

City of Oxnard California

# Energy Action Plan

A Component of the Oxnard  
Climate Action and Adaptation Plan

Development Services Department  
Planning Division

April 2013

City of Oxnard  
California

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# Contents

Terms and Acronyms	v
Executive Summary	ES-1
ES.1 Document Format	ES-2
ES.2 Baseline Energy Use and GHG Emissions	ES-3
ES.3 Energy Reduction Target	ES-8
ES.4 Reaching the Target	ES-9
1 Introduction and Background	1-1
1.1 Purpose and Goals	1-2
1.2 EAP Development	1-2
1.3 Regulatory Background	1-4
2 2005 Baseline, 2020 and 2030 Forecasts, and Reduction Target	2-1
2.1 Community Energy Consumption: 2005 to 2010	2-2
2.2 City Government Energy Consumption: 2005 to 2010	2-6
2.3 Business-as-Usual (BAU) Forecasts	2-11
2.4 Energy Reduction Target	2-12
2.5 AB 32 and Energy-Related GHG Reductions	2-12
3 Program Development	3-1
3.1 Review of Existing Initiatives	3-1
3.2 Strategies for Achieving the EAP Target	3-5
3.3 Program Analysis and Prioritization	3-6





4	EAP: City Government Programs	4-1
	G-1 to G-18	
5	EAP: Community Programs	5-1
	C-1 to C-17	
6	Implementation, Program Evaluation, and Monitoring	6-1
6.1	Reaching the 2020 Reduction Target	6-1
6.2	Implementation Responsibility	6-5
6.3	Schedule	6-5
6.4	Monitoring and Measuring Progress	6-8
7	Conclusion	7-1

## Appendices

A.	Outreach and Stakeholder Engagement Report	A-1
B.	Energy and Greenhouse Gas Inventory Methodology	B-1
C.	City of Oxnard 2030 General Plan Goals and Policies pertaining to Energy Efficiency and Conservation	C-1
D.	Cost Benefit Analysis Methodology	D-1
E.	Financing Models and Mechanisms	E-1
F.	Programs for Future Consideration	F-1

## List of Figures

ES-1	2005 Community Baseline Electricity Consumption by Sector	ES-4
ES-2	2005 Community Baseline Natural Gas Consumption by Sector	ES-4
ES-3	2005 City Government Baseline Electricity Consumption by Category	ES-5
ES-4	2005 Baseline Community GHG Emissions by Sector and Energy Source	ES-7
ES-5	2005 Baseline City Government GHG Emissions by Category and Energy Source	ES-8
ES-6	Comparison of Oxnard 2005 Baseline, 2010 Update, BAU Forecast, and Emissions after Achieving a 10% Energy Reduction	ES-9
ES-7	Projected Annual Community-Wide Electricity Use under Various Scenarios	ES-10
ES-8	Projected Annual Community-Wide Natural Gas Use under Various Scenarios	ES-11
ES-9	Oxnard GHG Emissions Reductions, by Category	ES-12
2-1	2005 Community Baseline Electricity Consumption by Sector	2-3
2-2	2010 Total Electricity Use (kWh)	2-3
2-3	2005 Community Baseline Natural Gas Consumption by Sector	2-4
2-4	2005 Baseline Community GHG Emissions by Sector and Energy Source	2-6

## List of Figures (continued)

2-5	2005 City Government Baseline Electricity Consumption by Category	2-8
2-6	2005 Baseline City Government GHG Emissions by Category and Energy Source	2-10
2-7	Comparison of Oxnard 2005 Baseline, 2010 Update, BAU Forecast, and Emissions after achieving a 10% Energy Reduction	2-13
6-1	Projected Annual Community-Wide Electricity Use under Various Scenarios	6-3
6-2	Projected Annual Community-Wide Natural Gas Use under Various Scenarios	6-3
6-3	Oxnard Energy GHG Emissions Reductions, by Category	6-4

## List of Tables

ES-1	Top 10 Electricity Using City Government Facilities: 2010	ES-5
ES-2	Top 10 Natural Gas Using City Government Facilities	ES-6
ES-3	Community GHG Emissions 2005 to 2010	ES-7
ES-4	Energy Reductions by 2020	ES-10
2-1	Community Electricity Use by Sector (GWh)	2-2
2-2	Community Natural Gas Use by Sector (thousand therms)	2-4
2-3	Community GHG Emissions 2005 to 2010	2-5
2-4	City Government Electricity Use by Category (GWh)	2-7
2-5	Top 10 Electricity Using City Government Facilities: 2010	2-8
2-6	Oxnard City Government Natural Gas Use by Category (thousand therms)	2-9
2-7	Top 10 Natural Gas Using City Government Facilities	2-9
2-8	City Government GHG Emissions	2-10
2-9	Community Electricity Use: 2005, 2010, and BAU Projections for 2020 and 2030	2-11
2-10	Community Natural Gas Use: 2005, 2010, and BAU Projections for 2020 and 2030	2-11
2-11	Community GHG Emissions: 2005, 2010, and BAU Projections for 2020 and 2030	2-11
3-1	City Government Energy Initiatives	3-2
3-2	Community Energy Initiatives	3-4
4-1	City Government EAP Programs	4-2
4-2	Program G-7 Upgrade Recommendations	4-9
5-1	Community EAP Programs	5-2
6-1	Energy Reductions by 2020	6-2
6-2	EAP Programs to Be Implemented by End of 2015	6-6
6-3	EAP Programs to Be Implemented by End of 2020	6-7
6-4	EAP Programs to Be Implemented after 2020	6-8

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## Terms and Acronyms

AB 32	Assembly Bill 32, the California Global Warming Solutions Act of 2006. Establishes a comprehensive program of regulatory and market mechanisms to achieve real, quantifiable, cost-effective reductions of greenhouse gases for the state of California. Makes the California Air Resources Board responsible for monitoring and reducing statewide greenhouse gas emissions, with a target to reduce greenhouse gas emissions to 1990 levels by 2020.
Baseline Inventory	The base year for assessment of energy trends against which future progress can be measured for a single calendar year (2005), consistent with legislative guidance and the Assembly Bill 32 Scoping Plan.
BAU	Business as Usual. A scenario that assumes that no new local actions will be taken to reduce emissions from current and future residents and businesses within the City.
CAAP	Climate Action and Adaptation Plan
CalEEMod	California Emission Estimator Model. An emissions modeling software that provides a uniform platform for government agencies, land use planners, and environmental professionals to estimate potential emissions associated with both construction and operational use of land use projects.
CalEPA	California Environmental Protection Agency



CALGreen	Refers to CALGreen component of the California Building Code. See California Building Code.
California Building Code	California Code of Regulations, Title 24, also known as the California Building Standards Code (composed of 12 parts). Title 24, Part 6 sets forth California's energy efficiency and conservation standards for residential and nonresidential buildings and was established in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow consideration and possible incorporation of new energy efficiency and conservation technologies and methods.
CARB	California Air Resources Board
CCA	Community Choice Aggregation. A system (neither a company nor an organization) adopted into law in California (among other states) which allows cities and counties to aggregate the buying power of individual customers within a defined jurisdiction in order to secure alternative energy supply contracts.
CEC	California Energy Commission
CEESP	California Long Term Energy Efficiency Strategic Plan. A plan adopted by the California Public Utilities Commission in 2008 that presents a single roadmap to achieve maximum energy savings across all major groups and sectors in California. This comprehensive plan for 2009 to 2020 is the state's first integrated framework of goals and strategies for saving energy, covering government, utility, and private sector actions, and holds energy efficiency to its role as the highest priority resource in meeting California's energy needs.
CEQA	California Environmental Quality Act
CFL	Compact fluorescent light
CH <sub>4</sub>	Methane
CO <sub>2</sub>	Carbon dioxide
CO <sub>2</sub> e	Carbon dioxide equivalent. A metric measure used to compare the emissions of various greenhouse gases based upon their global warming potential (GWP). The carbon dioxide equivalent for a gas is derived by multiplying the tons of the gas by the associated GWP factor. For example, the GWP factor for methane is 21. This means that emissions of one million metric tons (MT) of methane are equivalent to emissions of 21 million MTCO <sub>2</sub> e.
Community-wide	Refers to all activities within a city's geographic boundary. Typical sectors include government and civic, residential, commercial, and industrial energy use, transportation, off-road equipment, waste generation, and energy associated with water delivery and treatment.

CPUC	California Public Utilities Commission
CREB	Clean Renewable Energy Bond
DEER	Database on Energy Efficient Resources. This CEC and CPUC database provides estimates for electricity and natural gas savings associated with energy efficiency measures.
Demand Response	Mechanism for managing end-user electricity consumption in response to energy supply conditions, especially during summer periods when electricity demand on the California power grid is high. A demand response system controls electrical equipment such as lights or air conditioning (either directly or remotely) to reduce electricity consumption during times of increased energy demand and/or constrained energy availability.
Direct Access Electricity	Direct access service is an optional choice that customers can select to purchase electricity and other services from an electric service provider (ESP), instead of from a public or private utility company. An ESP is an entity that contracts directly with its customers to provide electric service, and is responsible for arranging an adequate supply of electricity. ESPs are required to meet certain requirements with the California Public Utilities Commission in addition to meeting financial and technical requirements with individual utility companies.
DOE	United States Department of Energy
DOT	California Department of Transportation
EAP	Energy Action Plan
EECBG	Energy Efficiency and Conservation Block Grant. The Energy Efficiency and Conservation Block Grant program was funded through the American Recovery and Reinvestment Act and managed by the US Department of Energy to assist cities, counties, states, and territories to develop, promote, and implement energy efficiency and conservation programs and projects.
ELP Program	Energy Leader Partnership Program. Southern California Edison (SCE) has an ELP Program that supports local governments in identifying and implementing opportunities to improve energy efficiency in municipal facilities and promoting community awareness of demand side energy management opportunities. The ELP has four focus areas: municipal upgrades, demand response, strategic plan support, and energy efficiency programs coordination. The ELP program has four incentive tiers for participating cities: (1) Valued Partner, (2) Silver, (3) Gold, and (4) Platinum. Each city begins the program as a valued partner. To advance to the next incentive tier and earn financial incentives, each participating city must achieve the pre-determined energy savings and requirements community-wide and for city facilities.

ENERGY STAR	A joint program of the U.S. Environmental Protection Agency and the U.S. Department of Energy to provide consumers with energy efficiency information and incentives to purchase the most energy-efficient products available.
ESA	Environmental Science Associates
ESCO	Energy Service Company. A commercial business providing a broad range of comprehensive energy solutions including designs and implementation of energy savings projects, energy conservation, energy infrastructure outsourcing, power generation and energy supply, and risk management.
ESP	Electric Service Provider. An ESP is an entity that contracts directly with its customers to provide electric service, and is responsible for arranging an adequate supply of electricity.
First Cost	Immediate purchase and installation cost. First costs do not include lifecycle or long-term operating costs, which may result in long-term cost savings from increased efficiency and conservation, reduced maintenance, and other factors.
Forecast	Energy and GHG emissions are forecast to future years based on current consumption patterns and projected increases in population, job growth and other local trends.
GHG	Greenhouse Gases. Gases which cause heat to be trapped in the atmosphere, generally warming the Earth. Greenhouse gases are necessary to keep the Earth warm, but increasing concentrations of these gases are implicated in global climate change. The principal greenhouse gases that enter the atmosphere because of human activities are carbon dioxide (CO <sub>2</sub> ), methane (CH <sub>4</sub> ), nitrous oxide (N <sub>2</sub> O) and fluorinated gases (hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride).
Government	Refers to energy use and greenhouse gas emissions from City-owned and operated facilities and equipment.
Green Building	Sustainable or “green” building is a holistic approach to design, construction, and demolition that minimizes the building’s impact on the environment, the occupants, and the community.
Green Team	A formal or informal group of people within an organization or community who promote more environmentally sustainable practices and create sustainability plans and management approaches.
Greenhouse Gas Inventory	A greenhouse gas inventory provides estimates of the amount of greenhouse gases (GHG) emitted to and removed from the atmosphere by human activities. A city or county that conducts an inventory looks at both community emissions sources as well as emissions from government operations.

GWh	Gigawatt hour. Equal to 1,000,000 kilowatt-hours.
GWP	Global Warming Potential
HPS	High pressure sodium
HUD	United States Department of Housing and Urban Development
HVAC	Heating, ventilation and cooling
ICLEI	Local Governments for Sustainability. An international association of local governments and national and regional local government organizations that have made a commitment to sustainable development.
JPA	Joint Powers Agency. An entity permitted under the laws of some states of the USA, whereby two or more public authorities (e.g. local governments, or utility or transport districts) can operate collectively.
kWh	Kilowatt-hour. A unit of energy equivalent to one kilowatt (kW) of energy used for an hour. For example, if an appliance requires a kW of energy to function, leaving the appliance on for one hour would consume one kWh of energy.
LED	Light emitting diode
LEED	Leadership in Energy and Environmental Design. An internationally recognized green building certification system, which provides third-party verification that a building or community was designed and built using sustainable approaches, with particular regard to energy savings, water efficiency, CO2 emissions reductions, and improved indoor environmental quality, among others.
MH	Metal halide
MT	Metric Tons
MT CO2e	Metric tons of carbon dioxide equivalent
MPO	Metropolitan Planning Organization. A federally mandated and federally funded transportation policy-making organization that is made up of representatives from local government and governmental transportation authorities.
N2O	Nitrous oxide
OPR	California Governor's Office of Planning and Research
PACE	Property-Assessed Clean Energy. A form of long term financing that creates municipal finance districts to provide loans to homeowners and businesses for energy-efficient upgrades and renewable energy system installations. Loans are repaid through an annual surcharge on property tax assessments.



Policy	An active tense statement that sets a specific course of action for decision-makers to achieve a goal.
PPA	Power Purchase Agreement. A contract between two parties, one who generates electricity for the purpose of sale (the seller) and one who is looking to purchase electricity (the buyer).
Program	An action or procedure to achieve a policy. EAP Programs provide the foundation for quantification of energy reduction potential and assignment of responsibility for implementation.
PV	Photovoltaic
QECB	Qualified Energy Conservation Bonds
Rebate	Offered by the state, utility, or local government to promote the installation of renewables, and energy efficiency and conservation projects.
Renewable Energy	Energy from sources that regenerate such as solar, wind, biomass, and small-scale hydroelectric power.
RPS	Renewable Portfolio Standard. Requires utility providers to increase the portion of generated energy that comes from renewable sources to 20% by 2010 and to 33% by 2020.
SB 375	Senate Bill 375: Enhances California's ability to reach its AB 32 goals by planning more sustainable communities.
SB 97	Senate Bill 97: Requires the Governor's Office of Planning and Research (OPR) to develop and adopt CEQA guidelines for the mitigation of GHG emissions.
SCAG	Southern California Association of Governments. The metropolitan planning organization (MPO) for most of Southern California, including Ventura County.
SCE	Southern California Edison. An investor-owned utility that is the primary electricity provider to City of Oxnard and Ventura County.
SCG	Southern California Gas Company. An investor-owned utility that is the primary natural gas provider to City of Oxnard and Ventura County.
SGC	Strategic Growth Council. Created by Senate Bill 732 in 2008, the SGC is a cabinet-level committee tasked with coordinating the activities of state agencies to: improve air and water quality; protect natural resources and agriculture lands; increase availability of affordable housing; promote public health; improve transportation; encourage infill and compact development; revitalize community and urban centers; and assist state and local entities in the planning of sustainable communities and meeting AB 32 goals.

Title 24	California Code of Regulations, Title 24, also known as the California Building Standards Code (composed of 12 parts). Title 24, Part 6 established California's energy efficiency standards for residential and nonresidential buildings. See California Building Standards.
U.S. EPA	United States Environmental Protection Agency
VCREA	Ventura County Regional Energy Alliance. A joint powers agency (JPA) composed of Ventura County public agencies working in collaboration to address the availability, reliability, conservation and innovative use of energy resources in the Ventura County region.
Zero Net Energy	For buildings, use of no more energy over the course of a year than can be generated onsite through renewable resources such as solar, wind, or geothermal power.



## Executive Summary

With adoption of this plan, the City of Oxnard (City) commits to reducing energy consumption and increasing renewable energy production within City Government and the community (residential, commercial, agricultural, and industrial) relative to planned growth by 2030. The purpose of this Energy Action Plan (EAP) is to establish an overall realistic net energy consumption reduction target and identify and scope programs to achieve the target over time. The EAP builds upon existing energy conservation efforts and identifies energy conservation and production programs consistent with 2030 General Plan goals and policies, utility company programs, and State and Federal legislation and initiatives.

The EAP focuses primarily on electricity efficiency and conservation, but also includes natural gas and renewable energy production strategies. The EAP will:

- Quantify 2005 baseline electricity and natural gas use, project future demand in City Government and the community, identify and encourage renewable energy production, and establish a net energy reduction target;
- Identify funding sources and facilitate applications for grants and loans;
- Quantify reductions in Greenhouse Gas emissions associated with energy conservation programs and renewable energy production;
- Evaluate the costs and benefits and prioritize proposed programs; and
- Create public/private partnerships through gatherings and workshops, and coordinating with local utility providers to promote public education.

## ES.1 Document Format

**Chapter 1** is an introduction outlining the key drivers behind development of the EAP, including the City's 2030 General Plan goals and policies; Southern California Edison and Southern California Gas Company, state and Federal legislative actions; and guidance from state, regional, and Federal agencies. Chapter 1 outlines the process used to develop the EAP which includes the following:

1. Establish 2005 baseline, and 2020 and 2030 future projections electricity and natural gas (energy) consumption (and associated GHGs) for the Oxnard community and for the City Government;
2. Identify and scope energy reduction and renewable energy programs;
3. Establish a net energy reduction target relative to projected growth;
4. Prioritize EAP programs based on a cost-benefit analysis and identify implementation steps; and
5. Conduct outreach and stakeholder engagement.

**Chapter 2** outlines the energy reduction challenge by presenting a 2005 energy use baseline, energy use data for subsequent years through 2010, and future 2020 and 2030 energy use projections for the Oxnard community and City Government operations. The EAP establishes a net reduction target for 2020 for electricity and natural gas by considering future growth projections under a business-as-usual (BAU) scenario, current energy and GHG regulations, existing and ongoing local community and City Government energy efficiency and conservation activities, opportunities for renewable energy production, and estimated energy reductions from implementing additional programs identified by this plan.

**Chapter 3** describes the process that the City used to develop the EAP programs starting with a review of existing City Government and community initiatives followed by development of strategies for improving energy efficiency and renewable energy use and qualitative cost-benefit analysis to prioritize programs and their implementation. In general, EAP programs utilize four strategies to achieve net energy reduction targets:

1. Leverage existing local, state, utility, and Federal programs to increase energy efficiency and conservation;
2. Develop new programs that increase energy efficiency and conservation, including financing mechanisms;
3. Ensure that local ordinances and permitting practices facilitate "green" building and energy efficiency and conservation; and
4. Identify and support renewable energy generation and use.

For each EAP program, the City estimated the initial costs and staff resources needed (expressed as minimal, moderate, high), as well as the anticipated energy and GHG reduction benefits (minimal or indirect, moderate, high). The City's "Green Team" used this process to identify the best set of feasible programs for the EAP.



Chapters 4 and 5 partitions the EAP into City Government and the private sector community, respectively, but recognizes that EAP programs overlap and public/private efforts and necessary and desirable.

**Chapter 4** demonstrates how the City Government will lead by example with its own facilities and energy usage practices, presenting 18 EAP programs tailored specifically to City Government operations. These programs were developed to take into consideration the range of facilities operated by the City Government and opportunities for reducing energy consumption and increasing the use of renewable energy. Chapter 4 provides a detailed description of each City Government program including estimates of electricity, natural gas, and GHG reductions resulting from program implementation along with anticipated initial implementation costs and estimated cost savings. Program descriptions also identify when the EAP program would be implemented, where funding might come from, which City Government department is responsible for implementation, and where collaboration with other departments or agencies may be necessary.

**Chapter 5** presents 16 Community EAP programs tailored to Oxnard's residential, commercial, industrial, and agricultural sectors. These programs were designed to address the energy profile of the community, wherein the commercial sector consumed approximately 70 percent of total community electricity and 73 percent of total community natural gas in 2010. Chapter 5 provides a detailed description of each community program including estimates of electricity, natural gas, and GHG reductions resulting from program implementation, along with anticipated initial implementation costs and estimated cost savings. Program descriptions also identify when the program would be implemented, where funding might come from, which City department is responsible for implementation, and where collaboration with other departments or agencies may be necessary.

**Chapter 6** describes how City Government departments would implement EAP programs and collaborate with residents, businesses and other agencies to ensure that programs are well-managed, cost-effective, and responsive to the unique energy needs of Oxnard. This chapter demonstrates how the cumulative effects of existing community programs, successful implementation of EAP programs, and California statewide actions would help the City achieve its net energy (and resulting GHG reduction) target. The chapter also describes how the City would monitor, measure and verify progress towards its energy reduction target.

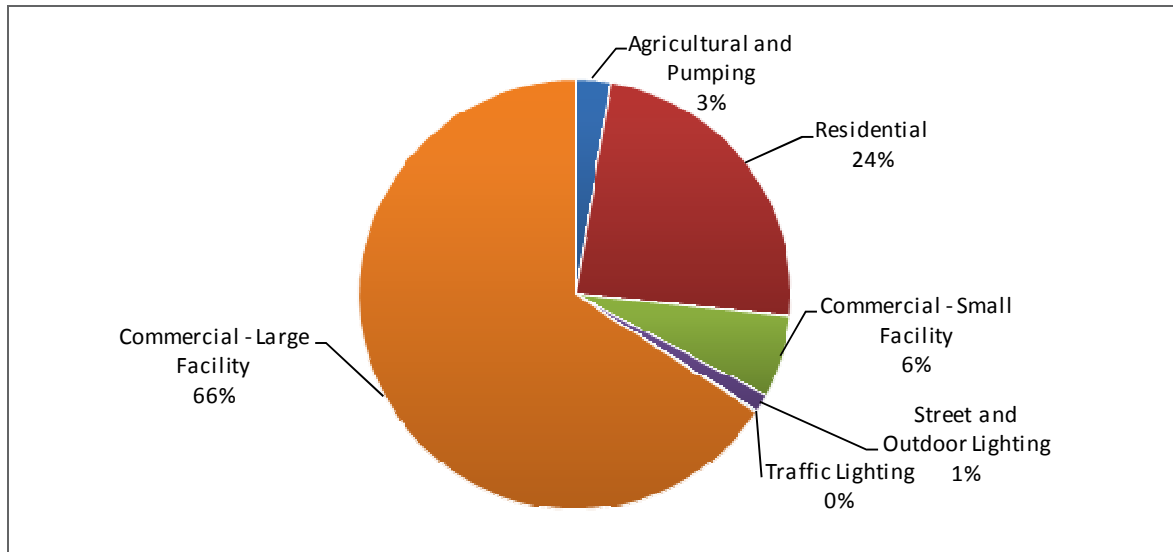
## ES.2 Baseline Energy Use and GHG Emissions

### Community

**Figure ES-1** shows 2005 community-wide electricity usage (which includes City Government operations) aggregated by service sector. The Commercial-Large Facility sector was the largest consumer of electricity in 2005, and this trend has continued through 2010.

