Petaluma General Plan 2025

Air Quality – Greenhouse Gas Emissions Section
Revised Draft Environmental Impact Report

STATE CLEARINGHOUSE NO. 2004082065

Prepared for
City of Petaluma

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INTRODUCTION

In September 2006, the City of Petaluma published a Draft Environmental Impact Report (EIR) on their Draft Petaluma General Plan 2025. The Draft EIR was circulated to interested agencies and the public from September 2006 through May 2007, and public hearings were held before the City Planning Commission and Council throughout the nine months. Comments were received on the General Plan and Draft General Plan EIR requesting further assessment of greenhouse gases and their effect on the environment. During this same time, Governor Schwarzenegger signed into legislation Assembly Bill 32, the Global Warming Solutions Act. As a result of the public concern expressed in the comments and the new legislation, the City Council authorized the preparation of a Revised Draft EIR to assess the impacts of Petaluma's proposed General Plan on greenhouse gas emissions and their contribution to global climate change.

The California Environmental Quality Act (CEQA) Guidelines provide that when a Lead Agency prepares a revised Draft EIR, it need only recirculate the portions of the EIR that have been modified (Section 15088.5(c)). No issue, besides greenhouse gas emissions, has been raised which requires recirculation of the Draft EIR, as would be required by the CEQA Guidelines under Section 15088.5(a). Therefore, this revised Draft EIR includes only an evaluation of the proposed General Plan's impacts upon greenhouse gas emissions.
No current CEQA regulation, statute or judicial decision outlines how CEQA analysis of a project's greenhouse gas emissions impact should be performed. Senate Bill 97, adopted in August, 2007, requires the Office of Planning and Research to develop CEQA Guidelines for the mitigation of greenhouse gas emissions or the effects of greenhouse gas emissions by July 1, 2009 which must be certified and adopted by January 1, 2010. It is likely that these prospective Guidelines will provide needed guidance on significance criteria and reconciling AB 32 rollback provisions with CEQA's mandate that project EIRs are not required to mitigate existing pre-project conditions. CEQA is only one of many tools being used to approach the greenhouse gas problem, and it is unclear to what extent CEQA documents may rely on other efforts, such as measures adopted to address stationary emission sources pursuant to AB 32.

The City has undertaken a strenuous effort to quantify and provide the best available information to its decision makers and the public about the impacts of General Plan 2025 policies on global warming as well as note the uncertain nature both of the regulatory climate and the ability to measure effects within Petaluma of emissions and reduction measures that emanate from or rely on larger regional, state, federal and global contexts and programs. Specific impacts of global climate change itself on Petaluma are incapable of determination with any degree of certainty on the basis of available information. The analysis in this EIR acknowledges the unresolved status of many of the issues and regulatory and voluntary efforts to combat greenhouse gas impacts. However, this analysis represents the result of the City's best efforts to reconcile existing law, available information and anticipated impacts of statewide programs in the context of statewide reduction standards, General Plan programs and policies, adopted City "targets" for greenhouse gas reductions and the City's wish to remain a leader in confronting the greenhouse gas issue.

As described in more detail in the Regulatory Setting section below, the policies and science surrounding greenhouse gas emissions are changing rapidly. New regulations, new initiatives, new data, and new solutions are announced daily during this period of time when government and private interests alike are turning their attention to solving this problem. While this Revised Draft EIR is based upon the best data and most recent policies and regulations available in November 2007, it is not possible to foresee all of the actions which the City may be required to take relative to greenhouse gases through 2025.

SUMMARY

The analysis compares 2005 greenhouse gas emissions (baseline for the General Plan) to 2025 emissions (buildout of the General Plan) to determine if implementation of the General Plan would make a considerable contribution to the cumulative effects of greenhouse gases. Taking into account emissions savings from Programs identified in the Climate Change section of the General Plan, as well as State reduction measures that apply to the local level, this analysis finds that implementation of the General Plan would decrease greenhouse gas emissions relative to 2005 levels. However, because not all the State reduction measures have been formally adopted at this time, there is a substantial level of uncertainty about their effectiveness and how they will apply to local governments. It cannot be determined to a reasonable degree of certainty that buildout under the General Plan will not result in a cumulatively considerable incremental contribution to the significant cumulative impact of global climate change. Therefore, cumulative global climate change impacts could remain significant and unavoidable.

3.10 AIR QUALITY – GREENHOUSE GAS EMISSIONS

This section provides additions to the Environmental Setting, Regulatory Setting, and Impact Analysis, including Significance Criteria, Methodology & Assumptions, and Impacts and Mitigation Measures, of section 3.10 Air Quality. Because greenhouse gas emissions act on a large scale, global basis, the additions contained herein relate entirely to cumulative impacts. Therefore, what is being evaluated is whether implementation of the General Plan would provide a considerable contribution to a cumulative impact.

Environmental Setting

Climate change is the shift of "average weather" patterns observed on earth, and can be measured by such variables as temperature, wind patterns, storms and precipitation. The temperature on earth is regulated by the "greenhouse effect," where naturally occurring gases, such as carbon dioxide, absorb infrared radiation emitted by the Earth's surface and radiate it back to the surface, thus trapping heat within the atmosphere (IPCC, 2001a). Changing the atmospheric abundance or properties of these gases can lead to a warming or cooling of the climate system. Without this naturally occurring greenhouse effect the Earth's temperature would be about 61 degrees Fahrenheit (34 degrees Centigrade) cooler (CAT, 2006).

Human activities result in emission of four principal greenhouse gases: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O) and halocarbons (fluorine, chlorine and bromine).

Carbon Dioxide (CO_2): CO_2 is an odorless, colorless gas. Natural sources include decomposition of dead organic matter, respiration of plants and animals, evaporation from oceans and volcanic outgassing. Human activities contribute to CO_2 emissions from the burning of fossil fuels for transportation, building heating and cooling, and the manufacturing of goods. In addition deforestation releases CO_2 and reduces its uptake by plants (IPCC, 2007b).

Methane (CH_4): CH_4, a colorless, odorless gas, is the principal component of natural gas. CH_4 is released naturally through the anaerobic decay of organic matter such as the natural processes that occur in wetlands. Human activities contributing to CH_4 include agricultural activities and landfills.

Nitrous Oxide (N_2O): N_2O, commonly known as laughing gas, is a colorless gas with a slightly sweet order. N_2O is released through natural processes in the soil and oceans. Human activities contribute to N_2O emissions through the use of fertilizers and the burning of fossil fuels.

Halocarbons: Halocarbon compounds are chemicals in which one or more carbon atoms are linked by covalent bonds with one or more halogen atoms (fluorine, chlorine, bromine or iodine). Halocarbon gas concentrations are primarily due to human activities.

Halocarbons are best known as gasses that deplete the ozone layer; however many are also powerful greenhouse gases. Under the Montreal Protocol of 1987, emissions of halocarbons are tightly controlled and concentrations of many dual ozone depleting and global warming inducing gases are now decreasing (IPCC, 2007b).

For analysis purposes, these gases are expressed in terms of Carbon Dioxide equivalents (CO_2e). This is a common unit for combining emissions of greenhouse gases with different levels of impact on climate change. It is a measure of the impact that each gas has on climate change and is expressed in terms of the potency of carbon dioxide. For carbon dioxide itself, emissions in tons of CO_2 and tons of CO_2e are the same, whereas for nitrous oxide and methane, stronger greenhouse gases, one ton of emissions is equal to 310 tons and 21 tons of CO_2e respectively.

