



**Otay Ranch Village 3 North
and a Portion of Village 4**

Air Quality Improvement Plan

Adopted December 6, 2016

By Resolution No. 2016-254

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I. Executive Summary



A. Intent of the AQIP

The City of Chula Vista has been progressive in advancing the practices of energy conservation and the reduction of greenhouse gas emissions. This is evident through the City's Growth Management Ordinance (CVMC 19.09), Carbon Dioxide (CO₂) Reduction Plan, Climate Change Working Group (CCWG) Implementation Measures, and Green Building and Increased Energy Efficiency Ordinances (CVMC 15.12, and 15.26.030, respectively). These programs promote energy conservation and reduction of greenhouse gas emissions by requiring applicants to implement the best available community site design practices such as providing alternative modes of transportation, transit-friendly, walkable communities, and sustainable building design.

The AQIP provides an analysis of air pollution impacts which would result from a project and demonstrates the best available community design to reduce vehicle trips, maintain or improve traffic flow, reduce vehicle miles traveled, including implementation of appropriate traffic control measures, and other means of reducing emissions (direct or indirect) from the project. Through the AQIP, projects demonstrate how they have incorporated the best available design principles to improve energy efficiency and reduce greenhouse gas emissions and implement the action measures contained in the City's Carbon Dioxide (CO₂) Reduction Plan. The AQIP includes a qualitative and quantitative analysis of the proposed project to demonstrate how the project has met the City's thresholds for reducing air quality impacts and improving energy conservation.

B. Community Site Design Goals

The Village 3 North SPA Plan Community Site Design Goals include the following:

- Foster development patterns which promote orderly growth and prevent urban sprawl.
- Establish an urban pedestrian-oriented village with a village core designed to reduce reliance on the automobile.
- Promote multi-modal transportation, including walking and the use of bicycles, buses and regional transit.
- Establish multi-use trail linkages to the Chula Vista Greenbelt and OVRP, consistent with the Greenbelt Master Plan and OVRP Concept Plan.
- Promote synergistic uses to balance activities, services and facilities with employment, housing, transit and commercial opportunities.

C. Planning Features

The Village 3 North SPA Plan includes the following planning features to achieve the community site design goals.

1. Village Core

Village 3 North concentrates multi-family housing, mixed-use residential/commercial, office, school and neighborhood park uses in and around a centrally-located village core.



A network of pedestrian and bicycle circulation throughout the village connect to the village core.

2. Housing Intensity

The highest density homes are located in the village core which interfaces with planned employment areas (office and industrial) and future transit stops. Smaller detached homes and attached buildings use less energy for heating and cooling than larger, single-family detached homes. In addition, the small-lot single family homes have a smaller area of landscaping than typical single-family lots, which reduces the amount of water used for landscape irrigation.

3. Street Widths, Pavement and Street Trees

Otay Ranch street sections are narrower than typical standards which reduces asphalt pavement and the “urban heat-island effect” by limiting the amount of reflective surfaces. Street trees provide shade which further reduces heat-gain.

4. Public Transportation

Rapid Bus service is planned along Main Street, adjacent to Village 3 North, with a future stop at the Main Street/Heritage intersection. In addition, Local Bus service can be accommodated to serve Village 3 North along Heritage Road with a future transit stop at Heritage Road and Street V.

5. Alternative Travel Modes

In Village 3 North, the Village Pathway and Promenade Trails allow for bicycle and pedestrian use throughout the village and connect to the regional trail network and adjacent communities. Regional Trails are provided on Heritage Road and Main Street, connecting Village 3 North to Village 2 to the north, and Villages 4 and 8 to the east.

In addition to these planning and site design features, other building features such as energy and water conservation measures will be implemented as part of the Village 3 North Energy Conservation Plan to further reduce greenhouse gas emission and limit air pollution. Those building and landscaping features are outlined in Section VII.

D. Modeled Effectiveness of Community Design

With implementation of the above listed site design features, the project is consistent with the City of Chula Vista’s requirements for the CO2 Index Model. Table ES-1 depicts the results for the proposed project.



Table ES-1: Chula Vista CO2 Index Model Results – Village 3 North

Element	Indicator	Units	Threshold Score	SPA Plan Score	Compliance Status (Y/N)
Land Use	Use Mix	0-1 scale	0.1	0.25	Yes
	Use Balance	0-1 scale	0.6	0.77	Yes
	Neighborhood Completeness	% of key uses	60	60	Yes
Housing	School Proximity to Housing	avg walk ft to closest	3,200	1,459	Yes
	Transit Proximity to Housing	avg walk ft to closest stop	2,900	2,504	Yes
Employment	Transit Proximity to Employment	avg walk ft to closest stop	2,600	1,277	Yes
Recreation	Park Proximity to Housing	avg walk ft to closest park	1,700	1,582	Yes
Travel	Internal Street Connectivity	cul-de-	0.7	0.95	Yes
	Intersection Density	Intersections/sq mi	210	233	Yes
	Pedestrian Network Coverage	% of streets w/sidewalks	81	100.0	Yes
	Residential Multi-Modal Access	%DU w/3+ modes w/i 1/8mi	40	96.5	Yes
	Daily Auto Driving (3Ds Methodology)	VMT/capita/day	22	21.30	Yes
	Daily Auto Driving Inputs				
	Density		9,692	21,122	
	Diversity		.18	0.87	
Design		3.57	4.54		
Street Network Density		17.57	25.70		
Pedestrian Network Coverage		96.00	100.00		
Street Route Directness		1.73	1.27		
Climate Change	Residential Building Energy Use	MMBtu/yr/capita	29	26.5	Yes
	Non-Residential Building EnergyUse	MMBtu/yr/emp	19	11.0	Yes
	Residential Building CO2 Emissions	lbs/capita/yr	4,800	4,360	Yes
	Non-Residential Building CO2 Emissions	lbs/emp/yr	2,100	1,789	Yes

II. Introduction



A. AQIP Required

The City's Growth Management Ordinance requires an Air Quality Improvement Plan (AQIP) to be submitted with all Sectional Planning Area (SPA) Plans or major development projects consisting of 50 dwelling units or greater (or non-residential or mixed use projects with equivalent dwelling units (EDUs) to a residential project of 50 or more dwelling units). Because the Village 3 North SPA Plan proposes 1,597 residential units and up to 20,000 sq. ft. of commercial/retail space, an AQIP is required.

The AQIP has been prepared based on best available design practices which serve to implement several aspects of the City's CO₂ Reduction Plan. Best available design practices, including the City's Green Building and Energy Efficiency Ordinance (CVMC 15.12 and 15.26.030 respectively) requirements, implemented by the Village3 North SPA Plan are described in detail further below. An assessment for how the project meets the requirements of the City's CO₂ Reduction Plan is provided in Table 9.

B. Purpose and Goals of the AQIP

The AQIP provides an analysis of air pollution impacts which would result from a project and demonstrates the best available design to reduce vehicle trips, maintain or improve traffic flow, reduce vehicle miles traveled, including implementation of appropriate traffic control measures, and other means of reducing emissions (direct or indirect) from the project. Through the AQIP, projects demonstrate how they have incorporated the best available design principles to improve energy efficiency and reduce greenhouse gas emissions and implement the action measures contained in the City's Carbon Dioxide (CO₂) Reduction Plan. The AQIP includes a qualitative and quantitative analysis of the proposed project to demonstrate how the project has met the City's thresholds for reducing air quality impacts and improving energy conservation.

C. Regulatory Framework

1. Federal

Clean Air Act: The federal Clean Air Act (CAA), passed in 1970 and last amended in 1990, forms the basis for the national air pollution control effort. The Environmental Protection Agency (EPA) is responsible for implementing most aspects of the CAA, including the setting of National Ambient Air Quality Standards (NAAQS) for major air pollutants, hazardous air pollutant standards, approval of state attainment plans, motor vehicle emission standards, stationary source emission standards and permits, acid rain control measures, stratospheric O₃ protection, and enforcement provisions. NAAQS are established for "criteria pollutants" under the CAA, which are O₃, CO, NO₂, SO₂, PM₁₀, PM_{2.5}, and Pb.

The NAAQS describe acceptable air quality conditions designed to protect the health and welfare of the citizens of the nation. The NAAQS (other than for O₃, NO₂, SO₂, PM₁₀, PM_{2.5}, and those based on annual averages or arithmetic mean) are not to be exceeded more than once per year. NAAQS for O₃, NO₂, SO₂, PM₁₀, and PM_{2.5} are based on statistical calculations over 1- to 3-year periods, depending on the pollutant. The CAA requires the EPA to reassess the NAAQS at least every 5 years to determine whether adopted standards are adequate to protect public health based on current



scientific evidence. States with areas that exceed the NAAQS must prepare a State Implementation Plan that demonstrates how those areas will attain the standards within mandated time frames.

Massachusetts vs. EPA: On April 2, 2007, in *Massachusetts v. EPA*, 549 U.S. 497, the Supreme Court found that GHGs are air pollutants covered by the Clean Air Act. The court held that the Administrator to determine whether GHG emissions from new motor vehicles cause or contribute to air pollution that may reasonably be anticipated to endanger public health or welfare, or whether the science is too uncertain to make a reasoned decision. In making these decisions, the Administrator is required to follow the language of Section 202(a) of the CAA. On December 7, 2009, the Administrator signed a final rule with two distinct findings regarding GHGs under Section 202(a) of the CAA:

- The Administrator found that elevated concentrations of GHGs—CO₂, CH₄, N₂O, HFCs, PFCs, and SF₆—in the atmosphere threaten the public health and welfare of current and future generations. This is referred to as the endangerment finding.
- The Administrator further found the combined emissions of GHGs—CO₂, CH₄, N₂O, and HFCs—from new motor vehicles and new motor vehicle engines contribute to the GHG air pollution that endangers public health and welfare. This is referred to as the cause or contribute finding.

These two findings were necessary to establish the foundation for regulation of GHGs from new motor vehicles as air pollutants under the CAA.

Energy Independence and Security Act: On December 19, 2007, President Bush signed the Energy Independence and Security Act of 2007. Among other key measures, the Act would do the following, which would aid in the reduction of national GHG emissions:

1. Increase the supply of alternative fuel sources by setting a mandatory Renewable Fuel Standard (RFS) requiring fuel producers to use at least 36 billion gallons of biofuel in 2022
2. Set a target of 35 miles per gallon for the combined fleet of cars and light trucks by Model Year 2020, directs National Highway Traffic Safety Administration to establish a fuel economy program for medium- and heavy-duty trucks and create a separate fuel economy standard for work trucks
3. Prescribe or revise 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.

EPA and NHTSA Joint Final Rule for Vehicle Standards: On April 1, 2010, the U.S. EPA and the Department of Transportation's National Highway Traffic Safety Administration (NHTSA) announced a joint final rule to establish a national program consisting of new standards for light-duty vehicles model years 2012 through 2016. The joint rule was intended to reduce GHG emissions and improve



fuel economy. EPA finalized the first-ever national GHG emissions standards under the Clean Air Act, and NHTSA is finalizing Corporate Average Fuel Economy (CAFE) standards under the Energy Policy and Conservation Act (EPA 2010b). This final rule follows the EPA and Department of Transportation's (DOT) joint proposal on September 15, 2009, and is the result of the President Obama's May 2009 announcement of a national program to reduce greenhouse gases and improve fuel economy (EPA 2011). This final rule will become effective 60 days after publication in the Federal Register (EPA and NHTSA 2010).

The EPA GHG standards require new passenger cars, light-duty trucks, and medium-duty passenger vehicles to meet an estimated combined average emissions level of 250 grams of CO₂ per mile in model year 2016, equivalent to 35.5 mpg if the automotive industry were to meet this CO₂ level all through fuel economy improvements. The CAFE standards for passenger cars and light trucks will be phased in between 2012 and 2016, with the final standards equivalent to 37.8 mpg for passenger cars and 28.8 mpg for light trucks, resulting in an estimated combined average of 34.1 mpg. Together, these standards will cut greenhouse gas emissions by an estimated 960 million metric tons and 1.8 billion barrels of oil over the lifetime of the vehicles sold under the program. The rules will simultaneously reduce greenhouse gas emissions, improve energy security, increase fuel savings, and provide clarity and predictability for manufacturers (EPA 2011).

2. State of California

The federal CAA delegates the regulation of air pollution control and the enforcement of the NAAQS to the states. In California, the task of air quality management and regulation has been legislatively granted to CARB, with subsidiary responsibilities assigned to air quality management districts (AQMDs) and air pollution control districts (APCDs) at the regional and county levels. CARB, which became part of the California Environmental Protection Agency (CalEPA) in 1991, is responsible for ensuring implementation of the California Clean Air Act (CCAA) of 1988, responding to the federal CAA, and regulating emissions from motor vehicles and consumer products.