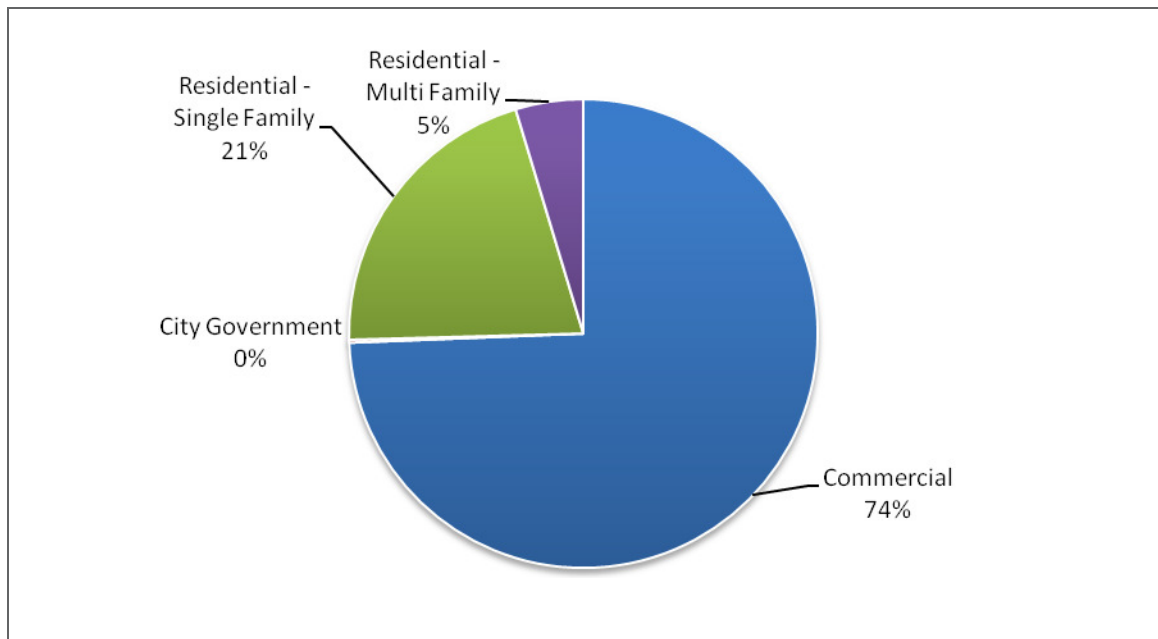
**Figure ES-2** shows 2005 community baseline natural gas usage (which includes City Government operations) by service sector. In 2005, the Commercial sector was the largest consumer of natural gas, representing approximately three-quarters of all natural gas usage, followed by the Single Family Residential sector. Natural gas use has remained relatively constant across all sectors from 2005 through 2010.

Figure ES-1: 2005 Community Baseline Electricity Consumption by Sector



Source: SCE, 2012

Figure ES-2: 2005 Community Baseline Natural Gas Consumption by Sector



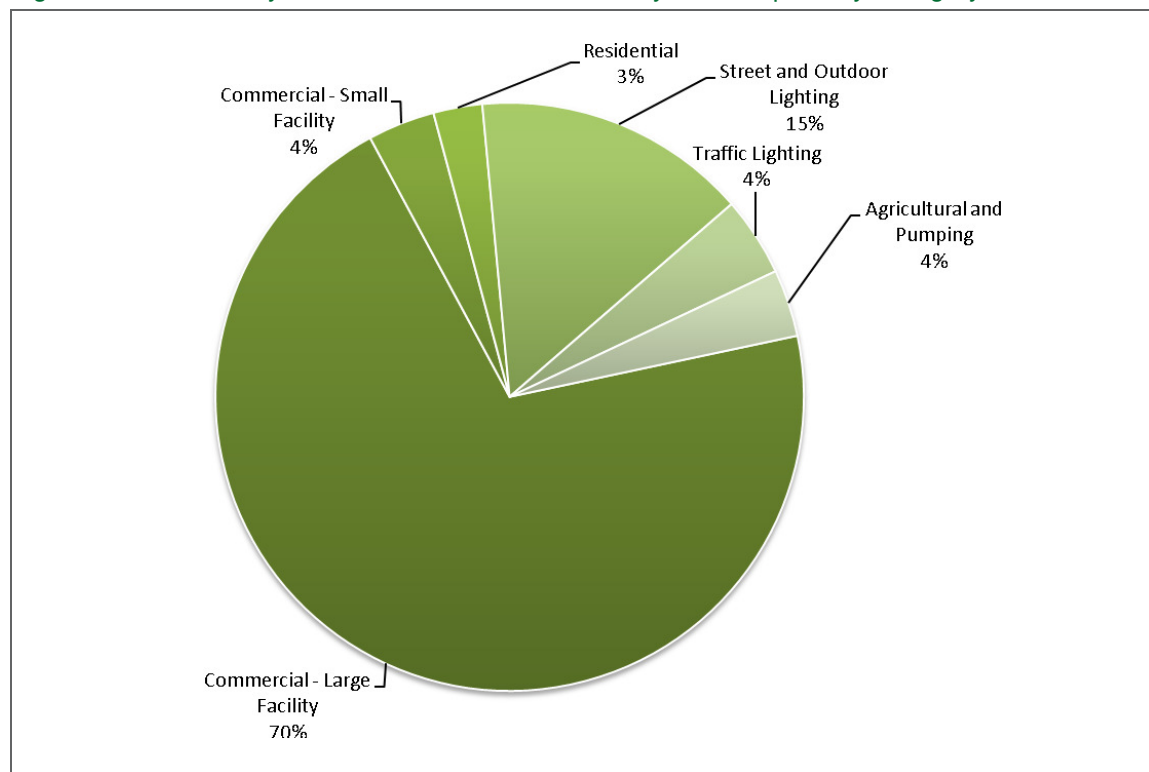
Source: SCG, 2012

### City Government

Figure ES-3 shows the breakdown of the 2005 baseline City Government electricity usage, by energy use category. Table ES-1 presents the top 10 electricity consuming facilities operated by the City in 2010, representing almost 65 percent of annual electricity usage. City Government's top two electricity consuming facilities are the Wastewater Treatment Plant and the Water Yard, which together consume more than twice as much electricity as the next eight facilities combined.

The remainder of the list contains facilities that operate on extended schedules, such as the Public Safety Building and Oxnard Transit Center.

Figure ES-3: 2005 City Government Baseline Electricity Consumption by Category



Source: SCE, 2012

Table ES-1: Top 10 Electricity Using City Government Facilities: 2010

Facility Name	2010 Electricity (kWh)
Wastewater Treatment Plant	9,526,772
Water Yard	5,432,032
Service Center/Fire Admin	977,646
Public Safety Building	950,109
Oxnard Public Library	761,178
Del Norte RRTS	706,377
Annex 1	620,245
Performing Arts Center	448,114
Oxnard Transportation Center	443,250
Corporate Yard	386,203

Source: SCE, 2012

City Government's top 10 natural gas consuming facilities are summarized in [Table ES-2](#). In contrast to the largest electricity users, residential facilities are the biggest consumers of natural gas, with the Public Housing Authority's two senior living high-rises at the top of the list. In addition to space heating, these residential facilities consume natural gas to provide domestic hot water for on-site laundry services.

**Table ES-2: Top 10 Natural Gas Using City Government Facilities**

Facility Name	2010 Natural Gas Usage (therms)
Palm Vista Housing Complex	25,575
Plaza Vista Housing Complex	16,617
Annex 1	14,527
Oxnard Public Library	13,854
Corporate Yard	12,818
Service Center/Fire Admin	11,606
Community Center West	10,310
Colonia Multi-Service Center	7,101
Carnegie Art Museum (Library)	6,028
Civic Center	5,637

Source: SCG, 2012

## GHG Emissions

Resulting GHG emissions are calculated as part of the broader scope of the Oxnard Climate Action and Adaption Plan (CAAP) under development that responds to statewide AB32 initiatives. Energy use is a significant component of the Oxnard CAAP. Community-wide GHG emissions associated with energy use are summarized in [Table ES-3](#) as metric tons of carbon dioxide equivalent per year (MT CO<sub>2</sub>e/yr).<sup>1</sup> Indirect GHG emissions from electricity consumption decreased from 2005 through 2010, with an overall reduction of approximately 10 percent in this time period. Direct GHG emissions from natural gas combustion remained relatively constant from 2005 through 2010, with a small dip from 2007 to 2009. Total GHG emissions ranged from a high of 693,362 MT CO<sub>2</sub>e in 2005 to a low of 621,754 MT CO<sub>2</sub>e in 2009.

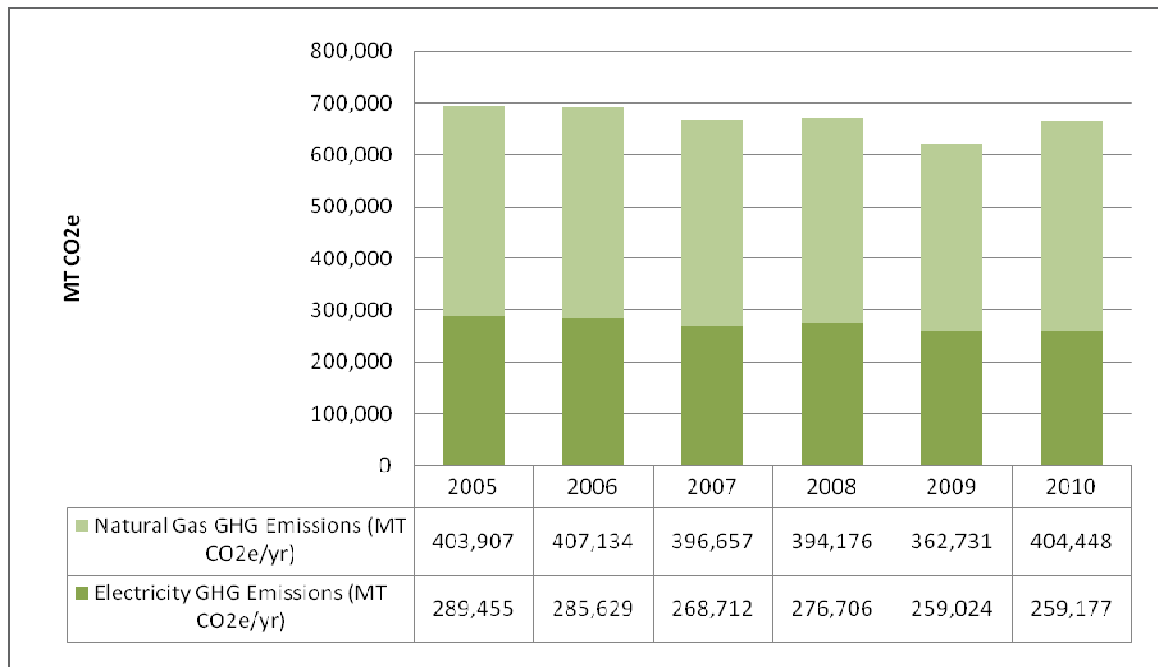
[Figure ES-4](#) presents a breakdown of 2005 baseline community GHG emissions associated with energy use, by sector and energy source. Non-residential sectors contribute almost three quarters of total energy consumption-related GHG emissions. Natural gas usage contributes almost 60 percent of the total. In total, community-wide GHG emissions decreased over 4 percent between 2005 and 2010, likely due to a combination of the economic downturn and City and community energy conservation efforts implemented during this timeframe.

City Government baseline GHG emissions from electricity and natural gas use are shown in [Figure ES-5](#), by category and energy source. In contrast to the community-wide GHG emissions inventory, the majority of GHG emissions related to City Government operations come from electricity use, accounting for 91 percent of the government's energy-related emissions in 2005 and 2010.

<sup>1</sup> CO<sub>2</sub>e includes emissions of CO<sub>2</sub>, methane (CH<sub>4</sub>), and nitrous oxide (N<sub>2</sub>O).

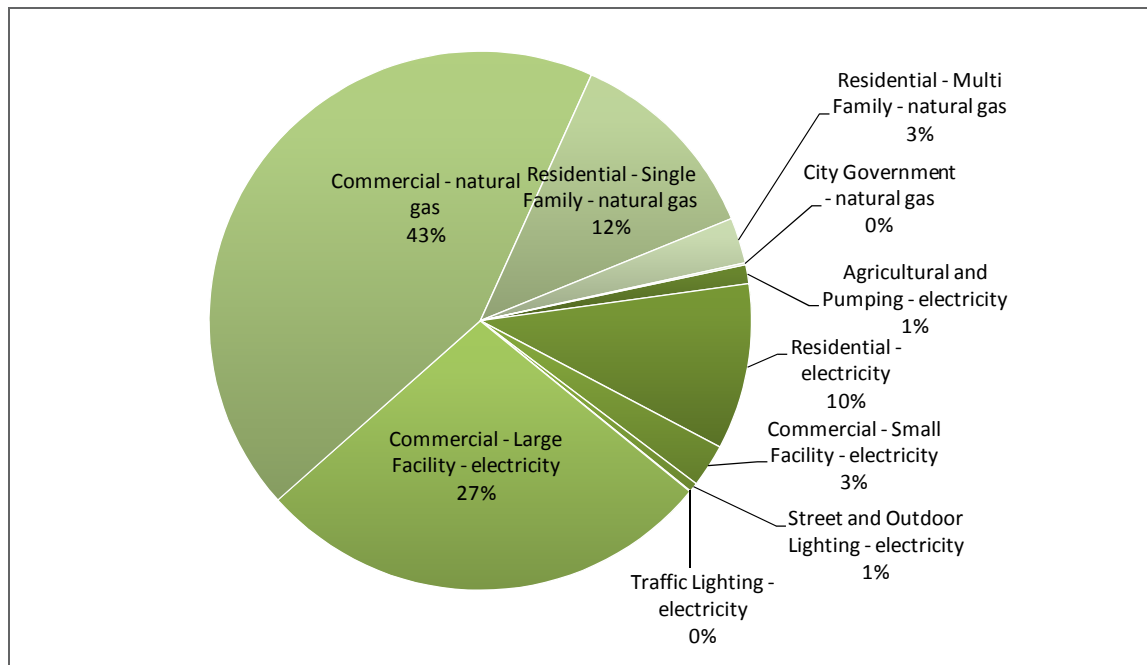


Table ES-3: Community GHG Emissions 2005 to 2010



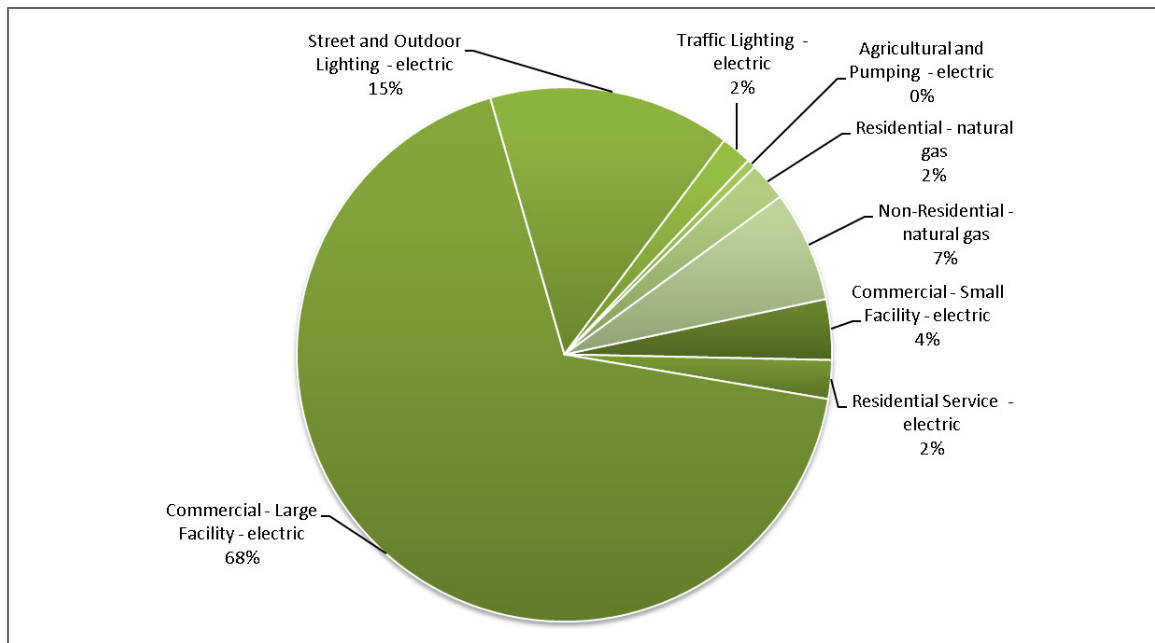
Source: SCE, 2012; SCG, 2012

Figure ES-4: 2005 Baseline Community GHG Emissions by Sector and Energy Source



Source: SCE, 2012; SCG 2012

Figure ES-5: 2005 Baseline City Government GHG Emissions by Category and Energy Source



Source: SCE, 2012; SCG, 2012

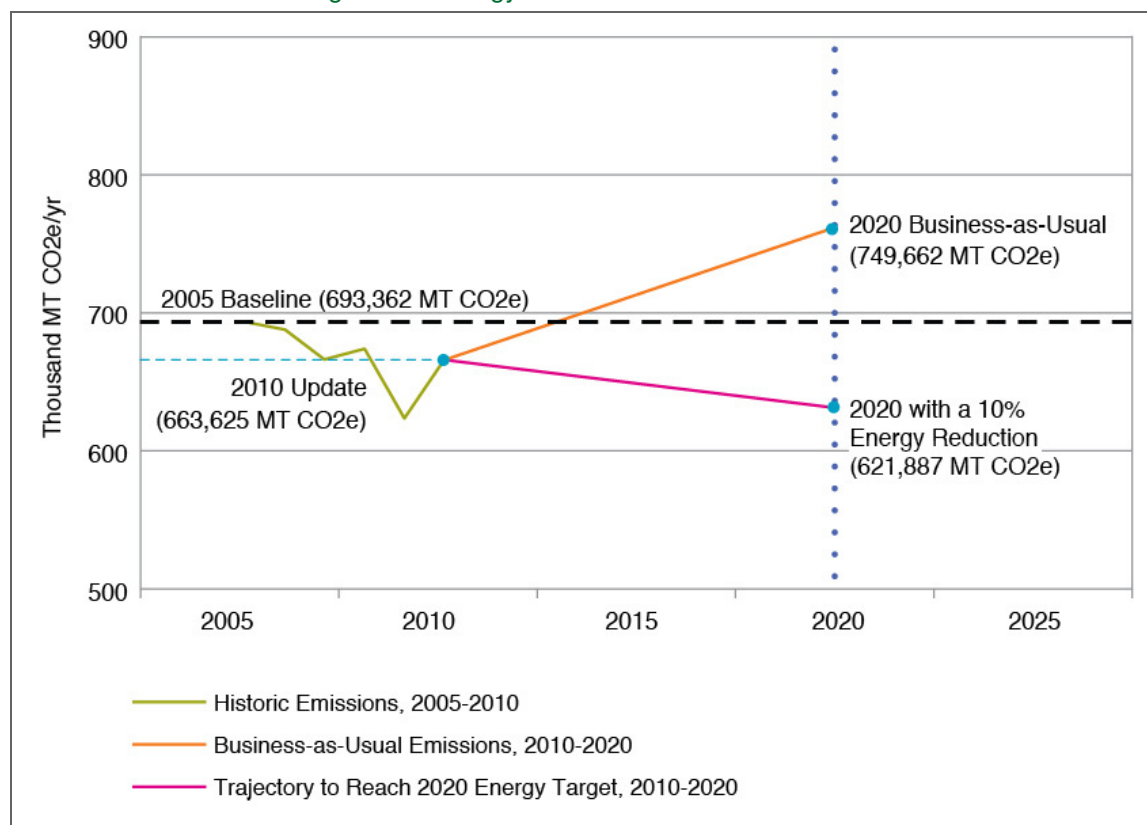
## ES.3 Energy Reduction Target

The City is participating in SCE's Energy Leader Partnership (ELP) Program and pursuing the "Gold Level" which targets a 10 percent kWh reduction for City Government facilities. For the purpose of this EAP, the 10 percent reduction target, measured from the 2005 electricity (kWh) and natural gas (therms) energy use baseline, is expanded to the Oxnard community at large as well as City Government facilities. This equates to a community-wide energy reduction target, net of renewable energy production, of approximately 858,000 MWh of electricity and 68 million therms of natural gas. Expressed another way, the EAP target is to use 10 percent less electricity and natural gas than we would otherwise use by 2020 without these EAP programs, including offsetting utility-provided electricity and natural gas with local renewable energy production.

The City recognizes that achieving this target will be challenging, given that the City's per-capita and per-household energy use are already below state and Ventura County averages due to our mild climate. However, in the context of the more comprehensive climate action planning and the need to focus on where the City has influence over its own and community actions, a 10 percent reduction net of renewable energy production is considered a feasible appropriate target.