Of all human activities, the burning of fossil fuels is the largest contributor in overall greenhouse gas emissions, releasing CO_2 into the atmosphere (IPCC, 2007b). The resulting increases in greenhouse gas emissions from human activities are leading to higher concentrations and a change in composition of the atmosphere. During the previous 10,000 years up to 1750, CO_2 measured within the range of 280 ppm, give or take 20 ppm. During the industrial era CO_2 rose to 367 ppm in 1999 and 379 ppm in 2005 (ICPP, 2007a).

Many sources and models indicate that temperatures on earth are and will continue to warm at unprecedented levels. The global mean surface temperature has increased by 1.1 degrees Fahrenheit (^oF) since the 19th century (IPCC, 2001b) and the 10 warmest years of the last 100 years all occurred within the last 15 years. The Intergovernmental Panel on Climate Change (IPCC) also reports that the average global temperature is expected to rise by 1.1 to 6.4 ^oC by the end of the 21st century – depending on future greenhouse gas emission scenarios (IPCC 2007a).

In 2004 California produced 492 million metric tons of CO_2e, including emissions associated with imported electricity. The largest source of greenhouse emissions comes from the transportation sector. Combustion of fossil fuel in the transportation sector was the single largest source of California's greenhouse gas emissions in 2004, accounting for 40.7 percent of the total greenhouse gas emissions in the state. This sector was followed by the electrical power section at 22.2 percent (including both in-state and out-of-state sources) and the industrial sector at 20.5 percent. (CEC, 2006)

For 2005 Petaluma's contribution to greenhouse gas emissions were estimated at 610,400 tons of CO_2e (refer to Table 3.10-6). This equates to approximately 0.113% of State emissions. Approximately 39% of emissions were attributable to electrical and natural gas usage in buildings and 59% came from vehicle emissions.

Regulatory Setting

State of California

In 2005, Governor Schwarzenegger issued Executive Order S-02-05, calling for statewide reductions of greenhouse gas emissions to 2000 levels by 2010, 1990 levels by 2020 and to 80 percent below 1990 levels by 2050. The Executive Order also called for the creation of a state "Climate Action Team", which would report to the Governor every two years on both progress toward meeting the targets and effects of climate change on the state.

In the fall of 2006, the Governor signed Assembly Bill 32 (AB32), the "Global Warming Solutions Act of 2006," committing the State of California to reducing greenhouse gas emissions to 1990 levels by 2020. The statute requires the California Air Resources Board (CARB) to track emissions through mandatory reporting, determine what 1990 emissions were, set annual emissions limits that will result in meeting the target, and identify a list of discrete early actions that directly address greenhouse gas emissions, are regulatory, and can be enforced by January 1, 2010.

The initial report of the Climate Action Team was published in March 2006. This report identifies recommended measures that account for a reduction of approximately 68 million metric tons of CO_2-equivalents ($MMTCO_2E$). In June 2007, the CARB approved the *Proposed Early Actions to Mitigate Climate Change in California* (April 20, 2007). In September 2007 CARB published the *Draft Expanded List of Early Action Measures to Reduce Greenhouse Gas Emissions in California*. The two ARB reports combined include 44 measures that are estimated to reduce greenhouse gas emissions by 42 $MMTCO_2E$. Of the 44 measures, nine are identified as "discrete early actions" that are regulated and enforceable by January 1, 2010. The remaining 35 measures are to be initiated by CARB between 2007 and 2012 (CARB, September 2007). To achieve the 2020 target, California must reduce its emissions by 177 $MMTCO_2E$ (CEC, 2006). The remaining reduction needed will come from a Scoping Plan due in late 2008 for public review, and adopted no later than January 1, 2009 by CARB. At this time it is not known what additional measures may be included in the Scoping Plan.

In August 2007, the Senate passed SB 97 requiring the State Office of Planning and Research to prepare and submit guidelines to the State Resources Agency by July 1, 2009 for the analysis and mitigation of greenhouse gas emissions in CEQA documents. The Resources Agency must adopt the regulations by January 1, 2010.

City of Petaluma

On August 5th, 2002, the City Council adopted Resolution 2002-117 committing to participate in the Cities for Climate Protection. By doing so the City committed to:

- Taking a leadership role in promoting public awareness about the causes and impacts of climate change.

- Undertaking the Cities for Climate Protection program's five milestones to reduce greenhouse gas and air pollution emissions throughout the community by:
    1. Conducting a greenhouse gas emissions inventory and forecast to determine the source and quantity of greenhouse gas emissions.
    2. Establishing a greenhouse gas emissions reduction target.
    3. Developing an action plan with both existing and future actions to meet the greenhouse gas reduction target.
    4. Implementing the action plan.
    5. Monitoring to review progress.

In 2005 the City completed steps 1 and 2. On July 18, 2005 the City passed Resolution 2005-118, "Resolution to Establish GHG Emission Reduction Target(s) for the City of Petaluma". Resolution 2005-118 established greenhouse gas emissions reduction targets of 25% below 1990 levels by 2015 for community emissions and 20% below 2000 levels by 2010 for municipal government operations. The City's reduction targets are more stringent than those passed by the State. As shown in the Impact section below, greenhouse gas emissions from the proposed *General Plan 2025* would not be expected to meet the target of 25% below 1990 levels. Emissions in 2025 are estimated to be 562,500 tons per year of CO_2e, including reductions from selected General Plan policies and State measures as they apply within Petaluma. To meet the community target, emissions would need to be reduced to 326,200 tons per year.

Also, the City signed the U.S. Mayors' Climate Protection Agreement calling for participating cities to meet or surpass the Kyoto Protocol targets, and the resolutions above do surpass the Kyoto targets.

The City has implemented, or is in the process of implementing, many programs to reach the municipal operations goal established in Resolution 2005-118. These include:

1) In 2007 the City performed a major lighting retrofit at City Hall, the Police Department and the Lucchesi Community Center. Approximately 150,000 kWh per year is saved from the 844 light fixtures that were retrofitted as part of this project.
2) Since 2006 the City has replaced four traditional fuel vehicles in its fleet with one zero emission electric vehicle and three hybrid vehicles. In addition, nine "off-road" vehicles (vacuum trucks, dump trucks, etc.) are being retrofitted to comply with the California Air Resources Board lower vehicle emission regulations (Cal EPA, 1998).
3) In the years between 2000 and 2006 the City replaced 99 percent of its incandescent traffic lights with LED lights.
4) In 2007, the Public Works Transit Division retired three of nine 1989 diesel buses and replaced them with four, 2007 Gillig models, which are equipped with clean burning diesel engines that meet the 2010 CARB regulations. The new equipment has reduced the fleet emissions output by 90%.

5) As standard procedure, the Public Works Maintenance & Operations staff replaces older lighting fixtures with energy efficient units, as the original fixtures burn out.

6) The Green Team, a Council sanctioned group comprised of City staff members and interested citizens, was formed to analyze City procedures and processes to identify areas of improvement educate staff and the community (i.e. Petaluma Green activities), and sponsor the Going Green Expo.

In addition to the programs listed above, the City is currently preparing a Climate Action Plan (CAP) for its municipal government activities per Resolution 2002-117. The purpose of the municipal CAP is to identify and prioritize programs, projects, and procedural policies that will help the City government achieve the municipal greenhouse gas emission goals of Resolution 2005-118.

Impact Analysis

Significance Criteria

Impacts of buildout of the proposed General Plan would be significant if they:

- Result in community greenhouse gas emission levels which exceed pre-project levels by a substantial margin.
- Conflict with Assembly Bill 32 and its governing regulations.

