levels when compared to equivalent areas before development.

Based on the site's current conditions and the absence of development, existing GHG emissions are negligible and assumed to be zero.

2.2 Typical Adverse Effects

California-specific studies identifying potential impacts resulting from anticipated global warming have identified the following areas of concern:

Public Health. Higher temperatures are expected to increase the frequency, duration, and intensity of conditions conducive to air pollution formation. For example, days with weather conducive to ozone formation are projected to increase; and, an increase in wildfires could also occur, with corresponding increases in the release of pollutants, including particulate matter, further compromising air quality.

Potential health effects from GCC may arise from temperature increases, climate-sensitive diseases, extreme events, and air quality. There may be direct temperature effects through increases in average temperature leading to more extreme heat waves and less extreme cold spells. Those living in warmer climates are likely to experience more stress and heat-related problems (e.g., heat rash and heat stroke). In addition, climate sensitive diseases (such as malaria, dengue fever, yellow fever, and encephalitis) may increase, such as those spread by mosquitoes and other disease-carrying insects.

Potential public health impacts from climate change would be global in nature rather than site-specific. That being said, because the Project site is not located in an area that is subject to climate sensitive diseases (such as the tropics), it is unlikely that risks associated with these diseases would increase substantially. It is too speculative to estimate the potential frequency of heat waves at the Project site that would be associated with GCC.

Water Resources. A vast network of reservoirs and aqueducts capture and transport water throughout the State from northern California rivers and the Colorado River. The current distribution system relies on Sierra Nevada mountain snowpack to supply water during the dry spring and summer months. Rising temperatures, potentially compounded by decreases in precipitation, could severely reduce spring snowpack, increasing the risk of summer water shortages. In addition, if temperatures continue to rise more precipitation would fall as rain instead of snow, further reducing the Sierra Nevada spring snowpack by as much as 70 to 90%. The State's water resources are also at risk from rising sea levels. An influx of seawater would degrade California's estuaries, wetlands, and groundwater aquifers.

Impacts to water resources could affect the Project site through decreased availability of water in southern California overall. Decreased availability could lead to higher prices and water rationing. However, due to the scientific and factual uncertainties regarding the effects of climate change at a regional level, it is too speculative to quantify the effect of this impact. Nonetheless, reference should be made to the EIR's water supply analysis for further information.

Agriculture. Increased GHG and associated increases in temperature are expected to cause widespread changes to the agricultural industry, reducing the quantity and quality of agricultural products statewide. Significant reductions in available water supply to support agriculture would also impact production. Crop growth and development will change as will the intensity and frequency of pests and diseases.

This potential effect of climate change would not directly impact the proposed Project because the Project does not involve agricultural uses.

Ecosystems/Habitats. Continued global warming will likely shift the ranges of existing invasive plants and weeds, thus alternating competition patterns with native plants. Range expansion is expected in many species while range contractions are less likely in rapidly evolving species with significant populations already established. Continued global warming is also likely to increase the populations of and types of pests. Continued global warming would also affect natural ecosystems and biological habitats throughout the State.

Due to the scientific and factual uncertainties regarding the effects of climate change at a regional and site-specific level, particularly as to sensitive biological resources, it is too speculative to assess the effect of this impact on the Project site. Nonetheless, reference should be made to the EIR's analysis of biological resources for further information.

Wildland Fires. Global warming is expected to increase the risk of wildfire and alter the distribution and character of natural vegetation. However, since wildfire risk is determined by a combination of factors including precipitation, winds, temperature, and landscape and vegetation conditions, future risks will not be uniform throughout the State.

The Project site generally has a low potential for fire risks due to the type of on-site native vegetation. If fire risks do increase due to GCC, the Project has developed a fire protection plan that will protect the site and minimize hazards arising from wildland fires.

Sea Level Rising and Coastal Flooding. Rising sea levels, more intense coastal storms, and warmer water temperatures will increasing threaten the State's coastal regions.

Because the Project site is not located in a coastal area, it is unlikely to be affected by rising sea levels.