By achieving a 10 percent reduction in electricity and natural gas consumption below a 2005 baseline, the City would also reduce its GHG emissions accordingly. If these energy reductions are translated into GHG reductions, the City's 2020 energy-related GHG emissions would be approximately 621,887 MT CO<sub>2</sub>e. This is approximately 10 percent below the 2005 GHG baseline (693,362 MT CO<sub>2</sub>e) and 17 percent below the projected 2020 BAU emissions (749,662 MT CO<sub>2</sub>e). Figure ES-6 depicts the 2020 BAU forecast compared with the GHG emissions achieved with an energy reduction target of 10 percent below 2005 levels.

Figure ES-6: Comparison of Oxnard 2005 Baseline, 2010 Update, BAU Forecast, and Emissions after Achieving a 10% Energy Reduction



The City's energy-reduction target would put the City on a path towards reaching California Air Resources Board's (CARB's) recommended 15 percent reduction in community GHG emissions for all sectors combined. As part of the Oxnard Climate Action and Adaptation Plan (CAAP), the City intends to examine all sectors for community GHG reduction opportunities, including land use, transportation, vehicle miles traveled, local generation and use of alternative energy, and solid waste management.

## ES.4 Reaching the Target

### ES.4.1 Energy Reductions

As discussed above, the City proposes a reduction target of 10 percent below the 2005 baseline for electricity and natural gas consumption. As shown in [Table ES-4](#), implementation of existing City programs since 2005 is expected to result in reductions of 2.7 GWh/yr of electricity, and over 1,000 therms/yr of natural gas associated with City Government operations. The EAP programs presented in Chapters 4 and 5 that can be quantified are estimated to result in additional reductions of 37.5 GWh/yr of electricity, and 1.4 million therms/yr of natural gas. Updates to the State's Title 24 regulations for new construction will further reduce annual energy usage by approximately 10 GWh and 900,000 therms.

Table ES-4: Energy Reductions by 2020

Energy Reductions	Annual Electricity Reduction in 2020 (GWh/yr)	Percent of 2020 BAU Electricity Use	Annual Natural Gas Reduction in 2020 (therms/yr)	Percent of 2020 BAU Natural Gas Use
Existing City programs since 2005	2.7	0%	1,181	0%
New EAP programs by 2020	37.5	4%	1,389,600	2%
Title 24 updates	10.0	1%	909,522	1%
<b>Total energy reductions</b>	<b>50.1</b>	<b>5%</b>	<b>2,300,303</b>	<b>3%</b>

Combined, the reductions listed in Table ES-4 are not enough to compensate for the anticipated increase in community energy use under the BAU and growth scenario. As shown in Figures ES-7 and ES-8, by 2020, the BAU scenario projects that annual electricity usage will increase by 64.2 GWh/yr, while natural gas usage will increase by almost 10 million therms/yr. The reductions listed in Table ES-4 would represent approximately 50.1 GWh/yr (5 percent of the 2020 BAU for electricity), and approximately 2.3 million therms (3 percent of 2020 BAU natural gas use). However, this still represents an increase over the 2005 baseline.

Figure ES-7: Projected Annual Community-Wide Electricity Use under Various Scenarios

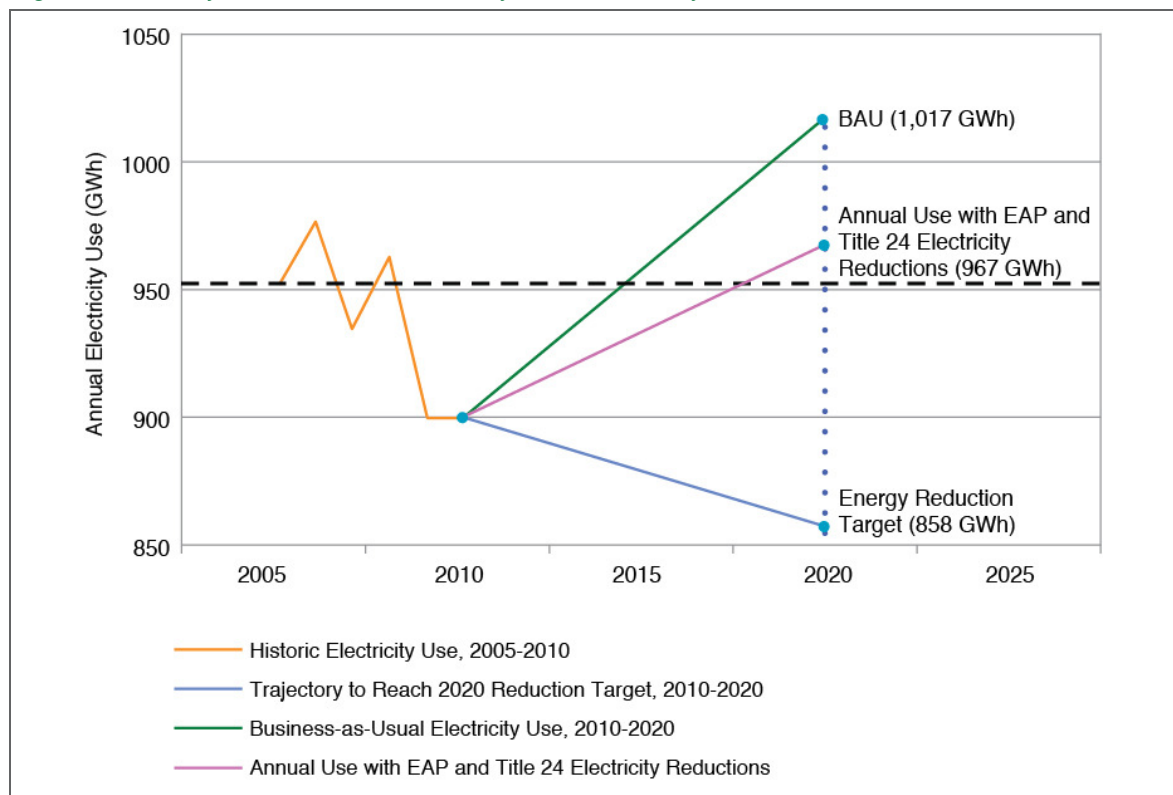
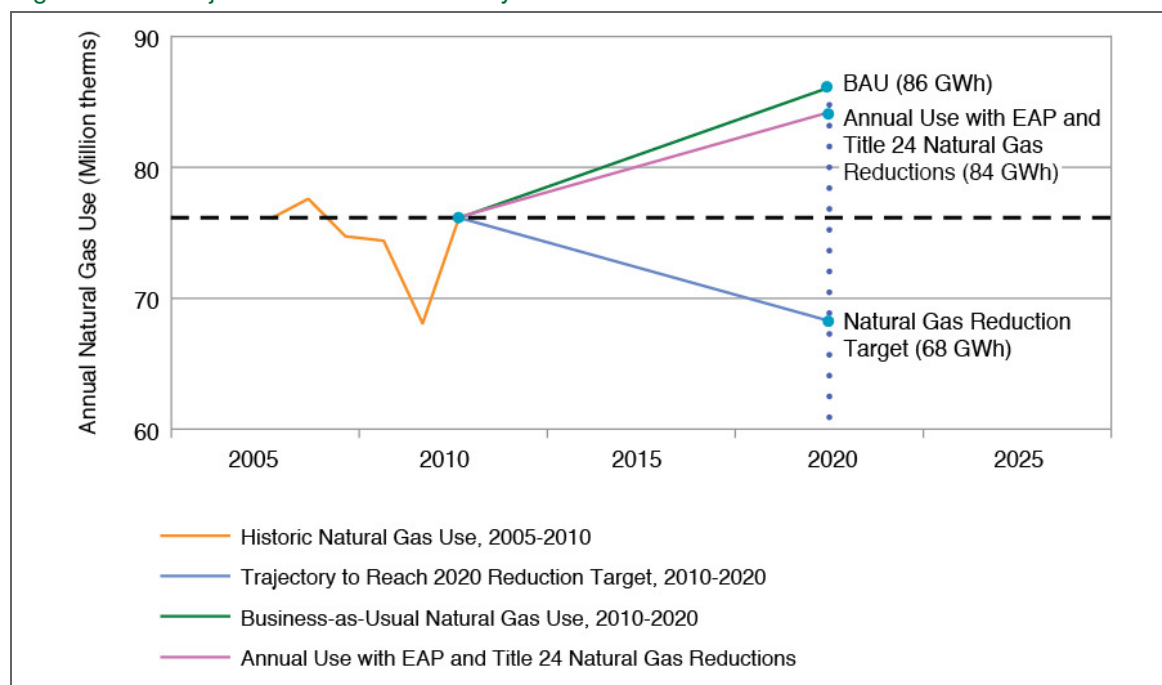


Figure ES-8: Projected Annual Community-Wide Natural Gas Use under Various Scenarios



EAP Chapter 6 provides guidance on where the City may focus its efforts to increase energy reductions including additional programs that the City does not currently plan to implement, but which may be considered during future EAP updates that allow for new energy reducing technologies. Regardless of achieving the EAP target, conserving energy use saves money for taxpayers and the community and is beneficial to the environment.

#### ES.4.2 Implications for GHG Emissions

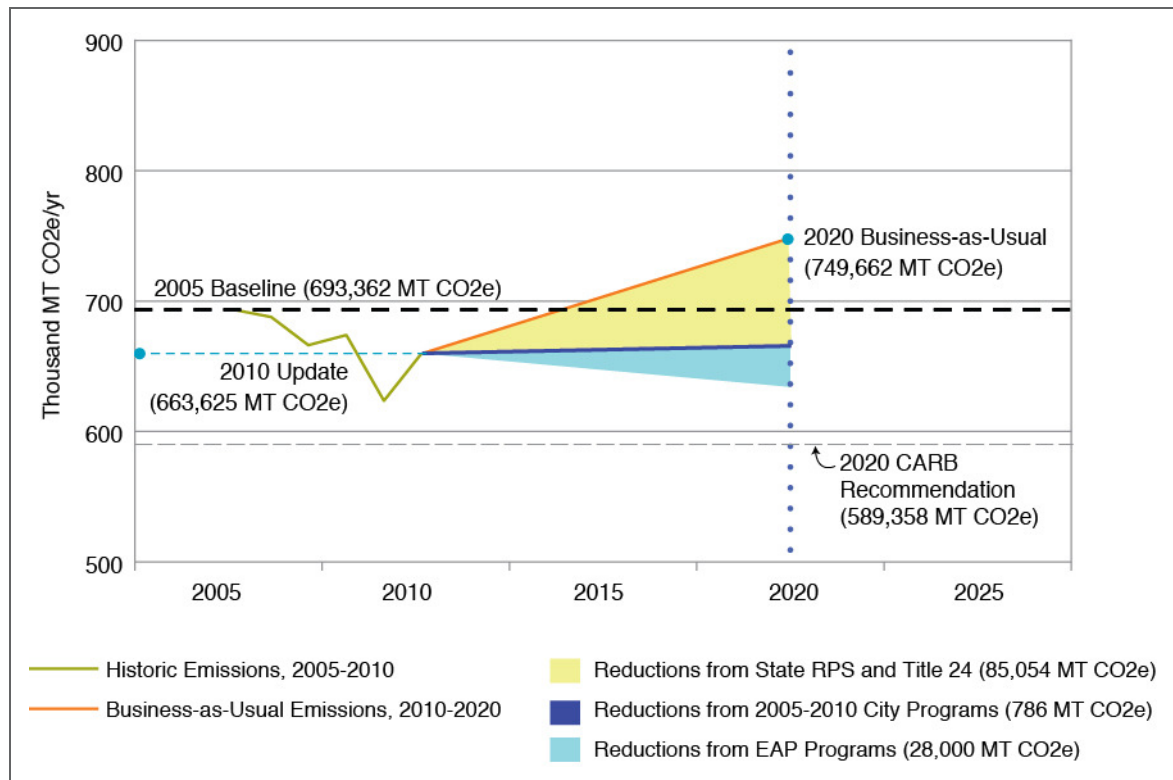
Although the City foresees a challenge in reaching the energy reduction target, the EAP programs and statewide measures will nevertheless result in substantial decreases in community-wide GHG emissions. Figure ES-9 shows the sources of anticipated GHG reductions between 2010 and 2020.

Oxnard's existing initiatives implemented since 2005 (described in Chapter 3) already reduce the City's energy-related GHG emissions, and these programs will result in an additional reduction of 786 MT CO<sub>2</sub>e/yr by 2020. Implementation of the EAP programs described in Chapters 4 and 5 of are expected to reduce community-wide emissions by approximately 28,000 MT CO<sub>2</sub>e/yr by 2020.

Renewable energy policies being implemented statewide will further reduce community-wide GHG emissions. Most significantly, the California Renewable Portfolio Standard (RPS) mandates that 33 percent of electricity sold by the state's investor-owned utilities (including SCE) be generated from renewable resources by 2020. The state-wide AB 32 Scoping Plan includes measures such as updates to Title 24 that will improve energy performance of residential and non-residential buildings. State programs are expected to reduce community-wide GHG emissions by over 85,000 MT CO<sub>2</sub>e/yr by 2020.



Figure ES-9: Oxnard GHG Emissions Reductions, by Category



The combined effect of these reductions would decrease community-wide GHG emissions by almost 114,000 MT CO2e per year by 2020. Applied against the 2020 BAU emissions scenario, this represents an 8 percent reduction from the 2005 baseline, and a 15 percent reduction from the 2020 BAU projection. This puts the City on a path towards achieving CARB's recommended goal of a 15 percent reduction (from 2005) in community-wide GHG emissions for all sectors.



# 1. Introduction and Background

The City of Oxnard (City) has a long history of supporting local efforts to promote energy efficiency and conservation, renewable resource development, and other sustainability efforts in the region. The City has incorporated energy efficiency and conservation goals and policies in its 2030 General Plan to guide government operations and future development. As a member of the Ventura County Regional Energy Alliance (VCREA), the City has leveraged and disseminated energy efficiency and conservation information and technical assistance to use energy more efficiently throughout the community.

This Energy Action Plan (EAP) provides direction to the City to use energy more efficiently and thereby reduce greenhouse gas (GHG) emissions related to both City government operations and the greater community compared to a “business as usual” (BAU) scenario. This EAP builds upon existing efforts and identifies additional actions to implement and augment statewide energy efficiency strategies, implement 2030 General Plan goals and policies, and identify specific projects suitable for existing and future grants and related special energy efficiency funding opportunities.

## EAP Goal

*Achieve maximum practical energy performance in existing buildings and infrastructure, encourage new buildings and upgrade projects to meet the highest standards for energy efficiency and conservation, and develop renewable energy production within public and private communities.*

## 1.1 Purpose and Goals

The City recognizes the emergence of energy conservation, renewable energy production, and climate change as critical issues related to long-term sustainable development. Chapter 2 of the

2030 General Plan identifies a need for energy action planning to address these issues, and provides a vision for sustainable planning efforts at the local level. General Plan Goal SC-3 sets the stage for the City's commitment to sustainable energy use:

*"Energy efficiency performance standards and generation from renewable resources."*

Supporting 2030 General Plan policies include development of a City Government EAP (Policy SC-3.2), a Community EAP (Policy SC-3.3), and various strategies for addressing energy generation and increased efficiency.

The Oxnard EAP supports 2030 General Plan goals and policies by providing specific energy efficiency and conservation programs to reduce community-wide and City Government energy consumption and associated GHGs compared to a BAU scenario. Under this EAP, the City will revise 2030 General Plan Goal SC-3 as follows, to reflect the City's commitment to sustainable energy practices:

*"Achieve maximum practical energy performance in existing buildings and infrastructure, encourage new buildings and retrofit projects to meet the highest standards for energy efficiency and conservation, and develop renewable energy production within public and private communities."*

This revised goal is consistent with the objectives of the California Long Term Energy Efficiency Strategic Plan (CEESP) that achieves significant energy efficiency through 2020. Pursuant to Decision 09-09-047, the California Public Utilities Commission (CPUC) authorized Southern California Edison (SCE) to conduct strategic plan activities centered on energy efficiency and addressing the strategies and related local government goals found in the CEESP. Following a competitive solicitation, SCE awarded funding to Oxnard to develop an EAP to achieve the following two CEESP goals:

- **SCE Strategic Plan Goal 4:** "Local governments lead their communities with innovative programs for energy efficiency, sustainability and climate change."
- **SCE Strategic Plan Goal 3:** "Local governments lead by example with their own facilities and energy usage practices."

The City recognizes that energy represents only one component of a long term strategy to address climate change at a local level. This EAP is a second step in developing a *City of Oxnard Climate Action and Adaptation Plan* (CAAP) which will incorporate the EAP energy baseline information and GHG reduction strategies. The CAAP will eventually address other climate change adaptation issues such as sea level rise and severe weather patterns.

The City provides goals and policies pertaining to energy efficiency and conservation in the City of Oxnard 2030 General Plan Goals and Policies document published in October of 2011, as well as the City of Oxnard Housing Element, Draft No. 4, published in February 2012. Specific goals and policies are provided in Appendix C and demonstrate the City's commitment to municipal and community energy efficiency efforts.

## 1.2 EAP Development

This EAP was developed in 2012 as described below:

1. **Establish 2005 Baseline and 2020 Future Projections of Energy Consumption and Associated GHGs.** The Oxnard EAP includes a community and City Government energy baseline that quantifies electricity and natural gas consumption in 2005, and the resulting inventory of energy-related GHG emissions. The year 2005 was chosen as the baseline based on guidance from the California Statewide Energy Efficiency Collaborative (SEEC), and is consistent with most local government climate action plans in California. Complete and accurate electricity and natural gas energy consumption data is available for that year. The EAP also summarizes energy consumption and GHG emissions information for 2006 through 2010 and depicts trends from the 2005 baseline. The EAP presents electricity and natural gas forecasts and resulting GHG emissions for years 2020 and 2030 under a business-as-usual (BAU) scenario that extends current consumption patterns and incorporates population projections from the City of Oxnard General Plan Background Report<sup>1</sup> and job projections published by the California Department of Transportation (DOT) Economic Analysis Branch for Ventura County.<sup>2</sup>
2. **Develop Energy Reduction and Renewable Energy Programs.** Following review of the baseline data, GHG BAU projections, Oxnard 2030 General Plan, stakeholder feedback, and other available information, the consultant team developed a set of energy programs for the City that would result in a decrease in electricity and natural gas energy use and an increase in renewable energy generation. The Oxnard Sustainability Green Team (Green Team) and Planning Division staff reviewed feasibility of the programs.
3. **Develop Energy Reduction Target.** A proposed reduction target for electricity and natural gas use was based on the 2005 energy use baseline, Southern California Edison's (SCE) Energy Leader Partnership (ELP) Program, future BAU projections, state regulatory requirements, and estimates of EAP program impacts.
4. **Identify Implementation Steps.** Staff prioritized EAP programs based on a cost-benefit analysis and feedback from the Green Team and community stakeholders. The EAP outlines actions for near-, medium-, and long-term implementation, while identifying responsible City Government departments and how the EAP programs implement 2030 General Plan goals and policies.
5. **Conduct Outreach and Stakeholder Engagement.** The EAP process included outreach and stakeholder engagement to obtain feedback on proposed EAP programs, and to communicate the benefits of and opportunities for energy efficiency and conservation. Two community meetings were conducted in May, 2012 to obtain local input on energy efficiency and conservation strategies. Conference calls were conducted in June, 2012

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<sup>1</sup> Oxnard, 2006. City of Oxnard 2030 General Plan (2011), Background Report. (2006).

<sup>2</sup> California Department of Transportation (DOT), 2011. California County-Level Economic Forecast 2011 = 2040, page 221. August 2011. Available at: [http://www.dot.ca.gov/hq/tpp/offices/eab/socio\\_economic\\_files/2011/Caltrans\\_2011\\_Forecasts\\_rev1.pdf](http://www.dot.ca.gov/hq/tpp/offices/eab/socio_economic_files/2011/Caltrans_2011_Forecasts_rev1.pdf)

with the Oxnard Green Team and Planning Division staff to review EAP programs. Appendix A provides a summary of stakeholder outreach efforts.

With these five tasks, the City developed an EAP designed to lead the community with realistic programs to increase energy efficiency and conservation and encourage renewable energy production. The City seeks to engage community residents and businesses in a dialogue that motivates everyone to achieve energy savings and reduce their long-term energy costs and help the City achieve its energy use reduction target.

## 1.3 Regulatory Background

The State of California is a leader in developing and implementing policies and regulations to directly address the risk of climate change by reducing GHG emissions. A summary of the key statewide legislation and state guidance is provided below. Implementation of statewide policies and regulations complement and set the stage for Oxnard EAP programs, enhancing the City's ability to improve community-wide energy efficiency and conservation, and reduce GHG emissions.

### State of California Executive Order S-3-05

In June 2005, the Governor of California signed Executive Order S-3-05, which identified the California Environmental Protection Agency (CalEPA) as the lead coordinating state agency for establishing climate change emission reduction targets in California. A "Climate Action Team," a multi-agency group of state agencies, was set up to implement Executive Order S-3-05. The Governor's Executive Order established aggressive emissions reductions goals: by 2010, GHG must be reduced to 2000 levels; by 2020, GHG emissions must be reduced to 1990 levels; and by 2050, GHG must be reduced to 80 percent below 1990 levels. GHG emission reduction strategies and measures to reduce global warming were identified by the California Climate Action Team in 2006.

### Assembly Bill 32, the California Global Warming Solutions Act of 2006

In September 2006, the California Legislature passed Assembly Bill (AB) 32, which set the goal of reducing GHG emissions to 1990 levels by 2020. AB 32 finds and declares that "global warming poses a serious threat to economic well-being, public health, natural resources and the environment of California." The legislation granted authority to the California Air Resources Board (CARB) to establish multiple mechanisms (regulatory, reporting, voluntary and market) to achieve quantifiable reductions in GHG emissions to meet the statewide goal.

The Climate Change Scoping Plan, adopted in 2008, outlines the State's plan to achieve the GHG reductions required in AB 32. The actions include direct regulations, alternative compliance mechanisms, incentives, voluntary actions, and other mechanisms. The Scoping Plan identifies local governments as "essential partners" in achieving California's goals to reduce GHG emissions, encouraging the adoption of reduction targets for community and municipal operations emissions that are consistent with the State's commitment (identified as equivalent to 15 percent below "current" levels). CARB recommended a GHG reduction goal for local governments of 15 percent below today's levels by 2020 to ensure that municipal and community-wide emissions match the State's reduction target.