Methodology & Assumptions

The greenhouse gas emissions were determined using the Clean Air and Climate Protection Software (released May 2003). The software converts fuel types (gas, electricity, etc.) and fuel units (therms, MWh, etc.) into carbon dioxide-equivalents (CO_2e) emissions for the California/Nevada portion of the Western Electricity Coordinating Council. Unlike the earlier emissions report that was prepared for City government activities only (attached to the staff report for Resolution 2005-118), this analysis examines emissions by the community as a whole. Energy inputs for the community were determined as follows:

Buildings: Electricity and natural gas usage in 1990 and 2005 for buildings was determined using modeled data provided by the California Energy Commission (CEC 2002) for each of those years. Modeled data were only available through 2015; therefore, 2015 factors were applied to 2025 buildout data.

Municipal Services - Water and Sewer: Although pumping of potable water and treatment and pumping of recycled water were included in the emissions report for the City government (2005), energy for these uses is also included in this analysis as it directly supports the community and growth projected by the General Plan. After the data were collected and analyzed, energy use by water and sewer services was found to constitute less than 1% of total community emissions. Nonetheless, the information has been

retained, as shown in Table 3.10-6, for comparison. Energy use for 1990 was calculated from PG&E records (for the Hopper Street facility) as well as from known pump station horsepower and water flows. Energy use for 2005 was based on records kept by the City. Energy use for 2025 was projected from estimated future flows and Ellis Creek plant operations.

Solid Waste: Required inputs are tons of solid waste generated. Waste generation in 1990 was estimated based on data from 1995 (Sonoma County 1996) that was extrapolated to 1990 based on a per capita factor and Petaluma's population. The 2005 waste generation is based on waste generation data as reported by the Sonoma County Waste Management Agency (2006). The 2005 per capita waste factor was used to calculate 2025 solid waste escalated for Petaluma's projected 2025 population.

Transportation: Vehicle miles traveled (VMT) for 2005 and 2025 were calculated using the traffic model developed by Fehr & Peers for *General Plan 2025*. For 1990 no data were available specific to Petaluma. Therefore, Petaluma VMT was extrapolated from the Sonoma County VMT for 1990, as published by the Metropolitan Transportation Commission.

Impacts and Mitigation Measures

Impact 3.10-6: It cannot be determined to a reasonable degree of certainty that buildout under the General Plan will not result in a cumulatively considerable incremental contribution to the significant cumulative impact of global climate change. (Significant and Unavoidable)

The primary sources of greenhouse gas emissions in Petaluma are identified in Table 3.10-6 on the following page. In summary, residential and commercial buildings are responsible for about 40 percent; transportation is responsible for about 55 to 59 percent; and municipal services and solid waste management account for about 2 to 5 percent of emissions.

Emissions have grown from about 434,900 tons in 1990 at about 10.1 tons per person to 610,400 tons in 2005 at about 10.7 tons per person. Without benefit of the policies in the proposed General Plan or mitigation measures recommended below, emissions in 2025 are estimated to be 721,600 tons at about 9.9 tons per person. Although emissions would continue to increase, the rate of increase is expected to slow in the future based on implementation of the General Plan policies and State measures.

Table 3.10-6: Petaluma Community-wide 1990 and 2005 Greenhouse Gas Emissions and Projected Emissions for 2025

	1990				2005				2025			
	Electricity (kWh)	**Natural Gas (Therms)**	**CO_2e Emissions (tons)**	**Percent of Total**	**Electricity (kWh)**	**Natural Gas (Therms)**	**CO_2e Emissions (tons)**	**Percent of Total**	**Electricity (kWh)**	**Natural Gas (Therms)**	**CO_2e Emissions (tons)**	**Percent of Total**
Buildings	335,233,026	9,083,718	172,200	40%	455,792,623	12,245,736	237,400	39%	554,183,117	15,572,117	292,800	40%
Municipal Services - Water & Sewer	6,184,009	209	2,100	0%	6,786,555	209	2,400	0%	10,146,879	6,000	3,600	1%
	Population	**Waste Generated (tons)**			**Population**	**Waste Generated (tons)**			**Population**	**Waste Generated (tons)**		
Solid Waste	43,200	49,567	22,500	5%	57,085	29,144	12,500	2%	72,707	37,178	15,900	2%
		Vehicle Miles Traveled				**Vehicle Miles Traveled**				**Vehicle Miles Traveled**		
Transportation		305,992,640	238,100	55%		544,710,305	358,100	59%		662,392,145	409,200	57%
TOTAL			**434,900**	**100%**			**610,400**	**100%**			**721,600**	**100%**
Percent Increase							**2.7% increase per year from 1990 to 2005**				**0.9% increase per year from 2005 to 2025**	

Notes: Columns may not add due to rounding.

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Proposed Policies in the General Plan 2025 that Reduce Petaluma's Contribution

The *General Plan 2025* includes numerous policies that seek to reduce greenhouse gas emissions by conserving resources, increasing energy efficiencies, and using green technologies as expressed through the goals, policies, and programs outlined in the proposed General Plan.

The issue of greenhouse gas emission reduction is most directly addressed in The Natural Environment element. However, a number of other General Plan elements also include proposed policies that, as a result of addressing the purpose of the element, would also reduce greenhouse gases. Following are the specific policies found in the Natural Environment element which address greenhouse gas emissions, followed by a summary of policies in other sections of the General Plan.

4-P-18 Fund and/or designate a Green Program Manager to oversee implementation of all Greenhouse Gas Emissions policies and programs identified in the Greenhouse Gas Emissions section as well as the City's Climate Action Plan . The policies and programs will need to be reviewed and updated periodically as new information, regulatory standards, and technologies develop. A report shall be provided to the City Council biannually, reporting on the status of the City's efforts to reduce green house gases, and recommendations for any changes that are deemed necessary.

4-P-19 Comply with AB 32 and its governing regulations to the full extent of the City's jurisdictional authority.

4-P-20 To the full extent of the City's jurisdictional authority, implement any additional adopted State legislative or regulatory standards, policies and practices designed to reduce greenhouse gas emissions, as those measures are developed.

4-P-21 Implement to the fullest extent possible all measures identified in the municipal Climate Action Plan to meet the municipal target set in Resolution 2005-118 (20% below 2000 levels by 2010).

4-P-22 The City may prepare a Community Climate Action Plan to identify and prioritize programs, projects, and procedural policies that will help the City achieve the community greenhouse gas emission goals of Resolution 2005-118 (25% below 1990 levels by 2015).

4-P-23 Prepare a feasibility report for the City of Petaluma forming a Community Choice Aggregation (through AB 117, permits any city or county to aggregate the electric loads of residents, businesses and municipal facilities to facilitate the purchase and sale of electrical energy) as a way of supplying renewable energy to the community.

4-P-24 Continue to provide opportunities for City employees to learn about and participate in the Low Carbon Diet sponsored by the Green Team and consider options for expanding the program to the community.

4-P-25 Train appropriate City staff on new technology and look for opportunities to improve energy efficiency in public facilities.

4-P-26 Continue to monitor new technology and innovative sustainable design practices for applicability to insure future development minimizes or eliminates the use of fossil fuel and GHG-emitting energy consumption.

4-P-27 Provide information and tips on reducing greenhouse gas emissions to the community.

A. Advertise "Green Tip" in the local newspaper.
B. Work with utilities to offer Green Tips with the utility bills.
C. Continue sponsoring the Going Green Expo.
D Create a program of on-going community education.
E. Support the efforts of the Sonoma Green Business Program.