CARB has established California Ambient Air Quality Standards (CAAQS), which are more restrictive than the NAAQS, consistent with the CAA, which requires state regulations to be at least as restrictive as the federal requirements. The CAAQS describe adverse conditions; that is, pollution levels must be below these standards before a basin can attain the standard. The CAAQS for O₃, CO, SO₂ (1-hour and 24-hour), NO₂, PM₁₀, and PM_{2.5} and visibility-reducing particles are values that are not to be exceeded. All others are not to be equaled or exceeded.

AB 1493: In a response to the transportation sector accounting for more than half of California's CO₂ emissions, AB 1493 (Pavley) was enacted on July 22, 2002. AB 1493 required CARB to set GHG emission standards for passenger vehicles, light-duty trucks, and other vehicles determined by the state board to be vehicles whose primary use is noncommercial personal transportation in the state. The bill required that CARB set the GHG emission standards for motor vehicles manufactured in 2009 and all subsequent model years. CARB adopted the standards in September 2004. When fully phased in, the near-term (2009–2012) standards will result in a reduction of



about 22% in GHG emissions compared to the emissions from the 2002 fleet, while the mid-term (2013–2016) standards will result in a reduction of about 30%.

Before these regulations could go into effect, the EPA had to grant California a waiver under the federal CAA, which ordinarily pre-empts state regulation of motor vehicle emission standards. The waiver was granted by Lisa Jackson, the EPA administrator, on June 30, 2009. On March 29, 2010, the CARB Executive Officer approved revisions to the motor vehicle GHG standards to harmonize the state program with the national program for 2012 to 2016 model years (see “EPA and NHTSA Joint Final Rule for Vehicle Standards” above). The revised regulations became effective on April 1, 2010.

Senate Bill 1078: Approved by former governor Gray Davis in September 2002, Senate Bill 1078 (SB 1078, Sher) established the Renewal Portfolio Standard program, which requires an annual increase in renewable generation by the utilities equivalent to at least 1% of sales, with an aggregate goal of 20% by 2017. This goal was subsequently accelerated, requiring utilities to obtain 20% of their power from renewable sources by 2010 (see SB 107 and Executive Orders S-14-08 and S-21-09.)

Executive Order S-3-05: In June 2005, former governor Arnold Schwarzenegger established California’s GHG emissions reduction targets in Executive Order S-3-05. The Executive Order established the following goals: GHG emissions should be reduced to 2000 levels by 2010; GHG emissions should be reduced to 1990 levels by 2020; and GHG emissions should be reduced to 80% below 1990 levels by 2050. The Secretary of CalEPA is required to coordinate efforts of various agencies to collectively and efficiently reduce GHGs. Representatives from several state agencies comprise the Climate Action Team. The Climate Action Team is responsible for implementing global warming emissions reduction programs. The Climate Action Team fulfilled its report requirements through the March 2006 Climate Action Team Report to the governor and the legislature (CAT 2006).

A second biennial report, released in April 2010, expands on the policy orientation in the 2006 assessment (CAT 2010). The 2010 report provides new information and scientific findings regarding the development of new climate and sea-level projections using new information and tools that have recently become available and evaluates climate change within the context of broader soil changes, such as land use changes and demographics. The report also identifies the need for additional research in several different aspects that affect climate change in order to support effective climate change strategies. The aspects of climate change that were discussed that need future research include vehicle and fuel technologies, land use and smart growth, electricity and natural gas, energy efficiency, renewable energy and reduced carbon energy sources, low GHG technologies for other sectors, carbon sequestration, terrestrial sequestration, geologic sequestration, economic impacts and considerations, social science, and environmental justice.

SB 107: Approved by former governor Arnold Schwarzenegger on September 26, 2006, SB 107 (Simitian) requires investor-owned utilities such as Pacific Gas and Electric, Southern California



Edison, and San Diego Gas and Electric, to generate 20% of their electricity from renewable sources by 2010. Previously, state law required that this target be achieved by 2017 (see SB 1078).

AB 32: In furtherance of the goals established in Executive Order S-3-05, the legislature enacted AB 32 (Núñez and Pavley), the California Global Warming Solutions Act of 2006, which former governor Arnold Schwarzenegger signed on September 27, 2006. The GHG emissions limit is equivalent to the 1990 levels, which are to be achieved by 2020.

CARB has been assigned to carry out and develop the programs and requirements necessary to achieve the goals of AB 32. Under AB 32, CARB must adopt regulations requiring the reporting and verification of statewide GHG emissions. This program will be used to monitor and enforce compliance with the established standards. CARB is also required to adopt rules and regulations to achieve the maximum technologically feasible and cost-effective GHG emission reductions. AB 32 allows CARB to adopt market-based compliance mechanisms to meet the specified requirements. Finally, CARB is ultimately responsible for monitoring compliance and enforcing any rule, regulation, order, emission limitation, emission reduction measure, or market-based compliance mechanism adopted.

The first action under AB 32 resulted in the adoption of a report listing early action GHG emission reduction measures on June 21, 2007. The early actions include three specific GHG control rules. On October 25, 2007, CARB approved an additional six early action GHG reduction measures under AB 32. The original three adopted early action regulations meeting the narrow legal definition of “discrete early action GHG reduction measures” consist of:

1. A low-carbon fuel standard to reduce the “carbon intensity” of California fuels
2. Reduction of refrigerant losses from motor vehicle air conditioning system maintenance to restrict the sale of “do-it-yourself” automotive refrigerants
3. Increased methane capture from landfills to require broader use of state-of-the-art methane capture technologies.

The additional six early action regulations, which were also considered “discrete early action GHG reduction measures,” consist of:

1. Reduction of aerodynamic drag, and thereby fuel consumption, from existing trucks and trailers through retrofit technology
2. Reduction of auxiliary engine emissions of docked ships by requiring port electrification
3. Reduction of perfluorocarbons from the semiconductor industry
4. Reduction of propellants in consumer products (e.g., aerosols, tire inflators, and dust removal products)



5. Require that all tune-up, smog check and oil change mechanics ensure proper tire inflation as part of overall service in order to maintain fuel efficiency
6. Restriction on the use of SF6 from non-electricity sectors if viable alternatives are available.

As required under AB 32, on December 6, 2007, CARB approved the 1990 GHG emissions inventory, thereby establishing the emissions limit for 2020. The 2020 emissions limit was set at 427 million metric tons CO₂E. In addition to the 1990 emissions inventory, CARB also adopted regulations requiring mandatory reporting of GHGs for large facilities that account for 94% of GHG emissions from industrial and commercial stationary sources in California. About 800 separate sources that fall under the new reporting rules and include electricity generating facilities, electricity retail providers and power marketers, oil refineries, hydrogen plants, cement plants, cogeneration facilities, and other industrial sources that emit carbon dioxide in excess of specified thresholds.

On December 11, 2008, CARB approved the Climate Change Proposed Scoping Plan: A Framework for Change (Scoping Plan; CARB 2008) to achieve the goals of AB 32. The Scoping Plan establishes an overall framework for the measures that will be adopted to reduce California's GHG emissions. The Scoping Plan evaluates opportunities for sector-specific reductions, integrates all CARB and Climate Action Team early actions and additional GHG reduction measures by both entities, identifies additional measures to be pursued as regulations, and outlines the role of a cap-and-trade program. Additional development of these measures and adoption of the appropriate regulations will occur over the next 2 years, becoming effective by January 1, 2012.

The key elements of the Scoping Plan include:

- Expanding and strengthening existing energy efficiency programs as well as building and appliance standards
- Achieving a statewide renewables energy mix of 33%
- Developing a California cap-and-trade program that links with other Western Climate Initiative partner programs to create a regional market system and caps sources contributing 85% of California's GHG emissions
- Establishing targets for transportation-related GHG emissions for regions throughout California, and pursuing policies and incentives to achieve those targets
- Adopting and implementing measures pursuant to existing state laws and policies, including California's clean car standards, goods movement measures, and the Low Carbon Fuel Standard
- Creating targeted fees, including a public goods charge on water use, fees on high global warming potential gases, and a fee to fund the administrative costs of the State of California's long term commitment to AB 32 implementation.



SB 1368: In September 2006, former governor Arnold Schwarzenegger signed SB 1368, which requires the California Energy Commission (CEC) to develop and adopt regulations for GHG emissions performance standards for the long-term procurement of electricity by local publicly owned utilities. These standards must be consistent with the standards adopted by the California Public Utilities Commission (CPUC). This effort will help to protect energy customers from financial risks associated with investments in carbon-intensive generation by allowing new capital investments in power plants whose GHG emissions are as low or lower than new combined-cycle natural gas plants, by requiring imported electricity to meet GHG performance standards in California and requiring that the standards be developed and adopted in a public process.

Executive Order S-1-07: Issued on January 18, 2007, Executive Order S 1-07 sets a declining Low Carbon Fuel Standard (LCFS) for GHG emissions measured in CO₂-equivalent gram per unit of fuel energy sold in California. The target of the LCFS is to reduce the carbon intensity of California passenger vehicle fuels by at least 10% by 2020. The carbon intensity measures the amount of GHG emissions in the lifecycle of a fuel, including extraction/feedstock production, processing, transportation, and final consumption, per unit of energy delivered. CARB adopted the implementing regulation in April 2009. The regulation is expected to increase the production of biofuels, including those from alternative sources such as algae, wood, and agricultural waste. In addition, the LCFS would drive the availability of plug-in hybrid, battery electric, and fuel-cell power motor vehicles. The LCFS is anticipated to replace 20% of the fuel used in motor vehicles with alternative fuels by 2020.

SB 97: In August 2007, the legislature enacted SB 97 (Dutton), which directs the Governor's Office of Planning and Research (OPR) to develop guidelines under California Environmental Quality Act (CEQA) for the mitigation of GHG emissions. OPR is to develop proposed guidelines by July 1, 2009, and the Natural Resources Agency is directed to adopt guidelines by January 1, 2010. On April 13, 2009, OPR submitted to the Secretary for Natural Resources its proposed amendments to the State CEQA Guidelines.

On June 19, 2008, OPR issued a technical advisory as interim guidance regarding the analysis of GHG emissions in CEQA documents (OPR 2008). The advisory indicated that a project's GHG emissions, including those associated with vehicular traffic, energy consumption, water usage, and construction activities, should be identified and estimated. The advisory further recommended that the lead agency determine significance of the impacts and impose all mitigation measures that are necessary to reduce GHG emissions to a less than significant level.

On April 13, 2009, OPR submitted to the Natural Resources Agency its proposed amendments to the state CEQA Guidelines relating to GHG emissions. On July 3, 2009, the Natural Resources Agency commenced the Administrative Procedure Act rulemaking process for certifying and adopting the proposed amendments, starting the public comment period.

The Natural Resources Agency adopted CEQA Guidelines Amendments on December 30, 2009, and transmitted them to the Office of Administrative Law on December 31, 2009. On February 16, 2010, the Office of Administrative law completed its review and filed the amendments with the



secretary of state. The amendments became effective on March 18, 2010. The amended guidelines establish several new CEQA requirements concerning the analysis of GHGs, including the following:

- Requiring a lead agency to “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(a))
- Providing a lead agency with the discretion to determine whether to use quantitative or qualitative analysis or performance standards to determine the significance of greenhouse gas emissions resulting from a particular project (Section 15064.4(a))
- Requiring a lead agency to consider the following factors when assessing the significant impacts from greenhouse gas emissions on the environment:
 - The extent to which the project may increase or reduce greenhouse gas emissions as compared to the existing environmental setting.
 - Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project.
 - The 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. (Section 15064.4(b))
 - Allowing lead agencies to consider feasible means of mitigating the significant effects of greenhouse gas emissions, including reductions in emissions through the implementation of project features or off-site measures, including offsets that are not otherwise required (Section 15126.4(c)).

The amended guidelines also establish two new guidance questions regarding GHG emissions in the Environmental Checklist set forth in CEQA Guidelines Appendix G:

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

The adopted amendments do not establish a GHG emission threshold, and instead allow a lead agency to develop, adopt, and apply its own thresholds of significance or those developed by other agencies or experts. The Natural Resources Agency also acknowledges that a lead agency may consider compliance with regulations or requirements implementing AB 32 in determining the significance of a project’s GHG emissions.