## Senate Bill 375 (SB 375)

In 2008, SB 375 was enacted to address indirect GHG emissions caused by urban sprawl. SB 375 develops emissions-reduction goals that regions can apply to planning activities. SB 375 provides incentives for local governments and developers to create new walkable and sustainable communities, revitalize existing communities, and implement conscientiously planned growth patterns that concentrate new development around public transportation nodes. CARB has been working with the state's metropolitan planning organizations (MPOs) to align their regional transportation, housing, and land use plans to reduce vehicle miles traveled. SB 375 enhances CARB's ability to reach the goals of AB 32 by directing the agency to develop regional GHG emission reduction targets to be achieved from the land use and transportation sector for 2020 and 2035.

The emissions reduction target for the Southern California Association of Governments (SCAG) region encompassing the City of Oxnard is 8 percent and 13 percent for 2020 and 2035, respectively. In contrast to the AB 32 targets, the SB 375 targets are per capita emissions reduction targets for GHG emissions from automobiles and light trucks.

## Senate Bill 97, Amendments to California Environmental Quality Act

California Environmental Quality Act (CEQA) requires public agencies to review the environmental impacts of proposed projects, including General Plans, Specific Plans and specific kinds of development projects. Recognizing that AB 32 did not discuss how GHGs should be addressed in documents prepared under CEQA, the legislature enacted SB 97 to require the Governor's Office of Planning and Research (OPR) to develop and adopt CEQA guidelines for the mitigation of emissions. The draft guidelines were formalized on March 18, 2010, and all CEQA documents prepared after this date are required to comply with the OPR-approved amendments to the CEQA Guidelines.

## OPR Guidance for California Environmental Quality Act

OPR provides guidance for agency compliance with CEQA, which requires that lead agencies analyze and document the environmental impacts of proposed projects. OPR has developed guidance on the analysis and mitigation of GHG emissions in CEQA documents. This guidance states that lead agencies should develop their own approach to performing climate change analysis for projects that generate GHG emissions, and that compliance with CEQA can be achieved by identification and quantification of GHG emissions, assessment of significance of the impact on climate change, and identification of mitigation measures and/or alternatives if the impact is found to be significant.

OPR developed, and the California Resources Agency has adopted, amendments to the CEQA Guidelines to incorporating this guidance. CEQA Guidelines Section 15183.5(b) states that a lead agency may choose to analyze and mitigate significant greenhouse gas emissions in a plan for the reduction of GHGs or similar document, and that such a plan may be used in a cumulative impacts analysis of a project. A lead agency may determine that an individual project's incremental contribution to a cumulative effect on climate change is not cumulatively considerable if the project complies with the requirement of the previously adopted plan to reduce GHGs. This plan should:



1. Quantify GHG emissions, both existing and projected over a specified time period, resulting from activities within a defined geographic area;
2. Establish a level, based on substantial evidence, below which the contribution to GHG emissions from activities covered by the plan would not be cumulatively considerable;
3. Identify and analyze the GHG emissions resulting from specific actions or categories of actions anticipated within the geographic area;
4. Specify measures or a group of measures, including performance standards, that substantial evidence demonstrates, if implemented on a project-by-project basis, would collectively achieve the specified emissions level;
5. Establish a mechanism to monitor the plan's progress toward achieving the level and to require amendment if the plan is not achieving specified levels; and
6. Be adopted in a public process following environmental review.

Oxnard EAP fulfills steps (1) through (5) related to energy, encompassing electricity and natural gas consumption in the community and City Government operations. In the future, the City will incorporate GHG emissions reduction strategies associated with transportation, solid waste, and direct industrial GHG emissions into a CAAP. In developing the Oxnard CAAP the City will fulfill OPR steps (1) through (6) for the full spectrum of GHG emissions.



## 2. 2005 Baseline, 2020 and 2030 Forecasts, and Reduction Target

This chapter presents a 2005 electricity and natural gas use baseline and 2020 and 2030 projections under a business as usual scenario (BAU) for the Oxnard greater community and City Government operations. The BAU scenario projects future energy consumption in the absence of this EAP, without local renewable energy production, and without the State-mandated energy conservation programs and utility-provider directives that have been implemented since 2005, such as the State Green Building Code (Title 24) and increasing the percentage of renewable sources in SCE's energy portfolio (Renewables Portfolio Standard). This chapter also sets a target for electricity and natural gas conservation in both City Government and the Oxnard community, and explains the implications of those targets for reducing GHG emissions.

The purpose of the energy use inventory is to analyze the relative magnitude of energy use to create feasible and effective local programs to further reduce energy consumption in ways tailored to Oxnard residents and businesses within our coastal climate and economy. The energy use inventory is focused only on electricity and natural gas provided by SCE and SGC, respectively. The energy use information is translated into GHG emissions as a common energy metric and for use in the climate action and adaptation planning which will include GHG emissions from other sources such as solid waste and transportation.

The 2005 energy use baseline inventory:

1. Presents SCE- and SCG-provided electricity and natural gas consumption for the community-wide and for City Government operations in 2005, and

2. Quantifies resulting energy-related GHG emissions from the community and from City Government operations in 2005.

This chapter then presents the same information for 2006 through 2010 to establish consumption trends from the 2005 baseline. Detailed methodology, calculations and supplemental tables supporting the baseline energy usage and GHG emissions are provided in Appendix B.

## 2.1 Community Energy Consumption: 2005 to 2010

Located about 60 miles northwest of Los Angeles along a stretch of Pacific Ocean coastline, Oxnard is the largest city within Ventura County. Oxnard is the center of a regional agricultural industry and a progressive business center, while also serving as a relaxed seaside destination with a variety of neighborhoods and community services. Occupying approximately 26 square miles, the city is surrounded by extensive year-round agriculture in the Oxnard Plain, and its land use pattern reflects its growth from a small town to full-service General Law city with a 2012 population of about 200,000 people, 52,000 housing units, and 4,200 businesses (U.S. Census Bureau, 2010; City of Oxnard, 2012). The community energy consumption inventory includes electricity and natural gas use within the City limits from commercial, industrial, City Government, and residential sectors. For additional information on the sectors and sources included in the inventory, please see Appendix B.

### 2.1.1 Community Electricity and Natural Gas Usage

**Table 2-1** provides 2005 to 2010 electricity usage aggregated by service sector.<sup>1</sup> The two commercial sectors capture commercial, industrial, institutional and City Government buildings and facilities.

**Table 2-1: Community Electricity Use by Sector (GWh)**

Sector	2005	2006	2007	2008	2009	2010
Commercial - Large Facility	627.0	646.5	601.7	627.3	565.8	568.1
Commercial - Small Facility	58.9	58.5	59.8	60.1	58.6	57.8
Residential	227.5	233.2	237.5	241.6	243.4	243.0
Street and Outdoor Lighting	12.2	12.3	12.4	12.8	13.0	13.0
Traffic Lighting	1.4	1.0	0.8	0.7	0.7	0.7
Agricultural and Pumping	25.7	25.2	21.3	18.7	18.4	17.7
<b>Total Community Electricity</b>	<b>952.8</b>	<b>976.7</b>	<b>933.5</b>	<b>961.3</b>	<b>899.9</b>	<b>900.4</b>

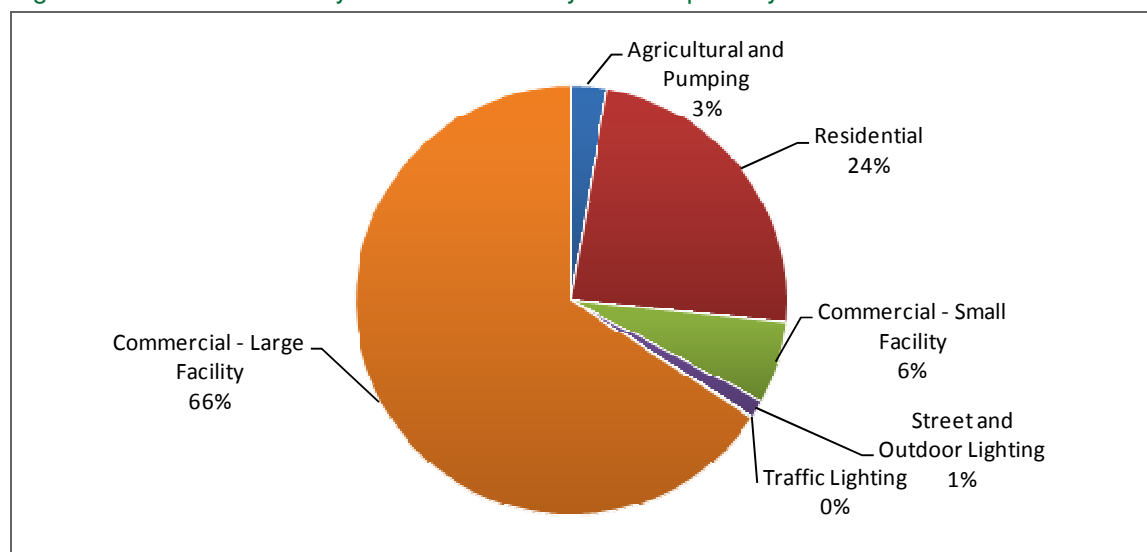
All values, including Total, are rounded to one decimal point from raw data.

Source: SCE, 2012

As shown in Table 2-1, for the six years, the Commercial-Large Facility sector was the largest consumer of electricity. Energy consumption in this sector fluctuated from 2005 through 2010, with an overall decrease that is likely a result of the national economic downturn. Residential electricity usage has gradually increased every year from 2005 through 2010 reflecting new development, with a total increase of approximately 6.4 percent. **Figure 2-1** shows the relative contribution by each sector to the 2005 energy use baseline.

<sup>1</sup> SCE does not provide data that would violate the CPUC's 15/15 rule. As further described in Appendix B, the 15/15 Rule was adopted by the CPUC in the Direct Access Proceeding (Commission Decision 97-10-031) to protect customer confidentiality, and requires that (1) any aggregated information provided by a utility must be made up of at least 15 customers, and (2) a single customer's load must be less than 15 percent of an assigned category.

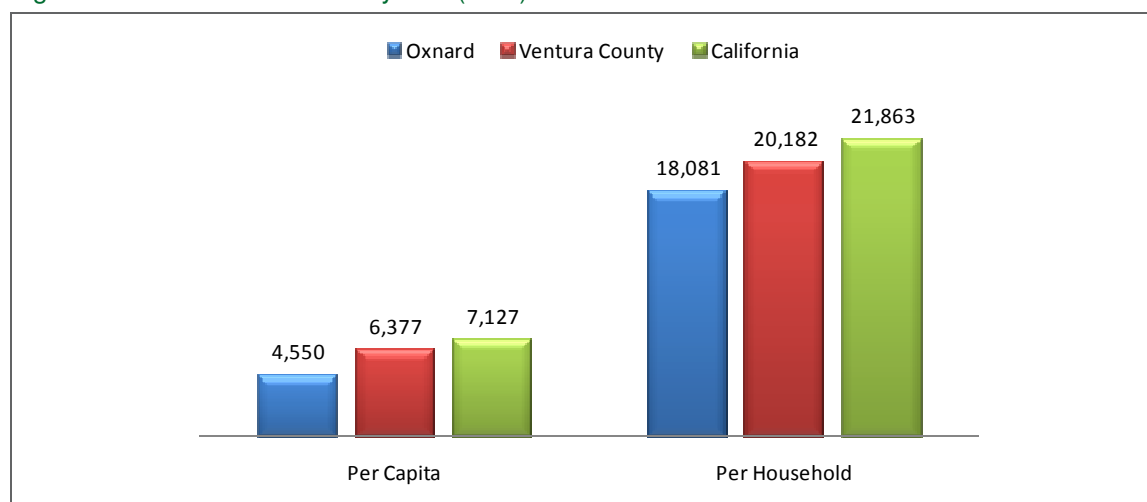
Figure 2-1: 2005 Community Baseline Electricity Consumption by Sector



Source: SCE, 2012

Compared to average electricity usage in California and Ventura County, Oxnard's community-wide electricity usage is lower on both a per capita basis and per household basis. As shown in Figure 2-2, in 2010, per capita electricity use in Oxnard was 36 percent lower than the California average and 29 percent lower than the Ventura County average. Per household electricity use in Oxnard was 17 percent lower than the California average and 10 percent lower than the Ventura County average. Much of this lower consumption is attributable to Oxnard's mild climate.

Figure 2-2: 2010 Total Electricity Use (kWh)



Source: SCE, 2012; CEC, 2012; California State Association of Counties (CSAC), 2012; U.S. Census Bureau, 2010

Table 2-2 summarizes Oxnard community natural gas usage from 2005 through 2010, aggregated by service sector.<sup>2</sup> The Commercial sector includes commercial, industrial, and institutional buildings and facilities.

<sup>2</sup> Non-residential data excludes accounts that trigger the CPUC 15/15 Rule described above and in Appendix B.

Table 2-2: Community Natural Gas Use by Sector (thousand therms)

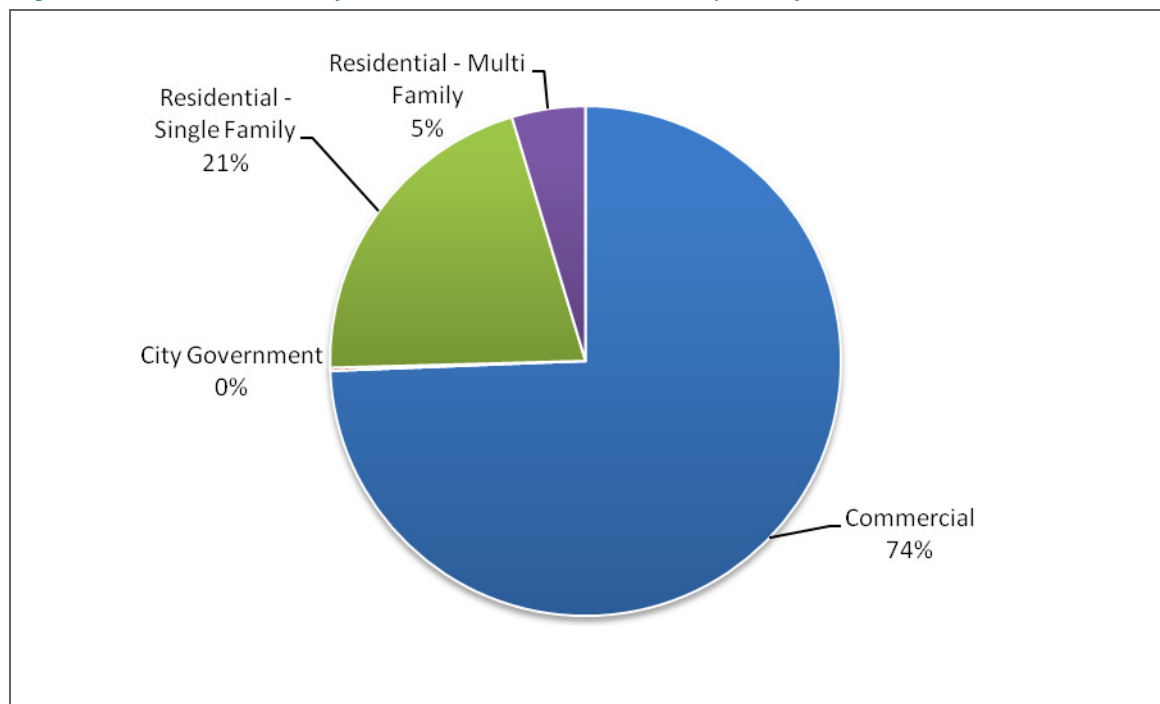
Sector	2005	2006	2007	2008	2009	2010
Residential - Single Family	15,784	15,943	16,776	16,350	16,078	16,683
Residential - Multi Family	3,556	3,408	3,531	3,442	3,322	3,428
Commercial	56,583	57,169	54,235	54,290	48,757	55,895
City Government	153	163	165	158	159	169
<b>Total</b>	<b>76,075</b>	<b>76,683</b>	<b>74,707</b>	<b>74,240</b>	<b>68,316</b>	<b>76,175</b>

All values, including Total, are rounded to the nearest thousand therms from raw data.

Source: SCG, 2012

As shown in Table 2-2, natural gas use remained relatively constant across all sectors from 2005 through 2010, showing small fluctuations but no significant increase or decrease. For all six years, the Commercial sector was the largest consumer of natural gas, representing approximately three-quarters of all natural gas usage, followed by the Single Family Residential sector. Figure 2-3 shows 2005 community baseline natural gas usage by sector.

Figure 2-3: 2005 Community Baseline Natural Gas Consumption by Sector

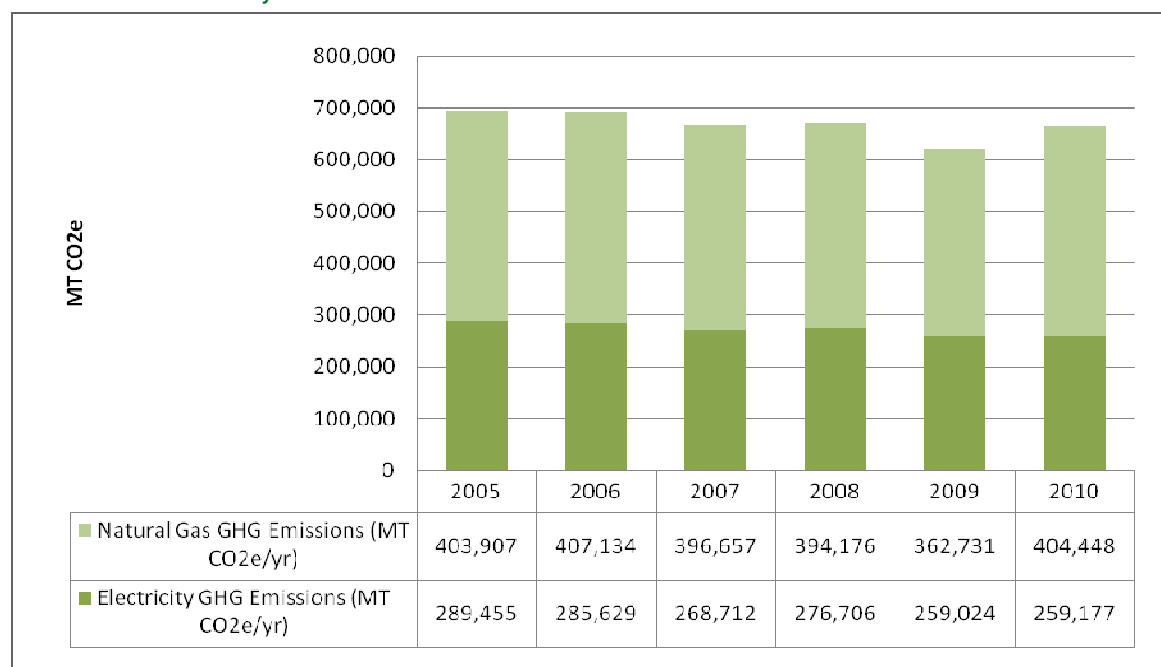


Source: SCG, 2012

## 2.1.2 Community GHG Emissions

This section presents GHG emissions resulting from the electricity and natural gas consumption detailed in Section 2.1.1. Community-wide GHG emissions are summarized in [Table 2-3](#) as metric tons of carbon dioxide equivalent per year (MT CO<sub>2</sub>e/yr).<sup>3</sup> Indirect GHG emissions from electricity consumption generally decreased from 2005 through 2010, with an overall reduction of approximately 10 percent in this time period. Direct GHG emissions from natural gas combustion remained relatively constant from 2005 through 2010, with a small dip from 2007 to 2009. Total GHG emissions ranged from a high of 693,362 MT CO<sub>2</sub>e in 2005 to a low of 621,754 MT CO<sub>2</sub>e in 2009.

**Table 2-3: Community GHG Emissions 2005 to 2010**



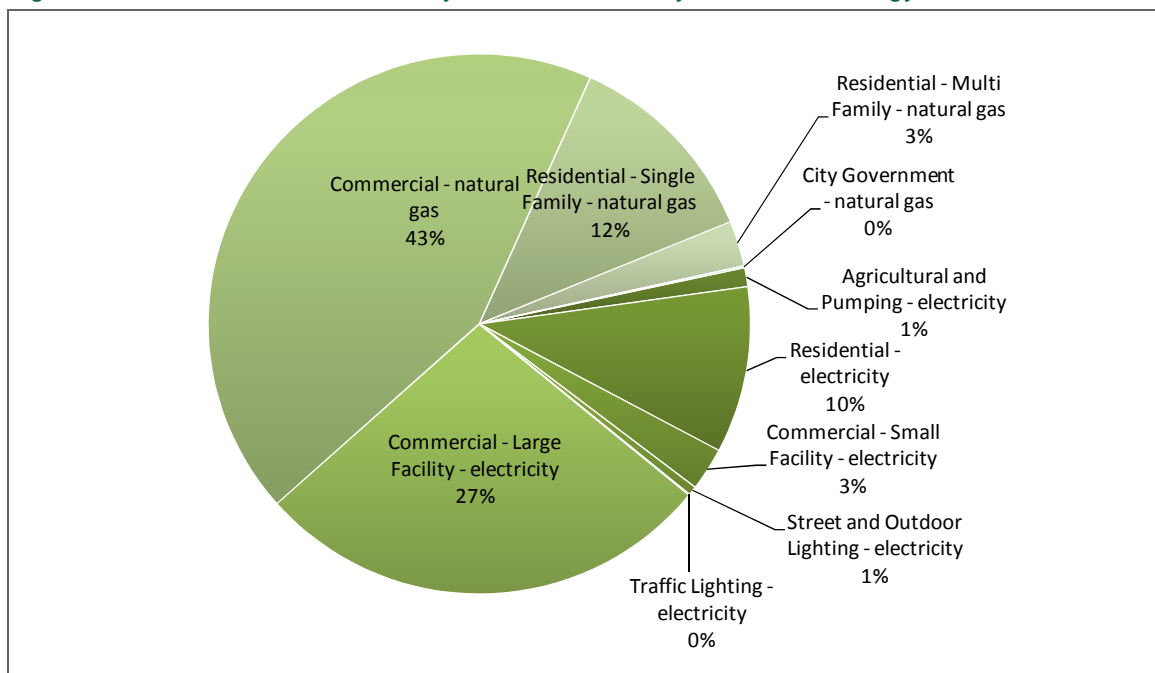
Source: SCE, 2012; SCG, 2012

[Figure 2-4](#) presents a breakdown of 2005 baseline community GHG emissions associated with energy use, by sector and energy source. [Figure 2-4](#) shows that non-residential sectors contribute almost three quarters of total energy-related GHG emissions. Natural gas usage contributes almost 60 percent of the total. In total, community-wide GHG emissions decreased over 4 percent between 2005 and 2010, likely due to a combination of the national economic downturn and energy conservation efforts implemented the City Government and the community during this timeframe.