4-P-28 Develop and implement a municipal Environmentally Preferable Purchasing Program.

Of particular note is Policy 4-P-22 which calls for the preparation of a Community Climate Action Plan (CCAP). The CCAP would build on the City's municipal Climate Action Plan currently being developed. Similar to the greenhouse gas emissions reduction plan identified by the California Attorney General as one element of an adequate greenhouse gas CEQA analysis, the CCAP would quantify community-wide emissions for 1990 (per Resolution 2005-118) and identify programs for reducing emissions.

In the Land Use, Growth Management, and the Built Environment element, the proposed policies generally call for infill development, high density/intensity development, mixed-use development including transit opportunities, limiting growth with the Urban Growth Boundary, maintaining open space and preserving tree resources. The Recreation and Parks element goes further by stipulating the procedure by which trees [larger than 8 inches in diameter] must be replaced if removed to accommodate development. These policies would aid greenhouse gas emission reduction by limiting vehicle-miles-traveled and preserving plant life which would process CO_2 emissions.

The Community Design, Character, and Green Building element presents policies specific to particular areas of the city or to neighborhood and building design and character in general. Many the of policies are similar to those set forth in the Land Use, Growth Management, and the Built Environment element with regard to suggesting mixed-use developments, infill development, and high density/intensity development. Transportation-oriented policies are also presented addressing: pedestrian and bicycle mobility, facilities, and circulation; rail transit and transit-oriented development; and, increased vehicular commuting opportunities. The maintenance and preservation of open space and trees are also treated in the policies in this element. And finally, a policy is presented to implement a mandatory Green Building program to replace the current voluntary program.

In The Natural Environment, element policies are included to support alternative fuel sources, provide electric vehicle charging facilities, promote ride-sharing, and integrate Intelligent Transportation technologies into Petaluma's transportation system. In addition, the element contains policies that support reduced energy consumption by municipal facilities and promote the development of alternative sources of energy, including co-generation at the Ellis Creek Water Recycling Facility.

The Mobility element seeks to limit the use of fossil fuels and other materials which would contribute to greenhouse gas emissions, either through vehicular/equipment emissions or stationary area sources. It considers transportation-related policies, focusing on the encouragement of bicycling and the development of bicycle-friendly amenities (i.e., bike lanes, bikeway systems, etc.). The element also includes a policy (5-P-21) which requires the City to "strive to create a five percent bicycle commute share by 2025". Likewise, policies are included to encourage pedestrian movement throughout the city by preserving or creating such networks and providing support facilities. The element calls for the expansion of the bus transit system to provide convenient, affordable, and useful service to appropriate areas of the city, such as commercial and employment centers. Finally, like the Community Design,

Character, and Green Building Element, the Mobility Element also encourages transit-oriented development.

In Recreation and Parks, a policy is included to develop an Urban Forestry Program to consolidate and manage various City policies and ordinances regarding trees and to incorporate the goal of the State to plant 5 million trees in urban areas for the purpose of energy conservation and to reduce greenhouse gas emissions.

It is difficult to quantify the reduction in emissions from each of these policies in a reliable manner. However, several are large enough and specific enough, that benefits can be estimated, as shown in Table 3.10-7. The estimated emission reduction from these selected policies is 19,900 tons.

Table 3.10-7 Estimate of Greenhouse Gas Emissions Reductions from Selected General Plan Policies

City Reduction Measures	CO_2e Emissions (tons)
Implement Build-It-Green for residential buildings in 2009	13,000
Implement LEED for commercial/institutional buildings in 2009	5,000
Implement cogeneration at Ellis Creek WRF	500
Achieve 70% Waste Reduction Goal	1,400
TOTAL	**19,900**

State Reduction Measures Applicable to Petaluma

As discussed in the setting section, the State of California is in the process of identifying and implementing numerous measures to reduce greenhouse gas emissions in California. Some of these measures have a direct relation to emissions at the local level. Those measures that will contribute to Petaluma's emission reductions are summarized below. Each description includes a summary of the corresponding General Plan policies or programs that are in support of or are similar to the particular State measure. For the complete list of General Plan policies and programs that relate to the reduction of greenhouse gas emissions refer to Appendix A at the end of this document.

SB 1368 (Regulation of greenhouse gases from load serving entities): SB 1368 requires the California Energy Commission, in consultation with the CPUC and the State Air Resources Board, to establish a greenhouse gas emissions performance standard for baseload generation that would not exceed the emissions of a combined-cycle natural gas power plant. In 2002 the State of California adopted a goal to achieve 20 percent of retail electricity sales from renewable energy sources by 2017, referred to as the Renewable Portfolio Standard. In 2003 the goal was accelerated to 2010. The emission reductions from the Renewable Portfolio Standard are included under the reductions for SB1368. (CEPA, 2006 and 2007) The City supports compliance with AB 32 and its governing regulations, through General Plan Policy 4-P-19 and Policy 4-P-20. Policy 4-P-23 calls for the preparation of a feasibility report for the formation of a Community Choice Aggregation as a way to supply renewable energy to the

community. In addition, Policies 4-P-10, 4-P-13, and 4-P-22 support the implementation of solar and other renewable energy sources.

IOS Energy Efficiency Programs: In 2007, the California Public Utilities Commission is evaluating the design of a risk/reward incentive mechanism for utilities to encourage additional investment in energy efficiency. Also in 2007, CPUC will develop new aggressive targets for efficiency between 2007 and 2020. As part of the process, CPUC will evaluate new technologies and new measures that could deliver additional energy savings through these programs. (CEPA, 2007) Although the City has no authority to regulate utilities, the City does support compliance with AB 32 and its governing regulations through General Plan Policy 4-P-19 and Policy 4-P-20.

Urban Forestry: CalFire is working with the U.S. Forest Service's Center for Urban Forestry Research (CUFR), CCAR and others to develop a new forestry protocol for urban forestry. An initial draft protocol outline for measuring Urban Forestry emission reductions has been completed and is being reviewed by the task group assigned. Partnering with local government and private sector entities the objective of this strategy is to expand efforts with the end result of five million additional trees in urban areas by 2020. (CEPA, 2007) This measure is included because numerous policies and programs throughout the General Plan support the planting and preserving of trees. In addition, Policy 6-P-20a calls for an Urban Forestry Program consistent with the objectives of Urban Forestry measure.

California Solar Initiative: In late 2006, the Public Utilities Commission finalized implementation rules which took effect beginning January 2007. The Initiative is designed to deliver approximately 2,000 megawatts of clean, emissions-free energy to the California grid by 2016. The City supports and encourages the development of passive solar systems through the implementation of Policies 4-P-10, 4-P-14, and 4-P-22. Adoption of the Green Building programs as called for in Policy 3-P-127 and Policy 3-P-128 also would support passive solar.

Additional RPS: The *2004 Energy Report Update* recommended an increased goal of 33 percent renewable portfolio standard by 2020. This goal was adopted in the *2005 Energy Action Plan II*. In addition, the Public Utilities Commission is evaluating the use of renewable energy certificates for RPS compliance. The Public Utilities Commission is evaluating interaction between RPS program requirements and greenhouse gas emissions cap. (CEPA, 2006 and 2007) As noted under SB 1368 above, the City supports compliance with AB 32 and its governing regulations and supports the development of renewable energy through General Plan Policies 4-P-10, 4-P-13, 4-P-19, 4-P-20, 4-P-22, and 4-P-23.