SB 375: In August 2008, the legislature passed and on September 30, 2008, former governor Arnold Schwarzenegger signed SB 375 (Steinberg), which addresses GHG emissions associated with the transportation sector through regional transportation and sustainability plans. By September 30, 2010, CARB will assign regional GHG reduction targets for the automobile and light truck sector for 2020 and 2035. The targets are required to consider the emission reductions associated with vehicle emission standards (see SB 1493), the composition of fuels (see Executive Order S-1-07), and other CARB-approved measures to reduce GHG emissions. Regional metropolitan planning organizations will be responsible for preparing a Sustainable Communities Strategy within the Regional Transportation Plan. The goal of the Sustainable Communities Strategy is to establish a development plan for the region, which, after considering transportation measures and policies, will achieve, if feasible, the GHG reduction targets. If a Sustainable Communities Strategy is unable to achieve the GHG reduction target, a metropolitan planning organization must prepare an Alternative Planning Strategy demonstrating how the GHG reduction target would be achieved through alternative development patterns, infrastructure, or additional transportation measures or policies. SB 375 provides incentives for streamlining CEQA requirements by substantially reducing the requirements for “transit priority projects,” as specified in SB 375, and eliminating the analysis of the impacts of certain residential projects on global warming and the growth-inducing impacts of those projects when the projects are consistent with the Sustainable Communities Strategy or Alternative Planning Strategy. On September 23, 2010, CARB adopted the SB 375 targets for the regional metropolitan planning organizations (MPOs). The targets for the San Diego Association of Governments are a 7% reduction in emissions per capita by 2020 and a 13% reduction by 2035. Achieving these goals through adoption of a Sustainable Communities Strategy will be the responsibility of the MPOs.

Executive Order S-13-08: Former governor Arnold Schwarzenegger issued Executive Order S-13-08 on November 14, 2008. The Executive Order is intended to hasten California’s response to the impacts of global climate change, particularly sea level rise. It directs state agencies to take specified actions to assess and plan for such impacts. It directs the Resource Agency, in cooperation with the California Department of Water Resources, CEC, California’s coastal management agencies, and the Ocean Protection Council to request the National Academy of Sciences to prepare a Sea Level Rise Assessment Report by December 1, 2010. The Ocean Protection Council, California Department of Water Resources, and CEC, in cooperation with other state agencies are required to conduct a public workshop to gather information relevant to the Sea Level Rise Assessment Report. The Business, Transportation, and Housing Agency was ordered to assess the vulnerability of the state’s transportation systems to sea level rise within 90 days of the order. The OPR and the Resources Agency are required to provide land use planning guidance related to sea level rise and other climate change impacts. The order also requires the other state agencies to develop adaptation strategies by June 9, 2009, to respond to the impacts of global climate change that are predicted to occur over the next 50 to 100 years. A discussion draft adaptation strategies report was released in August 2009, and the final adaptation strategies report was issued in December 2009. To assess the state’s vulnerability, the report summarizes key climate change impacts to the state for the following areas: public health, ocean and coastal resources, water supply and flood protection, agriculture, forestry, biodiversity and habitat, and



transportation and energy infrastructure. The report then recommends strategies and specific responsibilities related to water supply, planning and land use, public health, fire protection, and energy conservation.

Executive Order S-14-08: On November 17, 2008, former governor Arnold Schwarzenegger issued Executive Order S-14-08. This Executive Order focuses on the contribution of renewable energy sources to meet the electrical needs of California while reducing the GHG emissions from the electrical sector. The governor's order requires that all retail suppliers of electricity in California serve 33% of their load with renewable energy by 2020. Furthermore, the order directs state agencies to take appropriate actions to facilitate reaching this target. The Resources Agency, through collaboration with the CEC and Department of Fish and Game, is directed to lead this effort. Pursuant to a Memorandum of Understanding between the CEC and Department of Fish and Game creating the Renewable Energy Action Team, these agencies will create a "one-stop" process for permitting renewable energy power plants.

Executive Order S-21-09: On September 15, 2009, former governor Arnold Schwarzenegger issued Executive Order S-21-09. This Executive Order directed CARB to adopt a regulation consistent with the goal of Executive Order S-14-08 by July 31, 2010. CARB is further directed to work with the CPUC and CEC to ensure that the regulation builds upon the Renewable Portfolio Standard program and is applicable to investor-owned utilities, publicly owned utilities, direct access providers, and community choice providers. Under this order, CARB is to give the highest priority to those renewable resources that provide the greatest environmental benefits with the least environmental costs and impacts on public health and that can be developed most quickly in support of reliable, efficient, cost-effective electricity system operations. On September 23, 2010, CARB adopted regulations to implement a "Renewable Electricity Standard," which would achieve the goal of the executive order with the following intermediate and final goals: 20% for 2012–2014; 24% for 2015–2017; 28% for 2018–2019; 33% for 2020 and beyond. Under the regulation, wind; solar; geothermal; small hydroelectric; biomass; ocean wave, thermal, and tidal; landfill and digester gas; and biodiesel would be considered sources of renewable energy. The regulation would apply to investor-owned utilities and public (municipal) utilities.

SB X1 2: On April 12, 2011, Governor Jerry Brown signed SB X1 2 in the First Extraordinary Session, which would expand the RPS by establishing a goal of 20% of the total electricity sold to retail customers in California per year, by December 31, 2013, and 33% by December 31, 2020, and in subsequent years. Under the bill, a renewable electrical generation facility is one that uses biomass, solar thermal, photovoltaic, wind, geothermal, fuel cells using renewable fuels, small hydroelectric generation of 30 megawatts or less, digester gas, municipal solid waste conversion, landfill gas, ocean wave, ocean thermal, or tidal current and that meets other specified requirements with respect to its location. In addition to the retail sellers covered by SB 107, SB X1 2 adds local publicly owned electric utilities to the RPS. By January 1, 2012, the CPUC is required to establish the quantity of electricity products from eligible renewable energy resources to be procured by retail sellers in order to achieve targets of 20% by December 31, 2013; 25% by December 31, 2016; and 33% by December 31, 2020. The statute also requires that the governing



boards for local publicly owned electric utilities establish the same targets, and the governing boards would be responsible for ensuring compliance with these targets. The CPUC will be responsible for enforcement of the RPS for retail sellers, while the CEC and CARB will enforce the requirements for local publicly owned electric utilities.

3. Local

a. San Diego Air Pollution Control District

While CARB is responsible for the regulation of mobile emission sources within the state, local AQMDs and APCDs are responsible for enforcing standards and regulating stationary sources. The project is located within the SDAB and is subject to SDAPCD guidelines and regulations. In San Diego County, ozone and particulate matter are the pollutants of main concern, since exceedances of state ambient air quality standards for those pollutants are experienced here in most years. For this reason the SDAB has been designated as a nonattainment area for the state PM₁₀, PM_{2.5}, and ozone standards. The SDAB is also a federal ozone nonattainment area and a carbon monoxide maintenance area. The SDAB is currently in the process of being redesignated as a “serious” nonattainment area for ozone.

The SDAPCD and the San Diego Association of Governments (SANDAG) are responsible for developing and implementing the clean air plan for attainment and maintenance of the ambient air quality standards in the SDAB. The County Regional Air Quality Strategy (RAQS) was initially adopted in 1991, and is updated on a triennial basis (most recently in 2009). The RAQS outlines SDAPCD’s plans and control measures designed to attain the state air quality standards for O₃. The RAQS relies on information from CARB and SANDAG, including mobile and area source emissions, as well as information regarding projected growth in the cities and San Diego County, to project future emissions and then determine from that the strategies necessary for the reduction of emissions through regulatory controls. CARB mobile source emission projections and SANDAG growth projections are based on population, vehicle trends, and land use plans developed by the cities and San Diego County as part of the development of their general plans.

As stated above, the SDAPCD is responsible for planning, implementing, and enforcing federal and state ambient standards in the SDAB. The following rules and regulations apply to all sources in the jurisdiction of SDAPCD:

SDAPCD Regulation IV: Prohibitions; Rule 51: Nuisance. Prohibits the discharge from any source such quantities of air contaminants or other materials that cause or have a tendency to cause injury, detriment, nuisance, annoyance to people and/or the public, or damage to any business or property.

SDAPCD Regulation IV: Prohibitions; Rule 55: Fugitive Dust. Regulates fugitive dust emissions from any commercial construction or demolition activity capable of generating fugitive dust emissions, including active operations, open storage piles,



and inactive disturbed areas, as well as track-out and carry-out onto paved roads beyond a project site.

SDAPCD Regulation IV: Prohibitions; Rule 67.0: Architectural Coatings. Requires manufacturers, distributors, and end users of architectural and industrial maintenance coatings to reduce VOC emissions from the use of these coatings, primarily by placing limits on the VOC content of various coating categories.

b. City of Chula Vista

The Chula Vista City Council adopted the 2008 state Energy Code (Title 24) with an amendment requiring an increased energy efficiency standard. This amendment went into effect on February 26, 2010, as Section 15.26.030 of the Municipal Code. As required by this amendment, all building permits applied for and submitted on or after this date are subject to these increased energy efficiency standards. The increase in energy efficiency is a percentage above the new 2008 Energy Code and is dependent on climate zone and type of development proposed. The designation is as follows:

- New residential and nonresidential projects that fall within climate zone 7 must be at least 15% more energy efficient than the 2008 Energy Code. Climate zone 7 encompasses the western portion of the City Of Chula Vista (City of Chula Vista 2010).
- New low-rise residential projects (three-stories or less) that fall within climate zone 10 must be at least 20% more energy efficient than the 2008 Energy Code. New non-residential, high-rise residential or hotel/motel projects that fall within climate zone 10 must be at least 15% more energy efficient than the 2008 Energy Code. Climate zone 10 encompasses the easternmost portion of the City Of Chula Vista (City of Chula Vista 2010).

Additionally, per Section 15.12 of the City's Municipal Code, all new residential construction, remodels, additions, and alterations must provide a schedule of plumbing fixture fittings that will reduce the overall use of potable water by 20%.

The City of Chula Vista has developed a number of strategies and plans aimed at improving air quality. The City is a part of the Cities for Climate Protection Program, which is headed by the International Council of Local Environmental Initiatives (ICLEI). In November 2002, Chula Vista adopted the CO₂ Reduction Plan to lower the community's major greenhouse gas emissions, strengthen the local economy, and improve the global environment. The CO₂ Reduction Plan focuses on reducing fossil fuel consumption and decreasing reliance on power generated by fossil fuels, which would have a corollary effect in the reduction of air pollutant emissions into the atmosphere. The following 20 action measures have been proposed within the plan in order to achieve this goal:



1. Municipal clean fuel vehicle purchases
2. Green power
3. Municipal clean fuel demonstration project
4. Telecommuting and telecenters
5. Municipal building upgrades and trip reduction
6. Enhanced pedestrian connections to transit
7. Increased housing density near transit
8. Site design with transit orientation
9. Increased land use mix
10. Green Power public education program
11. Site design with pedestrian/bicycle orientation
12. Bicycle integration with transit and employment
13. Bicycle lanes, paths, and routes
14. Energy efficient landscaping
15. Solar pool heating
16. Traffic signal and system upgrades
17. Student transit subsidy
18. Energy efficient building program
19. Municipal Life-Cycle purchasing standards
20. Increased employment density near transit.

III. Project Description



A. Project Description

Village 3 North Land Use Plan is anchored by the location of the Village Core. The Village Core is centrally located within the Project site and includes a neighborhood park, and an elementary school site and mixed use commercial /residential and office uses. Each village-use is described further below. The Village 3 North Site Utilization Plan is shown in Exhibit 1 and the Village 3 North Land Use Summary is provided in Table 1.

1. Residential Uses

a. Multi-Family Residential:

13.5 acres of the total Project site would be designated as multi-family residential, which would accommodate 317 homes. This designation would allow for three multi-family residential neighborhoods, with an average density of 23.5 dwelling units per acre (du/acre).

b. Single-Family Residential:

107.5 acres of the total Project site would be designated as single-family residential, which would accommodate 1,002 single family homes. This designation would allow for 15 single-family residential neighborhoods, with an average density of 9.3 dwelling units per acre (du/acre).

2. Mixed-Use

The Project site includes a 9.0-acre Mixed Use (MU-1 and MU-2) area located adjacent to the elementary school and neighborhood park. As shown in Table 1, the MU designation would allow for 278 attached homes and up to 20,000 square feet of neighborhood commercial, and retail.

3. Office

The Village 3 SPA Plan land use plan includes an 8.3-acre office site (O-1 and O-2) located adjacent to the MU site. This site provides for approximately 139,370 sq. ft. of job-generating office space within the village core.

4. Industrial

On the north side of Heritage Road, adjacent to the existing Otay Landfill, the Village 3 North SPA Plan proposes 39.3 acres of Industrial uses on five development pads. The sites are anticipated to provide for approximately 265,000 sq. ft. of industrial buildings.

5. Parks and Recreation Uses

The Village 3 North SPA Plan includes an 8.1- acre neighborhood park located in the Village Core, adjacent to the elementary school site and the MU site.

6. Elementary School

To ensure a site for future school services is available, the Project proposes an elementary school site with the designation of an 8.3-acre elementary school site located in the Village Core, adjacent to the neighborhood park.



7. Community Purpose Facilities (CPF)

Community Purpose Facilities (CPF) means "a land use designation in a planned community intended for non-profit and certain for-profit land uses..." The SPA Land Use Plan distributes CPF sites throughout the Plan area as shown in Exhibit 1. CPF-1 is 2.6 acres, or equivalent CPF use, located in the Village Core.

