SUSTAINABILITY ELEMENT

"We do not inherit the earth from our ancestors, we borrow it from our children" —Native American Proverb

INTRODUCTION

Sustainability refers to efforts and practices aimed at minimizing and reversing where possible the depletion and degradation of our natural resources, including air, water, fossil fuels, minerals and soils, and flora and fauna, such that a balance between the activities of humankind and the quality of the natural environment can be sustained. Woodside has an obligation to include sustainability in the manner in which Town business is conducted, policies related to development and monitoring the built environment, and enhancing public awareness of the importance of sustainable practices and values.

California cities and counties must include an analysis of climate change in the environmental review of projects. "Projects" may include individual development projects; but also include plans, such as the General Plan. Many California cities and counties are addressing climate change and sustainability at the General Plan level. The reason is two-fold. First, if a program-level analysis is done and mitigation established, subsequent projects will benefit from streamlining under CEQA. Secondly, a General Plan itself also requires environmental review under CEQA, and therefore must include consideration of climate change.

CHANGES SINCE 1988

Since 1988, an increased awareness of global climate change and its causes and the resulting renewed interest in environmental protection, led to the enactment of new laws in California and renewed efforts to protect resources and reduce consumption.

In the last twenty years, additional data have become available that focus the extent of the issue.

AIR QUALITY

In the San Francisco Bay Area, as in the entire State of California, a certain amount of air pollution comes from stationary industrial sources, such as refineries and power plants. A greater percentage, however, of harmful air emissions comes from cars and trucks, construction equipment, and other mobile sources. California has more cars per household (1.8) than any other State, along with a thriving business economy and a continually expanding population. All of these factors contribute to the State and regional air quality challenges.

In 2005, the Woodside Community-Wide Emissions by Sector study estimated that the greatest contributor to green house gas emissions in Town is transportation on the two State highways that run through the Town (Highways 280 and 84). Whereas reducing vehicular trips on State highways is largely beyond local control, participation in regional solutions to transportation issues is important. The second greatest contributor to greenhouse gas emissions in Town is residential energy use which can be more directly influenced locally by requiring green building standards. The Town also contributes to managing air quality by regulating sources of pollution arising from building activity. Other sources of air pollution in Town include wood-burning fireplaces and stoves, methane emissions from septic and animal waste, and residential diesel backup generators.

WATER USAGE

Water is a critical resource for basic survival. Current challenges to providing adequate water resources in the State of California include drought, population growth, water quality, aging infrastructure, catastrophic events, and funding. In order to sustain the State's water resources, water use efficiency must be increased, water quality must be protected, and water resources must be responsibly managed. Management strategies in the State to achieve these goals include reducing water demand, increasing water supply, improving water quality, practicing resource stewardship, and improving flood management.

The Town of Woodside, being a predominantly residential community, uses the vast majority of its water resources for indoor and outdoor residential purposes. In 2010, the California Homebuilding Foundation estimated that a new three bedroom single family home with four occupants

used 174,000 gallons of water per year. Over fifty percent of this water use is for landscaping. The largest indoor water use is by showers.

On January 1, 2010, the Model Water Efficient Landscape Ordinance (Assembly Bill 1881, Laird) went into effect. This new State law regulates landscape water use for new residential landscape areas of at least 5,000 square feet, and for existing landscape installed prior to the enactment date that is at least an acre in size. In 2011, the California Green Building Standards Code (CGBSC) will come into effect. Combined with the Model Ordinance, homes built to these standards should save approximately 38,000 gallons of water per year.

In addition to new water usage restrictions, the State enacted updated regulations in 2009 to allow the use of graywater, which can be recycled on-site for uses such as landscape irrigation. Single graywater sources, such as a clothes washer or a dishwasher, no longer need to be permitted.

CLIMATE CHANGE AND CALIFORNIA GREENHOUSE GAS EMISSION REDUCTION TARGETS

The last decade of the twentieth century and the first decade of the twenty-first century were marked by heated debate on, and increased public awareness of, climate change, which effectively reenergized the environmental movement. Since the industrial age, human activity has released increasing amounts of pollutants, carbon dioxide, and other harmful gases into the atmosphere, primarily through the burning of fossil fuels and deforestation. Although the effects of human activities on air and water quality (pollutants) have been known for decades, global warming (a global "greenhouse" effect resulting in the warming of the Earth's atmosphere) did not really enter the public consciousness until the United Nations (U.N.) Framework Convention on Climate Change adopted the Kyoto Protocol in 1997. In 1997, the U.N. Convention highlighted the serious threats to public safety associated with global warming, including sea level rise, associated flooding, and effects on agriculture and disease vectors. In California, a series of State laws were passed in the first decade of the twenty-first century which address climate change.

In September of 2006, State Assembly Bill 32, the California Global Warming Solutions Act (California Health and Safety Code Section 38500), was signed into law, requiring California to reduce statewide greenhouse gas emissions levels to 1990 levels by 2020. The California Air Resources Board (CARB) is required to implement and enforce AB32. On September 30, 2008, State Senate Bill 375 (California Pubic Resources Code Section 21155) was signed into law. SB 375 clarified that CARB is responsible for setting regional greenhouse gas targets, and made transportation funding in California contingent on meeting these targets.

On, August 24, 2007, Senate Bill 97 (Pubic Resources Code Section 21083.05) was signed into law and required the Governor's Office of Planning and Research (OPR) to develop recommended amendments to the State California Environmental Quality Act (CEQA) Guidelines for addressing greenhouse gas emissions. On March 18, 2010, the California Natural Resources Agency adopted amendments to the guidelines for implementing CEQA. Specifically, these amendments (California Code of Regulations, Title 14, Sections 15000-15387) implement SB97, and direct the Resources Agency to certify and adopt guidelines prepared and developed by the Office of Planning and Research for the mitigation of greenhouse gas emissions or the effects of greenhouse gas emissions. In response, California cities and counties must include an analysis of climate change in the environmental review of projects.

GREEN BUILDING

According to the Federal Environmental Protection Agency, in the United States, the energy consumption of buildings accounts for:

- 39 percent of total energy use;
- 68 percent of total electricity use;
- 12 percent of the total water consumption;
- 38 percent of carbon dioxide emissions.