2.3 California Climate Adaptation Strategy

As part of its climate change planning process, the California Natural Resources Agency prepared its California Climate Adaptation Strategy (CNRA 2009) to summarize the best known science on climate change impacts in California, with the goal of assessing vulnerability to climate change impacts. According to the ARB, some of the potential California-specific impacts of global warming may include loss in snow pack, sea level rise, more extreme heat days per year, more high ozone days, more large forest fires, and more drought years.

To protect the State's public health and safety, resources, and economy, the California Natural Resources Agency—in coordination with other state agencies—has updated the *2009 California Climate Adaptation Strategy* with a document that is titled, *Safeguarding California: Reducing Climate Risk*. The final *Safeguarding California Plan: 2018 Update* (January 2018) provides policy guidance for state decision makers relative to climate risks in nine sectors: agriculture; biodiversity and habitat; emergency management; energy; forestry; ocean and coastal ecosystems and resources; public health; transportation; and water. It also identifies policies for reducing GHG emissions and accelerating the transition to a clean-energy economy through reductions in emissions, readiness, and continued research.

3.0 CLIMATE CHANGE SIGNIFICANCE CRITERIA

According to Appendix G of the CEQA Guidelines, the following criteria are considered to establish a significance threshold for GCC impacts:

Would the project:

- Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?
- Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

Rationale for Selection of Guidelines. As background, SB 97, enacted in 2007, expressly recognized the need to analyze GHG emissions as a part of the CEQA process. SB 97 required the Governor's Office of Planning and Research (OPR) to develop, and CNRA to adopt, amendments to the CEQA Guidelines to address the analysis and mitigation of GHG emissions. (Pub. Resources Code, §21083.05.) In 2010, a series of CEQA Guidelines amendments were adopted to fulfill SB 97 requirements, including revisions to Appendix G of the CEQA Guidelines. The Appendix G revisions included two questions related to GHG emissions, which were intended to satisfy the Legislative directive in Public Resources Code Section 21083.05 that the effects of GHG emissions be analyzed under CEQA. (The continued utilization of Appendix G, as set forth above, accords to the analytical framework set forth in the Project's Draft EIR (March 2015).

Section 15064.4 of the CEQA Guidelines was added as one of the amendments addressing GHG emissions. As most recently amended in December 2018, Section 15064.4 states that the "determination of the significance of greenhouse gas emissions calls for a careful judgment by the lead agency consistent with the provisions in section 15064. A lead agency shall make a good-faith effort, based to the extent possible on scientific and factual data, to describe, calculate or estimate the amount of greenhouse gas emissions resulting from a project." Section 15064.4(b)(1)-(3) further states that, "a lead agency should consider the following factors, among others, when determining the significance of impacts from greenhouse gas emissions on the environment: (1)

[t]he extent to which a project may increase or reduce greenhouse gas emissions as compared to the existing environmental setting; (2) [w]hether project emissions exceed a threshold of significance that the lead agency determines applies to the project; and, (3) [t]he extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of greenhouse gas emissions."

Recognizing that GHG emissions contribute to the cumulative impact condition of global climate change, Section 15064(h)(1) of the CEQA Guidelines is also applicable. Section 15064(h)(1) states that "the lead agency shall consider whether the cumulative impact is significant and whether the effects of the project are cumulatively considerable." A cumulative impact may be significant when the project's incremental effect, though individually limited, is cumulatively considerable. "Cumulatively considerable" means that the incremental effects of an individual project are significant when viewed in connection with the effects of other past, current, and reasonably foreseeable probable future projects. However, as provided in CEQA Guidelines Section 15130(a)(3), "[a] project's contribution is less than cumulatively considerable if the project is required to implement…its fair share of a mitigation measure or measures designed to alleviate the cumulative impact." Further, "[t]he mere existence of significant cumulative impacts caused by other projects alone shall not constitute substantial evidence that the proposed project's incremental effects are cumulatively considerable" (CEQA Guidelines Section 15064 (h)(4)).

Finally, Section 15064(h)(3) of the CEQA Guidelines is pertinent. Section 15064(h)(3) states that: "[a] lead agency may determine that a project's incremental contribution to a cumulative effect is not cumulatively considerable if the project will comply with the requirements in a previously approved plan or mitigation program…that provides specific requirements that will avoid or substantially lessen the cumulative problem within the geographic area in which the project is located."