CPF-2 and CPF-3, 0.9 and 0.9 acres respectively, provide additional private recreation facilities within residential neighborhoods to create a series of open space focal points within the village.

8. Private Open Space

Private Open Space areas are small, neighborhood-scale recreational areas which fulfill the City's Private and Common Usable Open Space requirements for single-family homes. There are 15 Private Open Space sites in Village 3 North totaling 5.3 acres.

9. Otay Ranch Preserve

The Site Utilization Plan designates approximately 157.2 acres of the Project site as Preserve land, which will be offered for dedication to the Otay Ranch Preserve system. Preserve land is generally undisturbed land or restored habitats set aside for dedication to the public.



Table 1: Village 3 North and a Portion of Village 4 Land Use Summary

Land Use Summary		Acres		
Neighborhood	Unit Type		Units	Target Density
Single Family				
R-1	SFD	12.5	80	6.4
R-2	SFD	12.4	65	5.2
R-3	SFD	11.4	104	9.1
R-4	SFD	9.5	75	7.9
R-5	SFD	7.5	46	6.1
R-6	SFD	5.3	44	8.3
R-7	SFD	3.8	22	5.8
R-8	SFD	5.5	43	7.8
R-9	SFD	6.7	40	6.0
R-10	SFD	9.5	98	10.3
R-11	SFD	5.7	37	6.5
R-12	SFD	3.1	24	7.7
R-13	SFD	6.6	58	8.8
R-17	SFD	5.7	53	9.3
R-18	SFD	2.3	24	10.4
Single Family Total		107.5	813	
Multi Family				
R-14	MF	5.0	71	14.2
R-15	MF	3.9	54	13.9
R-16a/b	MF	4.6	54	11.7
Multi Family Total		13.5	179	
Mixed Use¹				
MU-1a-b	MU	1.8	33	18.3
MU-2a-c ²	MU	7.3	245	33.6
Mixed Use Total³		9.1	278	30.9
Residential Total		130.1	1,270	12.3
Community Purpose Facilities				
CPF-1		0.9		
CPF-2		0.9		
CPF-3		0.9		
Total CPF⁵		2.7		
Private Open Space		5.3		
Public Parks				
P-1		8.1		
P-2 (Village 4)		17.8		
Total Public Parks		25.9		
School		8.3		



Land Use Summary	Acres		
Office			
O-1	5.1		
O-2	3.2		
Total Office	8.3		
Industrial			
I-1a	6.3		
I-1b	6.4		
I-2	4.6		
I-3a	4.2		
I-3b/c	7.8		
Total Industrial	29.3		
Open Space			
Open Space	34.8		
Preserve	157.2		
Total Open Space	192.0		
Circulation			
External Circulation	18.0		
Internal Circulation	16.2		
Total Circulation	34.2		
Unallocated SFD Units		189	
Unallocated Units		138	
Total Unallocated Units		327	
TOTAL⁶	436.0	1,597	

Notes:

- (1) A minimum of 2,000 SF of commercial/retail uses are required in the MU-1/MU-2 parcels.
- (2) MU-2 a-c acreage does not include the 0.9 acre CPF-1 site.
- (3) Final DU allocation within the MU-1 and MU-2 parcels shall be determined during preparation of the site-specific plan. The total DUs authorized within the combined MU parcels may not exceed 278 DUs.
- (4) The CPF-1 site is shown above as 0.9 acre site; however, the 2.6 acre obligation is met through a combination of land, site improvements and building construction, per the approved Alternative Compliance Agreement.
- (5) The Project includes over 4.0 acres of CPF credit, 0.3 acres more than the CPF requirement per the Land Offer Agreement; therefore, up to 0.3 acres of the CPF-2 and/or CPF-3 sites may be used to satisfy a portion of the Common Useable Open Space requirement for Village 3 North neighborhoods.
- (6) The total number of authorized units (1,597) within Village 3 North includes 189 SF DUs and 138 MF DUs for a total of 327 authorized but unallocated DUs. These authorized but unallocated DUs may be allocated to any school site or portion of any school site within Village 3 North not utilized for school purposes, subject to existing zoning and Development Services Director approval. In addition, any authorized but unallocated units may be transferred to other villages per the requirements described in Section D. Mapping Refinements, Density Transfers and Unallocated Units of this SPA Plan.



B. Project Design Features

The proposed project would implement the following design features and conservation plans, including Otay Ranch GDP requirements, as part of the project design and long-term operation.

1. General Design Standards Related to GHG Emission Reduction

The village concept intensifies residential densities and commercial uses to enhance transit use, reduce automotive dependency, consolidate open space, promotes social interaction, and create a strong sense of community and identity within Otay Ranch. The land use pattern required by the Otay Ranch GDP for transit-oriented villages emphasizes high density residential and commercial land uses located near public transit.

Village urban design focuses on an integrated system of roads, pathways, bike lanes, trails and pedestrian walkways. The plan also considers non-vehicular transportation systems by making provisions to connect to local and regional trails systems that provide access between the village core, neighborhood park, elementary school, open space areas and residential areas. Additionally, regional Rapid Bus and local bus lines are planned to provide public transit service to the villages.

The circulation plan encourages pedestrian activity and the use of bicycles through the provision of the Village Pathway, an off-street paved path for bicycles. The design of all village streets includes sidewalks and landscaping to promote pedestrian circulation throughout the project site.

2. Conservation Plans

a. Water Conservation Plan

The purpose of the Water Conservation Plan (WCP) is to respond to the Growth Management policies of the City of Chula Vista, which are intended to address the long-term need to conserve water in new developments, to address short-term emergency measures, and to establish standards for water conservation.

b. Energy Conservation Plan

The Otay Ranch GDP requires all SPA Plans prepare a Non-Renewable Energy Conservation Plan. This Plan identifies measures to reduce the use of non-renewable energy resources through, but not limited to transportation, building design and use, lighting, recycling, and alternative energy sources.

3. Transit Planning Principles

Public transportation is an integral part of the Otay Ranch Community. The design of the Plan area promotes access to public transit and locates land uses in proximity to proposed transit stations. Chula Vista Transit (CVT) provides bus service through the Eastern Territories of the City that can be extended to serve the SPA Plan areas. Regional transit plans also provide for commuter lines to serve villages in Otay Ranch.



Two future transit stops are located within or adjacent to the Village 3 North SPA Plan Area. Exhibit 2 shows the Transit Plan for Village 3 North. Transit stops location and design are based on the following principles:

- Locate transit stops where there are a number of major pedestrian generators.
- Locate transit stops and pedestrian walkways to provide access while respecting the privacy of residential areas.
- At the intersection of two or more transit routes, locate bus stops to minimize walking distance between transfer stations.
- Locate bus turn-outs on the far side of the intersections to avoid conflicts between transit vehicles and automobile traffic, permitting right-turning vehicles to continue turning movements.
- Transit stops should be provided with adequate walkway lighting and well designated shelters.
- Walkway ramps should be provided at transit stops to ensure accessibility.

4. Bicycle Routes and Pedestrian Trails

The Village 3 North Trails Plan and Bicycle Route Plan are shown on Exhibits 3 and 4. A description of the different facilities is provided below.

a. Regional Trails

Chula Vista Regional Trails are located on the south side of Main Street and east side of Heritage Road. These trails are located adjacent to the roadways within landscape buffers. The decomposed granite trails are 10-feet wide to accommodate both pedestrians and bicycles.

b. Otay Ranch Village Pathway

The Otay Ranch GDP provides for a Village Pathway to be located through Otay Ranch, specifically through the villages to connect open spaces. The Village 3 North SPA Plan locates a Village Pathway on Street V, connecting from Heritage Road through the Village Core and connecting.

c. Promenade Streets

Residential Promenade Streets are the primary circulation streets through residential neighborhoods. The street design promotes the pedestrian-oriented urban village by providing a "Promenade," a 6-foot wide, tree-shaded walkway (Promenade Trail) on one side of the street.

d. Village Streets

Village streets are designed to promote pedestrian, bicycle and low-speed electric vehicle travel. Sidewalks are provided on all village streets. The preferred design for all village streets provides for minimum 5-foot wide sidewalks separated from the roadway by landscaped parkways.



e. Paseo

A 55' to 78' paseo is planned to provide a pedestrian connection between the residential neighborhoods and the park, school and village core. The paseo features a 10 foot wide meandering concrete path, with adjacent landscape areas featuring benches, recreational lawn areas, trees and shrub plantings.

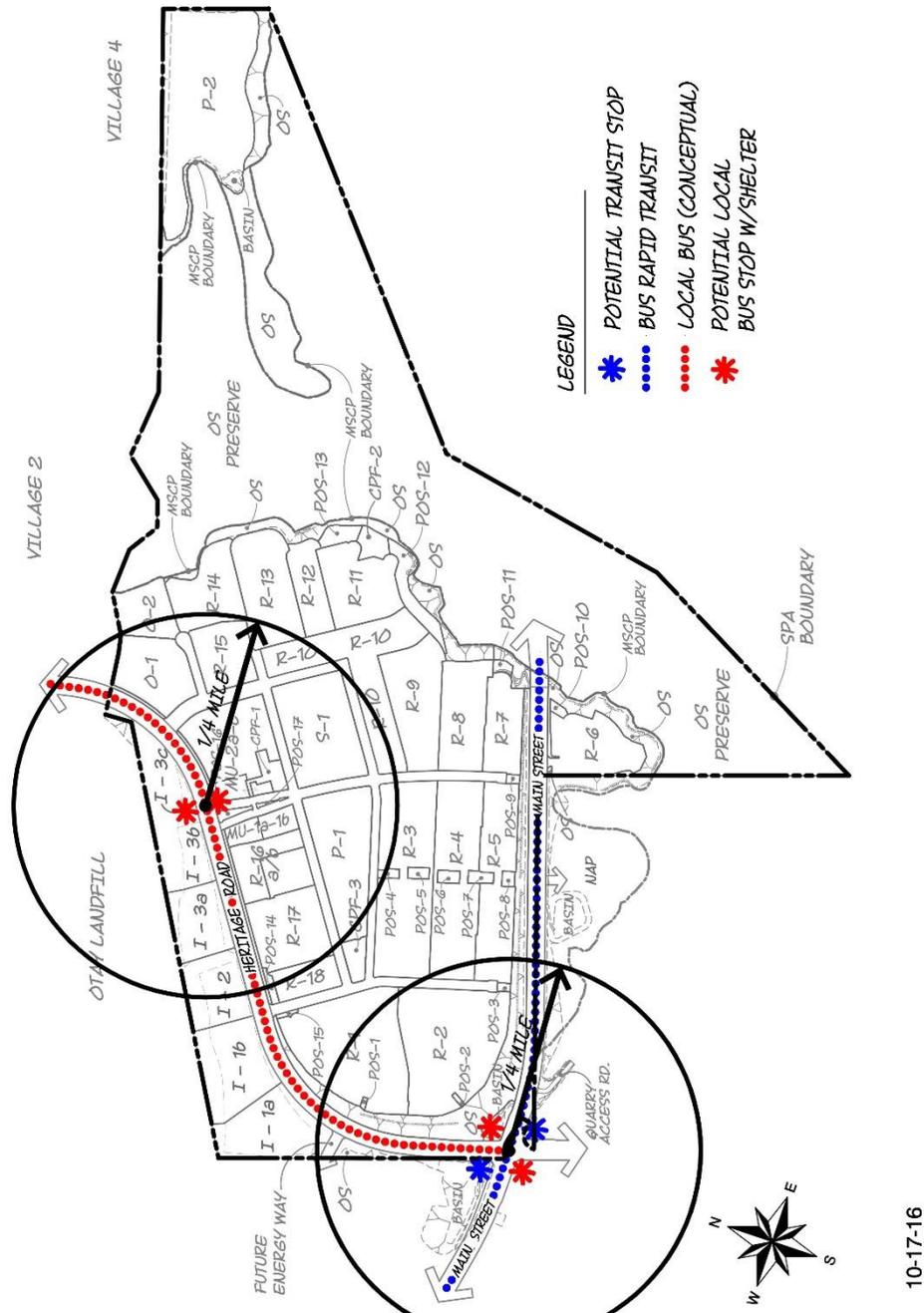
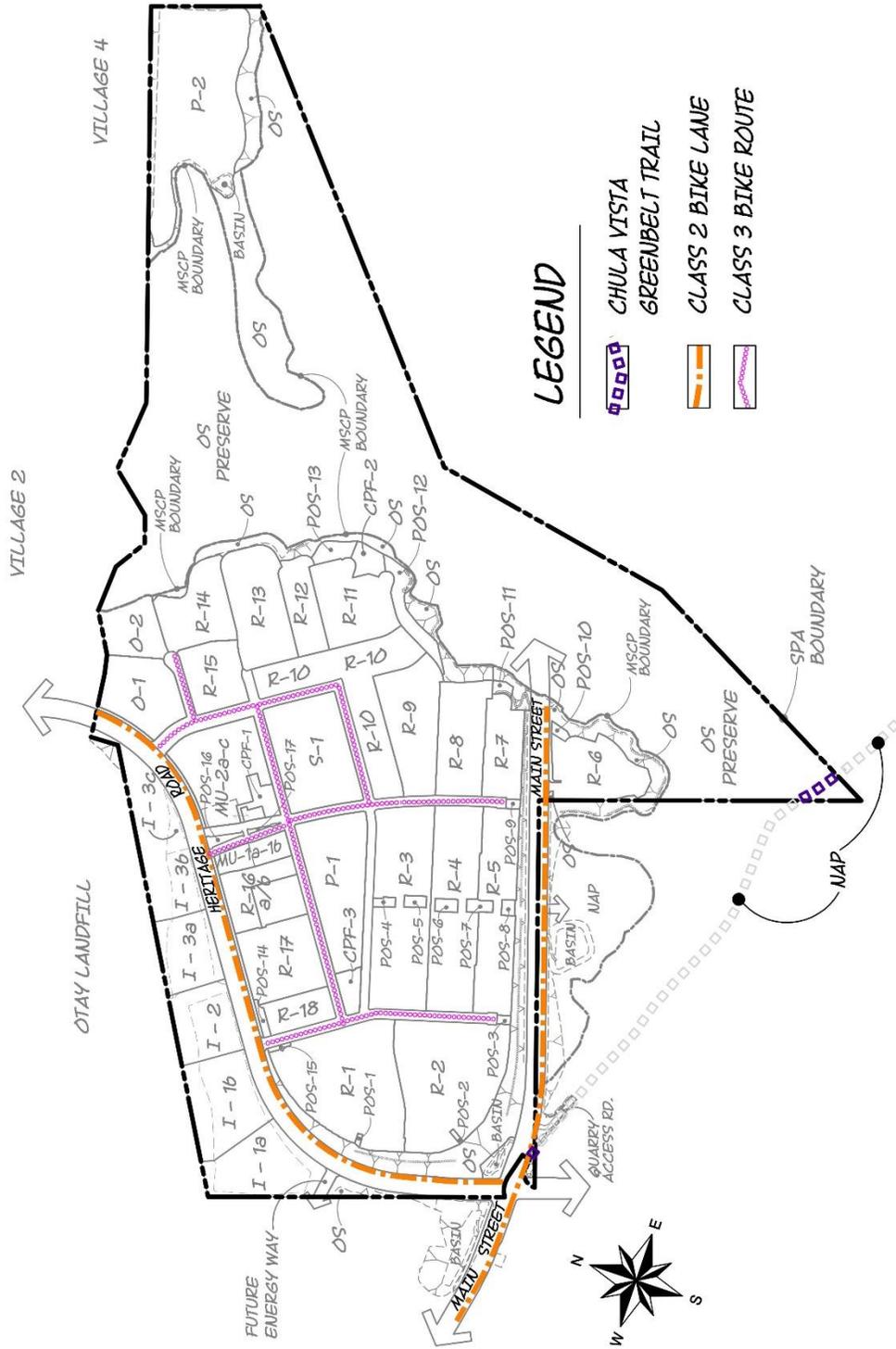