Vehicle Climate Change Standards: AB 1493 required CARB to achieve the maximum feasible and cost-effective reduction of greenhouse gas emissions from passenger vehicles and light-duty trucks. These vehicle standards were adopted by CARB in September 2004 and are scheduled to take effect in the 2009 model year. (CARB, 2007) Although the City has no regulatory authority over fuel standards, the City does support compliance with AB 32 and its governing regulations, through General Plan Policy 4-P-19 and Policy 4-P-20.

Low Carbon Fuel Standard: Will require fuel providers (including producers, importers, refiners, and blenders) to ensure that the mix of fuels they sell in California meets, on average, a declining standard for greenhouse gas emissions that result from the use of transportation fuel. Although the City has no regulatory authority over fuel standards, the City does support compliance with AB 32 and its governing regulations through General Plan Policy 4-P-19 and Policy 4-P-20.

Strengthen Light Duty Vehicle Technology: This would create new standards that would phase in beginning in the 2017 model year (following up on the existing mid-term standards that reach maximum stringency in 2016). The technologies that might be employed include highly efficient hybrid vehicles, use of lightweight materials to reduce vehicle mass, and reductions in air conditioning related emissions through the use of cool paints, low-GWP refrigerants, or other approaches. (CARB, 2007) Although the City has no regulatory authority over vehicle technology standards, the City does support compliance with AB 32 and its governing regulations through General Plan Policy 4-P-19 and Policy 4-P-20.

Heavy-duty Vehicle Emission Reductions: This would create new standards that would improve efficiency of the vehicles in areas such as improved aerodynamics, climate engine-based improved efficiency, vehicle weight reduction, rolling and inertia resistance improvements, and optimized vehicle operation. (CEPA, 2006) Although the City has no regulatory authority over vehicle technology and design standards, the City does support compliance with AB 32 and its governing regulations through General Plan Policy 4-P-19 and Policy 4-P-20.

Diesel Anti-idling: In July 2004 the ARB adopted a measure to limit diesel-fueled commercial motor vehicle idling. (CEPA, 2006) In addition to adhering to ARB's adopted anti-idling measure, the City includes additional measures that support anti-idling such as the development of traffic roundabouts as called for in Policy 4-P-9 and minimizing idling time of construction-related equipment called for in Policy 4-P-10.

Improve Transportation Energy Efficiency: This strategy builds on current efforts to provide a framework for expanded and new initiatives including incentives, tools and information that advance cleaner transportation and reduce climate change emissions. This includes policies governing land use, enhancing outreach and public education programs, and diversifying the transportation energy infrastructure. (CEPA, 2006) Many policies throughout the General Plan support the use of cleaner fuels, educational programs, and land use practices that results in fewer vehicle miles traveled (e.g., infill and mixed-use development).

Smart Land Use and Intelligent Transportation: Smart land use is an umbrella term for strategies that integrate transportation and land-use decisions. Such strategies generally encourage jobs/housing proximity, promote transit-oriented development, and encourage high-density residential/commercial development along transit corridors. These strategies develop more efficient land-use patterns within each jurisdiction or region to match population increases, workforce and socioeconomic needs for the full spectrum of the population. (CEPA, 2006) This state measure is represented throughout the Land Use, Growth Management, and the Built Environment element of the General Plan. Numerous

policies call for infill development, high density/intensity development, mixed-use development, expanding transit opportunities, and limiting growth within the Urban Growth Boundary.

Intelligent Transportation Systems (ITS) is the application of advanced technology systems and management strategies to improve operational efficiency of transportation systems and movement of people, goods and services. (CEPA, 2006) Policy 4-P-9a of the General Plan promotes the development and integration of Intelligent Transportation Systems into Petaluma's transportation system.

Table 3.10-8 provides a summary of the emission reduction estimated by the State for each measure and the portion attributable to Petaluma. Petaluma's portion was determined by taking the percent of total State greenhouse gas emissions that is attributable to Petaluma, 0.113%, as identified in the setting section.

Table 3.10-8 Estimate of Greenhouse Gas Emissions Reductions due to State Actions Applicable within Petaluma

Program	Emission Reduction by 2020 (metric tons)	Portion Attributable to Petaluma (tons)[a]
Climate Action Team Proposed Early Actions to Mitigate Climate Change (April 2007)		
SB 1368 (incl: RPS – 20% by 2010)	15 million	18,600
IOU Energy Efficiency Programs	4 million	5,000
Urban Forestry	1 million	1,200
California Solar Initiative – 2,000 MW by 2016	1 million	1,200
Additional RPS (33% by 2020)	11 million	13,700
Subtotal (applicable to buildings)	32 million	39,700
Proposed Early Actions to Mitigation Climate Change in California – CARB (April 2007)		
Vehicle Climate Change Standards	30 million	37,300
Low Carbon Fuel Standard	10-20 million[b]	18,600
Strengthen Light Duty Vehicle Technology	4 million	4,600
Heavy-duty Vehicle Emission Reductions	3 million	3,800
Climate Action Team Report (March 2006)		
Diesel Anti-idling	1.2 million	1,500
Improve Transportation Energy Efficiency	9 million	11,200
Smart Land Use and Intelligent Transportation	18 million	22,400
Subtotal (applicable to transportation)	80.2 million	99,400
TOTAL	**111.2 million**	**139,100**

Notes:

a. Based on Petaluma's share of State emissions = 0.113%. At this time it is not known what additional measures will be identified in the Scoping Plan. However, it is conceivable that the Scoping Plan will contain measures that would further reduce Petaluma's emissions beyond those identified above.

b. Average of 15 millions tons used in calculation.

Greenhouse gas emission benefits resulting from the selected policies in *General Plan 2025* plus the benefits expected from State actions applicable to Petaluma total 159,000 tons. This would decrease the estimated greenhouse gas emissions for 2025 from 721,600 tons to 562,600 tons at buildout, which is 8% below pre-project conditions and the baseline year of

2005 (610,400 tons) (refer to Table 3.10-9). ~~The proposed *General Plan 2025*, therefore, does not contribute to cumulative impacts on greenhouse gas emissions. No mitigation is necessary.~~

Table 3.10-9 Summary of *General Plan 2025* Greenhouse Gas Emissions

	Greenhouse Gas Emissions (tons CO_2e)
2005 Baseline Emissions	610,400
2025 General Plan Emissions	721,600
Reductions	
Selected General Plan Policies	<19,900>
State Actions Applicable to Petaluma	<139,100>
TOTAL	**562,600**

Despite the City's best efforts to identify probable greenhouse gas reductions from State measures and General Plan policies and programs, not all the State reduction measures have been formally adopted at this time. Additionally, there is a substantial level of uncertainty about their effectiveness and how they will apply to local governments. Therefore, it cannot be determined to a reasonable degree of certainty that buildout under the General Plan will not result in a cumulatively considerable incremental contribution to the significant cumulative impact of global climate change. Therefore, cumulative global climate change impacts could remain significant and unavoidable.

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COMPARISON OF ALTERNATIVES

This section describes the environmental impacts that may occur under each alternative and compares impacts of the alternatives to the proposed project impacts relative to greenhouse gas emissions.

Air Quality – Greenhouse Gas Emissions

Please refer to Chapter 5 of the General Plan 2025 Draft EIR for a description of the three alternatives. Primary factors in assessing comparative impacts upon greenhouse gas emissions are population, non-residential buildings, and vehicle miles traveled. Vehicle miles traveled are not available for the alternatives; instead total daily vehicle trips were estimated by the Draft EIR and are used below.