4.0 GREENHOUSE GAS INVENTORY

GHG emissions associated with the proposed Project were estimated separately for seven categories of emissions: (1) construction; (2) carbon sequestration; (3) area sources, including fireplace use and landscaping; (4) energy use, including electricity and natural gas usage; (5) water consumption; (6) solid waste handling; and (7) transportation.

The complete emissions inventory is summarized below and included in Appendices B through D.

4.1 Existing Greenhouse Gas Emissions

As discussed in Section 2.1, the site is currently undeveloped and existing site GHG emissions are negligible. Minor amounts of GHG emissions may be associated with intermittent on-site activities (e.g., vehicle use). However, this analysis assumes that the existing emission levels are zero. The analysis takes into account the loss in carbon sequestration from development of the existing site.

4.2 Construction Greenhouse Gas Emissions

Construction GHG emissions include emissions from heavy construction equipment, truck traffic, and worker trips. Emissions were calculated using the California Emissions Estimator Model (CalEEMod) Model Version 2016.3.2 (SCAQMD 2016), based on the anticipated construction schedule to full buildout.

4.3 Operational Greenhouse Gas Emissions

Operational GHG emissions were calculated using the CalEEMod Model, with adjustments to account for site-specific conditions.

Area Source Emissions. The CalEEMod Model calculates emissions associated with area sources, including landscaping equipment and hearth (fireplace) use. For this analysis, and for the purposes of the unmitigated and mitigated cases, it was assumed that all residential units would include a fireplace, and that fireplaces would be natural gas. Fireplaces were modeled based on average use for 30 days per year. This assumption is similar to the default value for the SCAQMD within CalEEMod, which assumes that fireplaces would operate 25 days per year, and appropriate in light of the average climatic conditions in southern California.

Energy Use Emissions. Energy use generates GHGs through emissions from power plants that generate electricity, as well as emissions from natural gas usage.

The CalEEMod Model includes energy intensity factors for utilities that are based on emission factors for electricity presented in Power Utility Protocol reports. However, implementation of the RPS will influence GHG emissions associated with the Project's electricity use. Therefore, the emission factors for utility energy use have been adjusted to account for implementation of the 60% RPS.

At a minimum, and for purposes of the unmitigated case, the Project's residential and non-residential buildings would meet the energy efficiency requirements of Title 24 as of 2016. The CalEEMod Model assumes buildings would meet Title 24 as of 2016 energy efficiency standards. The buildings would be constructed post-2016 and would therefore be required to meet the requirements of Title 24 as of 2016. Energy use for single-family residences meeting Title 24 as of 2016 was calculated by ConSol, as presented in Appendix C (ConSol 2017). To account for energy use for multi-family and non-residential buildings meeting Title 24 as of 2016, Title 24 energy use within the CalEEMod model was used..

For purposes of the mitigated case, the CalEEMod Model defaults were revised to reflect the Project's mitigation commitment to achieve the California Energy Commission's Zero Net Energy definition in the Project's single-family residential units. The modeling inputs were derived from Project-specific analysis undertaken by ConSol (see Appendix C).

The CalEEMod model calculates electricity use, and associated GHG emissions, from lighting electricity use separately from electricity use covered by Title 24 (building) and non-Title 24 (i.e., plug loads). The Project's multi-family and non-residential buildings shall be designed to improve energy efficiency by 10% over the 2016 Building Energy Efficiency Standards (Part 6 of Title 24). Additionally, the Project would include high-efficiency lighting that would reduce lighting electricity use by 15% for non-residential and multi-family residential uses; high-efficiency lighting within the single-family residences is accounted for in the modeling conducted by ConSol. The use of high-efficiency lighting in non-residential and multi-family residential uses results in an overall reduction in electricity use, and associated GHGs from electricity use, of 5.5%. High-efficiency lighting for single-family residences is addressed in the ConSol calculations (see Appendix C).