The manner of construction and use of our buildings has a significant impact on the consumption of resources. "Green Building" standards and practices seek to reduce this environmental impact. This design philosophy focuses on reducing the use of resources, such as energy, water and non-renewable building materials; and reducing building impacts on human health and the environment during the building's lifecycle, through better siting, design, construction, operation, maintenance, and demolition. These green attributes are currently evaluated by two different methodologies:

LEED

LEED certification of a property makes a statement affirming its sustainable design. The various LEED ratings systems, outlined by the U.S. Green Building Council, provide an international standard for third party verification certifying a building at one of four levels of sustainable design – Certified, Silver, Gold, or Platinum. Available rating systems address various types of buildings – New Construction & Major Renovation, Core & Shell, Schools, Healthcare, Existing Building, as well as others. LEED certification indicates to building employees and visitors as well as to future owners and tenants that the building was designed for sustainability in six specific categories – Sustainable Sites, Water Efficiency, Energy & Atmosphere, Materials & Resources, Indoor Environmental Quality, and Innovation in Design.

Build It Green

The GreenPoint Rated system, from Build It Green, is used to rate residences. A GreenPoint rated home is graded on five categories: Resource Conservation, Indoor Air Quality, Water Conservation, Community, and Energy Efficiency. If a home meets the minimum point requirements in each category on the checklist, as verified by a Certified GreenPoint Rater, it earns GreenPoint Rated certification.

A green building rating is not currently a requirement in the Town of Woodside, although CEQA, Title 24, energy efficiency regulations, zoning regulations, and General Plan policies address these issues. Green building rating requirements have, however, been adopted by numerous California cities and counties.

In 2008, California became the first State in the nation to adopt a green building code. The code update of 2010 requires a 20% improvement in water efficiency for both residential and commercial plumbing fixtures as well as a 50% increase in conservation for water used in landscaping. It also requires all new construction to reduce energy consumption by 15%. These green building standards will help California achieve the goal, mandated in Assembly Bill 32 and signed into law in 2006, of reducing greenhouse gas emissions 30% by 2020. Carbon emissions related to buildings represent about one quarter of the State's total, second only to transportation.

The promotion of green building in San Mateo County includes the Green Building Award sponsored by Sustainable San Mateo County, programs administered by RecycleWorks, and the activities sponsored by San Mateo County Chapter of the American Institute of Architects promotes sustainable design in architecture and recognizes the designers, builders, and owners of green buildings.

GREEN ENERGY

The Solar Rights Act of 1978 created a legal framework for solar access. That Act was amended in 2004 to prohibit local governments from restricting the installation of a solar energy system based on aesthetics and local development standards such as setbacks. As other forms of green energy become more prevalent, State and local governments will likely develop regulations promoting their utilization.

RECYCLING

A full discussion of solid waste management, related regulations, and Town collection statistics is included in the Public Utilities Element.

In addition to general refuse collection, the Town's hauler, Green Waste, collects recyclables, yard waste and some household hazardous waste, batteries, and Compact Fluorescent Lights. Additionally, the County holds periodic hazardous waste collection events.

In 2000, the Town Council adopted Ordinance 2000-504 which amended the Municipal Code by adding requirements to recycle and divert construction and demolition debris. There is also increasing interest in the community to either use recycled building products, or deconstruct homes and reuse salvageable building materials; as opposed to demolition, off-haul, and new construction with all new materials.

Livestock waste disposal from private properties is the responsibility of individual property owners, and is handled primarily by commercial haulers. There is increasing interest in the community to coordinate efforts to compost animal waste.

DEFINITIONS

Aquifer: A layer of permeable rock, sand or gravel through which ground water flows, containing enough water to supply wells and springs.

Average Daily Cover (ADC): The layer of compressed soil that is laid on top of a day's deposit of waste on an operational landfill site to prevent interaction between the waste and the air, thus reducing odors and enabling a firm base upon which vehicles can operate.

Biodiversity: The range of organisms present in a particular ecological community or system.

Carbon Absorption: The ability of forests to sequester carbon released as fossil fuel emissions.

Carbon Dioxoide Equivalent (CO2e): The measure used to equate the heat trapping capacity of other greenhouse gases with CO2.

Carbon Emissions: Carbon dioxide and carbon monoxide produced by motor vehicles and industrial processes and dispersed into the atmosphere. The primary human source of carbon dioxide in the atmosphere is from the burning of fossil fuels for energy production and transportation.

County of San Mateo RecycleWorks: RecycleWorks is a program of San Mateo County within the Public Works Department. RecycleWorks primarily provides outreach to all residents and businesses in San Mateo County and oversees waste and recycling services for County facilities and Unincorporated San Mateo County areas. RecycleWorks is not affiliated with any of the private waste haulers in San Mateo County, but does help to promote their recycling services. The Mission of RecycleWorks in 2010 was as follows: "RecycleWorks creates, delivers, and promotes recycling, composting, waste prevention, procurement, sustainability and green building programs and outreach at County facilities and for residents, employees, businesses and visitors in the unincorporated area of the county and, when appropriate, throughout San Mateo County to encourage, facilitate, and achieve resource conservation and the practice of responsible environmental stewardship and to maintain compliance with the California Integrated Waste Management Act (AB 939)."

Embodied Energy: The quantity of energy required to manufacture, delivered to the point of use and/or construct a product, material or service.

Green Building: The practice of creating structures and using processes that are environmentally responsible and resource-efficient throughout a building's life cycle from siting to design, construction, operation, maintenance, renovation, and deconstruction or demolition. This practice expands and complements the classical building design concerns of economy, utility, durability and comfort. [EPA definition, 2010].

Greenhouse Gas Emissions: Gases that trap heat in the atmosphere. Some greenhouse gases, such as carbon dioxide, occur naturally and are emitted to the atmosphere through natural processes and human activities. Other greenhouse gases (e.g., fluorinated gases) are created and emitted solely through human activities. The principal greenhouse gases that enter the atmosphere because of human activities are: carbon dioxide, methane, nitrous oxide and fluorinated gases. [EPA definition, 2010].