Exhibit 2 – Village 3 North Transit Plan



BICYCLE CIRCULATION PLAN

10-17-16

Exhibit 4 – Village 3 North Bicycle Route Plan



f. Greenbelt and OVRP Trails

The Chula Vista Greenbelt Master Plan provides for a Greenbelt to be located through Otay Ranch. The Greenbelt Trail is located south of Village 3 North through the Otay River Valley. The OVRP Concept Plan identifies a multi-use trail system through the Otay River Valley. The portion of the Greenbelt Trail described above coincides with the OVRP trail. General Development Plan (GDP) Goals and Policies

g. Class 2 Bike Lanes

Class 2 Bike Lanes are planned along Main Street and Heritage Road /Class 3 Bike Lanes are planned along the Secondary Village Entry and Promenade streets. These signed and striped or shared bike lanes within the street right-of-way connect to a larger bike circulation network within the City of Chula Vista.

5. General Development Plan (GDP) Goals and Policies

The adopted Otay Ranch GDP establishes goals and objectives for land use mobility as they relate to air quality and greenhouse gas emissions reduction throughout the project site.

Land Use

Goal: Reduce reliance on the automobile and promote alternative modes of transportation.

Objective: Develop villages which integrate residential and commercial uses with a mobility system that accommodates alternative modes of transportation, including pedestrian, bicycle, bus, light rail, and other modes of transportation.

Objective: Develop residential land uses which encourage the use of alternative modes of transportation through the provision of bus and light rail right-of-way, and the inclusion of a bicycle and pedestrian network.

Goal: Organize land uses based upon a village concept to produce a cohesive, pedestrian friendly community, encourage non-vehicular trips, and foster interaction amongst residents.

Mobility

Goal: Provide a safe and efficient transportation system within Otay Ranch with convenient linkages to regional transportation elements abutting the Otay Ranch.

Goal: Achieve a balanced transportation system which emphasizes alternatives to automobile use and is responsive to the needs of residents.

Objective: Study, identify, and designate corridors, if appropriate, for light rail and transit facilities.

Objective: Promote alternative forms of transportation, such as bicycle and car paths, riding and hiking trails, and pedestrian walkways as an integral part of the circulation system.



Commuter Trip Management

Goal: Create a safe and efficient multi-modal transportation network which minimizes the number and length of single passenger vehicle trips.

Objective: Minimize the number and length of single passenger vehicle trips to and from employment and commercial centers to achieve an average of 1.5 persons per passenger vehicle during weekday commute hours.

Bicycle System Design

Objective: Provide a safe, thorough and comprehensive bicycle network which includes bicycle paths between major destinations within, and adjacent to, Otay Ranch.

Objective: Encourage mixed use development to promote linking of trips, reduce trip length and encourage alternative mode usage.

Transit Route and Facility Design

Objective: Facilitate access to public transit.

Pedestrian Design

Objective: Encourage pedestrian traffic as an alternative to single vehicle passenger travel.

Building Design

Objective: Locate and design buildings within village cores to facilitate transit and pedestrian access.

Parking Management

Objective: Manage parking facilities to facilitate transit, ridesharing and pedestrian access.

Objective: Manage parking facilities to encourage a reduction in the number of single vehicle trips.

Street Configuration

Objective: Configure internal village streets to give pedestrian traffic a priority.

Energy Conservation

Objective: Minimize fossil fuel emission by conserving energy.



Water Conservation

Goal: Conserve water during and after construction of Otay Ranch.

Objective: Reduce CWA water use within Otay Ranch to a level that is 75% of County-wide, 1989 per capita levels.

Objective: Create a comprehensive framework for the design implementation and maintenance of water conserving measures, both indoor and outdoor.

IV. Effect of Project on Local/Regional Air Quality



A. Potential Short and Long Term Effects on Local and Regional Air Quality

1. Construction Emissions

Construction of the proposed project would result in a temporary addition of pollutants to the local airshed caused by soil disturbance, fugitive dust emissions, and combustion pollutants from on-site construction equipment, as well as from off-site trucks hauling construction materials. Construction emissions can vary substantially from day to day, depending on the level of activity, the specific type of operation and, for dust, the prevailing weather conditions. Therefore, such emission levels can only be approximately estimated with a corresponding uncertainty in precise ambient air quality impacts. Fugitive dust (PM₁₀ and PM_{2.5}) emissions would primarily result from grading and site preparation activities. NO_x and CO emissions would primarily result from the use of construction equipment and motor vehicles.

Emissions from the construction phase of the project were estimated through the use of emission factors from the URBEMIS 2007, Version 9.2.4, land use and air emissions model (Jones & Stokes 2007). Construction of the proposed project is anticipated to begin with Village 3 North in 2014¹. Project construction would end with buildout of Village 10, which is anticipated to occur in 2029. A detailed description of construction subphases (mass grading, fine grading, trenching, paving, building construction, and architectural coatings), as well as other assumptions made for the purposes of modeling, is included in Appendix A. Total construction is expected to take approximately 15 years. For the analysis, it was generally assumed that heavy construction equipment would be operating at the site for approximately 8 hours per day, 5 days per week (22 days per month), during project construction. URBEMIS model assumptions for construction equipment were used in calculating construction emissions as equipment and machinery mix would be typical of residential development. Additional project-specific assumptions regarding vehicle trips, construction schedule, soil import/export, and architectural coatings are included in Appendix A. The equipment mix is meant to represent a reasonably conservative estimate of construction activity.

The proposed project is subject to SDAPCD Rule 55 – Fugitive Dust Control. This requires that the project take steps to restrict visible emissions of fugitive dust beyond the property line. Compliance with Rule 55 would limit any fugitive dust (PM₁₀ and PM_{2.5}) that may be generated during grading and construction activities. To account for dust control measures in the calculations, it was assumed that the active sites would be watered at least two times daily, resulting in an approximately 55% reduction of particulate matter.

¹ The original construction schedule beginning in May 2014 is analyzed for the Proposed Project; however, construction would start at a later date. The construction scenario and schedule analyzed as part of the Proposed Project analysis is considered conservative because over time, emissions for both the construction and operational scenario would decrease due to more stringent air quality standards implemented over time, vehicle fleet turnover to more efficient engines, fuel mix, etc. As the duration of construction would not change (i.e. construction would occur over a 16-year period regardless of start date), the scenario analyzed as part of this analysis is considered conservative for the purposes of quantitatively analyzing air quality impacts.



The proposed project is also subject to SDAPCD Rule 67: Architectural Coatings which requires manufacturers, distributors, and end users of architectural and industrial maintenance coatings to reduce VOC emissions from the use of these coatings, primarily by placing limits on the VOC content of various coating categories.

Table 2, Estimated Maximum Daily Construction Emissions, shows the estimated maximum daily construction emissions associated with the construction phase of the proposed project before and after compliance with Rule 55 and Rule 67. Because the project phasing overlaps with other villages, Table 2 includes emissions for Village Three North and portion of Village Four, Village Eight East and Village Ten.

**Table 2: Estimated Maximum Daily Construction Emissions (pounds/day)
 Villages Three North/Portion of Four, Eight East and Ten**

	VOC	NO _x	CO	SO _x	PM ₁₀	PM _{2.5}
<i>Proposed Project Emissions (not compliant with SDAPCD Rules 55 and 67) Unmitigated</i>						
2014	14.99	94.29	108.02	0.10	603.75	128.74
2015	64.44	86.18	107.19	0.11	305.47	67.40
2016	103.46	155.79	202.89	0.20	908.02	195.04
2017	101.83	141.79	194.88	0.20	608.89	132.94
2018	91.99	80.71	145.21	0.19	304.55	67.14
2019	37.55	58.04	89.20	0.10	303.62	65.62
2020	36.83	52.86	86.18	0.10	303.34	65.46
2021	36.46	51.57	76.23	0.10	303.31	65.44
2022	36.46	51.57	76.23	0.10	303.31	65.44
2023	62.99	94.48	130.40	0.16	905.29	192.55
2024	58.65	62.29	104.74	0.16	304.29	66.17
2025	28.75	51.33	68.63	0.07	303.12	65.33
2026	28.59	50.83	64.86	0.07	303.11	65.33
2027	28.59	50.83	64.86	0.07	303.11	65.33
2028	28.59	50.83	64.86	0.07	303.11	65.33
2029	21.88	12.18	25.06	0.06	0.97	0.72
<i>Maximum Daily Emissions (Unmitigated)</i>	103.46	155.79	202.89	0.20	908.02	195.04
<i>Proposed Project Emissions (compliant with SDAPCD Rules 55 and 67)</i>						
2014	14.99	94.29	108.02	0.10	273.75	59.82
2015	47.65	86.18	107.19	0.11	140.47	32.94
2016	77.50	155.79	202.89	0.20	413.02	91.66
2017	75.87	141.79	194.88	0.20	278.89	64.02
2018	66.03	80.71	145.21	0.19	140.44	32.69
2019	28.38	58.04	89.20	0.10	138.62	31.26
2020	27.66	52.86	86.18	0.10	138.34	31.01
2021	27.29	51.57	76.23	0.10	138.31	30.98
2022	27.29	51.57	76.23	0.10	138.31	30.98



2023	47.22	94.48	130.40	0.16	410.29	89.17
2024	42.88	62.29	104.74	0.16	139.29	31.71
2025	22.15	51.33	68.63	0.07	138.12	30.88
2026	21.99	50.83	64.86	0.07	138.11	30.87
2027	21.99	50.83	64.86	0.07	138.11	30.87
2028	21.99	50.83	64.86	0.07	138.11	30.87
2029	15.28	12.18	25.06	0.06	0.97	0.72
<i>Maximum Daily Emissions (Mitigated)</i>	<i>77.50</i>	<i>155.79</i>	<i>202.89</i>	<i>0.20</i>	<i>413.02</i>	<i>91.66</i>
<i>City of Chula Vista Threshold</i>	<i>75</i>	<i>100</i>	<i>550</i>	<i>150</i>	<i>150</i>	<i>55</i>
Threshold Exceeded?	Yes	Yes	No	No	Yes	Yes

Source: URBEMIS 2007 Version 9.2.4. See Appendix A of Air Quality and Global Climate Change Technical Report for the Otay Ranch University Villages Project for complete results.