Water. Water use and energy use are often closely linked. The provision of potable water to commercial users consumes large amounts of energy associated with five stages: source and conveyance, treatment, distribution, end use, and wastewater treatment. GHG emissions from water use were calculated based on the CalEEMod model, assuming that low-flow fixtures would be used, and that water-efficient irrigation systems would be employed that would reduce outdoor water use by 30%, based on implementation of the Project-specific Water Conservation Plan. The same assumptions were used in the unmitigated and mitigated cases.

Solid Waste. The disposal of solid waste produces GHG emissions from anaerobic decomposition in landfills, incineration, and transportation of waste. Solid waste generation rates were estimated from CalEEMod Model, and GHG emissions from solid waste management were estimated using the model, assuming landfilling of solid waste with flaring.

As previously discussed, AB 341 sets forth a legislative declaration that it is the policy goal of the state that not less than 75% of solid waste generated be source reduced, recycled, or composted by the year 2020. The County achieves a high diversion rate currently and is working on developing a high diversion plan to meet the 75% goal. Solid waste diversion rates of 75% were calculated as shown in Appendix D.

Transportation. Several regulatory initiatives have been passed to reduce emissions from on-road vehicles, as discussed in Table 6 and Section 1.3. These measures include the Pavley I standards, the LCFS, and the Advanced Clean Cars program.

The CalEEMod Model uses emission factors from EMFAC2014 for the San Diego Air Basin. The EMFAC2014 model provides estimates of CO_2 emissions with implementation of the Pavley I, and Advanced Clean Cars programs. The LCFS is not included in EMFAC2014 because its GHG reductions are considered to occur upstream.

Total VMT were calculated based on data provided by SANDAG to Chen Ryan (Chen Ryan 2019) to provide a site-specific estimate of daily VMT. Based on this analysis, the weekday VMT is 212,097. According to calculations in the CalEEMod model for the project, the VMT would be reduced on weekends by approximately 3.6%. The weekend VMT is therefore 204,461.5. Total annual VMT in the unmitigated case would be 76,621,314. The emission reduction benefits of the TDM program are accounted for in the mitigated case. Calculation of the VMT and the Chen Ryan memorandum are provided as Appendix A.

5.0 SUMMARY OF ENVIRONMENTAL DESIGN CONSIDERATIONS AND IMPACTS

5.1 Project Greenhouse Gas Emissions

The results of the unmitigated GHG emission calculations are provided in Table 5a for the proposed Project, and Table 5b for the optional development scenario. These emission calculations account for the implementation of the EDCs and regulatory compliance measures identified in Tables ES-1 and ES-2, where quantifiable. The CalEEMod Model outputs are provided in Appendix B.

Table 5a
SUMMARY OF PROPOSED PROJECT'S
ESTIMATED GREENHOUSE GAS EMISSIONS – 2030
(WITH EDCS AND REGULATORY COMPLIANCE MEASURES)

Emission Source	Annual Emissions (Metric tons/year)			
	CO_2	CH_4	N_2O	CO_2e
Construction Emissions				
Construction Activities	37,491	8.0812	0.0000	37,695
Sequestration Loss	4,077	0.0000	0.0000	4,077
Sequestration Gain	-3,799	0.0000	0.0000	-3,799
Construction Total	**37,769**	**8.0812**	**0.0000**	**37,973**
Operational Emissions				
Area Sources	582	0.0328	0.0102	586
Energy Use	7,792	0.2133	0.1125	7,831
Water Consumption	426	3.6065	0.0881	543
Solid Waste Handling	238	14.0682	0.0000	590
Vehicles	24,212	1.1876	0.0000	24,241
Operational Sub-total	**33,250**	**19.1084**	**0.2108**	**33,791**
Global Warming Potential Factor	1	25	298	
Operational Total	**33,250**	**478**	**63**	**33,791**