Hydro-zone: A specific area of plants that have similar watering requirements and can be irrigated the same way and at the same time.

Hydrological System: The properties, distribution, use and circulation of the water on Earth and in the atmosphere in all of its forms.

ICLEI: The International Council for Local Environmental Initiatives (ICLEI) convened at its 1990 founding conference at the United Nations in New York. At that time, ICLEI involved 200 local governments from 43 countries. In 2003, the organization's name changed to "ICLEI – Local Governments for Sustainability" and assumed a broader mandate which grew to over 1,100 members in 68 countries who take responsibility in creating a sustainable society. ICLEI works with these local governments through international campaigns and programs. ICLEI provides technical consulting, training, and information services to build capacity, share knowledge, and support local government in the implementation of sustainable development at the local level.

Local Government Operations Protocol (LGOP): A standard methodology adopted in 2008 by the California Air Resources Board (ARB) for quantifying greenhouse gas emissions from local government operations. After its adoption and absent any further specific methodology for quantifying community-wide greenhouse gas emissions, in 2010 the LGOP was being used in a slightly modified version (e.g., substituting a standardized formula for government operations fleet emissions with a standardized formula for transportation on local roads and State highways) to quantify community-wide greenhouse gas emissions.

Project, discretionary: A project review which includes subjective judgment of the project's merits (e.g., the review of a variance or use permit to determine if required quantitative and qualitative findings can be made).

Project, ministerial: A project reviewed according to established procedures and/or codes without exercising any individual judgment (e.g., the review of a building permit to ensure compliance with building codes).

WOODSIDE'S GREENHOUSE GAS EMISSIONS

Greenhouse gas emissions are gases that trap heat in the atmosphere. Some greenhouse gases, such as carbon dioxide, occur naturally and are emitted to the atmosphere through natural processes and human activities. Other greenhouse gases, such as fluorinated gases, are created and emitted solely through human activities. The principal greenhouse gases that enter the atmosphere because of human activities are: carbon dioxide, methane, nitrous oxide and fluorinated gases. The various greenhouse gases can be totaled by expressing each emission as a Carbon Dioxide Equivalent (CO2e). This measure is used to equate greenhouse gases with CO2. Woodside currently has three sets of greenhouse gas emissions data: 2005 baseline for Town government operations, 2005 baseline for the community as a whole, and 2020/2035 projections for the community as a whole.

GREENHOUSE GAS EMISSIONS - TOWN GOVERNMENT OPERATIONS (2005 BASELINE)

In April 8, 2009, the Town Council committed to participate in the Cities for Climate Protection Campaign. The Campaign includes the following five milestones:

1. Conduct a greenhouse gas emissions inventory and current forecast to determine the source and quantity of greenhouse gas emissions;
2. Establish a greenhouse gas emissions reduction target;
3. Develop an action plan with both existing and future actions which, when implemented, will meet the local greenhouse gas reduction target;
4. Implement the action plan; and,
5. Monitor the review progress.

The Town Council authorized an agreement to work with ICLEI to prepare a Government Operations Greenhouse Gas Emissions Inventory as part of a coordinated effort with other San Mateo, Santa Clara, and Santa Cruz County jurisdictions.

The ICLEI report, entitled "Town of Woodside – 2005 Government Operations Emissions by Sector Greenhouse Gas Emissions Inventory", estimates the greenhouse gas emissions, expressed in metric tons of carbon dioxide equivalent (CO2e) 1, which result from the conduct of Town business. The emission sectors included in this report are: buildings and facilities, vehicle fleet, public lighting, water and sewer transport, government generated solid waste, and employee commute (see Table S.1). Fifty percent of Town Government operations emissions result from the employee commute, 24% from the vehicle fleet, and 22% from buildings and facilities.

Based on these results, ICLEI suggested that the Town consider the following strategies for reducing greenhouse gas emissions:

- Offer telecommuting and/or improved transportation options, such as carpooling, to Town employees;
- Conduct an energy audit of Town buildings and improve energy efficiency where possible; and,
- Continue to convert the vehicle fleet to more fuel-efficient vehicles on a replacement basis.

Table S1: Woodside Government Operations Emissions by Sector, 2005 Baseline

Sector	Greenhouse Gas Emissions[1]	Gas Emissions (% of Total)
Buildings and Facilities	45	22%
Vehicle Fleet	50	24%
Public Lighting	1	1%
Water/Sewer Transport	4	2%
Government Generated Solid Waste	2	1%
Employee Commute	104	50%
Total	206	100%

[1]metric tons $C0_2e$

Source: ICLEI report "Town of Woodside - 2005 Government Operations Emissions by Sector Greenhouse Gas Emissions Inventory.
Note: An explanation of the methodology for preparing this greenhouse gas emissions inventory is located in Section Two: Methodology and Appendix A: Local Government Operations Protocol of the above referenced ICLEI report. In summary, the inventory follows standard methodology outlined in the Local Government Operations Protocol (LGOP), which was adopted in 2008 by the California Air Resources Board (ARB) and established a national standard for quantifying greenhouse gas emissions from local government operations.

GREENHOUSE GAS EMISSIONS - COMMUNITY-WIDE (2005 BASELINE)

In October 2010, the County of San Mateo County RecycleWorks program prepared an estimation of community-wide greenhouse gas emissions for Woodside. RecycleWorks estimated the 2005 greenhouse gas as 120,063 metric tons of carbon dioxide equivalent (CO2e) for the baseline calendar year of 2005. The emission sectors included in this report are: residential energy use, community energy use, transportation on local roads, transportation on State highways, water disposal, average daily cover of waste, and transportation off-roads (See Table S.2). Sixty five percent of community-wide emissions result from transportation on State highways, 19% from residential energy use, and 11% from transportation on local roads.

Table S2: Woodside Community Wide Operations Emissions by Sector, 2005 Baseline

Sector	Greenhouse Gas Emissions[1]	Gas Emissions (% of Total)
Commercial Energy Use	3,063	2.6%
Residential Energy Use	22,663	18.9%
Transportation - Local Roads	13,119	10.9%
Transportation - Off Roads	1,855	1.5%
Transportation - State Highways	78,113	65.1%
Waste - ADC	144	0.1%
Waste - Disposal	1,106	0.9%
Total	120,063	100%

[1]metric tons $C0_2e$

Source: 2010 San Mateo County Recycle works Woodside Greenhouse Gas Emissions Inventory.

