



Appendix C

Nonrenewable Energy Conservation Plan

NON-RENEWABLE ENERGY CONSERVATION PLAN

Otay Land Company Village 9

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DRAFT

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I. INTRODUCTION

The Otay Ranch General Development Plan (GDP) requires the preparation of a Non-Renewable Energy Conservation Plan that identifies feasible methods to reduce the consumption of non-renewable energy resources. Categories identified in this Plan where reductions may occur include, but are not limited to, Transportation, Building Design & Use, Lighting, Recycling, and Land Use.

The Chula Vista region's current reliance on fossil fuels provides the majority of non-renewable energy consumption. Fossil fuels are directly consumed in the form of gasoline, diesel fuel and natural gas, and indirectly as electricity generated from these fuels. The goals, objectives and policies of the GDP require that any new project identify a plan that assists in a long-range strategy that will increase the conservation of and decrease the consumption of non-renewable energy resources.

II. NON-RENEWABLE ENERGY CONSERVATION PLAN

Opportunities for energy conservation in Village 9 are characterized by the following:

A. Transportation

Transportation design features that encourage energy conservation in Village 9 include:

- **Reduced Vehicle-trip Miles**
On the regional level, Village 9 is designed to accommodate Bus Rapid Transit as well as Rapid Bus Service. Within Otay Ranch, Village 9 also will be served by a local circulator service. In addition, the project will provide sidewalks and bike lanes on all Transportation Element roadways and a Village Pathway on Campus Boulevard that connect the University and transit stops to the Neighborhood Park and the future SR-125 Pedestrian/Bicycle Bridge. By design, higher density uses will be provided in the UC and TC Zones. This intensified land use is intended to help reduce the dependence on the passenger vehicle and encourage the use of transit, walking and biking.
- Additional measures to promoted alternative transportation use or reduce traffic congestions include: Provision of shower and locker facilities at offices with more than ten occupants to encourage bicycle use; Parking lot design to promote use of mass transit and car pools; Synchronization of the traffic lights as part of an

individual development project with previously installed traffic lights in order to reduce traffic congestion; identification of an environmental coordinator to be responsible for education and disseminating information on ridesharing and/or mass transit opportunities, recycling, energy conservation programs, etc.

Trip reductions were based on the internal trip capture methodology outlined in the ITE Trip Generation Handbook. Using this methodology, traffic reductions ranging from, 27% to 50% were applied. As determined by San Diego Association of Governments (SANDAG), the average daily trip length for the Village 9 is 5.08 miles. This is less than the regional average trip length of 5.8 miles.

- **Alternative Travel Modes**

Low speed vehicles (LSVs) are envisioned as an alternative mode of travel within and between the Otay Ranch villages. In Village 9, LSVs may travel on all village streets with a maximum travel speed of 35 miles per hour. This will include all village streets except for Main Street and Otay Valley Road.

- **Increase Use of Transit**

Village 9 concentrates its highest density housing, retail / commercial uses as well as school and park uses in or adjacent to the UC and TC Zones. The resulting land use plan features an integrated circulation system that provides residents of these zones and adjacent neighborhoods non-automobile related circulation options that include walking, bicycling and transit. The current regional transit plan includes transit lines on East "H" Street, East Palomar Street, La Media Road, and Eastlake Parkway. Transit stations are planned to be located approximately five to six miles apart. Within Village 9, planned transit routes include Street B and Otay Valley Road with a transit station located at the intersection of Street B and Campus Boulevard. In conformance with the General Plan, a potential transit route is also provided on Main Street with potential stops located at the intersection of Street B. Potential stops are also identified at the intersection Otay Valley Road and Street A. The actual transit plan will be developed in conjunction with the SANDAG. Public transit lines and stops are integrated into the plan and are located within or in close proximity to the higher intensity neighborhoods.

- **Roadway Pavement Widths and Street Trees**
It has been demonstrated that narrow street widths and the resulting reduction in pavement area reduces the heat island effect and thus the demand for air conditioning. A strong street tree program also provides shade that enhances the reduction of heat from roadways. Both of these design concepts would be implemented by the Village 9 plan.