Table 5b SUMMARY OF OPTIONAL DEVELOPMENT SCENARIO'S ESTIMATED GREENHOUSE GAS EMISSIONS – 2030 (WITH EDCS AND REGULATORY COMPLIANCE MEASURES)				
Emission Source	**Annual Emissions (Metric tons/year)**			
	CO_2	**CH_4**	**N_2O**	**CO_2e**
Construction Emissions				
Construction Activities	37,491	8.0812	0.0000	37,695
Sequestration Loss	4,077	0.0000	0.0000	4,077
Sequestration Gain	-3,799	0.0000	0.0000	-3,799
Construction Total	**37,769**	**8.0812**	**0.0000**	**37,973**
Operational Emissions				
Area Sources	582	0.0328	0.0102	586
Energy Use	7,839	0.2138	0.1136	7,878
Water Consumption	422	3.5682	0.0871	538
Solid Waste Handling	240	14.1951	0.0000	595
Vehicles	24,212	1.1876	0.0000	24,241
Operational Sub-total	**33,295**	**19.1975**	**0.2109**	**33,838**
Global Warming Potential Factor	1	25	298	
Operational Total	**33,295**	**480**	**63**	**33,838**

As shown in Tables 5a and 5b, the proposed Project (and the optional development scenario) would emit about 37,973 MT CO_2e that are attributable to construction-related activities and approximately 33,791 MT CO_2e per year that are attributable to operational activities for the proposed Project and 33,838 MT CO_2e per year for the optional development scenario, after accounting for the quantifiable effects of regulatory compliance measures and environmental design considerations (but not mitigation measures). As such, the unmitigated, proposed Project would increase the existing emissions level by approximately 33,791 MT CO_2e per year during its operational phase and contribute, on a one-time basis, 37,973 MT CO_2e that are attributable to construction-related activities. The optional development scenario would increase the existing emissions level by approximately 33,838 MT CO_2e per year during its operational phase and contribute, on a one-time basis, 37,973 MT CO_2e that are attributable to construction-related activities.

While the Project would result in an obvious change to the existing GHG emissions from the Project site, there is no scientific or regulatory consensus regarding what particular quantity of GHG emissions is considered significant, and there remains no applicable, adopted numeric threshold for assessing the significance of a project's individual emissions as a direct impact.[18] Further, it should be noted that "AB 32 demonstrates California's commitment to reducing GHG emissions and the state's associated contribution to climate change, without intent to limit population or economic growth within the state."[19] As a result, there are negative policy implications arising from the utilization of a uniform numeric threshold because of its potential to conflict with projected population and economic growth. CEQA is not a policy tool to control population or economic growth, and, the future residents and occupants of development enabled by this Project would exist and live somewhere else even if this Project were not approved.[20]

Nonetheless, in an effort to ensure a conservative analysis, this report concludes that the Project's increase in GHG emissions may have a potentially significant impact on the environment (see CEQA Guidelines §15064.4(b)(1)).

Tables 6a and 6b present emissions for the Project and optional development scenario at buildout in 2030 with implementation of the recommended mitigation measures identified in Table ES-3.

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[18] SMAQMD, CEQA Guide (December 2016), p. 6-10 [the air district has "recognize[d] that … there is no known level of emissions that determines if a single project will substantially impact overall GHG emission levels in the atmosphere"]; SJVAPCD, Guidance for Valley Land-use Agencies in Addressing GHG Emission Impacts for New Projects under CEQA (December 2009), p. 3 [the air district has concluded that "existing science is inadequate to support quantification of impacts that project specific GHG emissions have on global climatic change"].

[19] SMAQMD, CEQA Guide (December 2016), p. 6-10.

[20] CAPCOA, CEQA & Climate Change (January 2008), p. 73 ["[A] land development project, such as a specific plan, does not necessarily create 'new' emitters of GHG, but would theoretically accommodate a greater number of residents in the state. Some of the residents that would move to the project could already be California residents, while some may be from out of state (or would 'take the place' of in-state residents who 'vacate' their current residences to move to the new project). Some also may be associated with new births over deaths (net population growth) in the state. The out-of-state residents would be contributing new emissions in a statewide context, but would not necessarily be generating new emissions in a global context."].