<sup>3</sup> CO<sub>2</sub>e includes emissions of CO<sub>2</sub>, methane (CH<sub>4</sub>), and nitrous oxide (N<sub>2</sub>O).



Figure 2-4: 2005 Baseline Community GHG Emissions by Sector and Energy Source



Source: SCE, 2012; SCG 2012

## 2.2 City Government Energy Consumption: 2005 to 2010

Oxnard is a full-service city, providing police and fire services and operating libraries, parks, water and wastewater treatment facilities, and more. The City also provides a public housing program with over 900 units of rental housing for eligible low-income families, the elderly, and persons with disabilities. The City Government energy use inventory is based on electricity and natural gas meters under the direct control of the City. For a complete description of City Government operations, see Appendix B.

### 2.2.1 City Government Electricity and Natural Gas Usage

City Government operations are included in the community-wide energy and GHG emissions estimates presented in Section 2.1. This section provides added detail on the energy use and GHG emissions just from City Government operations. Table 2-4 provides 2005 to 2010 electricity usage aggregated by operations category. The two commercial categories capture all non-residential City Government buildings and facilities (utility companies generally classify City Government buildings as commercial). The Residential category includes all public housing facilities owned and operated by the City's Housing Department.

As shown in Table 2-4, City Government electricity usage fluctuated from 2005 through 2010, with a total increase of approximately 2.4 percent over that timeframe. The Commercial - Large Facility category represents the aggregation of 41 major City Government facilities which are collectively the biggest consumers of electricity, as most City Government facilities such as water and wastewater treatment operations fall into that category.

Table 2-4: City Government Electricity Use by Category (GWh)<sup>4</sup>

City Government Operations Category	2005	2006	2007	2008	2009	2010
Commercial - Large Facility	21.0	22.6	17.3	20.0	23.6	23.4
Commercial - Small Facility	1.1	1.1	1.0	1.1	1.3	1.3
Residential	0.8	0.8	0.8	0.9	0.8	0.8
Street and Outdoor Lighting	4.5	4.6	4.7	4.8	5.0	5.1
Traffic Lighting	1.3	1.0	0.7	0.7	0.7	0.6
Agricultural and Pumping	1.1	1.0	0.6	0.2	0.2	0.2
<b>Total City Government Electricity</b>	<b>29.8</b>	<b>30.9</b>	<b>25.1</b>	<b>27.7</b>	<b>31.7</b>	<b>31.3</b>

All values, including Total, are rounded to one decimal point from raw data.

Source: SCE, 2012

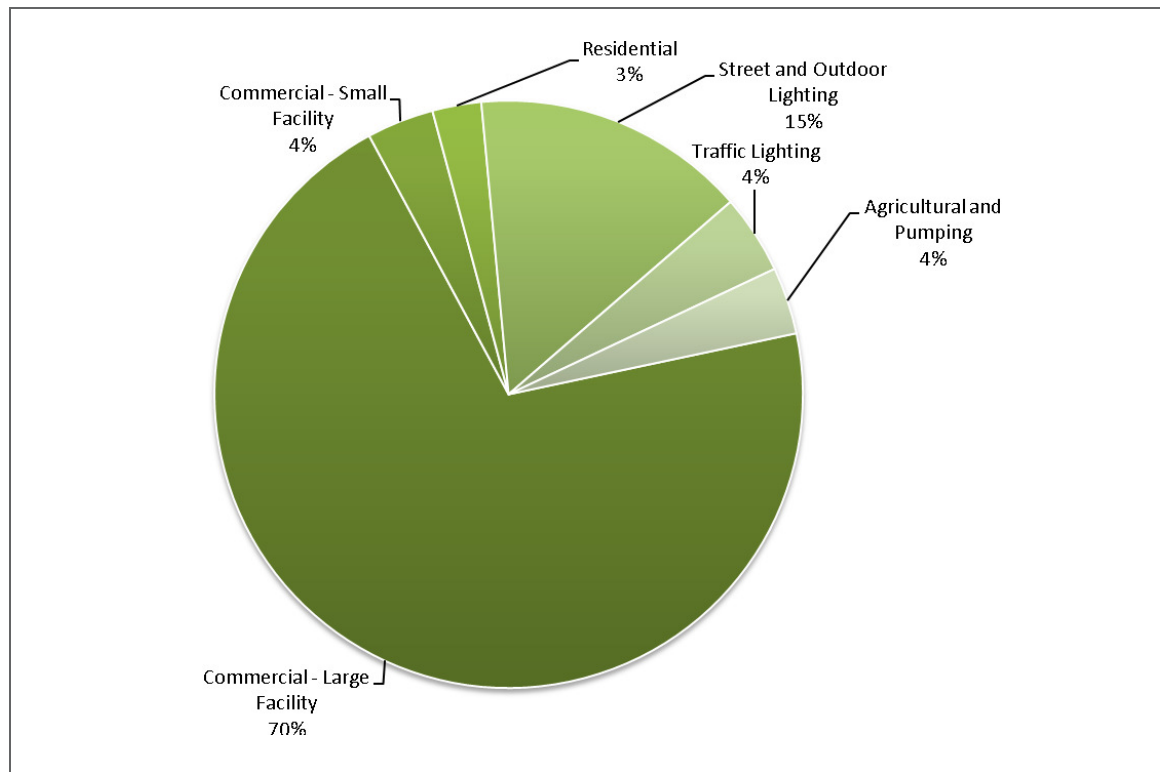
Both commercial categories show little year-over-year change, with the exception of 2007, when electricity use in Commercial-Large Facilities decreased approximately 20 percent. This decrease was primarily due to a large decrease in electricity consumption at the Waste Water Treatment Facility and the Water Yard. If these two facilities are removed from the Commercial-Large Facility category the result is a 5-10 percent increase in electricity consumption each year between 2005 and 2008, followed by a slight decline in 2009 and again in 2010. Electricity usage by Traffic Lighting decreased from 2006 to 2007 due to upgrades of traffic signals from incandescent light bulbs to light-emitting diode (LED) technology. Electricity use in the Agricultural and Pumping category decreased from 2007 to 2008 due to a new groundwater desalter, which shifted energy use from water accounts to the commercial category. This may explain fluctuations in energy consumption visible in the Commercial-Large Facility category.

Figure 2-5 shows that in 2005, a large majority (70 percent) of baseline City Government electricity usage occurred in the Commercial-Large Facility category. Street and Outdoor Lighting represent about 15 percent of the total City Government electricity consumption, while Small Commercial and Traffic Lighting make up the next biggest categories at about 4 percent each. Within the Street and Outdoor category, SCE-owned street lights (for which the City pays for the electricity) account for almost three quarters of electricity usage. In 2010, category breakdowns were similar to the 2005 baseline with the two commercial categories comprising 79 percent of total electricity usage, followed by Street and Outdoor Lighting (16 percent).

Table 2-5 presents the top 10 electricity consuming facilities operated by the City Government in 2010, representing almost 65 percent of annual electricity usage. City Government's top two electricity consuming facilities are the Wastewater Treatment Plant and the Water Yard, which together consume more than twice as much electricity as the next eight facilities combined, as shown in Table 2-5. These two facilities alone account for almost half of all City Government energy use. The remainder of the list contains facilities that operate on extended schedules, such as the Public Safety Building and Oxnard Transit Center.

<sup>4</sup> 2005 and 2006 street lighting data was unavailable. Values presented in Table 2-4 are estimates based on the 2007 consumption and 1.9 percent annual outdoor and street light growth rate.

Figure 2-5: 2005 City Government Baseline Electricity Consumption by Category



Source: SCE, 2012<sup>5</sup>

Table 2-5: Top 10 Electricity Using City Government Facilities: 2010

Facility Name	2010 Electricity (kWh)
Wastewater Treatment Plant	9,526,772
Water Yard	5,432,032
Service Center/Fire Admin	977,646
Public Safety Building	950,109
Oxnard Public Library	761,178
Del Norte RRTS	706,377
Annex 1	620,245
Performing Arts Center	448,114
Oxnard Transportation Center	443,250
Corporate Yard	386,203

Source: SCE, 2012

<sup>5</sup> 2005 and 2006 street lighting data was unavailable. Values presented in Table 2-5 are based on the 2007 consumption and 1.9 percent annual outdoor and street light growth rate

Table 2-6 shows City Government natural gas usage from 2005 through 2010, aggregated by Residential and Non-Residential categories, as well as total City Government natural gas usage.

Table 2-6: Oxnard City Government Natural Gas Use by Category (thousand therms)<sup>6</sup>

Category	2005	2006	2007	2008	2009	2010
Non-Residential	127.8	134.4	135.3	125.0	117.8	125.7
Residential	41.1	44.4	45.9	41.7	41.4	43.6
<b>Total City Government Natural Gas</b>	<b>168.8</b>	<b>178.8</b>	<b>181.2</b>	<b>166.7</b>	<b>159.2</b>	<b>169.4</b>

All values, including Total, are rounded to one decimal point from raw data.  
Source: SCG, 2012

As shown in Table 2-6, the Non-Residential category used the largest portion of natural gas over all six years, accounting for approximately three-quarters of annual consumption. Year-over-year natural gas use for Non-Residential City Government facilities increased between 2005 and 2007, and dipped between 2007 and 2009 before rising again in 2010. While energy use patterns in the Non-Residential category are difficult to discern, it is possible to identify facilities having a large impact on government-wide usage. As shown in Table 2-7, for non-residential City Government facilities the Annex 1, Oxnard Public Library, and Corporate Yard are the largest users of natural gas. Several facilities, including the Community Center West, Performing Arts & Convention Center and Oxnard Public Library, saw large decreases in natural gas usage since 2006. The Public Library alone reduced natural gas usage by over 20 percent between 2007 and 2008, due to improvements made to the heating, ventilation and cooling (HVAC) system.

Natural gas use in the Residential category fluctuated from 2005 through 2010, peaking in 2007, as shown in Table 2-6. Combined, the Palm Vista and Plaza Vista Housing Complexes account for over 90 percent of all City Government Residential use, and almost a quarter of the total City Government natural gas use.

Table 2-7: Top 10 Natural Gas Using City Government Facilities

Facility Name	2010 Natural Gas Usage (therms)
Palm Vista Housing Complex	25,575
Plaza Vista Housing Complex	16,617
Annex 1	14,527
Oxnard Public Library	13,854
Corporate Yard	12,818
Service Center/Fire Admin	11,606
Community Center West	10,310
Colonia Multi-Service Center	7,101
Carnegie Art Museum (Library)	6,028
Civic Center	5,637

Source: SCG, 2012

<sup>6</sup> Natural gas consumption for the Plaza Vista Housing Complex was not available for 2005 through 2008. Natural gas consumption for this time period was estimated as the average of years 2009 and 2010.

City Government's top 10 natural gas consuming facilities are summarized in Table 2-7. In contrast to the largest electricity users, residential facilities are the biggest consumers of natural gas, with the Public Housing Authority's two senior living high-rises at the top of the list. In addition to space heating, these residential facilities consume natural gas to provide domestic hot water for on-site laundry services.

## 2.2.2 City Government GHG Emissions

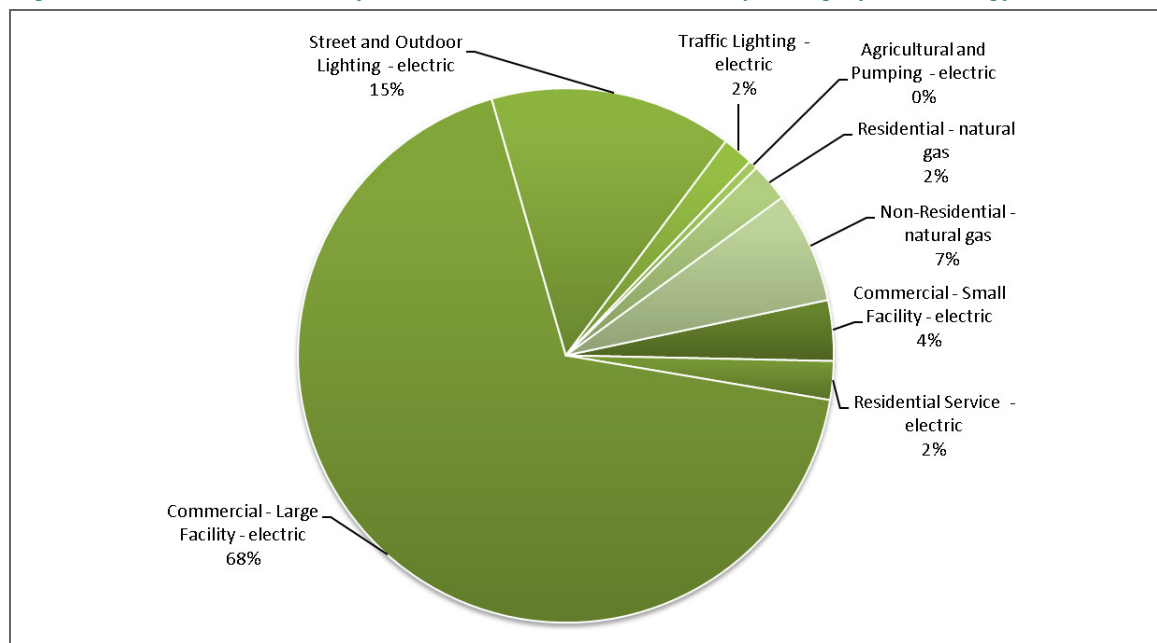
The resulting City Government GHG emissions from electricity and natural gas use are summarized in Table 2-8 as MT CO<sub>2</sub>e/yr. GHG emissions from electricity fluctuated from 2005 through 2010, decreasing significantly in 2007 and 2008 before returning to 2005 levels in 2010. GHG emissions from natural gas remained relatively constant from 2005 through 2010.

**Table 2-8: City Government GHG Emissions**

Year	Electricity GHG Emissions (MT CO <sub>2</sub> e/yr)	Natural Gas GHG Emissions (MT CO <sub>2</sub> e/yr)	Total GHG Emissions (MT CO <sub>2</sub> e/yr)
2005	9,059	896	9,955
2006	9,036	949	9,985
2007	7,214	962	8,176
2008	7,982	885	8,867
2009	9,112	845	9,957
2010	9,020	899	9,919

In contrast to the community-wide GHG emissions inventory, the majority of GHG emissions related to City Government operations come from electricity use, accounting for 91 percent of the government's energy-related emissions in 2005 and 2010.

**Figure 2-6: 2005 Baseline City Government GHG Emissions by Category and Energy Source**



Source: SCE, 2012; SCG, 2012

## 2.3 Business-as-Usual (BAU) Forecasts

Establishing a 2005 energy consumption baseline and forecasting to 2020 and 2030 are essential steps to setting an energy reduction target and identifying the local measures needed to achieve it. Tables 2-9, 2-10 and 2-11 present 2020 and 2030 BAU forecasts of community-wide electricity use, natural gas use, and energy-related GHG emissions.<sup>7</sup> These forecasts are based on the 2005 baseline inventory, 2010 inventory update, growth projections prepared for the City's 2030 General Plan, and anticipated job growth in the City.

BAU projections are made based on the most recent energy use data (i.e., 2010), and include the impact of Federal, State, City, SCE, and SCG policies and programs that were in place during and prior to 2010. Energy conservation projects and programs implemented subsequent to 2010 are not considered BAU in this context. Separate forecasts are not provided for City Government operations because those emissions are included in the community forecasts.

Table 2-9: Community Electricity Use: 2005, 2010, and BAU Projections for 2020 and 2030

Emissions Sectors	2005 (MWh)	2010 (MWh)	2020 (MWh)	2030 (MWh)	Annual Growth Rate	Change 2005- 2020
Residential	227,479	243,027	269,032	286,369	1.0%	+18.3%
Commercial/Industrial	725,306	657,362	747,996	808,419	1.3%	+3.1%
<b>Total Electricity Use</b>	<b>952,786</b>	<b>900,340</b>	<b>1,017,028</b>	<b>1,094,788</b>	<b>1.2%</b>	<b>+6.7%</b>

Source: SCE, 2012; SCG, 2012; California Department of Transportation (DOT), 2011; Oxnard, 2006

Table 2-10: Community Natural Gas Use: 2005, 2010, and BAU Projections for 2020 and 2030

Emissions Sectors	2005 (therms)	2010 (therms)	2020 (therms)	2030 (therms)	Annual Growth Rate	Change 2005- 2020
Residential	19,339,405	20,111,136	22,263,110	23,697,759	1.0%	+15.1%
Commercial/Industrial	56,735,258	56,064,192	63,794,027	68,947,251	1.3%	+12.4%
<b>Total Natural Gas Use</b>	<b>76,074,663</b>	<b>76,175,328</b>	<b>86,057,137</b>	<b>92,645,010</b>	<b>1.2%</b>	<b>+13.1%</b>

Source: SCE, 2012; SCG, 2012; California Department of Transportation (DOT), 2011; Oxnard, 2006

Table 2-11: Community GHG Emissions: 2005, 2010, and BAU Projections for 2020 and 2030

Emissions Sectors	2005 (MT CO <sub>2</sub> e)	2010 (MT CO <sub>2</sub> e)	2020 (MT CO <sub>2</sub> e)	2030 (MT CO <sub>2</sub> e)	Annual Growth Rate	Change 2005- 2020
Residential	171,909	176,858	195,783	208,399	1.0%	+13.9%
Commercial/Industrial	521,453	486,767	553,879	598,621	1.3%	+6.2%
<b>Total GHG Emissions</b>	<b>693,362</b>	<b>663,625</b>	<b>749,662</b>	<b>807,020</b>	<b>1.2%</b>	<b>+8.1%</b>

Source: SCE, 2012; SCG, 2012; California Department of Transportation (DOT), 2011; Oxnard, 2006

<sup>7</sup> Nearer term estimates (i.e., 2020) are more accurate than longer term estimates (i.e., 2030).



Energy and GHG emissions forecasts for the Residential and Commercial/Industrial sectors were developed separately, using the best available data, as follows:

- For the Residential energy sector, the annual population growth rate was calculated based on population projections included in the City of Oxnard 2030 General Plan Background Report, June 2006 (Oxnard, 2006).
- For the Non-Residential energy sector, the annual growth rate is based on job projections published by the California Department of Transportation Economic Analysis Branch for Ventura County (DOT, 2011).

In Tables 2-9 through 2-11 annual growth rates are applied from 2010 to 2020 and 2030. The average annual growth rate for the period from 2010 through 2020 is 1.2 percent across all energy use categories.

## 2.4 Energy Reduction Target

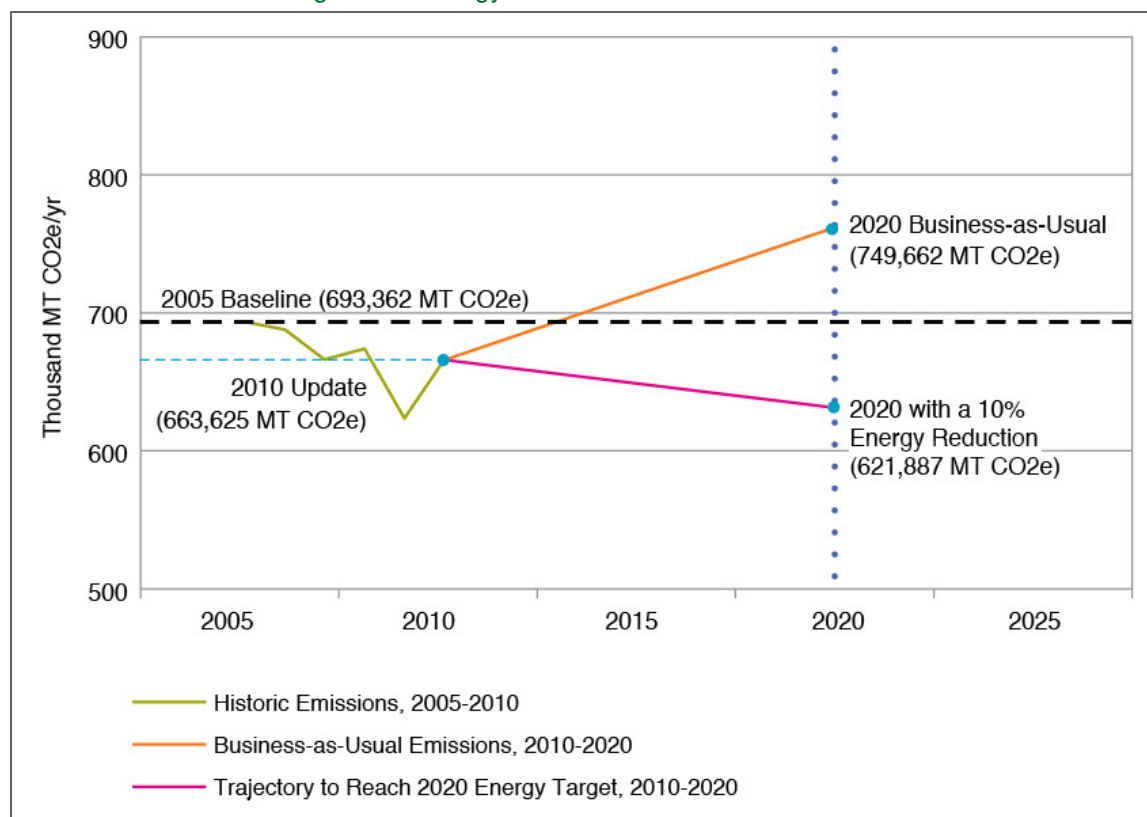
The City is participating in SCE's Energy Leader Partnership (ELP) Program and pursuing the "Gold Level" which targets a 10 percent kWh reduction for City Government facilities. For the purpose of this EAP, the 10 percent reduction target, measured from the 2005 electricity (kWh) and natural gas (therms) energy use baseline, is expanded to the Oxnard community at large as well as City Government facilities. This equates to a community-wide energy reduction target, net of renewable energy production, of approximately 858,000 MWh of electricity and 68 million therms of natural gas. Expressed another way, the EAP target is to use 10 percent less electricity and natural gas than we would otherwise use by 2020 without these EAP programs, including offsetting utility-provided electricity and natural gas with local renewable energy production.