An explanation of the methodology for preparing this greenhouse gas emissions inventory is located in Section Two: Emission Inventory Methodology of the above referenced RecycleWorks report. In summary, the inventory follows standard methodology developed for the Local Government Operations Protocol (LGOP), with modifiers (e.g., substituting a standardized formula for government operations fleet emissions with a standardized formula for transportation on local roads and state highways) to quantify community-wide greenhouse gas emissions.

As evidenced by Table S2, 2005 Woodside Community-Wide Emissions by Sector, it is estimated that the greatest contributor (65%) to green house gas emissions in Town is transportation on State highways. Given the small size of the Town, its government, and available resources, reducing vehicular trips on State highways that run through Town are largely beyond local control. Participation in regional solutions to transportation issues is one way to be involved. The second greatest contributor (19%) to green house gas emissions in Town is residential energy use which may be more directly influenced locally by regulation, such as required green building standards.

Per capita emissions can be a useful metric for measuring progress in reducing greenhouse gases (GHG) and for comparing one community's emissions with neighboring cities and against regional and national averages. Comparisons should be viewed more as rough comparisons, however, since it can be difficult to produce and obtain directly comparable per capita emissions numbers. Each community has its own particular proximity to work and commercial areas, housing densities, as well as availability of public transportation which can result in wide variation in per capita emissions.

As detailed in Table S.2, dividing the total community-wide GHG emissions by population yields a result of approximately 21.9 metric tons of CO2e per capita. It should be noted that this number is not the same as the carbon footprint of the average individual living in the Town, as the per capita number also includes emissions from activities by people who work or drive through Town, not only those living in the Town.

Table S3: Woodside Community Wide Per Capita Emissions, 2005 Baseline

Estimated 2005 Population[1]	5,476
Community Greenhouse Gas Emissions[2]	120,063
Per Capita Greenhouse Gas Emissions[2]	13,119

[1]State of California, Department of Finance, E-4 Population Estimates for Cities, Counties, and the State, 2001-2010, with 2000 Benchmark, Sacramento, California, October 2010. [2]metric tons $C0_2e$

GREENHOUSE GAS EMISSIONS PROJECTIONS (2020/2035)

In October 2011, The Planning Center, PG&E, in conformance with BAAQMD requirements, prepared GHG calculations for existing land uses in the Town in the CEQA baseline year (2011), land uses in the Town at 2020, and land uses in the Town at buildout of General Plan 2012 (2035). The results are shown in Table S4. Under the business-as-usual (BAU) scenario, the maximum development allowed under buildout of General Plan 2012 would result in annual emission that would exceed BAAQMD's 6.6 MTons per service population threshold. Because the GHG emissions associated with General Plan 2012 would exceed BAAQMD's efficiency matrix, this plan includes a GHG reduction strategy for the Town.

Statewide GHG emissions reduction measures that are being implemented over the next 10 years (such as, changes in fuel mix, and energy source portfolios, and green building requirements), will reduce the Town's GHG emissions. Table S5 is the 2020 and 2035 GHG emissions in the Town with federal, State, and local GHG reduction strategies in place. As shown in the table, the Town is projected to have no growth in non-residential land uses and only a small amount of residential growth, resulting in a nominal increase in GHG emissions growth in the Town from 2010 to 2020. BAAQMD requires municipalities to identify a GHG reduction target that is in line with the GHG reduction goals of AB 32, which are:

- 1990 levels by 2020,
- 15 percent lower than existing (2005 – 2008) levels by 2020, or,
- 6.6 MTons per service population.

The Town, through its Climate Action Plan (see S2.5) would be required to establish a GHG reduction target that is consistent with one of the three BAAQMD targets outlined above. For the purposes of this GHG assessment, Table S5 compares communitywide GHG emissions in 2020 based on a target consistent with BAAQMD's recommendations of 15 percent below existing levels. The target identified in Table S5 is based on existing levels of GHG emissions shown in Table S4. As a result, federal and State-wide GHG emissions reduction measures currently being implemented have the potential to reduce GHG emission within the Town almost to the GHG reduction target of 15 percent lower than current (2011) levels (within 94 percent of the target). A Town GHG reduction strategy identifying local communitywide GHG reduction measures that ensure that emissions reductions in the Town continue on a downward trend to achieve the Town's GHG reduction target and meet at least 590 MTons of additional reductions is, however, included in this Plan to ensure consistency with the GHG reduction goals of AB 32 (preparation and implementation of the Climate Action Plan).

Table S4: Woodside GHG Emissions Inventory (Business-as-Usual Scenario)

GHG Sector	Existing Metric Tons (MTons)	BAU-2020 Metric Tons (MTons)	BAU-2035 Metric Tons (MTons)
Transportation[1]	40,020	40,590	41,980
Residential[2]	23,670	24,440	25,590
Non-Residential[2]	3,370	3,390	3,430
Water/Wastewater[3]	1,970	2,020	2,080
Waste Disposal[4]	2,130	2,110	2,300
Other Emissions[5]	2,010	2,030	2,060
Total GHG Emissions	**73,170**	**74,580**	**77,440**
GHG Emissions/Service Population (SP)	9.4 MTons/SP	9.3 MTons/SP	9.3 MTons/SP
Exceeds BAAQMD Threshold	Yes	Yes	Yes
15 Percent Reduction from Existing[6]	62,190	62,190	62,190
Total Reductions Needed	10,980	12,390	15,250
Service Population			
Residents	5,300	5,480	5,740
Employment	2,510	2,530	2,560
Total Service Population	**7,810**	**8,010**	**8,300**

Source:

1 Vehicle miles traveled (VMT) provided by Hexagon and calculated using EMFAC2007. The Regional Transportation Advisory Committee (RTAC), which was established to identify targets under SB 375, considered only 50 percent of the VMT for trips that originate in one city and end in other (and vice-versa). For the purpose of this analysis, the 50 percent of the trip length was assumed for trips that either originate or end in the Town of Woodside but travel outside of the Town boundaries.