Table 6a SUMMARY OF PROPOSED PROJECT'S ESTIMATED GREENHOUSE GAS EMISSIONS – 2030 (WITH MITIGATION)				
Emission Source	**Annual Emissions (Metric tons/year)**			
	CO_2	**CH_4**	**N_2O**	**CO_2e**
Construction Emissions				
Construction Activities	37,491	8.0812	0.0000	37,695
Sequestration Loss	4,077	0.0000	0.0000	4,077
Sequestration Gain	-3,799	0.0000	0.0000	-3,799
Construction Carbon Offsets – MM GCC-7	-37,769	-8.0812	-0.0000	-37,973
Construction Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**
Operational Emissions				
Area Sources	582	0.0331	0.0102	586
Energy Use	3,845	0.0696	0.0728	3,868
Water Consumption	426	3.6065	0.0881	543
Solid Waste Handling	238	14.0682	0.0000	590
Vehicles	23,010	1.1286	0.0000	23,038
Operational Sub-total	**28,101**	**18.9057**	**0.1711**	**28,625**
Global Warming Potential Factor	1	25	298	
Operational Total	**28,101**	**473**	**51**	**28,625**
Operational Carbon Offsets – MM GCC-8				-28,625
Operational Total				**0**

Table 6b SUMMARY OF OPTIONAL DEVELOPMENT SCENARIO'S ESTIMATED GREENHOUSE GAS EMISSIONS – 2030 (WITH MITIGATION)				
Emission Source	**Annual Emissions (Metric tons/year)**			
	CO_2	**CH_4**	**N_2O**	**CO_2e**
Construction Emissions				
Construction Activities	37,491	8.0812	0.0000	37,695
Sequestration Loss	4,077	0.0000	0.0000	4,077
Sequestration Gain	-3,799	0.0000	0.0000	-3,799
Construction Carbon Offsets – MM GCC-7	-37,769	-8.0812	-0.0000	-37,973
Construction Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**
Operational Emissions				
Area Sources	582	0.0328	0.0102	586
Energy Use	3,787	0.0661	0.0728	3,810
Water Consumption	422	3.5682	0.0871	538
Solid Waste Handling	240	14.1951	0.0000	595
Vehicles	23,010	1.1286	0.0000	23,038
Operational Sub-total	**28,041**	**18.9908**	**0.1701**	**28,567**
Global Warming Potential Factor	1	25	298	
Operational Total	**28,041**	**474**	**51**	**28,567**
Operational Carbon Offsets – MM GCC-8				-28,567
Operational Total				**0**

With implementation of the eight (8) mitigation measures presented in Table ES-3, the Project's and optional development scenario's mitigated emissions would be reduced to zero MT CO_2e per year as shown in Tables 6a and 6b. The eight (8) mitigation measures would reduce Project-related GHG emissions to zero by reducing the Project's total quantity of vehicle miles traveled through the implementation of transportation demand management strategies; increasing the efficiency of energy consumption in the Project's built environment through the implementation of green building design strategies; and, securing carbon offsets from credible registries that issue credits for GHG emissions-reducing projects with high environmental integrity.

As such, because the recommended mitigation measures would ensure that the Project would result in no net increase in GHG emissions as compared to the existing environmental setting (see CEQA Guidelines §15064.4(b)(1)), the mitigated Project would not generate GHG emissions that may have a significant impact on the environment and the Project's GHG emissions would be reduced to a less-than-significant level.

5.2 Consistency with an Applicable Plan, Policy, or Regulation Adopted for the Purpose of Reducing GHG Emissions

The proposed Project, without mitigation, potentially may conflict with plans, policies or regulations adopted to reduce GHG emissions because the Project would result in an incremental increase in existing GHG emissions levels. However, because the Project would not increase net GHG emissions above existing levels, following implementation of the EDCs and eight (8) recommended mitigation measures, the mitigated Project would not conflict with any local or state plans, policies, or regulations adopted for the purpose of reducing GHG emissions. The following provides additional discussion of plans, policies, and regulations adopted for the purpose of reducing GHG emissions and the determination that the Project does not conflict with such plans, policies, or regulations.