- *Alternative 1 (No Project).* Relative to the proposed General Plan, this alternative would decrease population by approximately 5 percent, but increase non-residential square footage (mainly industrial) by about 13 percent. Daily vehicle traffic remains approximately the same as the proposed General Plan. Also, the many policies in the proposed General Plan that assist the City in reducing its greenhouse gas emissions would not be in place. It is expected that the No Project Alternative would therefore have a contribution to cumulative greenhouse gas impacts relative to pre-project conditions, and greater impacts than the proposed General Plan.

- *Alternative 2 (Arterial Infill Corridor Development Focus).* In comparison to the proposed General Plan, this alternative would increase population by about 3 percent and increase non-residential square footage by about 11 percent. Daily vehicle traffic would increase by about 6 percent. This configuration would rely on infill, higher density residential uses, and mixed use land uses, so they would be conducive to reducing greenhouse gases. However, the increase in residential population, non-residential uses, and vehicle traffic would likely cause Alternative 2 to have small contributions to cumulative greenhouse gas impacts relative to pre-project conditions, and greater impacts than the proposed General Plan.

- *Alternative 3 (River Corridor Development Focus).* Relative to the proposed General Plan, this alternative would increase population by about 6 percent and increase non-residential square footage by about 8 percent. Daily vehicle traffic would increase by about 5 percent. This configuration would focus on higher density uses, but center development around the river corridor. The increase in residential population, non-residential uses, and vehicle traffic would likely cause Alternative 3 to have small contributions to cumulative greenhouse gas impacts relative to pre-project conditions, and greater impacts than the proposed General Plan.

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Appendix A: Applicable Policies from the General Plan that Reduce Greenhouse Gas Emissions

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Table A-1: Summary of Applicable Policies from the General Plan that Reduce Greenhouse Gas Emissions (amendments and new text illustrated with ~~strikeouts~~ and/or underline).

2 LAND USE, GROWTH MANAGEMENT AND THE BUILT ENVIRONMENT

2-P-2 Use land efficiently by promoting infill development, at equal or higher density and intensity than surrounding uses.

2-P-6 Encourage mixed-use development, which include opportunities for increased transit access.

2-P-12 Encourage reuse of underutilized sites along East Washington Street and Petaluma Boulevard as multi-use residential/commercial corridors, allowing ground-floor retail and residential and/or commercial/office uses on upper floors.

2-P-15 Under a discretionary review process opportunities to blend live-work or limited commercial/office uses within medium and high-density residential development may be permitted when abutting an arterial roadway.

2-P-29 It is the policy of the City to build within the agreed upon Urban Growth Boundary (UGB). No urban development shall be permitted beyond the UGB.

2-P-35 Growth shall be contained within the boundaries of the Urban Growth Boundary; the necessary infrastructure for growth will be provided within the Urban Growth Boundary.

2-P-46 New development shall acknowledge, preserve, protect and enhance the ecological and biological health and diversity of the Petaluma River.

2-P-49 Preserve existing tree resources and add to inventory and diversity of native/indigenous species.

2-P-50 Preserve and expand the inventory of trees on public property.

3 COMMUNITY DESIGN, CHARACTER, AND GREEN BUILDING

3-P-7 Encourage creation of a street tree planting program in existing suburban residential areas and industrial areas undergoing revitalization.

3-P-28 Develop a cohesive street tree program integral to redevelopment and new development within the Downtown area.

3-P-32 Improve bicycle circulation through the corridor by adding bicycle lanes on or parallel to East Washington Street, i.e. East D Street and/or Madison Street.

3-P-44 Use the Natural Environment Element, Water Resources Element and the Petaluma River Enhancement Plan as the tool to implement the Petaluma River greenway by maintaining setbacks, creating flood terraces where appropriate, preserving flood storage capacity of the floodplain, protecting and enhancing habitat conservation areas, protecting and enhancing oak and riparian habitat and other open spaces along the river.

3-P-50 Provide additional pedestrian/bicycle access to and along the riverfront to connect to existing and future trails toward Downtown.

3-P-60 Permit a mix of uses, with fairly high intensities to create the ambiance of a bustling urban corridor.

3-P-61 Reinforce existing Neighborhood Commercial uses at West Payran Street; encourage intensification and expansion of the existing center to provide a wider range of products to meet the needs of the surrounding neighborhoods.

3-P-62 Encourage development of the area south of Payran Street as an urban corridor, with a mix of uses comparable to those of the Central Petaluma Specific Plan, increasing in intensity approaching Downtown.

3-P-63 Preserve and enhance the oak woodland setting and integrate development to protect and enhance these resources.

3-P-75 Create an open space network through residential areas by requiring integration of open space with public trails when properties are developed.

3-P-81 Preserve trees and enhance the natural woodland ecology of the South Hills subarea.

3-P-92 Preserve existing and plant additional trees in the Washington Creek area between North McDowell Blvd. and Sonoma Mountain Parkway.

3-P-93 Provide enhanced facilities to encourage improved pedestrian and bicycle mobility along East Washington Street and East D Street to connect to the existing pedestrian overcrossing of Highway 101, south of the East Washington overpass.

3-P-95 Provide enhanced pedestrian and bicycle network connections between the industrial, commercial, and residential clusters.

3-P-97 Work with regional and other agencies to create a new rail transit station near Corona Road with high-intensity, transit-oriented development.

3-P-98 Promote walkability by clustering business parks and increasing pedestrian linkages between office structures and nearby commercial and restaurant uses.

3-P-100 Work with CalTrans and other agencies to establish a park-and-ride lot close to the new interchange. Include parking spaces with electric vehicle recharging facilities, secure bicycle parking, and reserved spaces for ride-sharing vehicles.

3-P-101 Encourage the development of landscape standards that reduce existing lawns and require tree planting.

3-P-103 Develop high and medium density residential near the proposed rail transit station on Corona Road.

3-P-105 Improve older streetscapes with added street trees, landscaping and pedestrian amenities.

3-P-110 Keep Corona Road as a rural two-lane road (east of Sonoma Mountain Parkway), with an improved cross-section to facilitate safer bicycle and pedestrian use utilizing innovative design standards that increase connectivity and safety while maintaining the rural context.

3-P-116 Improve pedestrian and bicycle amenities along Frates Road/Cedar Lane as access to industrial/employment areas and Shollenberger Park.

3-P-117 Extend bicycle paths along Adobe Creek, and provide new paths along major local connectors and city arterials.

3-P-119 Strengthen pedestrian connections to Downtown and the Central Petaluma Specific Plan (CPSP) subarea through streetscape improvements along the Washington Street/Bodega Avenue corridor.

3-P-122 Street trees shall be preserved and their numbers increased as development/redevelopment/remodeling occurs.

3-P-124 As part of the Development Code and Standards Updates, incorporate sustainable site planning, development, and maintenance standards and procedures, reflecting conditions in the variety of Petaluma settings (such as hillsides and floodplains).

3-P-125 Incorporate green building principals and practices~~, to the extent practicable and financially feasible,~~ into the planning, design, construction, management, renovation, operations and demolition of all facilities that are constructed, owned, managed or financed by the City.

3-P-125a Encourage Sonoma County to use the same Green Building Standards when constructing new facilities that serve Petaluma, that Petaluma requires for construction of city-owned or city-sponsored facilities after such time as Petaluma has adopted standards.

3-P-126 Evaluate the success of the voluntary green building program and ~~evaluate feasibility and impact of initiating~~ develop and implement a ~~similar, but~~ mandatory, program for new residential, commercial and municipal development and remodels.