## 2.5 AB 32 and Energy-Related GHG Reductions

As described in Chapter 1, California's AB 32 Climate Change Scoping Plan seeks to achieve 1990 GHG emissions levels statewide by the year 2020. The Scoping Plan identifies local governments as "essential partners" in achieving California's goal, encouraging the adoption of GHG emissions reduction targets by local governments that are consistent with the State's commitment. CARB recommends a GHG local government reduction goal of 15 percent below 2008 or earlier GHG emission levels by 2020. This recommended goal pertains to all GHG emissions within a community, not just those that are related to electricity and natural gas consumption.

A 10 percent reduction in electricity and natural gas consumption below the 2005 baseline reduces GHG emissions accordingly. If these energy reductions are translated into GHG reductions, the City's 2020 energy-related GHG emissions would be approximately 621,887 MT CO<sub>2</sub>e. This is approximately 10 percent below the 2005 GHG baseline (693,362 MT CO<sub>2</sub>e) and 17 percent below the projected 2020 BAU emissions (749,662 MT CO<sub>2</sub>e). [Figure 2-7](#) depicts the 2020 BAU forecast compared with the GHG emissions achieved with an energy reduction target of 10 percent below 2005 levels.

Figure 2-7: Comparison of Oxnard 2005 Baseline, 2010 Update, BAU Forecast, and Emissions after achieving a 10% Energy Reduction



As shown in Figure 2-7, as of 2010, community-wide GHG emissions from electricity and natural gas consumption were already 4 percent below 2005 levels. Although the national economic downturn was a significant factor in this reduction, there were City and community energy conservation efforts underway between 2005 and 2010 that produced energy savings. These are discussed in more detail in Chapter 3.

Implementing and achieving the EAP 10 percent energy-reduction target would put the City on a path towards reaching CARB's recommended 15 percent reduction in overall community GHG emissions. The Oxnard CAAP will address the CARB recommended GHG reduction target by examining land use regulations and planning, transportation, vehicle miles travelled, transit and bicycle usage, and solid waste management for their potential to further reduce GHG emissions.

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### 3. Program Development

To achieve the EAP net energy reduction target, staff have identified and developed energy efficiency and conservation and renewable/alternative energy programs to reduce electricity and natural gas consumption both within City Government operations and in the Oxnard community. The EAP programs described in chapters 4 and 5 are designed to increase participation in existing local and utility energy efficiency and conservation programs, start new initiatives to address underserved communities and commercial sectors, and ensure that the City's regulations, codes, and operations support energy efficiency, conservation, and renewable energy production.

The following sections describe how staff developed the EAP programs starting with a review of existing City Government and community initiatives, followed by development of general strategies for improving energy efficiency, conservation and renewable energy use, and qualitative cost-benefit analysis to prioritize program implementation.

EAP Program
<i>A specific action to achieve the City's energy reduction target.</i>

#### 3.1 Review of Existing Initiatives

The EAP programs build on existing City Government and community initiatives in energy conservation and local renewable energy generation. Oxnard's City Government has actively pursued energy efficiency and conservation improvements in its operations prior to the development of this EAP. [Table 3-1](#) summarizes energy-related City Government plans, policies, and programs.

**Table 3-1: City Government Energy Initiatives**

Initiative	Description
<b>Intra-City Coordination</b>	
Green Team and Energy Initiatives Steering Committee	Established in 2009, the Oxnard “Green Team” is comprised of staff from multiple City departments and is responsible for coordinating sustainability and environmental initiatives, policies, and programs in municipal operations. Four Department Directors and the City Manager’s office form an Energy Initiatives Steering Committee that sets direction and coordinate executive-level decisions.
<b>General Services Department</b>	
Facility Energy Assessments	The City completed SCE-sponsored energy assessments at eight government facilities in 2010 and 2011. The assessments focused primarily on efficiency opportunities related to interior and exterior lighting systems. The City made a number of HVAC controls and equipment replacements at several facilities.
Lighting Upgrades	Drawing from \$1.8 million in funding from the Department of Energy’s (DOE’s) Energy Efficiency and Conservation Block Grant (EECBG), the City completed lighting upgrades at eight facilities, replacing outdated T12 and T8 interior lighting with energy efficient fluorescent T8 lamps and ballasts, installed LED exit signs, and incorporated lighting controls such as occupancy sensors and timers. The City replaced exterior fixtures with fluorescent and induction lighting technologies. These upgrades have saved approximately 356,900 kWh of electricity and 103 MT CO <sub>2</sub> e.
HVAC Infrastructure Upgrades	The City continually upgrades HVAC equipment to keep facilities operating as efficiently as funding allows. Several EECBG improvements include the installation of a new air-cooled chiller on the Civic Center east wing and the installation of a digital building automation system at the main library. Upgrades to the Civic Center have reduced electricity by approximately 15,500 kWh and GHG emissions by 4 MT CO <sub>2</sub> e. Upgrades to the Main Library have saved approximately 38,000 kWh of electricity, 700 therms of natural gas, and 15 MT CO <sub>2</sub> e.
Campus Park Facilities	General Services renovated the Campus Park gymnasium building (PAL) with energy efficient lighting and HVAC systems. The City estimates this renovation has saved 7,800 kWh of electricity, 500 therms of natural gas, and 5 MT CO <sub>2</sub> e.
<b>Public Works: Water and Wastewater</b>	
Oxnard Blending Stations No. 1 and No. 3	<p>The Blending Station No. 1 Desalter was completed in 2008 and awarded the U.S. Green Building Councils Leadership in Energy and Environmental Design (LEED) Gold award for conserving energy, water and building materials. Some of the green building elements include:</p> <ul style="list-style-type: none"> <li>• Recycling or salvaging of at least half of construction and demolition waste</li> <li>• Utilizing materials with recycled content</li> <li>• Reducing onsite water use by 30%</li> <li>• Using solar panels to generate onsite power</li> </ul> <p>The City also received the 2006 Environmental Project of the Year from the American Public Works Association, Ventura County Chapter for Blending Station No. 3. This building has saved 112,500 kWh of electricity, and 32 MT CO<sub>2</sub>e.</p>
Wastewater Treatment Plant Cogeneration	The Oxnard Wastewater Treatment Plant produces methane gas as a byproduct of the digestion processes. The methane is used to fuel three cogeneration engines that can supply approximately 40% of the plant’s electrical demand. To maximize the volume of fuel for its cogeneration plant, the Oxnard Wastewater Treatment Plant also accepts fats, oil and grease waste streams into its digesters and can add natural gas purchased from SCG to the digester gas stream at the cogeneration engines. (This facility was in place prior to 2005, and associated energy and GHG savings are captured in the energy baseline.)
Advanced Water Purification Facility	The Advanced Water Purification Facility (AWPF) is scheduled for operation in January 2015. Treated wastewater from the Oxnard Wastewater Treatment Plant will be further treated at the AWPF using advanced state-of-the-art processes. The AWPF recycled water will be made available for landscape irrigation, industrial processes, and agricultural irrigation. The water will be so pure it can be used to meet any water supply needs in the future, including replenishing Oxnard’s groundwater supply. The facility is pursuing LEED GOLD certification. As the building will be completed in January 2014, the GHG



**Table 3-1: City Government Energy Initiatives (continued)**

Initiative	Description
<b>Public Works: Water and Wastewater (cont.)</b>	
Advanced Water Purification Facility (cont.)	emissions reduction associated with the LEED certification are included in reaching the EAP 2020 target, with savings of 150,000 kWh of electricity, and 43 MT CO <sub>2</sub> e.
<b>City Manager's Office: Information Systems</b>	
Green Technologies Initiative and Green Procurement Policy	In 1995, the City adopted its Green Procurement Policy, specifying that purchases be made with post-consumer recycled content. In 2010, the City's primary office supply vendor reported that more than 30% of City purchases were designated as green products. The City also started the Green Technologies Initiative which includes activities such as procurement of Energy Star hardware, recycling broken or outdated hardware, and using technology software which allows IS staff to support users remotely thereby reducing road trips to outlying facilities and offices.
Government Data Center and Server Room Design and Technologies	Over the past few years, the City has continually improved the operation of government data centers to incorporate energy efficiency technologies and designs. Some of the projects completed include server virtualization and in-row cooling design strategies at both the Public Service building and Civic Center Annex data centers. The main IS data-room server facility was reconstructed in 2012.
<b>Oxnard Housing Authority</b>	
Energy Efficiency Upgrades	The Oxnard Housing Authority completed energy improvement projects at City-managed properties. Recent projects include the installation of new sliding glass doors in all residential units in the Palm Vista Housing Complex, and the increase in insulation levels at the Pleasant Valley Housing units.
Annual- and Five-year Maintenance Plans	The Oxnard Housing Authority keeps annual- and five-year maintenance plans for all housing authority managed facilities. The maintenance plans include recommendations and budgets for energy related facility improvements.
<b>Streets and Traffic</b>	
Traffic Signals	In 2006 and 2007 the City replaced all incandescent traffic and pedestrian signal lamps with LED lamps, reducing operational costs through direct energy cost savings and reduced maintenance cost due to the extended life of LED lamps. The City estimates these improvements have saved 2,028,600 kWh of electricity and 584 MT CO <sub>2</sub> e.
LED Streetlight Study	The City is conducting a streetlight study to evaluate converting street lights from high pressure sodium (HPS) to light-emitting diode (LED) fixtures. Potentially 600 to 700 HPS lamps are being considered for LED conversion.

The estimated total reduction in energy use from the above listed projects completed after 2005 (the baseline year) is 2,709,400 kWh of electricity and 1,200 therms of natural gas, which has resulted in approximately 790 MT CO<sub>2</sub>e in GHG emissions reductions.

The City, SCE and SGC, special agencies, and several industrial companies continued to implement and promote energy conservation and local generation of renewable/alternative energy in the Oxnard community. [Table 3-2](#) presents past and current plans, policies, and programs related to community-wide energy efficiency and conservation.



**Table 3-2: Community Energy Initiatives**

Initiative	Description
California Green Building Standards Code, 2010 Edition	The City adopted the mandatory provisions of the 2010 California Green Building Standards Code (CALGreen) effective January 1, 2010. The code encourages sustainable construction practices pertaining to planning and design, energy efficiency, water efficiency and conservation, and material conservation. See Oxnard, California Code of Ordinances Chapter 14: Building Regulations, Article IV. CA Green Building Standards Code, Section 14-6.
City of Oxnard 2030 General Plan Goals and Policies, October 2011	The 2030 General Plan, Chapter 2, Sustainable Community, provides the majority of energy-related goals and policies, including Goal SC-3: Energy efficiency performance standards and generation from renewable sources. Chapter 4, Infrastructure and Community Services, also provides energy-related policies. See Appendix C for a complete list of 2030 General Plan goals and policies pertaining to energy efficiency and conservation.
City of Oxnard 2006-2014 Housing Element,	The 2006-2014 Housing Element, adopted in 2012, supports energy efficient homes. See Appendix C for a complete list of Housing Element goals and policies pertaining to energy efficiency and conservation.
City Website – Energy Page	The City's website provides energy saving tips and resources including links to utility rebates and associated programs for residences and businesses. See <a href="http://energyaction.oxnard.org/whatwedo.html">http://energyaction.oxnard.org/whatwedo.html</a> .
Ventura County Regional Energy Alliance (VCREA)	VCREA is "a Joint Powers Agency (JPA) composed of public agencies working in collaboration to address the availability, reliability, conservation and innovative use of energy resources in the Ventura County region." Oxnard has been a member of VCREA since its inception. VCREA provides services that include a local energy efficiency clearinghouse office, website, training seminars, project identification, technical project support and energy planning. See <a href="http://www.vcenergy.org/">http://www.vcenergy.org/</a> .
Southern California Edison's Energy Leader Partnership (ELP)	Under the ELP, SCE helps local governments lead by example to address energy efficiency first in their own municipal facilities. The program further serves to increase community awareness and participation in demand-side management opportunities. (See <a href="http://www.sce.com/business/energy-solutions/energy-efficiency-partnerships.htm">http://www.sce.com/business/energy-solutions/energy-efficiency-partnerships.htm</a> ). Oxnard is pursuing Platinum Level Leadership under the ELP, which requires: <ul style="list-style-type: none"> <li>• Commitment to Long Term Energy Efficiency Leadership</li> <li>• Commitment to Partnership Goals including energy savings in municipal facilities</li> <li>• Completion, Adoption, and Implementation of a City EAP</li> <li>• Target at least 50% of City facilities to complete energy efficiency upgrades</li> <li>• Target 10% kWh reduction for City facilities</li> <li>• Co-sponsor marketing and outreach to the community on energy efficiency programs.</li> </ul>
Community Action of Ventura County, Inc., Energy Efficient Home Repairs	This assistance program provides installation and weatherization measures that increase the energy efficiency of dwellings occupied by low-income persons. Qualified homeowners, and renters and tenants can improve energy efficiency by replacing windows, weather-stripping doors, adding insulation, completing minor home repairs, and installing more efficient appliances and products. See <a href="http://www.ca-vc.org/Programs/Energy.aspx?menu=2">http://www.ca-vc.org/Programs/Energy.aspx?menu=2</a> .
City Website – Water Pages	The City's website provides information on water conservation strategies for residences, commercial facilities, and landscaping, as well as information on recycled water and the Groundwater Recovery Enhancement and Treatment (GREAT) program. See <a href="http://publicworks.cityofoxnard.org/Department.aspx?DepartmentID=14&amp;DivisionID=99">http://publicworks.cityofoxnard.org/Department.aspx?DepartmentID=14&amp;DivisionID=99</a> .
U.S. EPA WaterSense Partner	The City is a "WaterSense" partner with the U.S. EPA, helping customers use water resources more efficiently. Oxnard provides links to rebates for high-efficiency toilets and clothes washers, as well as links to free conservation devices. See <a href="http://publicworks.cityofoxnard.org/Department.aspx?DepartmentID=14&amp;DivisionID=99&amp;ResourceID=471">http://publicworks.cityofoxnard.org/Department.aspx?DepartmentID=14&amp;DivisionID=99&amp;ResourceID=471</a> .

Table 3-2: Community Energy Initiatives (continued)

Initiative	Description
Adoption of Mandatory Water Conservation Measures	To ensure an adequate water supply for Oxnard's residents and businesses, the City Council established mandatory water conservation measures in July of 2009, which were amended on April 6, 2010. The measures prohibit waste or unreasonable use of water and mandate water conservation both within and outside City limits. See Oxnard, California Code of Ordinances, Article III. Water Waste, Section 22-135 et seq.
Groundwater Recovery Enhancement and Treatment (GREAT) Program	Launched in 1999, the GREAT Program is a comprehensive water supply project that is designed to improve water supply reliability, improve water quality for the future, and reduce the City's reliance on imported water supplies. The GREAT Program combines wastewater recycling, recycled water distribution and use for irrigation and industrial uses, aquifer and groundwater injection, storage and recovery, and restoration of wetlands to provide reliable water supply to the City and environs. See <a href="http://www.oxnardnews.org/great.aspx">http://www.oxnardnews.org/great.aspx</a> .

## 3.2 Strategies for Achieving the EAP Target

Through discussions with City staff and department heads, analysis of existing initiatives, and an analysis of best practices in other cities and communities, Planning Division staff and consultants developed EAP programs with four main strategies to achieve the EAP target:

1. **Leverage existing federal, state, and local programs to increase energy efficiency and conservation.** As demonstrated in Tables 3-1 and 3-2, the City, SCE, SCG, and VCREA already promote numerous energy efficiency and conservation programs for both the community and City Government. The City will take advantage of the momentum, resources, and funding associated with existing programs and focus its efforts on increasing participation rates above current and projected levels. This will allow the City Government to improve its own operations while simultaneously reaching out to all community sectors including residential, commercial, industrial, and agricultural.
2. **Develop new programs that increase energy efficiency and conservation, including financing mechanisms.** The City recognizes that there are gaps in the suite of existing programs and will attempt to provide additional or new support to meet the unique needs of Oxnard neighborhoods and businesses not currently addressed by existing energy savings programs.
3. **Ensure that local ordinances and permitting practices facilitate green building and energy efficiency and conservation.** The Oxnard Municipal Code is a set of ordinances that regulates how property can be developed in the City. The Code, along with City policies and procedures for granting permits for new development, need to support the City's ability to reach the EAP target.
4. **Support alternative energy generation and use.** The City is committed to promoting renewable and alternative energy generation in its own operations and in the community. Renewable energy sources include solar or wind and alternative fuels that supplement or replace traditional fossil fuels. Generally, renewable energy systems should be coordinated with cost-effective efficiency and conservation measures.

These strategies try to ensure that EAP programs are feasible, practical, and provide effective and measureable results.

### 3.3 Program Analysis and Prioritization

Using the four strategies identified above, energy efficiency and conservation programs and renewable energy generation opportunities were identified, analyzed, and prioritized according to cost, benefits, and implementation. The first phase of analysis was primarily qualitative, using knowledge of past efforts and local conditions, and drawing on the experience of other communities, to identify programs that are generally proven to be cost-effective. For each program, the City estimated the upfront costs and ongoing staff resources (minimal, moderate, high), as well as the anticipated energy and GHG reduction benefits (minimal or indirect, moderate, high). The City used this process to identify the best set of programs for inclusion in the EAP.

The second analysis phase involved prioritizing the programs into three groups reflecting the preferred order of implementation and refining the cost-benefit analysis of the most promising programs using, to the extent possible, well-founded assumptions and case study results from other communities with established quantitative methods. The program-specific assumptions, calculation methodologies, and data sources are documented in Appendix D (Cost and Benefits Calculation Methodology). Appendix D also provides supporting information for each program, including Internet links to resources that support development and implementation (SCE, SGC, U.S. EPA, U.S. Department of Energy, etc.), and links to known examples of comparable programs successfully implemented in other communities.

This process was iterative, where some programs rose or fell in priority once the costs and benefits were articulated. Using this approach, staff prioritized the implementation of EAP programs as follows:

1. **Near-Term Implementation (by 2015): Programs with higher benefits and lower cost.** These programs are proven locally or in other communities and believed to be cost-effective and feasible for Oxnard. Near-term programs are evaluated for costs and benefits.
2. **Mid-Term Implementation (by 2020): Programs with moderate benefits and cost.** These are promising programs for Oxnard based on cost-effectiveness, potential funding, and/or ability to leverage an existing program. Mid-term programs are evaluated for costs and benefits.
3. **Long-Term Implementation (after 2020): Programs with lower benefits and higher cost.** These are new or innovative programs with potential to reduce energy use but which require more analysis to determine cost-effectiveness and/or feasibility. For long-term programs, costs and benefits are not completed at this time.

The City may reevaluate program implementation dates as it monitors and measures progress toward achieving the EAP energy target.





## 4. EAP: City Government Programs

As described in Chapter 1, the Oxnard City Government is committed to leading the community with innovative programs for energy efficiency and conservation, renewable energy production, and sustainable development. To allow the City Government to lead by example with its own facilities and energy use practices, this chapter presents 18 EAP programs tailored specifically to City Government operations. These programs take into consideration the range of facilities operated by the City Government and opportunities for reducing energy consumption and increasing the use of renewable energy production.

Table 4-1 presents a summary of City Government EAP programs listed by date of implementation. Following Table 4-1 is a detailed description of each program including its number, title, and information on how and when the program could be implemented by the City Government with appropriate approvals by the City Council<sup>1</sup>. For near-term and mid-term EAP programs, descriptions include estimates of electricity, natural gas, and resulting GHG reductions (as applicable<sup>2</sup>), along with estimated initial implementation costs and estimated cost savings.<sup>3</sup>

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<sup>1</sup> All estimates of energy and GHG reductions, as well as cost savings, are based on the assumption that the program would be implemented in the year identified in its program description. Delayed or early implementation would affect energy and GHG reductions, and cost savings associated with the program.

<sup>2</sup> Some programs are categorized as 'supporting programs,' meaning they do not result in direct reductions in energy use but are necessary to support implementation of other EAP programs. This plan does not include calculations of energy and cost savings for supporting programs.

<sup>3</sup> Upfront costs are estimates broadly categorized as falling within one of four ranges: less than \$50,000, \$50,000 to \$249,999, \$250,000 to \$999,999, and \$1,000,000 or more. Cost savings over time are calculated based on program-specific assumptions detailed in Appendix D.

Table 4-1: City Government EAP Programs

Program Number	Title	Implementation Timeframe	Annual Electricity savings by 2020 (kWh/yr)	Annual Natural gas savings by 2020 (therms/yr)	Annual GHG emissions savings by 2020 (MT CO2e/yr)
G-1	Create a Staff Sustainability Manager Position	2013	Supporting program	Supporting program	Supporting program
G-2	Benchmark and Monitor City Government Facilities	2015	36,500	400	10
G-3	Continuous Improvements and Preventative Maintenance	2015	994,900	13,900	215
G-4	Update Computer and Office Equipment	2015	147,000	0	35
G-5	Increase Demand Response Participation	2015	3,200	0	5
G-6	Empower Oxnard "Green Team"	2015	Supporting program	Supporting program	Supporting program
G-7	Upgrade City Government Facilities	2015	218,400	3,100	50
G-8	Incorporate Greening Guidelines	2015	43,900	200	10
G-9	Install Solar Power	2015	791,200	0	170
G-10	Upgrade Street Lights	2020	229,000	0	50
G-11	Develop Energy-Efficient Product Procurement Policy	2020	204,000	0	45
G-12	Net-Zero City Government Buildings by 2025	2020	41,200	200	10
G-13	Install Solar Thermal Systems	2020	0	6,200	2
G-14	Increase On-site Electricity Generation at City Wastewater Treatment and Materials Recovery Facilities	2020	656,400	0	140
G-15	Identify Bulk Purchasing Opportunities	After 2020	Not calculated	Not calculated	Not calculated
G-16	Develop Energy Efficiency Fund	After 2020	Not calculated	Not calculated	Not calculated
G-17	Adopt LEED-Like Standards for City Government Facilities	After 2020	Not calculated	Not calculated	Not calculated
G-18	Create Solar Ready Roofs	After 2020	Not calculated	Not calculated	Not calculated
<b>Total annual savings by 2020</b>			<b>33,655,700</b>	<b>24,000</b>	<b>742</b>

Note: Annual electricity and natural gas values, including total, are rounded to the nearest 100 from raw data. GHG emissions values are rounded to the nearest five.