B. Building Design & Use

Building design & use features that encourage energy conservation in Village 9 include:

- **Housing Efficiency**
Projections for Village 9 indicate that approximately ninety percent (90%) of the residential dwelling units will be small single family and multi-family residences. It has been demonstrated that these smaller detached and attached building designs use less energy for heating and cooling when compared to larger single-family detached homes.
- **Solar Orientation**
It has been demonstrated that passive solar design, including the orientation of buildings, can take advantage of the sun's warmth in winter to assist with heating as well as minimize heat gain in summer months to assist with cooling. The Village 9 UC, TC and UN Zones are oriented primarily on a north – south and east – west axis to take advantage of solar orientation.
- **Use of Better-insulated Buildings Efficiency**
Title 24, Part 6 of the California Building Standards Code regulates energy uses including space heating and cooling, hot water heating, and ventilation. The energy code allows new buildings to meet a "performance" standard that allows a builder to choose the most cost effective energy saving measures to meet the standard. These choices include:
 - Added insulation,
 - Radiant barriers,
 - Cool roofs,
 - Improved HVAC systems,
 - Alternative heating and cooling systems,
 - More efficient water heating systems, and
 - More efficient light systems.

The energy code was updated in 2008 to continue to reduce the amount of energy needed for new buildings. This update reduced the electricity needed to operate central air conditioning for residential uses between 19.7% and 22.7% and the natural gas needed for gas water heaters between 7% and 10%. For non-residential buildings, the most recent update reduced the electricity needed to operate heating equipment 37.2%, cooling equipment 8.3%, and interior lighting 5.9%. The non-residential natural gas need for heating was reduced 15.9%.¹

The City of Chula Vista has adopted Green Building Standards (CVMC Chapter 15.12) and an Energy Efficiency Ordinance (CVMC Section 15.26.030) that requires an increased energy efficiency standard of 15% beyond 2008 Title 24 Part 6 Energy Code levels. For residential uses, this requirement represents a .75-1.35% reduction in electricity use and an 11.85%-12.45% reduction in natural gas usage. For commercial uses this represents a 4.35% reduction in electricity use and a 9.9% reduction in natural gas usage.²

▪ **Water Conservation**

Water-related energy use consumes 19 percent of California's electricity, 30 percent of its natural gas, and 88 billion gallons of diesel fuel every year. The water-related energy use includes water and wastewater treatment as well as the energy needed to transport the water from its source (either northern California or the Colorado River).

All residential units will be required to have:

- Hot Water Pipe Insulation
- Pressure Reducing Valves
- Water Efficient Dishwashers
- Dual Flush Toilets
- Water Efficient Landscape

¹ *Quantifying Greenhouse Gas Mitigation Measures*; California Air Pollution Control Officers Association (CAPCOA), August 2010, Tables D-1 and D-2

² *Quantifying Greenhouse Gas Mitigation Measures*; California Air Pollution Control Officers Association (CAPCOA), August 2010, Tables BE-1.1 and BE-1.2

All non-residential units will be required to have:

- Hot Water Pipe Insulation
- Pressure Reducing Valves
- Dual Flush Toilets
- Water Efficient Landscape

- **Use of Energy Efficient Appliances**

For residential uses, energy efficient appliances can reduce electricity use an additional .12-.14% if Energy Star dishwashers are installed and .66-1.21% if one Energy Star ceiling fan is installed in each home. For nonresidential uses, an Energy Star refrigerator in grocery stores can reduce electricity usage by 21%.

- **Improved Construction Standards**

Residential and commercial construction within Village 9 is required to adhere to the Increased Energy Efficiency Standards of the City of Chula Vista Municipal Code Section 15.26.030 as well as the Building and Energy Efficiency Standards in Title 24 Part 6 of the California Code of Building Regulations. In addition, the developer of Village 9 has participated in the Chula Vista Research Project conducted by the Gas Technology Institute. Many of the appropriate measures from that study will become part of the choices that builders make to meet the Chula Vista and Title 24 Part 6 requirements.

- **Use of Solar Energy Systems**

Chula Vista Municipal Code Section 20.04.040 requires all new residential units to include plumbing specifically designed to allow later installation of a system that utilizes solar energy as the primary means of heating domestic potable water.

New buildings will be designed to be photovoltaic (PV) ready. This includes providing space on the roof surface for the PV system and electrical conduit from the electrical service equipment to the future PV system. Planting of trees on southern exposures to buildings will be carefully monitored to ensure that solar energy systems will not be impacted.

C. Lighting

Lighting features that encourage energy conservation in Village 9 include:

- **Energy Efficient Public Lighting**

Standards for Village 9 encourage the use of energy efficient lighting for all streetlights as well as park and other public space illumination.

The City of Chula Vista Public Works Department is implementing a pilot program testing the use of induction/l.e.d lighting for public streets that use 1/3 the electricity without reducing lighting levels and impacting public safety. If it is determined that one of these lighting systems is feasible on a citywide basis, the applicable lighting system will be used in Village 9.