County of San Diego General Plan. The proposed Project is consistent with the County's General Plan Conservation and Open Space Policies that are designed to reduce the emissions of criteria air quality pollutants, emissions of GHGs, and energy use in buildings and infrastructure, while promoting the use of renewable energy sources, conservation, and other methods of efficiency. The following discussion highlights the Project's consistency with applicable General Plan Goals:

- The Project is consistent with General Plan Goals COS-1, Inter-Connected Preserve System, and COS-2, Sustainability of the Natural Environment, through its preservation of open space.
- The Project is consistent with General Plan Goal COS-14, Sustainable Land Development, through its mix of on-site uses, integration into the Otay Ranch master-planned community, proximity to neighboring communities located within the City of Chula Vista and

unincorporated County areas, and use of various design strategies to achieve green building objectives (see, e.g., **MM GCC-2** through **MM GCC-5**).

- The Project is consistent with General Plan Goal COS-15, Sustainable Architecture and Buildings, through its use of various design strategies to achieve green building objectives (see, e.g., **MM GCC-2** through **MM GCC-5**).
- The Project is consistent with General Plan Goal COS-16, Sustainable Mobility, by utilizing a suite of transportation demand management strategies to facilitate the selection of more sustainable transportation modes, and by installing ZEV charging infrastructure (see **Table ES-1** and **MM GCC-1 and MM GCC-6**).
- The Project is consistent with General Plan Goal COS-17, Sustainable Solid Waste Management, because it will require Project-wide recycling for the single-family and multi-family homes, resort, school, and commercial/retail establishments.
- The Project is consistent with General Plan Goal COS-18, Sustainable Energy, because it will achieve Zero Net Energy standards in its single-family homes and use other strategies to reduce its demand for electricity and natural gas, and providing charging infrastructure for ZEVs (see, e.g., **MM GCC-2** through **MM GCC-6**).
- The Project is consistent with General Plan Goal COS-19, Sustainable Water Supply, by utilizing low-flow fixtures in accordance with the 2016 CALGreen Standards and implementing its site-specific Water Conservation Plan, which will serve to reduce outdoor water consumption by 30 percent.
- The Project is consistent with General Plan Goal COS-20, Governance and Administration, because it would reduce GHG emissions contributing to global climate change by meeting or exceeding the statewide reduction targets established by AB 32 and SB 32, neither of which require that new development achieve a net zero emissions level. The Project demonstrates consistency with this Goal by using a portfolio of on- and off-site emission reduction tools, which maximize on-site opportunities before utilizing feasible and effecting off-site opportunities for GHG reduction.

SANDAG's San Diego Forward Plan. At the regional level, SANDAG's Sustainable Communities Strategy (a component of the *San Diego Forward* plan) is an applicable plan adopted for the purpose of reducing GHGs in accordance with the 2020 and 2035 emission reduction targets adopted by the ARB for the San Diego region pursuant to SB 375.

For purposes of SB 375's underlying policy goals, it is important to recognize that the proposed Project is part of the planned and approved Otay Ranch General Development Plan/Subregional Plan. This master plan, approved in 1993 as a joint planning effort by the City of Chula Vista and the County of San Diego, encompasses 23,000 acres arranged in a series of Villages to be developed over a 50-year period. The Otay Ranch vision and plan contains a balanced mix of residential, commercial, civic, recreational and public facilities, along with an 11,000+ acre open space preserve, all of which – when viewed from an integrated perspective – reduce the amount of vehicle miles traveled and corresponding GHG emissions. The portion of Otay Ranch located within the City of Chula Vista is in closer proximity to employment centers, transit, and other regional amenities.

In addition to being part of a larger master-planned community that is an element of the region's planned forecast for accommodating anticipated population growth, the proposed Project itself also contains a balanced mix of uses, including resident-serving commercial, retail and office uses, a 10.3-acre community park and 18.3 acres of neighborhood parks, an elementary school site, a fire station site, and a resort with up to 200 rooms and related amenities. The Project's mix of uses allows for the Project to internally capture approximately 19.4 percent of all vehicle trips (i.e., these trips remain within the boundaries of the Project site), with an approximate trip length of one mile in each direction. Further, the Project's mix of land uses, including residential in conjunction with the retail, parks, and school, is coupled with an integrated pathway and trail plan and traffic calming features along internal streets and roads that promote a pedestrian experience for the Project's residents and visitors and facilitate non-vehicular travel, consistent with SB 375. The Project site also is located approximately one-quarter mile east of the City of Chula Vista, and in close proximity to San Miguel Ranch, Rolling Hills Ranch, and Eastlake. Finally, the Project's Transportation Demand Management strategies are estimated to achieve an approximately 4.969 percent reduction in vehicle miles traveled (see Appendix A (Chen Ryan)).