Annual electricity savings as a result of programs implemented by 2015 is anticipated to be 2,235,100 kWh/yr, 808,800 therms/yr, and result in a reduction of 495 GHGs. Program descriptions identify the City Government department primarily responsible for implementation, although many of the programs would require the lead department to collaborate with other departments. Many programs are linked to existing funding sources. In these cases, the program description provides such funding information. For programs not linked to existing funding sources, Appendix E (Financing Models and Mechanisms) provides

general information about a number of potential financing models and mechanisms that may be used to fund the programs.

## Program G-1: Create a Staff Sustainability Manager Position

**Program type:** New City program (supporting)

**Annual savings by 2020:**

**Electricity:** (Supporting program)    **Natural gas:** (Supporting program)    **GHGs:** (Supporting program)

**Annual energy cost savings by 2020:** (Supporting program)

**Estimated first cost to City:** \$50,000 - \$249,999

**Potential source of funding:** To be determined

**Implementation:** 2013

**Responsibility:** City Manager's Office

**Description:** The creation of a Sustainability Manager position is critical to the successful rollout and implementation of all EAP programs. Initial tasks will be to identify “unplug ready” energy efficiency capital projects for upcoming grant funding opportunities, oversee the City’s solar power strategy RFP process, represent the City in the ongoing SCE Energy Leader Partnership Program, work with VCREA and local agencies on a possible regional Utility Management System or Regional Energy Network, and track energy savings and renewable energy production consistent with the metrics within the EAP. Although responsibility for each individual EAP program and related projects is assigned to specific City departments, the role of the Sustainability Manager is to coordinate them as a whole and work with community partners and stakeholders to identify opportunities for public/private partnership and best practices.

- Oversee and be supported by the Oxnard Green Team.
- Work closely with all City Departments and report to the City Manager, Development Services Director, and/or to the Alternative Energy Initiatives Committee.
- The City may elect to create the position and seek applicants, reclassify an existing staff member, and/or utilize contractors on an as-needed basis.
- Fund the position in the following ways:
  1. Assess a small surcharge on the City’s internal utility bills. This fee would be used to support sustainability efforts for internal energy efficiency and conservation. Energy savings gained by sustainability programs could be used to fund the position/contract or fund projects.
  2. Through the budgeting process, use General Fund, Measure “O” funds, and/or enterprise funds.
  3. Seek grant funding wherever possible, such as Prop 39 and CARB “Cap and Trade” fees.

Additional information about the specific responsibilities of the Sustainability Manager is provided in Chapter 6, Section 6.2: *Implementation Responsibility*.



## Program G-2: Benchmark and Monitor City Government Facilities

**Program type:** New City program

**Annual savings by 2020:**

**Electricity:** 36,500 kWh      **Natural gas:** 400 therms      **GHGs:** 10 MT CO<sub>2</sub>e

**Annual energy cost savings by 2020:** \$4,851

**Estimated first cost to City:** <\$50,000

**Potential source of funding:** To be determined

**Implementation:** 2015

**Responsibility:** General Services

**Description:** Benchmarking city Government facilities energy use provides building operators with information that can help them identify poorly performing buildings, make operational changes to reduce energy use, and document energy savings.

- Establish baseline energy consumption data and ongoing energy use monitoring to evaluate real time building energy performance.
- Implement a Utility Manager System (UMS) with potential partnerships with other cities in Ventura County or special districts.
- As part of the UMS program, enroll all City-operated facilities (except streetlights and the Oxnard Housing Authority buildings) in both the SCE EnergyManager suite of tools and U.S. EPA's ENERGY STAR Portfolio Manager. The SCE EnergyManager Suite would be used for historical comparisons of facility energy use and costs, whereas ENERGY STAR Portfolio Manager would be used to benchmark Oxnard facilities against similar facilities in similar climate zones, and allow the City to compare energy performance across all of its facilities. Portfolio Manager rates a facility on a scale from 1 to 100 that indicates how each of the buildings compares to other buildings with similar characteristics. Any government facility with a score higher than 75 (uses less energy than 75 percent of comparable facilities) is eligible to apply for ENERGY STAR certification.
- Benchmarking and energy surveying City Government facilities is usually necessary to qualify for grant funding for energy-efficiency upgrades. Having a list of "unplug ready" project based on recent energy surveys and benchmarking allows the City to better qualify in a competitive grant process.

## Program G-3: Continuous Improvements and Preventative Maintenance

**Program type:** Leverage existing utility programs

**Annual savings by 2020:**

**Electricity:** 994,900 kWh      **Natural gas:** 13,900 therms      **GHGs:** 215 MT CO<sub>2</sub>e

**Annual energy cost savings by 2020:** \$134,900

**Estimated first cost to City:** \$250,000 - \$999,999

**Potential source of funding:** Local utility programs

**Implementation:** 2015

**Responsibility:** General Services

**Description:** The facilities with poor energy performance identified through benchmarking and monitoring (EAP Program G-2) would benefit from a number of continuous improvement and preventative maintenance programs. SCE and SGC offer a variety of programs that provide financial and technical assistance to the City, including but not limited to:

- **Continuous Energy Improvement Program:** Jointly offered by SCE and SCG to help customers implement strategic and ongoing energy management practices, the program offers consulting services to organizations at no additional cost through an energy advisor. The program lasts two years and helps facility managers develop site specific plans, implement energy improvement projects and evaluate results. See <http://www.sce.com/business/energy-solutions/continuous-energy-improvement.htm>.
- **Commercial Retro-commissioning Program:** SCE offers technical and financial assistance to organizations pursuing retro-commissioning, a process of analyzing existing facilities with the goal of restoring them to their optimal energy performance. Retro-commissioning services typically address low-cost operational and maintenance improvements and identify additional capital improvements. Retro-commissioning services are typically recommended for larger buildings with a central plant and automated controls, while smaller facilities are typically better served through other programs. See <http://www.sce.com/rcx/default.htm>.
- **HVAC Optimization Program:** This SCE program is a combined enhanced HVAC maintenance plan and financial incentive program designed to optimize the performance of packaged HVAC equipment. The program requires the use of a participating HVAC contractor who has received extensive training on the new HVAC maintenance standard from the American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE). See <http://www.sce.com/b-rs/commercial/hvac-optimization.htm>.
- **SCE Pumping Services:** SCE offers a number of pump testing and diagnostic services, including pump efficiency testing, vibration detection, and others. Information on all SCE pumping services is available on the SCE website at <http://www.sce.com/b-rs/agriculture/pumping-services/predictive-maintenance-services.htm>.

## Program G-4: Update Computer and Office Equipment

**Program type:** Expand existing City program

**Annual savings by 2020:**

**Electricity:** 147,000 kWh      **Natural gas:** 0 therms      **GHGs:** 35 MT CO<sub>2</sub>e

**Annual energy cost savings by 2020:** \$17,500

**Estimated first cost to City:** <\$50,000

**Potential source of funding:** To be determined; potential incentives from SCE

**Implementation:** 2015

**Responsibility:** Information Systems

**Description:** The City Government would increase the energy efficiency of its computers and office equipment through the following actions:

- Continue and expand Information Systems (IS) Green Technology Initiative that includes procurement of ENERGY STAR equipment, recycling broken or outdated hardware, and using technology which allows IS staff to support users remotely to reduce road trips to outlying facilities and offices. Office equipment and software is purchased through the IS Department, with the exception of the purchases for Oxnard libraries, the Oxnard Housing Authority, and the Police Department.
- Reduce the number of personal printers at individual work stations by installing centralized multi-function copiers across the City. New multi-function copiers can be set up with energy efficient stand-by modes and are more cost-effective to operate compared with individual inkjet desktop printers.
- Develop a policy to phase out desktop printers except in specific circumstances, such as human resources or finance-related positions.
- Continue to purchase computers with built-in power management software, and would consider installing computer power management software on all existing government personal computers to reduce computing energy consumption while computers are inactive. Multiple vendors offer software packages that provide computer power management features with controls set by a central user. While newer computers have built-in power management features, many require settings to be programmed at the individual computer level. City departments vary significantly in their hours of operation and customization may be challenging and time-consuming. However, SCE offers an incentive of \$15 per PC to help reduce the cost of implementation.

## Program G-5: Increase Demand Response Participation

**Program type:** Leverage existing utility program

**Annual savings by 2020:**

Electricity: 3,200 kWh

Natural gas: NA

GHGs: 5 MT CO<sub>2</sub>e

**Annual energy cost savings by 2020:** \$380

**Estimated first cost to City:** <\$50,000

**Potential source of funding:** SCE programs

**Implementation:** 2015

**Responsibility:** General Services

**Description:** As a participant in SCE's Energy Leader Partnership, the City is committed to reducing its demand on the electric grid during times of peak electricity use. SCE's Demand Response allows SCE to remotely turn down or off certain HVAC equipment during periods of high demand for short periods that would not be disruptive and would save the City money by reducing demand during peak electricity rate periods. Currently, 31 percent of eligible Oxnard facilities (6 of 19) are enrolled in SCE demand response programs. Oxnard is working with its SCE to identify the appropriate demand response activities at the Wastewater Treatment Plant, Service Center, Public Safety Building, Civic Center, Branch Library, and Corporate Yard.

Oxnard would consider expanding participation in SCE's demand response programs:

- **Summer Advantage Incentive** (aka Critical Peak Pricing): A rate designed to reward customers for voluntarily reducing electricity usage during times of critical peaks.
- **Time-Of-Use Base Interruptible Program:** Provides customers with credits for each billing period the customer can reduce at least 15 percent of their maximum demand during Time-of-Use (TOU) events. This program requires the customer to choose the amount of electricity required to operate the facility during TOU events and the required response time to implement reductions.
- **Automated Demand Response:** Allows customers to participate in demand response programs without manual intervention. Customers select levels of participation during events and SCE will remotely activate responses during events.

Although there are relatively low energy and GHG savings associated with demand response, this is an important program for grid reliability and a criterion for achieving Gold Level in the SCE Energy Leader Partnership. The Energy Leader Partnership program provides a tiered structure for increasing incentive funds for energy efficiency projects, as well as participation in SCE's on-bill financing program.

## Program G-6: Empower Oxnard Green Team

**Program type:** Expand existing City program (supporting)

**Annual savings by 2020:**

**Electricity:** (Supporting program) **Natural gas:** (Supporting program) **GHGs:** (Supporting program)

**Annual energy cost savings by 2020:** (Supporting program)

**Estimated first cost to City:** <\$50,000

**Potential source of funding:** To be determined

**Implementation:** 2015

**Responsibility:** Planning and Environmental Services

**Description:** This program places the responsibility of implementing this EAP on the Oxnard “Green Team,” under the direction of the Sustainability Manager, which consists of representatives across most City departments and agencies. The Green Team would:

- Continue to “develop policies and programs that nurture a balanced connection between natural resource conservation, economic vitality, and a quality of life that meets the needs of current and future residents of the City.”
- Meet regularly once a month and currently supports several environmental policies and programs across the City, including maintaining a City web page that provides convenient access to information, services, and programs that support the City’s commitment to becoming a sustainable and green community.
- Include staff from the following departments, at a minimum: Planning Division, Water Resources, Public Works, Environmental Resources, General Services, Fleet Services, Information Services, Communication and Public Information Office, and the Oxnard Housing Authority.
- Continue to provide input and guidance for how specific programs outlined in this EAP should be implemented.
- Directed by the Sustainability Manager.

## Program G-7: Upgrade City Government Facilities

**Program type:** New City program

**Annual savings by 2020:**

Electricity: 218,400 kWh

Natural gas: 3,100 therms

GHGs: 50 MT CO<sub>2</sub>e

**Annual energy cost savings by 2020:** \$29,682

**Estimated first cost to City:** \$250,000 - \$999,999

**Potential source of funding:** SCE and SCG programs

**Implementation:** 2015

**Responsibility:** General Services

**Description:** The City has identified high-level opportunities for energy upgrades to certain of its facilities through recent site assessments and energy surveys. This program focuses on the recommended upgrades of building systems in seven government facilities with energy efficient HVAC and lighting systems. Table 4-2 provides details on energy upgrade opportunities and estimated energy savings for those facilities. The City would continue to identify additional facilities and projects through benchmarking and surveying activities (Program G-2) and through continuous improvement and preventative maintenance (Program G-3).

Table 4-2: Program G-7 Upgrade Recommendations

Facility	Recommendations	Annual Electricity Savings (kWh)	Annual Gas Savings (therms)
Oxnard Transportation Center	Install new efficient water-source heat pumps and boiler; convert to variable flow system; install programmable thermostats or other automated controls.	17,098	473
Performing Arts Center	Upgrade lighting in Oxnard and Ventura rooms; replace 30 year old furnaces in classrooms; replace lobby heat pump.	10,825	112
Palm Vista Housing Complex	Replace T12 lighting in living units; convert to variable speed hot water pumping.	9,754	213
Colonia Multi-Service Center	Install programmable thermostats or other automated controls.	14,150	355
Public Safety Building	Complete SCE HVAC Optimization program.	22,400	0
Civic Center	Convert to variable air volume and variable speed pumping system; replace east wing air cooled chiller; install automated digital controls.	75,502	1,290
Civic Annex	Convert to variable air volume and variable speed pumping system; install automated digital controls.	68,646	1,124

SCE and SCG programs and grant funding would be used to help offset the cost of implementing the upgrades. SCE offers an On-Bill Financing program that provides low interest rates and on-bill loan repayment.



## Program G-8: Incorporate Greening Guidelines

**Program type:** Use City codes, ordinances, and/or permitting

**Annual savings by 2020:**

Electricity: 43,900 kWh

Natural gas: 200 therms

GHGs: 10 MT CO<sub>2</sub>e

**Annual energy cost savings by 2020:** \$5,470

**Estimated first cost to City:** <\$50,000

**Potential source of funding:** To be determined

**Implementation:** 2015

**Responsibility:** Development Services

**Description:** The City would incorporate green strategies and design into its own facilities that reduce energy consumption. The high solar reflectance properties of cool roofs and light-colored paving materials increase the amount of sunlight and heat reflected away from a building, helping to reduce inside air temperatures. Permeable paving materials and landscaping design can increase storm water retention, while shade trees and vegetation reduce surface and air temperatures by providing shade and increasing evaporation.

- Develop standards and/or design guidelines focused on energy efficiency and conservation, including cool roofs, light-colored or permeable paving, energy efficient landscapes, and shade trees to address the urban heat island effect.
- Continue to develop City Government structures in accordance with green building design guidelines.
- Research best practices for similar facilities completed in other cities.

## Program G-9: Develop a Solar Power Generation Strategy

**Program type:** New clean energy program

**Annual savings by 2020:**

Electricity: 791,200 kWh

Natural gas: 0 therms

GHGs: 170 MT CO<sub>2</sub>e

**Annual energy cost savings by 2020:** \$94,310

**Estimated first cost to City:** >\$1,000,000

**Potential source of funding:** SCE financial incentives through the California Solar Initiative (CSI) for solar PV installations. Prop 39 funding. CEC loan program.

**Implementation:** 2015

**Responsibility:** General Services

**Description:** The City Government owns and operates facilities that have available roof space, parking lots, and open land for solar photovoltaic (PV) systems. There is also a potential for public/private projects where air rights are leased for solar power generation facilities.

- Complete an RFP process for an expert comprehensive solar power generation strategy.
- Six facilities have been selected as potential PV system sites based on an initial site assessment: the Civic Center, Performing Arts Center, Main Library, Transportation Center, City Yard, and Campus Park buildings. The sites combined have a total of 30,000 square feet of available roof space and could produce approximately 330 kW and 560,000 kWh of electricity each year.
- City-owned parking facilities, including the downtown parking garage, would support large PV array installations. Installations in surface lots provide additional shaded parking areas for City employees and visitors and increase PV visibility.
- Based on an estimate of available roof and parking lot areas, a total of 460 kW in solar PV systems may be possible which would produce approximately 791,200 kWh per year. There are a variety of financing approaches:
  1. Purchase PV systems directly, or lease them through a Solar Power Purchase Agreement (SPPA). An SPPA is a financial agreement which allows a third party to install, operate, and maintain a solar PV system on a host site and allows the host to purchase the electricity produced by the system.<sup>4</sup>
  2. SCE provides financial incentives through the CSI for solar PV installations. Information on SCE incentives and additional resources are available on the Go Solar California website at <http://www.gosolarcalifornia.ca.gov/>.
  3. Virtual Net Metering: Many PV systems provide only a portion of a building's energy demand over the course of a year. Depending on the size of the system, excess electricity may be produced and net metering allows sell back of excess energy generated to the grid in exchange for credits or deductions from the SCE energy bill. The more recent introduction of virtual net metering makes it possible for individual organizations to obtain net metering credits even if the PV installation is owned by a collective of organizations.

<sup>4</sup> The ownership of the renewable energy certificates (RECs) and associated GHG reductions generated by a SPPA installation can be assigned to any party, and should be clearly addressed in the SPPA. If the system host, in this case the City, does not retain ownership of the associated RECs, the host cannot claim the environmental benefits of using solar power. However, other options exist for the host to retain the right to claim usage of 'green power.' For additional information, see the EPA's website on SPPAs at <http://www.epa.gov/greenpower/buygp/solarpower.htm>.

## Program G-10: Upgrade Street Lights

**Program type:** Leverage existing utility program

**Annual savings by 2020:**

**Electricity:** 229,000 kWh      **Natural gas:** 0 therms      **GHGs:** 50 MT CO<sub>2</sub>e

**Annual energy cost savings by 2020:** \$27,300

**Estimated first cost to City:** \$250,000 - \$999,999

**Potential source of funding:** SCE incentives

**Implementation:** 2020

**Responsibility:** Public Works

**Description:** The City would upgrade existing City-owned and -operated street and parking lot lighting from high pressure sodium (HPS) and metal halide (MH) lighting to light-emitting diode (LED) or induction lighting. Oxnard owns and operates approximately 470 predominantly HPS street lights. Converting them to LED or induction lighting systems would result in significant savings from both reduced utility costs and maintenance savings.

- SCE offers a number of incentives to help reduce the additional cost associated with the newer technologies. Prop 39 funding may be available.
- LED lamps last twice as long as HPS and MH lighting and minimize the staff time needed to procure and replace the lamps. Over the past few years LED technology has been applied to a number of general lighting applications. Beyond being an energy efficient lighting source, LEDs also have a longer life than many standard lighting technologies, are dimmable, turn on instantly, and offer excellent color quality. LED fixtures are a newer technology, however, and often come at a high cost compared with the existing HPS and MH fixtures.
- Induction lighting is a type of fluorescent lighting in which the lamp is completely sealed and power is provided from an external source through electromagnetic fields. Some of the advantages of this design are increased energy efficiency and prolonged lamp life, with some induction lamps lasting up to 100,000 hours. As with other fluorescent technologies, induction lamps offer minimal light output depreciation and good color quality. As with LED lighting, the benefits of induction lighting can also come at a high cost when compared to the cost of traditional street lighting technologies.

## Program G-11: Develop Energy-Efficient Product Procurement Policy

**Program type:** Expand existing City program

**Annual savings by 2020:**

Electricity: 204,000 kWh

Natural gas: 0 therms

GHGs: 45 MT CO<sub>2</sub>e

**Annual energy cost savings by 2020:** \$24,300

**Estimated first cost to City:** <\$50,000

**Potential source of funding:** To be determined

**Implementation:** 2020

**Responsibility:** Information Systems

**Description:** The Oxnard City Council adopted a Green Procurement Policy in 1995 to buy products made with post-consumer recycled content, primarily related to paper products. In addition, the Information Systems (IS) department is responsible for implementing and overseeing Green Technology Initiatives, including procurement of Energy Star hardware, recycling broken or outdated hardware, and using software which allows IS staff to support users remotely which reduces road trips to outlying facilities and offices.

The U.S. EPA recommends a two-tiered approach to implementing effective procurement programs. The first tier includes steps fundamental to the success of an energy efficient procurement program. The second tier focuses on more advanced features that can be incorporated into a procurement plan. A summary of the EPA's recommended Tier One activities is provided below:

- Borrow sample procurement language from other agencies. Many local, state, and federal government agencies and some non-governmental agencies have programs in place that provide a good starting point. ENERGY STAR and Federal Energy Management Program (FEMP) provide procurement contractor language for a number of products.
- Collect baseline energy consumption data. This data can help guide officials to the best opportunities for Oxnard.
- Create a working group bringing together purchasing departments with facilities, IS, and other departments.
- Develop a list of pre-approved products to streamline purchasing processes.
- Create a policy to ensure products are recycled and disposed of correctly.
- Involve employees and maintenance teams in planning efforts. Involving all end-users would result in a more successful plan and ensures effective use of energy efficient products.
- Use energy efficiency standards and specifications to help streamline procurement processes. The EPA ENERGY STAR program has established standards for over 60 product categories.

## Program G-12: Net-Zero City Government Buildings by 2025

**Program type:** Use City codes, ordinances, and permitting

**Annual savings by 2020:**

**Electricity:** 41,200 kWh

**Natural gas:** 200 therms

**GHGs:** 10 MT CO<sub>2</sub>e

**Annual energy cost savings by 2020:** \$5,130

**Estimated first cost to City:** \$50,000 - \$249,999

**Potential source of funding:** To be determined

**Implementation:** 2020

**Responsibility:** Development Services

**Description:** Net-zero energy buildings are designed to produce as much energy as they use each year. A net-zero energy goal encourages designers to incorporate energy production into their design strategies resulting in extremely energy-efficient buildings.

- Set a zero net energy goal for 2025 for all new City Government building construction, pre-empting the State goal by five years for non-residential construction. Oxnard's temperate climate and abundant sunlight make it an ideal locale to pursue the goal of zero net energy.
- Design facilities to provide natural ventilation and passive heating and cooling. Some examples of passive design elements include orienting the facility to allow for natural airflows through the building and installing shading structures and overhangs that block solar heat gain during the warm months. Skylights, solar tubes and clerestories can allow natural daylight into interior spaces, reducing energy consumption even further.
- Even the most efficient buildings consume some amount of energy which must be offset by the use of renewable technologies. Southern California's abundant sunshine supports the use of solar PV and solar thermal systems to offset the energy required to reach net zero energy use.