- **Energy Efficient Public Lighting**

Builders also are encouraged to use energy efficient lighting in all residential and commercial development.

D. Recycling

Recycling programs in Village 9 include:

- **Residential and Commercial Recycling**

Chula Vista Municipal Code Sections 8.23-25 requires all commercial and industrial establishments that recycle with a third party recycler to submit recycling tonnage documentation on an annual basis to the City's conservation coordinator, due on or before January 31st, for the previous year. This requirement promotes recycling of materials. Those establishments recycling with a franchised hauler do not need to report because the hauler does the reporting to the City.

The City of Chula Vista's Recycling and Solid Waste Planning Manual, adopted by City Council, provides information for adequate space allocated to recycling and solid waste within individual projects, based upon the type of project and collection service needed.

Additionally, the City of Chula Vista encourages the use of compost materials to be incorporated into the soil of all new construction projects to improve soil health, water retention, less water run off, and filtration of water run-off prior to entering storm drains and creeks on the way to San Diego Bay. The yard trimmings collected

in Chula Vista are composted at the Otay Landfill and may be available for purchase.

- **New Construction Waste Reduction**

California Green Building Code Title 24, Part 11 (CALGreen) requires that a minimum of 50% all new construction waste generated at the site be diverted to recycle or salvage. Additionally, the State has set per capita disposal rates of 5.3 pounds per person per day for the City of Chula Vista. To maintain these targets the following programs must be implemented per Chula Vista Municipal Code Sections 8.23 Solid Waste and Recycling Contract or Franchise; 8.24 Solid Waste and Litter; 8.25 Recycling and 19.58.340 Trash Enclosures:

All new construction and demolition projects in the City are required to divert from landfill disposal 90% of inert waste to include asphalt, concrete, bricks, tile, trees, stumps, rocks and associated vegetation and soils resulting from land clearing; and 50% of all remaining waste generated. Contractors will be required to put up a performance deposit and prepare a Waste Management Report form to ensure that all materials are responsibly handled. Upon verification that the diversion goals have been met, the performance deposit will be refunded (CVMC 8.25.095).

E. Land Use

Land use patterns and project features that conserve non-renewable energy resources and reduce the reliance on the automobile within Village 9 include:

- **Reduce the Reliance on the Automobile**

The vision for Village 9 is to develop a cohesive community with inter-connected uses and densities. The mix of proposed residential, commercial and community uses are intended to provide a complementary, mixed-use environment with a focus on promoting a walkable and bikeable community. Direct pedestrian links extend from the surrounding neighborhoods directly to the town center. Class II bicycle facilities are planned along all Transportation Element roadways. The Village pathway provides pedestrian and bike connections from the town center to the University, transit stops at Campus Blvd. and Street B, the Neighborhood Park, and the Pedestrian/Bike Bridge that links to Village 8 East. Roadways internal to the Village are designed to standards with speed limits of 25 to 35 mph. Slow traffic speeds are conducive to bicycling and provide the necessary linkage to the regional bicycle circulation network. Sidewalks will be provided

throughout Village 9. In addition, the land uses designated for the UC and TC Zones are specifically intended to be pedestrian and bicycle friendly. Except for Main Street and Otay Valley Road, all streets are planned for travel speeds of 25 to 35 mph and are designed to provide a comfortable walking environment. The UC and TC Zones also provide the opportunity for employee services to be located within walking distance of employer-based businesses.

- **Regional Mass Transit Facilities**

Otay Ranch and Village 9 are designed and ready to accommodate public transportation and alternative travel modes to reduce energy consumption. Village 9 is public transportation ready. In conformance with General Plan policy, public transportation is an integral part of Otay Ranch. The Village 9 plan has responded by providing for potential transit services with options available depending on what future program is implemented.

The current regional transit plan includes transit lines on East "H" Street, East Palomar Road, La Media Road, Eastlake Parkway and the existing segment of Main Street. Transit stops are planned to be located approximately five to six miles apart. In conformance with the General Plan, future transit stops are planned for the EUC and at the intersection of Campus Boulevard and Street B. There are additional transit stops possible at the intersection of Main Street and Street A as well as at the intersection of Otay Valley Road and Street A. The actual transit plan will be developed in conjunction with the San Diego Association of Governments (SANDAG). Specific access points as well as the internal circulation for bicycle riders and pedestrians and exact roadway crossings will be approved during the Tentative Tract Map (TM) process.