2 Residential and non-residential energy provided by PG&E for the 2005 County of San Mateo Recycle Works and City and County Association of Governments (C/CAG) Community-Scale GHG Emissions Inventory (ICLEI Inventory).

3 Based on existing per capita water use factors provided in the California Water Service Company's 2010 Urban Water Management Plan – Bear Gulch District and modeled using emission factors provided within CARB's Local Government Operations Protocol (LGOP).

4 Waste disposal based on municipal solid waste and alternative daily cover disposal in 2010 as reported by CalRecycle and modeled using CARB's Landfill Emissions Tool Version 1.2 (excluding biogenic CO2).

5 Other emissions include an estimate of landscaping, construction, and commercial equipment use based on Countywide data contained within CARB's OFFROAD2007. The Town of Woodside does not have agricultural crop/orchard production; however, several homeowners own horses. GHG emissions from equestrian uses are excluded due to a lack of available information for the purpose of the General Plan GHG emissions inventory.

6 Existing (2011-2010 baseline) emissions are similar to 2005 levels because there has been little to no growth within Woodside since 2005. The US Census reports a decrease in population from 2000 to 2010 (approximately 5,300 people in 2010 and 5,350 in 2000).

Table S5: Woodside GHG Emissions Inventory (Reduction Scenario)

GHG Sector	2020 Metric Tons (MTons)	2035 Metric Tons (MTons)
Transportation[1]	31,720	28,750
Residential[2]	22,320	25,300
Non-Residential[2]	2,860	2,900
Water/Wastewater[3]	1,460	1,520
Waste Disposal[4]	2,060	1,970
Other Emissions[5]	1,820	1,850
Total GHG Emissions	**62,240**	**60,290**
GHG Emissions/Service Population (SP)	7.8 MTons/SP	7.3 MTons/SP
BAAQMD Threshold	6.6 MTons/SP	6.6 MTons/SP
Exceeds BAAQMD Threshold	Yes	Yes
15 Percent Reduction from Existing	62,190	62,190
Total Reductions Needed for 2020 Target ("Gap")	50 MTons	0 – Exceeds Target by 1,900 MTons
Service Population		
Residents	5,480	5,740
Employment	2,530	2,560
Total Service Population	**8,010**	**8,300**

Source:

[1] Includes emissions reductions from the Low Carbon Fuel Standard (LCFS) and Pavley fuel efficiency standards using EMFAC2007 Pavley I + LCFS Postprocessor. Note: EMFAC2007 includes a larger turn-over of older, inefficient, vehicle fleets in 2035 than 2020. Therefore, even though there is an increase in VMT, GHG reductions are larger in the 2035 scenario.

[2] Includes improvements in energy efficiency from the 2008 Building and Energy Efficiency Standards (Title 24) and Title 25 Appliance Energy Standards for new units. Includes reductions in emissions from energy as a result of the state's 33 percent Renewable Portfolio Standard for existing and new units.

[3] Based on 2020 per capita water use factors that include reductions in urban per capita water demand under Senate Bill No. 7, as outlined in the State's 20X2020 Water Conservation Plan, provided in the California Water Service Company's 2010 Urban Water Management Plan – Bear Gulch District. Indirect emissions from water use also take into consideration expansion of PG&E's renewable portfolio.

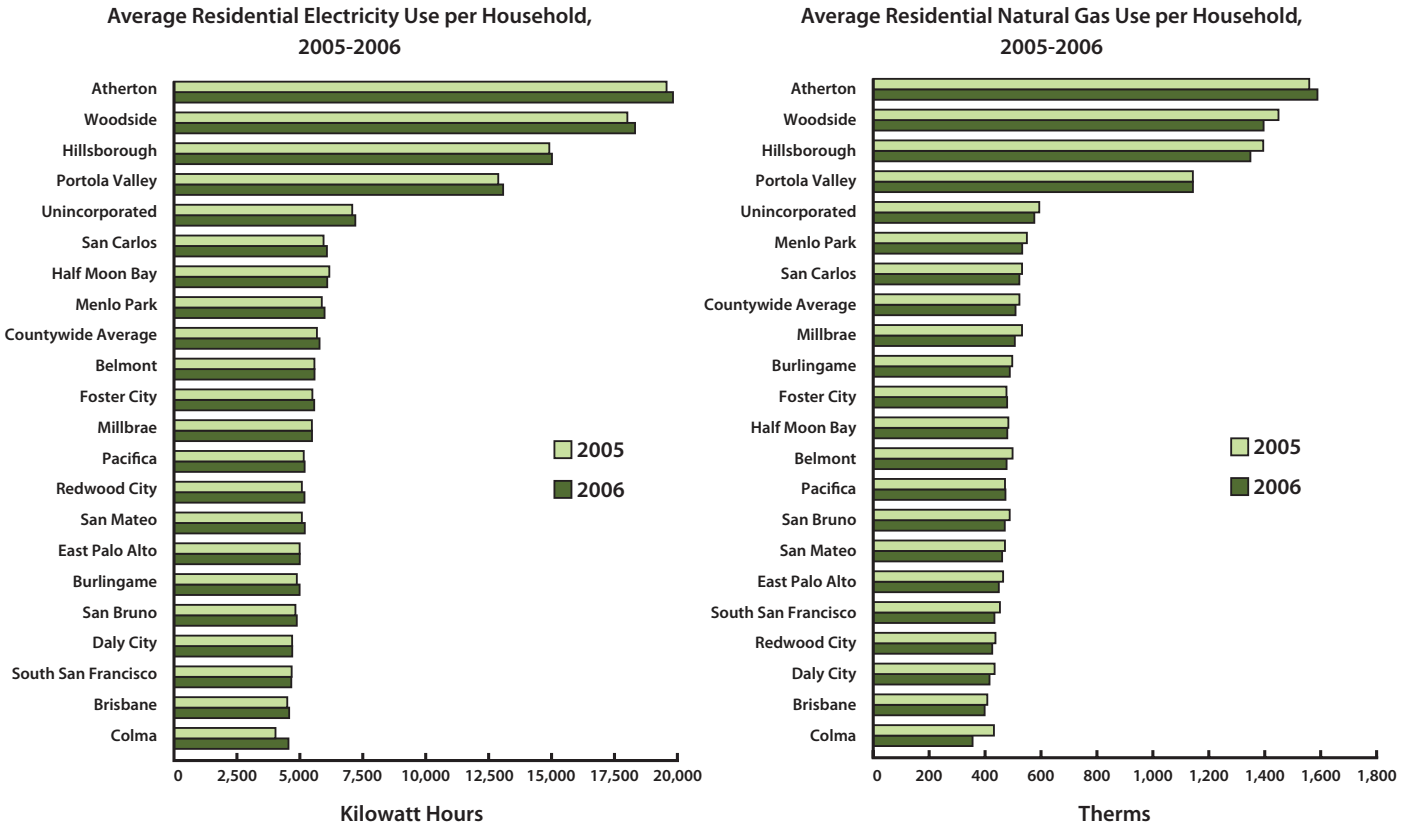
[4] Assumes reduction in waste disposal as a result of trends from increased efforts to reduce, reuse, and recycle in the Town of Woodside.