Note: Construction emissions shown include emissions from construction of all Villages analyzed under the proposed project, including Village Three and a Portion of Village Four, Village Eight East, and Village Ten.

- ¹ Construction emissions that would be generated under the Village Eight East Alternative Development Scenario would be essentially the same as construction equipment fleet, daily equipment and construction crew operations, and daily construction trips to and from the site would be the same as those analyzed under the proposed project. A pounds/per day daily threshold is the only threshold numerically considered for criteria pollutants; therefore, the quantitative analysis under both the proposed project and alternative scenario would be essentially the same.
- ² “Unmitigated” PM₁₀ and PM_{2.5} emissions as shown do not reflect compliance with SDAPCD Rule 55, which restricts visible fugitive dust emissions beyond the property line. Similarly, “Unmitigated” VOC emissions as shown do not reflect compliance with SDAPCD Rule 67 which restricts the VOC content in architectural coatings. “Mitigated” emissions as shown, account for compliance with these rules.

As shown, daily construction emissions would not exceed the City’s significance thresholds for CO and SOx. However, the VOC, NOx, PM10 and PM2.5 emissions associated with project construction would exceed the City of Chula Vista’s emission threshold. Mitigation Measure AQ-1 – AQ-2 (below) would reduce construction-related NOx emissions. Note that mitigation available for the reduction of NOx emissions (as described in mitigation measure AQ-1) is not quantifiable; therefore, emission reductions for NOx are not shown in Table 2.

MM AQ-1: Prior to approval of any grading permits, the project applicant or its designee shall place the following requirements on all grading plans, and shall be implemented during grading of each phase of the project to minimize NOx emissions:

- Minimize simultaneous operation of multiple construction equipment units. During construction, vehicles in loading and unloading queues shall turn their engines off when not in use to reduce vehicle emissions;
- All construction equipment shall be outfitted with best available control technology (BACT) devices certified by CARB. A copy of each unit’s BACT documentation shall be provided at the time of mobilization of each applicable unit of equipment;



- All construction equipment shall be properly tuned and maintained in accordance with manufacturer's specifications;
- All diesel-fueled on-road construction vehicles shall meet the emission standards applicable to the most current year to the greatest extent possible. To achieve this standard, new vehicles shall be used, or older vehicles shall use post-combustion controls that reduce pollutant emissions to the greatest extent feasible;
- The effectiveness of the latest diesel emission controls is highly dependent on the sulfur content of the fuel. Therefore, diesel fuel used by on- and off-road construction equipment shall be low sulfur (less than 15 ppm) or other alternative, low-polluting diesel fuel formulation.
- The use of electrical construction equipment shall be employed where feasible;
- The use of catalytic reduction for gasoline-powered equipment shall be employed where feasible;
- The use of injection timing retard for diesel-powered equipment shall be employed where feasible.

MM AQ-2: Prior to approval of any grading permits, and during project construction, the project applicant or its designee shall require implementation of the City's Standard Construction Best Management Practices (BMPs), including:

- Water, or utilize another acceptable SDAPCD dust control agent on, the grading areas at least twice daily to minimize fugitive dust;
- Stabilize grading areas as quickly as possible to minimize fugitive dust;
- Apply chemical stabilizer or pave the last 100 feet of internal travel path within the construction site prior to public road entry;
- Install wheel washers adjacent to a paved apron prior to vehicle entry on public roads;
- Remove any visible track-out into traveled public streets within 30 minutes of occurrence;
- Wet wash the construction access point at the end of the workday if any vehicle travel on unpaved surfaces has occurred;
- Provide sufficient perimeter erosion control to prevent washout of silty material onto public roads;
- Cover haul trucks or maintain at least 12 inches of freeboard to reduce blow-off during hauling;



- Suspend all soil disturbance and travel on unpaved surfaces if winds exceed 25 miles per hour (mph);
- Cover/water on-site stockpiles of excavated material; and
- Enforce a 20 mph speed limit on unpaved surfaces.
- Pave permanent roads as quickly as possible to minimize dust;
- During construction, site grading activities within 500 feet of a school in operation shall be discontinued or all exposed surfaces shall be discontinued or all exposed surfaces shall be watered to minimize dust transport off site to the maximum degree feasible, when the wind velocity is greater than 15mph in the direction of the school;
- During blasting, utilize control measures to minimize fugitive dust. Control measures may include, but are not limited to, blast enclosures, vacuum blasters, drapes, water curtains or wet blasting.

MM AQ-3: Prior to approval of the building permit for any uses that are regulated for TACs by the SDAPCD, the project applicant shall demonstrate to the satisfaction of the Development Services Director (or their designee) that the use complies with established criteria (such as those established by SDAPCD Rule 1200 and CARB). Also, gas stations shall not be located within 50 feet of a sensitive receptor, in accordance with CARB's siting recommendations.

2. Operational Emissions

Following the completion of construction activities, the proposed project would generate VOC, NO_x, CO, SO_x, PM₁₀, and PM_{2.5} emissions from project land uses, as well as mobile and stationary sources including vehicular traffic from residents, space heating and cooling, water heating, and fireplace (hearth) use.

The proposed project would impact air quality through the vehicular traffic generated by project residents. According to the project's Traffic Impact Analysis (Chen Ryan 2014), total project-generated daily traffic is estimated to be 77,748 trips per day at full buildout (2030) which includes Village Three North and portion of Village Four, Village Eight East and Village Ten. The URBEMIS 2007 model was utilized to estimate daily emissions from proposed vehicular sources. URBEMIS 2007 default data, including temperature, trip characteristics, variable start information, emissions factors, and trip distances, were conservatively used for the model inputs. Project-related traffic was assumed to be comprised of a mixture of vehicles in accordance with the model outputs for traffic. Emission factors representing the vehicle mix and emissions for 2030 (full buildout) were used to estimate emissions.

In addition to estimating mobile source emissions, the URBEMIS 2007 model was also used to estimate emissions from the project area stationary sources, which include natural gas appliances,



hearths, landscaping (which would not produce winter emissions), consumer products, and architectural coatings. All residential units would be constructed with natural gas fireplaces.

The present estimation of proposed operational emissions is based upon typical residential, retail, and industrial uses, and the analysis is considered a reliable estimate of the project's likely emissions. Table 3, Estimated Daily Maximum Operational Emissions, presents the maximum daily emissions associated with the operation of the proposed project after all phases of construction have been completed. Because the project phasing overlaps with other villages, Table 3 includes emissions for Village Three North and portion of Village Four, Village Eight East and Village Ten. The values shown are the maximum summer and winter daily emissions results from URBEMIS 2007. Complete details of the emissions calculations are provided in Appendix A of the Air Quality and Global Climate Change Technical Report for the Otay Ranch University Village Project.

As shown, daily operational emissions would not exceed the City's significance thresholds for SO_x. However, the VOC, NO_x, CO, SO_x, PM₁₀, and PM_{2.5} emissions associated with operation of the project would exceed the City of Chula Vista's significance thresholds.



**Table 3: Estimated Daily Maximum Operational Emissions – 2030 (pounds/day)
 Villages Three North/Portion of Four, Eight East and Ten**

Proposed Project Emissions	VOC	NO _x	CO	SO _x	PM ₁₀	PM _{2.5}
Summer						
Motor Vehicles	248.06	242.40	2,753.76	8.32	1,349.61	261.83
Area Sources	396.82	87.52	168.02	0.01	0.52	0.52
Total	644.88	329.92	2,921.78	8.33	1,350.13	262.35
<i>City of Chula Vista Threshold</i>	55	55	550	150	150	55
Threshold Exceeded?	Yes	Yes	Yes	No	Yes	Yes
Winter						
Motor Vehicles	266.89	291.97	2,576.56	6.92	1,349.61	261.83
Area Sources	377.07	131.50	56.44	0.29	3.84	3.80
Total	643.96	423.47	2,633	7.21	1,353.45	265.63
<i>City of Chula Vista Threshold</i>	55	55	550	150	150	55
Threshold Exceeded?	Yes	Yes	Yes	No	Yes	Yes

Source: URBEMIS 2007 Version 9.2.4. See Appendix A for complete results.

Note: Construction emissions shown include emissions from construction of all Villages analyzed under the proposed project, including Village Three and a Portion of Village Four, Village Eight East, and Village Ten.

“Summer” emissions are representative of the conditions that may occur during the ozone season (May 1 to October 31) and “Winter” emissions are representative of the conditions that may occur during the balance of the year (November 1 to April 30)

As shown, daily operational emissions would not exceed the City’s significance thresholds for SO_x. However, the VOC, NO_x, CO, SO_x, PM₁₀, and PM_{2.5} emissions associated with operation of the project would exceed the City of Chula Vista’s significance thresholds. Project design features would help to reduce operational emissions; however, significant reductions in VOC, NO_x, CO, PM₁₀, and PM_{2.5} emissions would be required to reduce emissions of these pollutants to less than significant, and feasible mitigation measures are not available to achieve these reductions. Therefore, even with incorporation of these design features, criteria pollutant emissions are anticipated to be above the thresholds for VOC, NO_x, CO, SO_x, PM₁₀, and PM_{2.5}.

B. Potential Short-term and Long-term Effects on Global Climate Change

1. Construction Emissions

GHG emissions would be associated with the construction phase of the proposed project through use of construction equipment and vehicle trips. Emissions of CO₂ were estimated using the URBEMIS 2007, Version 9.2.4, land use and air emissions model (Jones & Stokes 2007). The model results were adjusted to estimate CH₄ and N₂O emissions in addition to CO₂. The CO₂ emissions from off-road equipment and vehicles and delivery trucks, which are assumed by URBEMIS 2007 to be diesel fueled, were adjusted by a factor derived from the relative CO₂, CH₄, and N₂O for diesel fuel as reported in the California Climate Action Registry’s (CCAR) *General Reporting Protocol* (CCAR 2009) for transportation fuels and the global warming potential for each GHG to estimate the emissions in units of CO₂E. The CO₂ emissions associated with construction worker trips were multiplied by a factor based on the assumption that CO₂ represents 95% of the CO₂E emissions associated with passenger vehicles (EPA 2005). The results were then converted from



annual tons per year to metric tons per year. Table 4, Estimated Construction GHG Emissions, shows the estimated annual GHG construction emissions associated with the proposed project. Because the project phasing overlaps with other villages, Table 4 includes emissions for Village Three North and portion of Village Four, Village Eight East and Village Ten.

Table 4: Estimated Construction GHG Emissions (metric tons/year) Villages Three North/Portion of Four, Eight East and Ten

Construction Year	CO ₂ E Emissions
2014	1,117.58
2015	2,396.80
2016	3,867.28
2017	4,544.40
2018	3,085.30
2019	2,382.27
2020	2,391.37
2021	2,382.19
2022	2,373.07
2023	3,303.83
2024	2,753.49
2025	2,073.77
2026	2,073.80
2027	2,073.80
2028	1,773.19
2029	513.36
Total Construction Emissions	39,105.53
Amortized Annual Construction Emissions	1,303.52

Source: URBEMIS 2007 Version 9.2.4. See Appendix B for complete results.

Note: Construction emissions shown include emissions from construction of all Villages analyzed under the proposed project, including Village Three and a Portion of Village Four, Village Eight East, and Village Ten.

2. Operational Emissions

Operation of the proposed project would result in GHG emissions from vehicular traffic generated by residents, area sources (natural gas appliances, hearth combustion, and landscape maintenance), electrical generation, and water supply. Emissions associated with vehicular traffic, electrical generation, and water supply would be reduced by implementing GHG reduction measures, as indicated below.

a. Vehicular Traffic

Annual CO₂ emissions from motor vehicle trips for full project buildout were quantified using the URBEMIS 2007 model (refer to Appendix A for additional details and model assumptions). As described earlier, CH₄ and N₂O emissions were accounted for by multiplying the URBEMIS 2007 CO₂ emissions by a factor based on the assumption that CO₂ represents 95% of the CO₂E emissions associated with passenger vehicles (EPA 2005).