~~3-P-127 Encourage the development of green programs for non-residential projects~~.

3-P-127 Require development projects to prepare a Construction Phase Recycling Plan that would address the reuse and recycling of major waste materials (soil, vegetation, concrete, lumber, metal scraps, cardboard packaging, etc) generated by any demolition activities and construction of the project.

4 THE NATURAL ENVIRONMENT

4-P-6 Improve air quality through required planting of trees along streets and within park and urban separators, and retaining tree and plant resources along the river and creek corridors.

4-P-7 Reduce motor vehicle related air pollution.

4-P-7a Support, where feasible, the development of alternative fuel stations.

4-P-7b Require a percentage of parking spaces in large parking lots or garages to provide electrical vehicle charging facilities.

4-P-7c Require electric vehicle charging and alternative fuel facilities at all new and remodeled gas stations.

4-P-7d Promote ride-sharing and car-sharing programs.

4-P-8 Prohibit new and significant expansion of existing drive-thru food and service facilities.

4-P-9 Require development of traffic roundabouts, where feasible, as an alternative to a traffic signal, to reduce idling vehicles.

4-P-9a Develop and integrate Intelligent Transportation Technologies, as applicable, into Petaluma's transportation system.

4-P-10 Improve air quality by reducing emissions from stationary point sources of air pollution (e.g. equipment at commercial and industrial facilities) and stationary area sources (e.g. wood-burning fireplaces & gas powered lawnmowers) which cumulatively emit large quantities of emissions.

A. Continue to work with the Bay Area Air Quality Management District to achieve emissions reductions for non attainment pollutants; including carbon monoxide, ozone, and PM-10, by implementation of air pollution control measures as required by State and federal statutes. The BAAQMD's CEQA Guidelines should be used as the foundation for the City's review of air quality impacts under CEQA.

B. Continue to use Petaluma's development review process and the California Environmental Quality Act (CEQA) regulations to evaluate and mitigate the local and cumulative effects of new development on air quality.

C. Continue to require development projects to abide by the standard construction dust abatement measures included in BAAQMD's CEQA Guidelines. These measures would reduce exhaust and particulate emissions from construction and grading activities.

D. Reduce emissions from residential and commercial uses by requiring the following:

- Use of high efficiency heating and other appliances, such as cooking equipment, refrigerators, and furnaces, and low NOx water heaters in new and existing residential units;
- Compliance with or exceed requirements of CCR Title 24 for new residential and commercial buildings;
- Incorporation of passive solar building design and landscaping conducive to passive solar energy use for both residential and commercial uses, i.e., building orientation in a south to southeast direction, encourage planting of deciduous trees on west sides of structures, landscaping with drought resistant species, and use of groundcovers rather than pavement to reduce heat reflection;
- Use of battery-powered, electric, or other similar equipment that does not impact local air quality for non-residential maintenance activities;
- Provide natural gas hookups to fireplaces or require residential use of EPA-certified wood stoves, pellet stoves, or fireplace inserts.

4-P-11 To reduce combustion emissions during construction and demolition phases, the contractor of future individual projects should include in construction contracts the following requirements or measures shown to be equally effective:

- Maintain construction equipment engines in good condition and in proper tune per manufacturer's specification for the duration of construction;
- Minimize idling time of construction-related equipment, including heavy-duty equipment, motor vehicles, and portable equipment;
- Use alternative fuel construction equipment (i.e, compressed natural gas, liquid petroleum gas, and unleaded gasoline);
- Use add-on control devices such as diesel oxidation catalysts or particulate filters;
- Use diesel equipment that meets the ARB's 2000 or newer certification standard for off-road heavy-duty diesel engines.

4-P-13 Develop and adopt local energy standards that would result in less energy consumption than standards set by the California Energy Commission's (CEC) Title 24.

A. Identify and implement energy conservation measures that are appropriate for public buildings and facilities.

- Schedule energy efficiency "tune-ups" of existing buildings and facilities.
- Institute a lights-out-at-night policy in all public buildings where feasible.
- Continue to retrofit older lighting fixtures in City facilities until all buildings have been upgraded.
- Where new traffic signals or crosswalk signals are installed, or existing signals are upgraded, continue to use LED bulbs or other equivalent efficient technology that may develop.
- Evaluate the possibility of decreasing the average daily time streets lights are on.
- Periodically evaluate the efficiency of potable and sewer pumping facilities and identify measures to improve pumping efficiency.
- Encourage the County of Sonoma to upgrade existing, inefficient facilities which serve Petaluma (e.g. potable water pumping facilities).

B. Identify energy conservation measures appropriate for retrofitting existing structures. Work with local energy utility to encourage incentive program for retrofitting. Consider the use of alternative transportation fuels among City-owned vehicles and the Petaluma Transit system to reduce dependence on petroleum-based fuels and improve local air quality. Continue to replace traditional fuel vehicles in the City's fleet with alternative fuel vehicles and/or zero/low emission vehicles, as appropriate. When selecting alternative fuel vehicles consider the "full cycle" of emissions for the different fuel types.

C. Investigate and implement alternative sources of renewable power to supply City facilities, such as solar water heating at the Petaluma Swim Center and cogeneration at the Ellis Creek Water Recycling Facility.

4-P-14 Encourage use and development of renewable or nontraditional sources of energy.

4-P-16 Reduce solid waste and increase recycling, in compliance with the Countywide Integrated Waste Management Plan (ColWMP).

A. Work with Sonoma County to identify environmental and economical means to meet the need for solid waste disposal.

B. Require new or remodeled multifamily residential and all non-residential development to incorporate sufficient, attractive, and convenient interior and exterior storage areas for recyclables and green waste.

C. Continue to encourage waste reduction and recycling at home and in businesses through public education programs, such as informational handouts, on recycling, yard waste, wood waste, and hazardous waste.

D. Consider development of a residential and commercial food waste composting program.

E. Purchase goods containing recycled materials for City use~~, to the extent possible~~.

F. Continue to cooperate, require, and/or support the operation of resource recovery facilities by the City waste hauler and the disposal site operators.

G. Investigate and replace bottled water in City offices with alternate source of drinking water.

H. Ensure that all public facilities have adequate and accessible depositories for recyclables.

4-P-17 Require future waste contracts to ensure disposal of City waste products at a site with the least potential for environmental impacts.

4-P-18 Fund and/or designate a Green Program Manager to oversee implementation of all Greenhouse Gas Emissions policies and programs identified in the Greenhouse Gas Emissions section as well as the City's Climate Action Plan . The policies and programs will need to be reviewed and updated periodically as new information, regulatory standards, and technologies develop. A report shall be provided to the City Council biannually, reporting on the status of the City's efforts to reduce green house gases, and recommendations for any changes that are deemed necessary.

4-P-19 Comply with AB 32 and its governing regulations to the full extent of the City's jurisdictional authority.

4-P-20 To the full extent of the City's jurisdictional authority, implement any additional adopted State legislative or regulatory standards, policies and practices designed to reduce greenhouse gas emissions, as those measures are developed.

4-P-21 Implement to the fullest extent possible all measures identified in the municipal Climate Action Plan to meet the municipal target set in Resolution 2005-118 (20% below 2000 levels by 2010).

4-P-22 The City may prepare a Community Climate Action Plan to identify and prioritize programs, projects, and procedural policies that will help the City achieve the community greenhouse gas emission goals of Resolution 2005-118 (25% below 1990 levels by 2015).