[5] Includes reductions in off-road emissions from the LCFS.

RESIDENTIAL ENERGY USE

Given that Woodside is predominantly a residential community, it is helpful to compare residential energy use to those of surrounding communities. Sustainable San Mateo County has published an annual, county-wide report card on sustainability entitled "Indicators for a Sustainable San Mateo County", since 1997. The following figures and tables illustrate the Town's use of electricity and natural gas for 2005 and 2006, and compare these usages with other San Mateo County municipalities:

Figure S1: Indicators for a Sustainable San Mateo County, Twelfth Annual Report Card, April 2008



For 2005 and 2006, Woodside ranked the second highest in the County of San Mateo for average electricity and natural gas use per household. Factors which contribute to Woodside's high electric and natural gas usage include large residence sizes and the accompanying indoor and outdoor lighting, and heating and cooling needs; and the development of additional site amenities, such as guest houses, pool houses, pools, water features, and other accessory structures and uses.

OTHER PROVISIONS OF THE GENERAL PLAN THAT SUPPORT SUSTAINABILITY

Sustainability is an integral theme that runs through other Elements of the General Plan and its two Area Plans, as well as the Town's two Specific Plans. It has been a fundamental value of the Town since incorporation in 1956. Sustainability is addressed in the following ways in the other Elements:

LAND USE AND COMMUNITY DESIGN ELEMENT

The Land Use and Community Design Element provides for the grouping of community and commercial activities in two central locations and along major routes of travel. This results in reducing trip generation, air pollution, and consumption of energy.

HISTORIC PRESERVATION ELEMENT

The Historic Preservation Element is intended to help preserve the rich history of the Town. The retention of historic structures preserves the "embodied energy" of a structure (materials and labor) and site (mature landscaping).

CIRCULATION ELEMENT

The street system is designed to provide efficient access to the most frequently visited locations in Town, accommodating multiple forms of transportation(motor vehicles, bicycles, horses, and pedestrians). It also seeks to reduce energy consumption and air pollution.

OPEN SPACE ELEMENT

The Open Space Element calls for the preservation of major parts of the Town in a natural state. This contributes to a reduction in greenhouse gas emissions through carbon absorption by plants.

CONSERVATION ELEMENT

The Conservation Element provides for the protection of the natural resources of the Town including: water in streams, water bodies and wetlands; native vegetation; soils and geology; and wildlife. This Element also addresses preservation of the natural environment when new development is considered.

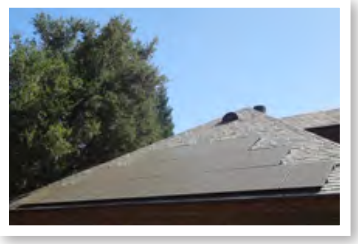
PUBLIC UTILITIES ELEMENT

The Public Utilities Element calls for access to utility services of a quality and quantity which will protect health and safety, installed in a manner that preserves the Town's rural character. It recognizes and incentivizes energy efficient alternative utility systems and encourages resource conservation.

Town Center provides convienient commercial services along major travel routes.

Historic building reuse preserves existing buildings.

Multiple forms of transportation help reduce auto trips.



Solar panels provide alternative energy sources.

HOUSING ELEMENT

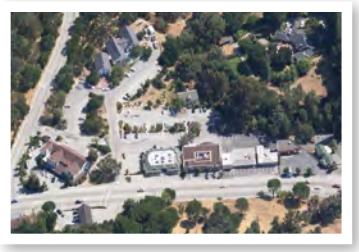
The Housing Element seeks to provide affordable housing. Related policies can lead to a reduction of traffic and consequent pollution when residents are employed locally.

SKYLONDA AREA PLAN

The Skylonda Center Plan is a guide for the expansion and replacement of existing structures and facilities, and the establishment of new structures and facilities needed to provide reasonable and accustomed services to local residents. The Skylonda Center is the sole commercial area immediately accessible to Woodside residents along the Skyline corridor. Encouraging local-serving businesses which meet the reoccurring needs of residents could reduce the needed number of trips on Highway 84.

TOWN CENTER AREA PLAN

The Town Center Plan seeks to combine civic functions along with commercial uses, including retail, restaurants, and office space. The grouping of these facilities, and the goal to encourage local-serving businesses which meet the reoccurring needs of residents, contributes to residents being able to accomplish several missions on a single trip combining shopping with other pleasure and business trips.



In the Town Center commercial activities are grouped together to reduce automobile trips.

GOALS, POLICIES, AND STRATEGIES

The goal of this Element is to address sustainability on a programmatic level. It seeks to identify a broad range of policies and strategies that the Town can promote in order to reduce or control consumption, and promote the reuse of resources. Local action could include green building requirements, water conservation programs, waste management and recycling programs, and community education aimed at vehicle trip reduction and lowering energy consumption. Policies and strategies are based on current knowledge and should be revisited as new information and technology becomes available.

GOAL S1

Conserve resources.

POLICY S1.1 – PROTECT AND CONSERVE WATER RESOURCES

Protect and conserve water resources in the Town, including imported water.