Several regulatory initiatives have been passed to reduce on-road vehicle emissions. These initiatives (Pavley and EPA/NHTSA standards for light-duty vehicles and the LCFS) have been estimated to reduce emissions from motor vehicles by approximately 32% by the year 2020, according to the SDCGHGI (University of San Diego 2008).

b. Area Sources

Annual CO₂ emissions from natural gas combustion for space and water heating, hearth combustion, and gas-powered landscape maintenance equipment were estimated using URBEMIS 2007. The CO₂ emissions from natural gas combustion were adjusted by a factor derived from the relative CO₂, CH₄, and N₂O for natural gas as reported in the CCAR's *General Reporting Protocol* (CCAR 2009) for stationary combustion fuels and their GWPs.

The proposed project would be required to comply with Section 15.26.030 of the City's Municipal Code, which requires that new residential projects that fall within climate zone 7 be at least 15% more energy efficient than the 2008 Energy Code. As such, building design would employ energy efficient measures beyond that required by the Energy Code, resulting in a 15% reduction in emissions generated by natural gas use.

c. Electrical Generation

Annual electricity use for the proposed project was based upon estimated generation rates for land uses in the San Diego Gas & Electric service area. The proposed project would consume approximately 65,521,407 kilowatt-hours per year (see Appendix B for calculations). The generation of electricity through combustion of fossil fuels typically results in emissions of CO₂ and to a smaller extent CH₄ and N₂O. Annual electricity emissions were estimated using the reported CO₂ emissions per kilowatt-hour for San Diego Gas & Electric, which would provide electricity for the project. The contributions of CH₄ and N₂O for power plants in California were obtained from the CCAR's *General Reporting Protocol* (CCAR 2009), which were adjusted for their GWPs.

Again, the proposed project would be required to comply with Section 15.26.030 of the City's Municipal Code, which would result in a 15% reduction in emissions generated by electricity use.

d. Water Supply

Water supplied to the proposed project requires the use of electricity. Accordingly, the supply, conveyance, treatment, and distribution of water would indirectly result in GHG emissions through use of electricity. Water usage rates were obtained from the Overview of Water Service completed for the proposed project (Dexter Wilson Engineering 2014). The estimated electrical usage associated with supply, conveyance, treatment, and distribution of water was obtained from a California Energy Commission report on electricity associated with water supply in California (CEC 2006).

Per Section 15.12 of the City's Municipal Code, all new residential construction, remodels, additions, and alterations must provide a schedule of plumbing fixture fittings that will



reduce the overall use of potable water by 20%, which would result in a 20% reduction in the GHG emissions from electricity generated for supply, conveyance, treatment, and distribution of water. The 20% reduction in the overall use of potable water is substantiated in the proposed project’s Water Conservation Plan; in fact, the Water Conservation Plans for Villages Three North and Portion of Village Four, Village Eight East and Village Ten identify a 29.2% reduction in the overall use of potable water. As such, a 29.2% reduction is applied in this analysis.

3. Summary of Operational Emissions

The estimated GHG emissions associated with vehicular traffic, area sources, electrical generation, and water supply are shown below in Table 5. Because the project phasing overlaps with other villages, Table 5 includes emissions for Village Three North and portion of Village Four, Village Eight East and Village Ten. Additional detail regarding these calculations can be found in Appendix B of the Air Quality and Global Climate Change Technical Report for the Otay Ranch University Villages Project. The estimated emissions of CO₂E would be 203,688 metric tons per year without the GHG reduction measures (“business as usual”), and 144,520 metric tons per year with the GHG reduction measures. As indicated in Table 5, the GHG reduction measures would reduce GHG emissions by approximately 29%.

**Table 5: Estimated Operational GHG Emissions (metric tons/year)
 Villages Three North/Portion of Four, Eight East and Ten**

Source	CO ₂ E Emissions	CO ₂ E Emissions w/ GHG Reduction Measures	Percent Reduction
Motor Vehicles	138,188	93,968	32%
Area Sources			
Natural Gas Combustion	18,213	12,749	30%
Hearth Combustion	26	26	0%
Landscaping	39	39	0%
Electrical Generation	22,031	15,422	30%
Water Supply	9,844	6,970	29%
Solid Waste	14,043	14,043	0%
Amortized Annual Construction Emissions	1,304	1,304	0%
Total	203,688	144,520	29.0%

Source: See Appendix B of the Air Quality and Global Climate Change Technical Report for the Otay Ranch University Villages Project for complete results.

Note: Construction emissions shown include emissions from construction of all Villages analyzed under the proposed project, including Village Three and a Portion of Village Four, Village Eight East, and Village Ten.

4. Assessment of GHG Impacts

The City of Chula Vista has developed a number of strategies and plans aimed at improving air quality while also addressing global climate change. In November 2002, Chula Vista adopted the Carbon Dioxide Reduction Plan in order to lower the community’s major greenhouse gas emissions, strengthen the local economy, and improve the global environment. In addition, as a



part of its Growth Management Ordinance and Growth Management Program, the City of Chula Vista requires that an Air Quality Improvement Plan (AQIP) be prepared for all major development projects with air quality impacts equivalent to that of a residential project of 50 or more dwelling units.

As shown in Table 5, with implementation of GHG reduction measures the proposed project would reduce GHG emissions by 29%. The proposed project would therefore exceed the target of 20% below business as usual that has been established for the purposes of assessing operational GHG emissions of projects in the City of Chula Vista, and this reduction would be consistent with the goals of AB 32. Furthermore, the proposed project would be consistent with Section 15.26.030 of the City's Municipal Code by employing energy efficient measures beyond that required by the Energy Code, resulting in a 15% reduction in emissions generated by energy use. Additionally, the proposed project would reduce the overall use of potable water by 29%, consistent with the City's Municipal Code. Lastly, the project design features would help to further reduce GHG emissions. The project would therefore have a less than significant impact on global climate change.

V. Quantitative Project Evaluation



A. INDEX PlanBuilder (INDEX) Modeling Results

Table 6 provides the modeling results from the INDEX Model for the Village 3 North SPA Plan.

Table 6: Chula Vista CO2 Index Model Results – Village 3 North

Element	Indicator	Units	Threshold Score	SPA Plan Score	Complies (Y/N)
Land Use	Use Mix	0-1 scale	> 0.1	0.25	Yes
	Use Balance	0-1 scale	> 0.6	0.77	Yes
	Neighborhood Completeness	% of key uses	> 60	60	Yes
Housing	School Proximity to Housing	avg walk ft to closest	< 3,200	1,459	Yes
	Transit Proximity to Housing	avg walk ft to closest stop	< 2,900	2,504	Yes
Employment	Transit Proximity to Employment	avg walk ft to closest stop	< 2,600	1,277	Yes
Recreation	Park Proximity to Housing	avg walk ft to closest park	< 1,700	1,582	Yes
Travel	Internal Street Connectivity	cul-de-	> 0.7	0.95	Yes
	Intersection Density	Intersections/sq mi	> 210	233	Yes
	Pedestrian Network Coverage	% of streets w/sidewalks	> 81	100.0	Yes
	Residential Multi-Modal Access	%DU w/3+ modes w/i 1/8mi	> 40	96.5	Yes
	Daily Auto Driving (3Ds Methodology)	VMT/capita/day	< 22	21.30	Yes
	Daily Auto Driving Inputs				
	Density		9,692	21,122	
	Diversity		.18	0.87	
	Design		3.57	4.54	
	Street Network Density		17.57	25.70	
Pedestrian Network Coverage		96.00	100.00		
Street Route Directness		1.73	1.27		
Climate Change	Residential Building Energy Use	MMBtu/yr/capita	< 29	26.5	Yes
	Non-Residential Building Energy Use	MMBtu/yr/emp	< 19	11.0	Yes
	Residential Building CO2 Emissions	lbs/capita/yr	< 4,800	4,360	Yes
	Non-Residential Building CO2 Emissions	lbs/emp/yr	< 2,100	1,789	Yes

The Village 3 North plan complies with the City's requirements related to all Elements.

B. Project Attributes Effects on Model Results

Table 7 provides a description of the project attributes that were considered in the modeling and the effect each of them had in terms of improving air quality, and reducing energy consumption and CO2 emissions.

Table 7: Project Attributes Effects on Model Results

Element	Indicator	Project Attribute	Effect on Modeling Result
Land Use	Use Mix		
	Use Balance		
	Neighborhood Completeness	Village Core	The Village Core area includes a neighborhood park, elementary school and employment opportunities in the office and retail/commercial areas which provides three of the five uses identified for neighborhood completeness. The remaining uses, a library and police/fire station, are planned in other portions of Otay Ranch. The Village 3 North SPA Plan will contribute its “Fair Share” towards the construction and operation of these facilities as outlined in the Village 3 North Public Facilities Financing Plan (PFFP).
Housing	School Proximity to Housing	Elementary School (S-1)	The Village 3 North SPA Plan locates an elementary school in the center of the Village such that it is within walking distance of a majority of the residents. This is aided by the provision of an interconnected sidewalk and trail system.
	Transit Proximity to Housing	Village Core Planned Transit Stops	The Village 3 North SPA Plan is planned to have local bus service near the village core with a possible stop at the intersection of Street “V” and Heritage Road. In addition, a planned Rapid Bus stop is located at the intersection of Heritage Road and Main Street, in the southwest corner of Village 3 North.
Employment	Transit Proximity to Employment	Village Core/MU, Office and Industrial uses	The Village Core includes centrally located Mixed Use Commercial/Retail and Mixed Use Retail/Office sites which are adjacent to a potential transit stop at the intersection of Street “V” and Heritage Road. In addition, the Industrial uses are adjacent to the potential local bus stop on the north side of Heritage Road.
Recreation	Park Proximity to Housing	Neighborhood Park P-1, CPF-1, CPF-2, P-OS-1 and P-OS02	Five parks are planned internal to Village 3 North, each distributed throughout the SPA Plan Area such that most residents are within a short walk. P-1 is the centrally located 7.9-acre neighborhood park in the Village Core adjacent to the highest-intensity MF site (R-22) and the Mixed Use Residential (MU-1) site.
Travel	Internal Street Connectivity	Grid Circulation System	The Village 3 North SPA Plan Circulation Plan establishes a grid system which connects streets and limits the number of cul-de-sacs.
	Intersection Density	Grid Circulation System	The Village 3 North SPA Plan Circulation Plan establishes a grid system which connects streets and limits the number of cul-de-sacs.
	Pedestrian Network Coverage	Otay Ranch Village Pathway Chula Vista Regional Trail Promenade Streets	All public streets in the Village 3 North SPA Plan Area are served by a pedestrian feature. Major arterials are part of the Regional Trails system, Street “V” includes 10’ Village Pathway on both sides, Residential Promenade Streets provide expanded 6’, tree-lined sidewalks connecting residential neighborhoods and all other public streets have 5’ sidewalks separated from the street by landscaped parkways.

	Residential Multi-Modal Access	Village Core Otay Ranch Village Pathway Chula Vista Regional Trail Promenade Streets	The mixed use village core which provides for residents to shop, go to school and recreate within the village, combined with a connected street and pedestrian/bicycle circulation system and the proximity to transit, limits the overall need for external vehicle trips which reduces average VMT.
	Daily Auto Driving (3Ds Methodology)		
Climate Change	Residential Building Energy Use	Small lot, single family homes Chula Vista Energy Efficiency Ordinance	The Chula Vista Energy Efficiency Ordinance requires homes within Climate Zone #7 to be 15% more energy efficient than applicable 2008 CA Energy Code Title 24-6 requirements. Small-lot homes are proposed throughout the single-family residential neighborhoods. These homes are smaller than traditional SF homes. When combined with energy efficiency requirements, they use much less energy than traditional SF homes. They also have smaller yards which require less water and therefore less energy to pump water to the project site.
	Non-Residential Building Energy Use	Chula Vista Energy Efficiency Ordinance	The non-residential buildings are required to meet Chula Vista energy efficiency requirements will result in less energy usage.
	Residential Building CO2 Emissions	Small lot, single family homes Chula Vista Energy Efficiency Ordinance	When combined with energy efficiency requirements, residences in Village 3 North will use much less energy than traditional SF homes.
	Non-Residential Building CO2 Emissions	Chula Vista Energy Efficiency Ordinance	The non-residential buildings are required to meet Chula Vista energy efficiency requirements will result in less energy usage.

VI. Community Design and Site Planning Features



A. Overview

Table 8 below provides an overview of the Community Design and Site Planning Features, as well as building and landscape features, which have been integrated into the Village 3 North SPA Plan to create a sustainable community. Exhibit 5 depicts several of the strategies.