For all of these reasons, and because the Project would achieve no net increase in GHG emissions, the Project would not conflict with SANDAG's implementation of the *San Diego Forward* plan or attainment of its SB 375 reduction targets in 2020 and 2035.

Consistency with SB 32 and S-3-05. As discussed above:

- SB 32 establishes a reduction target to reduce statewide GHG emissions to at least 40 percent below 1990 levels by 2030.
- Executive Order S-3-05 establishes the following goals: GHG emissions should be reduced to 2000 levels by 2010, to 1990 levels by 2020, and to 80 percent below 1990 levels by 2050.

This discussion evaluates whether the GHG emissions trajectory after Project completion would impede the attainment of the 2030 and 2050 GHG reduction goals.

To begin, the ARB has addressed the progress with regard to both the 2030 and 2050 goals. It states in the *First Update* to the *Scoping Plan* that "California is on track to meet the near-term 2020 GHG emissions limit and is well positioned to maintain and continue reductions beyond 2020 as required by AB 32" (CARB 2014b, p. ES2). With regard to the 2050 target for reducing GHG emissions to 80 percent below 1990 levels, the *First Update* states the following:

> This level of reduction is achievable in California. In fact, if California realizes the expected benefits of existing policy goals (such as 12,000 megawatts of renewable distributed generation by 2020, net zero energy homes after 2020, existing building retrofits under AB 758, and others) it could reduce emissions by 2030 to levels squarely in line with those needed in the developed world and to stay on track to reduce emissions to 80 percent below 1990 levels by 2050. Additional measures, including locally driven measures and those necessary to meet federal air quality standards in 2032, could lead to even greater emission reductions.

In other words, the ARB believes that the state is on a trajectory to meet the 2030 and 2050 GHG reduction targets set forth in AB 32, SB 32, and EO S-3-05. This is confirmed in the *2017 Scoping Plan*, which states:

> This Scoping Plan builds upon the successful framework established by the Initial Scoping Plan and First Update, while identifying new, technologically feasibility and cost-effective strategies to ensure that California meets its GHG reduction targets in a way that promotes and rewards innovation, continues to foster economic growth, and delivers improvements to the environment and public health, including in disadvantaged communities. [21]

As mentioned above, when discussing project-level GHG emissions reduction actions and thresholds for CEQA in the *2017 Scoping Plan*, the ARB states "[a]chieving no net additional increase in GHG emissions … is an appropriate overall objective for new development."[22]

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[21] ARB, 2017 Scoping Plan (November 2017), p. 6.
[22] Id. at p. 101.

Therefore, the Project would not interfere with implementation of any of the above-described GHG reduction goals for 2030 or 2050 because, with implementation of mitigation, the Project achieves carbon neutrality (i.e., a net zero emissions level), thereby resulting in *no* net increase in GHG emissions relative to existing environmental conditions.

The proposed Project, therefore, would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

6.0 CONCLUSIONS

In this case, the proposed Project feasibly can achieve no net increase in GHG emissions through implementation of mitigation measures **MM GCC-1** through **MM GCC-8**. The Project will utilize a suite of s and mitigation measures that reduce GHG emissions through on-site strategies targeted to the Project's built environment and transportation sources, and secure additional, necessary emission reductions through off-site, offset projects. The proposed Project also would be consistent with applicable goals and policies of the County's General Plan and would not conflict with SANDAG's *San Diego Forward* plan. As mentioned above, the Project is located within an area that has been slated for long-term growth ever since the County of San Diego's 1993 approval of the Otay Ranch General Development Plan/Subregional Plan, and incorporates various strategies that serve to capture vehicle trips internal to the Project site and reduce vehicle miles traveled.

The proposed Project, therefore, would not result in any significant impacts to the global climate with implementation of the identified mitigation measures, and cumulative impacts would be less than significant.

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