Strategies:

a. Water conservation ordinances

Prepare indoor and outdoor water conservation ordinances to reduce the consumption of water for domestic and landscape purposes. Landscape water reduction measures include: encouraging the replacement of lawns with drought-tolerant, native plants; installation of water-efficient irrigation systems; and hydro-zone planting areas to conserve water.

b. Encourage recycled water

Encourage the use of recycled water through collection of rainwater and reuse graywater. Include discussion of these considerations in staff reports for discretionary projects.

c. Residential Design Guidelines

Update the Residential Design Guidelines to reduce domestic and landscape water usage, and encourage graywater systems.

d. Cooperate with local utilities

Work with local utilities to take advantage of programs that assist in conserving water.

POLICY S1.2 – ENCOURAGE AND SUPPORT RENEWABLE CLEAN ENERGY

Conserve natural resources by encouraging and supporting renewable clean energy.

Strategies:

a. Promote green energy

Periodically review and update Town regulations to ensure compliance with State and federal law related to sustainability, such as California Solar Rights Act and Shade Control Act. Consider removing barriers to new technologies which are environmentally beneficial, while taking into account other environmental impacts such as noise, aesthetics, and the natural environment.

b. Clean energy incentives

Consider incentives for solar, water harvesting systems, green building through reduced permitting fees or expedited processing.

POLICY S1.3 – ENCOURAGE RECYCLING AND WASTE MANAGEMENT

Reduce the volume of the waste stream by encouraging recycling and composting.

Strategies:

a. Recycling

Support and expand recycling programs.

b. Waste Composting

Encourage appropriate waste composting programs for organic materials and livestock waste.

GOAL S2

Reduce greenhouse gas emissions.

Reduce carbon emission to 1990 levels by the year 2020 and to 80% below 1990 levels by 2050 as mandated by Assembly Bill 32. Encourage the use of renewable resources and minimize the use of nonrenewable resources, and encourage the principles of "green building" in building projects.

POLICY S2.1 – ENCOURAGE INCREASED BUILDING ENERGY EFFICIENCY

Encourage increased energy efficiency in both existing and new building stock.

Strategies:

a. Green building requirements

Consider revisions to the Municipal Code to achieve a specified level of sustainability based on an accepted "green" rating system, with the green building requirements increasing with project size.

b. Energy efficient features and practices

Encourage the use of energy efficient features and practices, and the use of "green building" design standards.

c. Local source materials

Encourage the use of materials produced or manufactured within 500 miles of the project site.

d. Review and reporting

Continue to discuss project considerations for sustainability in staff reports for discretionary projects. Consider developing commensurate procedures to ensure all projects (i.e., ministerial and discretionary) that come before the Town are reviewed with respect to sustainability, and make recommendations to help achieve sustainability strategies.

e. Model projects

Encourage residents who have remodeled their homes to make them more energy efficient to make their homes available at times for the education of other residents, or to provide data on their homes that can be posted on, or linked by, the Town website.

POLICY S2.2 – ENCOURAGE THE REUSE OF BUILDINGS AND BUILDING MATERIALS

Encourage the reuse of buildings and building materials to retain embodied energy and reduce the use of new materials and their required transport.

Strategies:

a. Reuse of buildings

Encourage residents to consider remodeling instead of demolishing a home in order to replace it with a new building. Suggest a cost-benefit analysis to aid in deciding between a complete tear down and a remodel.

b. Reuse of materials

Encourage persons considering demolition of their homes for replacement to reuse the building materials by employing methods such as deconstruction and reuse; or the use of recycled materials.

c. Recycled/reused building materials

Encourage the use of recycled/reused materials.

POLICY S2.3 – MAINTAIN CARBON ABSORPTION RESOURCES

Maintain open space which serves as carbon absorption areas.

Strategies:

a. Maintain, preserve, and enhance open space

Support local programs to encourage the protection of the natural environment by acquiring open spaces and securing conservation easements.

POLICY S2.4 – REDUCE VEHICLE TRIPS

Provide for transportation needs by methods that reduce greenhouse gas emissions.

Strategies:

a. Local-serving commercial

Encourage convenience retail and personal service uses in the Town Center which meet the reoccurring needs of residents to help minimize the number and length of vehicular trips.

b. Promote alternative transportation

Provide multi-modal pathways, consistent with the rural character of the Town, within a one-half mile radius of the Town Center and the Woodside Elementary School to encourage biking and walking.

c. Alternative vehicles

Encourage the use of alternative vehicles with higher fuel efficiency (e.g., hybrid vehicles).

d. Reduce school-related vehicular trips

Analyze options to reduce school-related vehicular traffic and resulting greenhouse gas emissions. Involve the school district and parents in this program.

POLICY S2.5 – REDUCE CARBON FOOTPRINT OF ALL TOWN ACTIVITIES

Strategies:

The Town of Woodside shall prepare a Climate Action Plan (CAP) within 18 months after adopting the General Plan. The goal of the Climate Action Plan shall be to reduce GHG emissions from all activities within the Town boundaries to support the State's efforts under AB 32 and to mitigate the Town's cumulative contribution to the impact of climate change. The Climate Action Plan shall include the following:

a. Emission Inventories

The Town shall establish GHG emissions inventories for "Existing" Year (2005, 2006, 2007, or 2008) and 2020 associated with:

- Transportation
- Residential (purchased energy and natural gas)
- Nonresidential (purchased energy and natural gas)
- Water/Wastewater
- Waste Disposal
- Other Emissions (e.g., off-road equipment use and agricultural), to the extent information is available

The emission inventory shall be conducted using methods approved by, or consistent with guidance from, the Bay Area Air Quality Management District (BAAQMD) and the California Air Resources Board (CARB). The Town shall update inventories every 3 years or as determined by BAAQMD standards to incorporate improved methods, better data, and more accurate tools and methods, and to assess progress.

b. Reduction Target

The Town shall establish a GHG reduction target that achieves a 15 percent reduction of GHG emissions from Existing conditions by 2020.

c. Reduction Measures

The CAP shall include specific measures to achieve the GHG emissions reduction targets. If the Town is not on-schedule to achieve the GHG reduction targets, additional measures shall be implemented, as identified in the CAP.