Table 8: Community Design and Site Planning Features

Strategy to Reduce GHG Emissions	Description	Emission Reduction	Basis for Emission Reduction
Mixed-Use Development	The Village 3 North SPA land use plan locates a school, parks, and commercial and office land uses in a mixed use village core area.	1% to 10% (vehicle emissions)	CAPCOA White Paper, Appendix B
Developing Concentrated Activity Centers	Village 3 North is part of the overall Otay Ranch GDP which created concentrated activity centers surrounded by supporting land uses. Village 3 North includes high density multi-family in proximity to the village core and future transit stop.	1% to 10% (vehicle emissions)	CAPCOA White Paper, Appendix B
Pedestrian Oriented Development	The Village 3 North SPA land use plan locates a school, parks, and commercial land uses in proximity to residential areas to encourage pedestrian and bicycle travel as an alternative to the automobile. In addition, the Village 3 North Trail and Pathway system provides alternate routes to these destinations.	1% to 10% (vehicle emissions)	CAPCOA White Paper, Appendix B
Street Widths, Pavement and Street Trees	The Village 3 North land use plan includes narrow streets and reduced paving, which reduces heat buildup and the demand for air conditioning. Street trees are also included to provide shade and further reduce ambient air temperatures.	Unknown	CAPCOA White Paper, Appendix B
Public Transportation	The Village 3 North provides for future local bus services through the Village Core. In addition, there is a planned Rapid Bus transit stop in the southwestern corner of the Village 3 North SPA Plan area at the intersection of Main Street and Heritage Road.	1% to 2% (vehicle emissions)	CAPCOA White Paper, Appendix B
Alternative Travel Modes	Village 3 North SPA streets will provide for a maximum travel speed which allows residential streets to be also used by bicycles.	1% to 10% (vehicle emissions)	CAPCOA White Paper, Appendix B
Alternative Travel Modes	Off-street pathways and trails in Village 3 North will accommodate pedestrian and bicycle travel.	1% to 10% (vehicle emissions)	CAPCOA White Paper, Appendix B
Improved Construction Standards	All residential buildings will be designed and constructed to achieve the California Green Building Code Tier 1 standards (CalGREEN).	15% reduction in energy use (electricity and natural gas)	CALBO Model Green Building Ordinance
Improved Construction Standards	Project-wide recycling for single-family, multi-family, school, commercial, and retail establishments will be required as required under the County's recycling ordinance.	Unknown	N/A



Strategy to Reduce GHG Emissions	Description	Emission Reduction	Basis for Emission Reduction
Improved Construction Standards	Electric car plug-in facilities/stations will be provided in all residential garages.	Unknown	CAPCOA White Paper, Appendix B
Energy Efficiency	All private residential and commercial structures will be designed and constructed to improve energy conservation 15% above the 2008 Building Energy Efficiency Standards in Title 24 of the California Code of Regulations.	20% (energy use emissions)	URBEMIS Model; Green Building Standards
Energy Efficiency	Indoor residential appliances will carry the Environmental Protection Agency's (EPA) ENERGYSTAR® certification, as applicable and feasible.	Embodied in Title 24 Energy Efficiency Standards.	CAPCOA White Paper, Appendix B
Energy Efficiency	All residential units will be part of the local utility demand response program to limit peak energy usage for cooling.	Unknown	N/A
Water Conservation	Indoor residential plumbing products will carry the EPA's WaterSense certification.	The CalGREEN Code requires a 20% reduction in water use	Green Building Standards
Water Conservation	High-efficiency irrigation equipment, such as evapotranspiration controllers, soil moisture sensors and drip emitters, will be required for all projects that install separate irrigation water meters.	Unknown	N/A
Water Conservation	Drought tolerant, low-water usage native vegetation will be planted in public and private landscaped areas.	Unknown	CAPCOA White Paper, Appendix B
Water Conservation	Natural turf in residential development will be limited to no more than 30% of the outdoor open space.	Unknown	N/A
Solar Access – Hot Water	All single-family structures will be designed and constructed to allow for installation of solar hot water heaters.	Unknown	N/A
Solar Access - Energy	All single family structures will be designed and constructed to facilitate the installation or retrofit of photovoltaic systems.	1% to 3% (energy use emissions)	CAPCOA White Paper, Appendix B
Lighting	Energy efficient lighting for streets, parks, and other public spaces will be required. Private developers will use energy efficient lighting and design.	Unknown	CAPCOA White Paper, Appendix B

VII. Chula Vista CO2 Reduction Plan

Table 9: Summary Project Consistency with CO2 Reduction Action Measures

Action Measure	Project/Community Design Features	Describe How Project Design Will Implement CO2 Reduction Action Measures
<p>Measure 6 (Enhanced Pedestrian connections to Transit): Installation of walkways and crossings between bus stops and surrounding land uses.</p>	<p>Village Pathway on Street “V” connecting to local bus stop and Promenade Streets/Trails; Intersection neck-downs; Regional Trails on Main Street and Heritage Road connected to Rapid Bus stop at Heritage and Main Street intersection</p>	<p>The Project will implement the design features which will enhance the pedestrian connection to transit stops located with the SPA Plan area and the planned local and Rapid Bus stops on Main Street and Heritage Road.</p>
<p>Measure 7 (Increased Housing Density near Transit): General increase in land use and zoning designations to reach an average of at least 14-18 dwelling units per net acre within ¼ mile of major transit facilities.</p>	<p>High Density MF in village core neighborhoods; Small lot single family and alley development in neighborhoods adjacent to the village core.</p>	<p>The increased density in the north-central portion of the project is within ¼ mile of the Village Core and planned local bus stop.</p>
<p>Measure 8 (Site Design with Transit Orientation): Placement of buildings and circulation routes to emphasize transit rather than auto access; also includes bus turn-outs and other transit stop amenities.</p>	<p>Village 3 North SPA Transit Plan / Centrally-located local bus stop at Village Core; P.C. District Regulations – building setbacks;</p>	<p>The Village 3 North SPA land use plan site design accommodates a centrally located mixed use core with a transit stop which is within ¼ mile of most residents. The building setback requirements in the PC District Regulations and Village Design Plan policies will provide for pedestrian-scaled building frontages to encourage walking. The local bus stop shelter will be all-weather and provide seating.</p>
<p>Measure 9 (Increased Land Use Mix): Provide a greater dispersion/variety of land uses such as siting of neighborhood commercial uses in residential areas and inclusion of housing in commercial and light industrial areas.</p>	<p>Mixed Use Village Core</p>	<p>The Village Core provides a mix of uses including office, commercial and park uses in a residential area, consistent with Measure 9.</p>
<p>Measure 10 (Reduced Commercial Parking Requirements): Lower parking space requirements; allowance for shared lots and shared parking; allowance for on-street spaces.</p>	<p>On Street Parking.</p>	<p>The project includes on-street parking spaces throughout the Village Core which reduces the need for large, paved parking lots.</p>
<p>Measure 11 (Site Design with Pedestrian/bicycle Orientation): Placement of buildings and circulation routes to emphasize pedestrian and bicycle access without excluding autos; includes pedestrian benches, bike paths, and bike racks.</p>	<p>P.C. District Regulations – building setbacks</p>	<p>The building setback requirements in the PC District Regulations and Village Design Plan policies will provide for pedestrian-scaled building frontages to encourage walking and bicycling. Bike racks will be provided at parks, the elementary school and the mixed use commercial/retail center in</p>

		the village core. Garages are discouraged in fronts of homes.
Measure 12 (Bicycle Integration with Transit and Employment): Provide storage at major transit stops and employment areas. Encourage employers to provide showers at the place of employment near major transit nodes.	P.C. District Regulations – Bicycle storage	The P.C. District Regulations include requirements for bicycle storage and shower/changing facilities in businesses such that future employees may bike to work.
Measure 13 (Bike Lanes, paths, and Routes): Continued implementation of the City's bicycle master plan. Emphasis is to be given to separate bike paths as opposed to striping bike lanes on streets.	Village Pathway on Street "V" Promenade Streets/Trails; Regional Trails on Main Street and Heritage Road Class II bike lanes Greenbelt/OVRP Trails	The Village 3 North SPA Circulation and Trail Plans provide for off-street bike travel on the Village Pathway, Regional Trails, and Promenade Streets and within the OVRP.
Measure 14 (Energy Efficient Landscaping): Installation of shade trees for new single-family homes as part of an overall city-wide tree planting effort to reduce ambient temperatures, smog formation, energy use, and CO2.	Otay Ranch Street Tree Program; Promenade Streets;	The Village 3 North street sections provide for landscaped parkways with street trees. The Water Conservation Plan identifies appropriate tree which are water efficient.
Measure 15 (Solar Pool Heating): Mandatory building code requirement for solar heating of new pools or optional motorized insulated pool cover.	Compliance with Municipal Code	Any installation of a pool will comply with the City's Municipal Code.
Measure 16 (Traffic Signal & System Upgrades): Provide high-efficiency LED lamps or similar as approved by the City Engineer.	Compliance with City Program	All traffic signals will comply with the requirements of the City's Traffic Signal Program.
Measure 18 (Energy Efficient Building Recognition Program): Reducing CO2 emissions by applying building standards that exceed current Title 24 Energy Code requirements.	Compliance with Municipal Code	All new construction will comply with the Municipal Code requirement to exceed Title 24 by 15%.
Measure 20 (Increased Employment Density Near Transit): General increase in land-use and zoning designations to focus employment-generating land-uses within ¼ mile of major transit stops throughout the City.	Mixed-use Commercial/Retail and Office adjacent to local bus stop.	The Village 3 North SPA land use plan locates a commercial/retail and office center in the Village Core near the planned future local bus stop.

VIII. Compliance Monitoring

TABLE 10: Village 3 North Compliance Monitoring Checklist

Village 3 North SPA Plan Air Quality Improvement Plan Compliance Monitoring Checklist							
	Method of Verification ¹	Timing of Verification				Responsible Party ²	Project Consistency & Compliance Documentation ³
		TM	Pre Cons	Cons	Post Cons		
Planning							
AQIP Project Design Features/Principles							
Mixed Use Village Core	SPA Plan	X				City of Chula Vista	
• Elementary School	SPA Plan	X				City of Chula Vista	
• Neighborhood Park	SPA Plan	X				City of Chula Vista	
• Commercial/Retail Center	SPA Plan	X				City of Chula Vista	
• Office (O-1)	SPA Plan	X				City of Chula Vista	
Local Bus Stop	SPA Plan	X				City of Chula Vista	
Rapid Bust Stop	SANDAG RTP				X	SANDAG	
CPF-1	SPA Plan	X				City of Chula Vista	
CPF-2	SPA Plan	X				City of Chula Vista	
P-OS-1	SPA Plan	X				City of Chula Vista	
P-OS-2	SPA Plan	X				City of Chula Vista	
Village Pathway – Street V	SPA Plan	X				City of Chula Vista	
Promenade Trails	SPA Plan	X				City of Chula Vista	

Regional Trail – Main Street	SPA Plan	X				City of Chula Vista	
Regional Trail – Heritage Road	SPA Plan	X				City of Chula Vista	
Small-lot Single Family Homes	SPA Plan	X				City of Chula Vista	
Alley-loaded single family homes	SPA Plan	X				City of Chula Vista	
Narrower Streets	SPA Plan	X				City of Chula Vista	
Building							
Minimize simultaneous operation of multiple construction equipment units. During construction, vehicles in loading and unloading queues shall turn their engines off when not in use to reduce vehicle emissions	MMRP		X			City of Chula Vista	
All construction equipment shall be properly tuned and maintained in accordance with manufacturer's specifications	MMRP		X			City of Chula Vista	
All diesel-fueled on-road construction vehicles shall meet the emission standards applicable to the most current year to the greatest extent possible.	MMRP		X			City of Chula Vista	
Diesel fuel used by on- and off-road construction equipment shall be low sulfur (less than 15 ppm) or other alternative, low-polluting diesel fuel formulation.	MMRP		X			City of Chula Vista	
Green Building Standards							
CalGreen Tier 1 Standards	Building Permit		X			City of Chula Vista	
Electric car plug in outlets in residential garages	Building Permit		X			City of Chula Vista	

EPA WaterSense certification on indoor plumbing	Building Permit		X			City of Chula Vista	
Evapotranspiration controllers	Building Permit		X			City of Chula Vista	
Soil moisture sensors / drip emitters	Building Permit		X			City of Chula Vista	
Water Conservation Plan	SPA Plan	X				City of Chula Vista	
Limit natural turf to 30% SF yards	Building Permit		X			City of Chula Vista	
Pre-plumb for solar hot water	Building Permit		X			City of Chula Vista	
Pre-plumb for photovoltaic system	Building Permit		X			City of Chula Vista	
Energy Efficiency Standards							
Exceed T-24 (2008) by 15%	Building Permit		X			City of Chula Vista	
EPA EnergyStar certified residential appliances	Building Permit		X			City of Chula Vista	

Notes:

1. Method of verification may include, but is not limited to, plan check, permit review, site inspection.
2. Identify the party responsible for ensuring compliance (City of Chula Vista, San Diego APCD, Other)
3. This column shall include all pertinent information necessary to confirm compliance including document type, date of completion, plan/permit number, special notes/comments, and contact information.