4-P-23 Prepare a feasibility report for the City of Petaluma forming a Community Choice Aggregation (through AB 117, permits any city or county to aggregate the electric loads of residents, businesses and municipal facilities to facilitate the purchase and sale of electrical energy) as a way of supplying renewable energy to the community.

4-P-24 Continue to provide opportunities for City employees to learn about and participate in the Low Carbon Diet sponsored by the Green Team and consider options for expanding the program to the community.

4-P-25 Train appropriate City staff on new technology and look for opportunities to improve energy efficiency in public facilities.

4-P-26 Continue to monitor new technology and innovative sustainable design practices for applicability to insure future development minimizes or eliminates the use of fossil fuel and GHG-emitting energy consumption.

4-P-27 Provide information and tips on reducing greenhouse gas emissions to the community.

A. Advertise "Green Tip" in the local newspaper.
B. Work with utilities to offer Green Tips with the utility bills.
C. Continue sponsoring the Going Green Expo.
D. Create a program of on-going community education.
E. Support the efforts of the Sonoma Green Business Program.

4-P-28 Develop and implement a municipal Environmentally Preferable Purchasing Program.

5 MOBILITY

5-P-1 Develop an interconnected mobility system that allows travel on multiple routes by multiple modes.

5-P-13 Encourage existing major employers and institutions to develop and implement Transportation Demand Management programs to reduce peak-period trip generation (including, but not listed here, sub policies A through F).

G. Encourage provision of preferential parking in selected areas for designated carpools, motorcycles, bikes and alternative vehicles.

5-P-15 Implement the bikeway system as outlined in the Bicycle and Pedestrian Plan, and expand and improve the bikeway system wherever the opportunity arises.

5-P-18 The City shall require Class II bike lanes on all new arterial and collector streets.

5-P-19 All new and redesigned streets shall be bicycle and pedestrian friendly in design.

5-P-20 Ensure that new development provides connections to and does not interfere with existing and proposed bicycle facilities.

5-P-21 Strive to create a five percent bicycle commute share by 2025.

5-P-22 Preserve and enhance pedestrian connectivity in existing neighborhoods and require a well connected pedestrian network linking new and existing developments to adjacent land uses.

5-P-23 Require the provision of pedestrian site access for all new development.

5-P-24 Give priority to the pedestrian network and streetscape amenities near schools, transit, shopping, and mixed use corridors emphasized in the General Plan.

5-P-25 Establish a network of multi-use trails to facilitate safe and direct off-street bicycle and pedestrian travel. At the minimum, Class I standards shall be applied unless otherwise specified.

5-P-28 Allow bicyclists and pedestrians use of all emergency access routes required of existing and new developments.

5-P-30 Require all new development abutting any public trail to provide access to the trail.

5-P-31 Make bicycling and walking more desirable by providing or requiring development to provide necessary support facilities throughout the day.

5-P-32 Promote bicycle and pedestrian safety and increased use of non-motorized transportation alternatives through engineering, education, and enforcement programs.

5-P-33 Fund and perform regular maintenance on all public bicycle and pedestrian facilities.

5-P-34 Utilize a creative variety of measures to fully implement all projects and programs of the Petaluma Bicycle and Pedestrian Plan.

5-P-35 Encourage continuing education and training for City staff to create awareness of bicycle and pedestrian needs and of the importance of planning for bicycle and pedestrian travel at the start of the development process.

5-P-36 Review, and update as necessary, the Petaluma Bicycle and Pedestrian Plan every five years, concurrent with the General Plan.

5-P-37 Continue to solicit and review progressive ideas from other communities and organizations related to bicycling and walking.

5-P-38 Coordinate efforts and resources with the County to construct bikeways called for in the SCTA Countywide Bicycle Plan.

5-P-39 Promote public/private partnerships in the development, implementation, operation, and maintenance of bicycle and pedestrian facilities.

5-P-39a Provide loan bicycles for City staff.

5-P-39b Continue to provide facilities for bicycles on City buses.

5-P-40 Expand the bus transit system so that it is convenient and provides frequent, regular service along major City corridors serving education, shopping and employment destinations, and SMART park-and-ride lots.

5-P-41 Support efforts for transit oriented development around the Petaluma Depot and along the Washington Street, Petaluma Boulevard, McDowell Boulevard, Lakeville Street and other transit corridors.

5-P-42 Maintain a transit system of nominal cost or no cost to riders.

5-P-43 Coordinate transit improvement efforts and schedules among Petaluma Transit, Sonoma County Transit, Golden Gate Transit, paratransit, commuter rail, and schools.

5-P-51 Support efforts to re-establish a local trolley line utilizing the old spur line into the Downtown area.

6 RECREATION AND PARKS

6-P-3 Connect city parks with other public facilities, open spaces, employment centers, and residential neighborhoods by locating new recreational facilities in proximity to these uses and by fully integrating the parks system with the city's pedestrian, bicycle, and transit system.

6-P-19 Support efforts by the City's Tree Advisory Committee to disseminate current information to the public advocating the use of Best Management Practices for the care and perpetuation of the urban forest, including issues such as ~~planting the right tree in the right place,~~ strategic tree planting that considers site conditions as well as shading in selection and placement of trees, proper planting and pruning techniques, and the importance of using Integrated Pest Management practices in order to minimize the use of chemicals harmful to the environment.

6-P-20 Where trees, larger than 8" in diameter, must be removed to accommodate development, they shall be replaced at a ratio established in the Development Code. Replacement trees may be planted on, or in the vicinity of, the development site, subject to approval by the Community Development Department or through the discretionary approval process.

6-P-20a Develop an Urban Forestry Program to consolidate the various City policies and ordinances regarding tree planting and removal and to incorporate the goals of the California Climate Action Team Report to plant 5 million trees in urban areas by 2020 to provide energy conservation and reduce greenhouse gas emissions.

7 COMMUNITY FACTILITIES, SERVICES, AND EDUCATION

7-P-15 Improve and expand safe pedestrian, bicycle, and transit access to all school sites and campuses.

8 WATER RESOURCES

8-P-5A Expand the use of recycled water to offset potable water demand.

8-P-5B Continue to expand water conservation to further improve the efficient use of potable water.

8-P-9 Provide tertiary recycled water for irrigation of parks, playfields, schools, golf courses and other landscape areas to reduce potable water demand.

8-P-13 Work to convert existing potable water customers identified under the City's Water Demand & Supply Analysis Report (2006) to tertiary recycled water as infrastructure and recycled water supply become available.

8-P-18 Reduce potable water demand through conservation measures.

8-P-32 Areas within the Petaluma watershed, outside of the City of Petaluma, which are subject to periodic surface water inundation and containment, should not be modified in any manner to reduce the historic storage characteristics and capacity.

9 ECONOMIC HEALTH AND SUSTAINABILITY

9-P-3 Provide an array of employment opportunities to existing and future residents by assuring diversity in Petaluma's industry and enterprise mix.

9-P-10 Encourage economic development that will enhance job opportunities for existing City residents by providing incentives for proposals that:

- Provide jobs that match the skills (occupations) of unemployed or underemployed workers who live in Petaluma, and/or
- Commit to first-source hiring for workers who live in Petaluma, and/or
- Pay wages that enable workers to live in Petaluma.

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General Plan 2025

Revised Draft
Environmental Impact Report

Volume 5.A; Appendix G.1
Greenhouse Gas Emissions

ERRATUM #1
November 26, 2007

Page 3.10-35 of Revised DEIR

City of Petaluma, California
General Plan Administration
27 Howard Street
Petaluma, CA 94952

2005 (610,400 tons) (refer to Table 3.10-9).

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