The CAP shall quantify the approximate greenhouse gas emissions reductions of each measure, as feasible, and measures shall be enforceable. Measures listed below, along with others, shall be considered during the development of the CAP:

Transportation:

- Work with appropriate agencies to create an interconnected transportation system that allows a shift in travel from private passenger vehicles to alternative modes, including public transit, ride sharing, car-sharing, bicycling and walking.

Energy (Residential and Non-Residential):

- Require that new buildings be designed be energy efficient by siting buildings to take advantage of shade, prevailing winds, landscaping, and sun screening to reduce energy required for cooling.
- Require cool roofs and cool pavement to be incorporated into the site/building design for new development where appropriate.
- Decrease heat gain from pavement and other hard surfaces.
- Consider allowing increased height limits and building square footage, and/or flexibility in other standards for projects that incorporate energy efficient green building practices that achieve a 15 percent greater energy efficiency than existing code.
- Identify and remove regulatory or procedural barriers to implementing green building practices within Woodside, such as updating codes, guidelines, and zoning, and ensure that all plan review and building inspection staff are trained in green building materials, practices, and techniques.
- Support the use of green building practices by providing information, marketing, training, and technical assistance about green building practices.
- Adopt energy efficiency performance standards for buildings designed to achieve a greater reduction in energy and water use than currently required by State law, including:
  - Standards for the installation of "cool roofs".
  - Standards for improved overall efficiency of lighting systems.
  - Requirements for the use of Energy Star appliances and fixtures in discretionary new development.
- Encourage the performance of energy audits for residential and commercial buildings prior to completion of sale, and that audit results and information about opportunities for energy efficiency improvements are presented to the buyer.
- Organize workshops on steps to increase energy efficiency in the home or business, such as weatherizing the home or building envelope, installing smart lighting systems, and how to conduct a self-audit for energy use and efficiency.

Water/Wastewater:

- Require all new landscaping irrigation systems installed within the Town to be automated, high-efficiency irrigation systems to reduce water use and require use of bubbler irrigation; low-angle, low-flow spray heads; or moisture sensors. Install or replace vegetation with drought-tolerant, low-maintenance native species or edible landscaping that can also provide shade and reduce heat-island effects.
- Reduce per capita water consumption consistent with State law by 2020.

- Ensure that building standards and permit approval processes promote and support water conservation, by:
- Establishing building design guidelines and criteria to promote water-efficient building design, including minimizing the amount of non-roof impervious surfaces around the building(s).
- Establishing menus and checklists for developers and contractors to ensure water-efficient infrastructure and technology are used in new construction, including low-flow toilets and shower heads, moisture-sensing irrigation, and other such advances.

Waste Disposal:

- Continue to require that new development projects in Woodside that require demolition prepare a demolition plan to reduce waste by recycling and/or salvaging a nonhazardous construction and demolition debris.
- Organize workshops on waste reduction activities for the home or business, such as backyard composting, or office paper recycling.
- Continue to schedule recycling drop-off events and neighborhood chipping/mulching days.
- Implement enhanced programs to divert solid waste from landfill operations, by:
  - Establishing a diversion target which meets or exceeds AB 939 requirements.
  - Promoting and expanding recycling programs, purchasing policies, and employee education to reduce the amount of waste produced.

POLICY S2.6 – REDUCE THE CARBON FOOTPRINT OF GOVERNMENT OPERATIONS

Strategies:

a. Government operations

Implement the strategies for reducing greenhouse gas emissions resulting from government operations as suggested by ICLEI:

1. Offer telecommuting and/or improved transportation options, such as carpooling, to Town employees;
2. Conduct an energy audit of Town buildings, and improve energy efficiency where possible; and,
3. Continue to convert the vehicle fleet to more fuel-efficient vehicles on a replacement basis.

POLICY S2.7 – MAINTAIN GREENHOUSE GAS EMISSIONS DATA

Maintain data which tracks greenhouse gas emissions.

Strategies:

a. Carbon footprint data collection

Quantify the Town's carbon footprint periodically, and assess, identify, and implement reduction strategies.

b. Green building data collection

Establish baseline data on greenhouse gas emissions and energy use specific to buildings, and periodically update with feedback into a green building program.

GOAL S3

Encourage Community Education.

Encourage and provide community education on sustainability principles and applications, and consider sustainability in all Town decision-making.

POLICY S3.1 – ENCOURAGE COMMUNITY PROGRAMS AND EDUCATIONAL OPPORTUNITIES WHICH PROMOTE SUSTAINABILITY

Encourage broad community participation in programs which promote sustainability, and provide the information people need to live in a sustainable way.

Strategies:

a. Community events

Organize and implement community events focused on sustainability (e.g., Environment Fest).

b. Green home tours

Encourage owners of "green homes" to open their properties for green tours.

c. Town publications

Add a section addressing sustainability to regularly distributed Town publications, such as the Town Newsletter and the Town website.

d. Town website

Use the Town website as a place for residents to convey information on sustainability to the Town and other residents.

e. Town and library displays and links

Display, or provide links to, information on sustainability at Town Hall and the library.

f. Partner with energy auditors

Consider partnering with energy audits to provide energy auditors and energy audit programs to Town residents at little or no cost, as feasible.

POLICY S3.2 – ENCOURAGE SUSTAINABLE TOWN PRACTICES

Lead by example by developing and maintaining sustainable Town practices.

Strategies:

a. Town buildings and practices

Provide models of sustainability in Town buildings and practices for purposes of being responsible stewards of the environment, demonstrating leadership to the community, and providing an educational opportunity for the Town's citizens.

b. Town procurement policy

Develop and maintain a procurement policy that encourages sustainability.

c. Community participation in policy-making

Involve the community in shaping sustainability policies and in determining which measures are essential, which are desirable, and which are possible to further sustainability in Town. Include reviews of sustainability policies and strategies during the preparation of the Town budget and work plan, General Plan reviews and updates, and municipal code revisions and updates.

d. Partner with outside agencies, vendors, and educators

Partner with outside agencies, vendors, and educators to cost-effectively increase opportunities for sustainability programs.