## Program G-13: Install Solar Thermal Systems

**Program type:** New clean energy program

**Annual savings by 2020:**

Electricity: 0 kWh

Natural gas: 6,200 therms

GHGs: 2 MT CO<sub>2</sub>e

**Annual energy cost savings by 2020:** \$7,297

**Estimated first cost to City:** \$50,000 - \$249,999

**Potential source of funding:** To be determined

**Implementation:** 2020

**Responsibility:** Housing Authority

**Description:** Solar thermal water heating technology is not new; modern solar thermal systems have been around since the early 1900's and more basic systems have likely been around even longer. Most common solar thermal installations consist of a storage tank and an array of solar collectors. Water is pumped through the collector, where the water is heated to the desired temperature. The hot water is then pumped through a heat exchanger in a storage tank, transferring heat to a building's hot water supply. Solar hot water systems commonly provide hot water to supplement conventional domestic hot water systems, reducing the energy use of water heaters or boilers. Systems can be designed to provide hot water for use in radiant heating systems; however this is typically only cost-effective in new construction.

- Target residential properties managed by the Oxnard Housing Authority for installation of solar thermal systems. Domestic hot water use in most of the City's government facilities is relatively low and installation of solar thermal technologies is probably not cost-effective.
- Some City facilities may be able to utilize solar hot water systems to provide space heating in addition to domestic hot water.

Overall, this program does not yield significant energy and GHG savings because the City uses minimal amounts of hot water in its operations.



## Program G-14: Increase On-site Electricity Generation at City Wastewater Treatment and Materials Recovery Facilities

<b>Program type:</b>	New clean energy program		
<b>Annual savings by 2020:</b>			
Electricity: 656,400 kWh	Natural gas: 0 therms	GHGs: 140 MT CO2e	
<b>Annual energy cost savings by 2020:</b>	\$40,000		
<b>Estimated first cost to City:</b>	\$250,000 - \$999,999		
<b>Potential source of funding:</b>	To be determined		
<b>Implementation:</b>	2020		
<b>Responsibility:</b>	Public Works Dept./Environmental Resources Division		

**Description:** The City operates a Wastewater Treatment Plant and regional Materials Recovery Facility (MRF) where additional on-site electricity generation systems may be developed. The Oxnard Wastewater Treatment Plant currently receives food, oil and grease (FOG) wastes into its digesters. The digesters convert the FOG into biogas (i.e., methane) for use in its cogeneration system which produces both electricity and heat for use in the wastewater treatment processes.

- Investigate increasing the amount of commercial food scrap collected for the bio-gas electricity generation at the Wastewater Treatment Plant. The City should conduct a study to determine the ultimate bio-gas generating capacity of its digesters from FOG and food scraps and then evaluate the associated economic and technical issues associated with increasing bio-gas power generation at the wastewater treatment plant.

The City's Del Norte Recycling and Transfer Station receives solid waste (refuse) and transfers it to landfills. Recyclables are separated by type, bailed, and sold to market. Yard waste is currently diverted to a composting facility. Waste-to-energy is a process of creating electricity from solid waste.

- Investigate the environmental and economic costs and benefits of installing a waste-to-energy plant, with the recognition that such plants can be a challenge, as there are potentially more effective uses for organics than combusting them for energy. According to the U.S. EPA, the upfront capital need to build a waste-to-energy plant can also be a significant hurdle, and typically requires at least \$100 million to finance the construction, with larger plants requiring double to triple that amount.<sup>5</sup> One of the challenging aspects of waste-to-energy is the need to engage in a long-term contract that "secures a guaranteed waste stream." This can be a disincentive for recycling and composting. Other conversion technology examples are gasification and pyrolysis. While this may potentially be a long-term goal for the City, further assessment of the environmental and economic benefits are warranted and are not quantified here.

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<sup>5</sup> U.S. Environmental Protection Agency. <http://www.epa.gov/osw/nonhaz/municipal/wte/basic.htm>

## Program G-15: Identify Bulk Purchasing Opportunities

**Program type:** New City program

**Annual energy and GHG savings by 2020:**

To be further evaluated

**Annual energy cost savings by 2020:** To be further evaluated

**Estimated first cost to City:** To be further evaluated

**Potential source of funding:** To be determined

**Implementation:** After 2020

**Responsibility:** General Services and Housing Authority

**Description:** Bulk purchasing of energy-saving devices and energy efficiency services can result in significant cost savings to the City.

- A bulk purchasing policy could require City agencies to identify equipment needs for the next fiscal year and coordinate the purchase of energy efficient equipment where possible. Example equipment may include commonly used lighting fixtures or lamps, and energy efficient refrigerators or water heaters for the Oxnard Housing Authority facilities and Oxnard Fire Stations.
- In addition to energy efficiency, the bulk purchasing policy could also be applied to solar PV projects across multiple City agency facilities, and energy surveying services.

## Program G-16: Develop Energy Efficiency Fund

**Program type:** New City program

**Annual energy and GHG savings by 2020:**

To be further evaluated

**Annual energy cost savings by 2020:** To be further evaluated

**Estimated first cost to City:** To be further evaluated

**Potential source of funding:** Multiple potential sources

**Implementation:** After 2020

**Responsibility:** City Manager's Office

**Description:** Energy efficient equipment that saves money and energy over the long term may have higher initial costs. Energy infrastructure improvements are identified and implemented as part of other capital projects or embedded in the work plans of various departments across the City. The creation of an energy fund may also support implementation of an ongoing energy efficiency program focused on working across departments to identify cost-effective projects, pursue utility or other financial incentives and funding opportunities, track completed projects' energy savings, and incentivize City staff to reduce energy consumption.

- Establish a dedicated Energy Efficiency Fund to provide funding specifically for the incremental additional cost of higher efficiency equipment or for specific energy efficiency upgrades, such as the installation of insulation.
- Set aside rebates and incentives received by the City from utility energy efficiency, renewable, or demand response programs.
- Initiate a small surcharge on department utility budgets, or a portion of saved costs due to energy efficiency projects.

## Program G-17: Adopt LEED-Like Standards for City Government Facilities

**Program type:** Use City codes, ordinances, and permitting

**Annual energy and GHG savings by 2020:**

To be further evaluated

**Annual energy cost savings by 2020:** To be further evaluated

**Estimated first cost to City:** To be further evaluated

**Potential source of funding:** To be determined; may include SCE incentives

**Implementation:** After 2020

**Responsibility:** Development Services

**Description:** Under this program, Oxnard would adopt or amend building development standards that exceed CALGreen for City Government new construction and/or major renovation projects. Green buildings are structures built using environmentally responsible processes that minimize environmental impacts throughout the life cycle of the building. Green building principles foster a holistic approach to building design, ensuring a facility that is resource efficient and provides a safe and healthy environment for occupants. Numerous standards and rating systems are available for adoption. Both LEED and Greenglobes are building rating systems that address facility energy use as well as site sustainability. The American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) and International Energy Conservation Code (IECC) both have green building codes, focused more directly on building energy use. SCE provides incentives for integrated designs that exceed Title 24 by 10 percent or greater. The incentive rates are based on the performance of the building with additions for LEED certification, end-use monitoring, and enhanced commissioning.

- Consider implementing a policy to evaluate the use of LEED-like and passive design strategies during the early design stage of all new construction and major renovation projects. Energy efficient lighting and HVAC equipment would also be high priorities along with proper insulation and dual-paned windows.

## Program G-18: Create Solar Ready Roofs

**Program type:** New City program

**Annual energy and GHG savings by 2020:**

To be further evaluated

**Annual energy cost savings by 2020:** To be further evaluated

**Estimated first cost to City:** To be further evaluated

**Potential source of funding:** To be further evaluated

**Implementation:** After 2020

**Responsibility:** Development Services and General Services

**Description:** This program requires a solar feasibility (i.e., solar thermal and PV) study for all City Government re-roofing projects, new construction, and major upgrades. Incorporating solar systems into a re-roofing project can result in cost savings and open the door to technologies that would not be feasible on existing roofs.

Many of the decisions made during a re-roofing project impact the feasibility and cost-effectiveness of a future solar thermal or PV installation. To make a roof “solar ready,” the following items should be considered when completing re-roofing projects, new construction or major upgrades:

- Select roofing materials with solar-friendly warranties;
- Avoid roofing materials that would make solar installations more challenging, such as river rock and tile;
- Plan for easy access to solar system locations;
- Plan for plumbing systems and water lines for solar thermal installations;
- Plan for electrical conduit and other components for PV installations;
- Consider installing solar panel mounting hardware to avoid future roof penetrations.



## 5. EAP: Community Programs

This chapter presents EAP programs tailored to Oxnard's residential communities and the commercial, civic, industrial, and agricultural sectors of the business community. As described in Chapter 2, the commercial sector consumed approximately 70 percent of total community electricity and 73 percent of total community natural gas in 2010, whereas the residential sector consumed roughly 26 percent of electricity and 27 percent of natural gas. Electricity for street and outdoor lighting, traffic lighting, and agriculture and water pumping represents a small portion of total community use.

Table 5-1 presents a summary of 16 Community EAP programs listed by date of implementation. Following Table 5-1 is a detailed description of each program including its number, title, and information on how and when the program would be implemented with City Government leadership after appropriate City Council direction<sup>1</sup>. For near-term and mid-term programs, descriptions include estimates of electricity, natural gas, and GHG reductions resulting from program implementation (as applicable<sup>2</sup>), along with anticipated upfront costs of implementation and estimated cost savings over time.<sup>3</sup>

<sup>1</sup> All estimates of energy and GHG reductions, as well as cost savings, are based on the assumption that the program would be implemented in the year identified in its program description. Early or delayed implementation would affect energy and GHG reductions, and cost savings.

<sup>2</sup> Some programs are categorized as 'supporting programs,' meaning they do not result in direct reductions in energy use but are necessary to support implementation of other EAP programs. This plan does not include calculations of energy and cost savings for supporting programs.

<sup>3</sup> Upfront costs are estimates broadly categorized as falling within one of four ranges: less than \$50,000, \$50,000 to \$249,999, \$250,000 to \$999,999, and \$1,000,000 or more. Cost savings over time are more precise, and are calculated based on program-specific assumptions detailed in Appendix D.



**Table 5-1: Community EAP Programs**

Program Number	Title	Implementation Timeframe	Annual Electricity savings by 2020 (kWh/yr)	Annual Natural gas savings by 2020 (therms/yr)	Annual GHG emissions savings by 2020 (MT CO <sub>2</sub> e/yr)
C-1	Additional Outreach to Commercial And Industrial Sector	2015	5,993,400	520,200	1,260
C-2	Additional Outreach to Residents	2015	1,458,000	120,600	300
C-3	Establish Partnerships between City Green Team and Local Agencies	2015	Supporting program	Supporting program	Supporting program
C-4	Implement Alternative Financing Mechanisms	2015	Supporting program	Supporting program	Supporting program
C-5	Recycled Water Outreach and Education Program	2015	Supporting program	Supporting program	Supporting program
C-6	Promote Renewable Energy Generation	2015	2,367,600	0	480
C-7	Support Electric Vehicle Infrastructure	2015	0	0	120
C-8	INCF Neighborhood Vintage Assessment Program	2016	952,000	79,000	200
C-9	Create Commercial PACE Program	2016	11,263,500	279,500	2,400
C-10	Create Residential PACE Program	2016	6,683,500	301,500	1,400
C-11	Expedite Permitting	2016	3,621,500	0	750
C-12	Develop Outreach to Agricultural Sector	2020	187,200	0	40
C-13	Promote Green Jobs in the Community	2020	Supporting program	Supporting program	Supporting program
C-14	Require Point-of-Sale Energy Use Disclosure	2020	782,900	64,800	170
C-15	Develop Renewable Energy Ordinance	2020	804,500	0	170
C-16	Develop Partnerships for Renewable Energy Generation	2020	0	0	19,710
C-17	Expand Business/Multi-Family Recycling Assessment Outreach	2015	Supporting program	Supporting program	Supporting program
<b>Total annual savings by 2020</b>			<b>34,114,100</b>	<b>1,365,600</b>	<b>27,000</b>

**Note:** Annual electricity and natural gas values, including total, are rounded to the nearest 100 from raw data. GHG emissions values are rounded to the nearest ten.

Annual electricity savings as a result of programs implemented by 2015 is anticipated to be 9,819,000 kWh/yr, 640,900 therms/yr, and result in a reduction of 2,160 GHGs. However, despite overwhelming City Council support for these programs implementation of these programs is dependent upon staff resources, and funding. Tracking of energy reductions is also predicated upon staff resources and

available funding. Program descriptions identify the primary City Government department responsible for implementation of the program with overall community outreach and coordination provided by the Sustainability Manager. Many of the EAP Community programs require the lead department to collaborate with the business community and related organizations. Appendix E provides general information for potential financing sources and mechanisms which are evolving and may change over time.

## Program C-1: Additional Outreach to Commercial and Industrial Sector

**Program type:** Leverage existing utility program

**Annual savings by 2020 (community-wide):**

**Electricity:** 5,993,400 kWh    **Natural gas:** 520,200 therms    **GHGs:** 1,260 MT CO<sub>2</sub>e

**Annual energy cost savings by 2020:** \$1,049,400

**Estimated first cost to City:** <\$50,000

**Potential source of funding:** Incentives/rebates

**Implementation:** 2015

**Responsibility:** Development Services and Communication and Public Information Office

**Description:** The City would increase energy-efficiency education and outreach efforts to commercial and industrial businesses to increase awareness of local, utility, state, and federal energy efficiency and conservation programs, focusing on SCE and SCG's wide-ranging energy efficiency and conservation programs for existing buildings and incentives for upgrades, including direct installation programs. Specifically, the City would:

- Leverage VCREA's lead role in outreach and education
- Provide more information on the City's website about the opportunities and benefits of energy efficiency and conservation, available rebates and incentives and free classes and workshops offered by VCREA, SCE and SCG
- Host a web page devoted to energy efficiency and conservation resources, including a link to free online energy assessments
- Provide information about water conservation rebates through the Water Division website
- Use the existing public outreach channels of the Oxnard Communication and Public Information Office to highlight local success stories to educate and raise awareness in the community, motivate community support of green business, and facilitate efforts of local businesses
- Use the OxnardNews.org web site, along with its associated Facebook and Twitter pages, to provide timely information about opportunities for businesses to save energy
- Consider highlighting energy efficiency and conservation, and local leaders in the Oxnard community newsletter
- Consider developing a local awards program or nomination process for "Energy Business Champion of the Year" to encourage and promote action and innovation

- Continue working with the Local Government Commission to encourage local industries to apply for BEACON awards to highlight energy efficiency programs

In addition, energy assessments represent an important step in identifying how businesses use electricity and natural gas as well as opportunities to be more energy efficient and conserve energy. While SCE provides comprehensive energy assessments for large commercial and industrial customers, small and medium commercial businesses would also benefit from proactive efforts to manage energy use. The City should:

- Promote available tools and resources for businesses to understand and manage their energy use
- Help local businesses to take advantage of SCE rebates, reduce energy usage, and save money
- Promote SCE's online "Business Energy Advisor" assessment tool which allows businesses to enter information related to building operations<sup>4</sup>, and SCE's directory of contractors and vendors to help Oxnard businesses with energy upgrades
- In cooperation with the Chamber of Commerce and business, select a pilot upgrade project that completes an assessment, installs upgrades and demonstrates energy savings.

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<sup>4</sup> <https://www.scebusinessenergyadvisor.com>

## Program C-2: Additional Outreach to Residents

**Program type:** Leverage existing utility program

**Annual savings by 2020 (community-wide):**

**Electricity:** 1,458,000 kWh    **Natural gas:** 120,600 therms    **GHGs:** 300 MT CO<sub>2</sub>e

**Annual energy cost savings by 2020:** \$317,400

**Estimated first cost to City:** <\$50,000

**Potential source of funding:** Incentives/rebates

**Implementation:** 2015

**Responsibility:** Development Services, Neighborhood Services, and Communication and Public Information Office

**Description:** The City would increase its education and outreach to local residents and owners of residential buildings to raise awareness of local, utility, state and federal energy saving programs.

- Develop strategies to increase participation in Energy Upgrade California, and leverage existing groups like VCREA and Inter-Neighborhood Council Forum (INCF) to disseminate information.
- Provide information about free energy assessments and no-cost/low-cost energy efficiency and conservation upgrades on bulletin boards and handed out to families participating in local recreation programs. The Recreation and Community Services department currently interfaces with many families in the community and is a key channel for informing local residents about opportunities for energy efficiency and conservation.
- Utilize the INCF to distribute information about SCE online energy assessments and remind residents of opportunities to save energy, such as purchasing compact fluorescent light bulbs, weather-stripping, and insulating ducts and hot water pipes.
- Highlight local energy efficiency success stories of homeowners and residents taking advantage of energy efficiency programs, such as Energy Upgrade California.



#### **Energy Action in the Community: Gill's Onions Transfers Waste to Energy**

*Gills Onions, an Oxnard-based family-owned onion grower and processor has experienced tremendous growth over the past 10 years as its customer base shifts and expands. With an expanding building and operational footprint, Gills Onions looked for new ways to incorporate sustainable elements into its operations and move toward a goal of zero waste. Managing over 17,000 acres of farmland and 300,000 square feet of processing and warehouse facilities, Gills' food processing operations generate an average of 250,000 pounds of green waste per day, amounting to approximately 44,243 tons annually. In the past, Gills followed industry practices and spread onion waste products across agricultural fields. However, this practice resulted in soil acidification, potential ground water contamination, and other issues.*

*Gills Onions spent several years looking for a more sustainable alternative for waste disposal. In July 2009, the company unveiled its Advanced Energy Recovery System (AERS). This award-winning system takes the previously discarded onion waste and converts it into energy by way of anaerobic digestion to produce methane that powers two 300kW fuel cells. Residual solid onion waste is sold as cattle feed.*

*The clean energy produced from the AERS supplies Gills with 100 percent of its plant's base load electricity requirements. Coupled with a comprehensive recycling program, AERS enables Gills to divert 99.6 percent of its total waste and greatly reduces the number of truck trips required to transport the remaining waste products (which helps reduce air pollution and GHG emissions from truck operations).*

## Program C-3: Establish Partnerships between City Green Team and Local Agencies

**Program type:** New community program (supporting)

**Annual savings by 2020 (community-wide):**

Electricity: (Supporting program)    Natural gas: (Supporting program)    GHGs: (Supporting program)

**Annual energy cost savings by 2020:** (Supporting program)

**Estimated first cost to City:** <\$50,000

**Potential source of funding:** To be determined

**Implementation:** 2015

**Responsibility:** Development Services

**Description:** The City's Green Team would coordinate and network with their counterparts at local agencies, school districts, and non-profits to share best-practices towards reducing energy consumption within the community and neighboring areas as well as reduce first-costs associated with implementing energy reduction strategies.

- Work with the Port of Hueneme (Oxnard Harbor District) and Naval Base Ventura County which has direction to reduce energy consumption by 30 percent by 2015 and produce at least 50 percent of energy from alternative sources by 2020 at U.S. Navy bases.<sup>5</sup>
- Organize bulk purchasing agreements for energy efficient equipment and services (such as energy assessments) or renewable energy purchases with the City's five elementary and secondary public school districts, community college district, public and non-profit housing providers, the City of Port Hueneme, the City of Ventura, and County. A Regional Energy Network (REN) may be the eventual outcome of this effort.
- Work with the Agricultural Commissioner's Office and the agricultural processing and manufacturing sectors that are relatively large consumers of energy to identify energy saving strategies and funding.
- Explore the feasibility of collecting regional agricultural waste as fuel for a City or public/private partnership-operated bio-gas digester facility located adjacent to the Oxnard Materials Recovery Facility.

<sup>5</sup> Jim Heller. PowerPoint presentation. <http://www.ncmbc.us/1015-1100MR2CRenewableEnergyPart2rev1.pdf> and Executive Order (EO) 13514 in 2009.



### **Energy Action in the Community: The U.S. Navy Goes Green**

*Directives within the Federal Government to make its buildings and communities more sustainable gained new impetus with the 2009 signing of Executive Order (EO) 13514. EO 13514 requires all Federal agencies to adopt new high-performance sustainable building design, construction, operation and management, maintenance, and deconstruction protocols for all new construction and major renovation projects. The EO also advances regional and local integrated planning, GHG and energy reduction, water-use efficiency, pollution prevention, and waste reduction initiatives. Though*

*many of the EO's mandates will take effect over the course of several years, the Naval Facilities Engineering Command (NAVFAC) Engineering Service Center (ESC) based at Naval Base Ventura County outlined its goals at an energy forum held in 2009.*

*NAVFAC bases its strategy on three core areas: 1) conservation, by reducing its current usage; 2) efficiency, by implementing new technologies and improving energy efficiency across all uses; and 3) alternatives, by increasing its reliance on renewable resources and alternative fuels. As part of this strategy, NAVFAC commits to using 25 percent renewable energy by 2025. New vehicles will be 100 percent alternative fuel and NAVFAC will reduce its total water consumption 30 percent by 2015, and 2 percent annually thereafter.*



## Program C-4: Implement Alternative Financing Mechanisms

**Program type:** New community program (supporting)

**Annual savings by 2020 (community-wide):**

**Electricity:** (Supporting program)   **Natural gas:** (Supporting program)   **GHGs:** (Supporting program)

**Annual energy cost savings by 2020:** (Supporting program)

**Estimated first cost to City:** \$50,000 - \$249,999

**Potential source of funding:** Revolving loan fund; On-bill financing; Energy efficiency fund

**Implementation:** 2015

**Responsibility:** Development Services

**Description:** Beyond PACE programs, Oxnard should consider establishing additional financing mechanisms for residential and/or commercial energy performance assessments and system upgrades:

- **Revolving Loan Fund.** A revolving loan fund is a dedicated fund that can be used to finance small energy efficiency and renewable energy projects. This fund turns over as individual borrowers pay back loans and others take out new loans. A revolving loan fund would require an initial investment into the fund, as well as ongoing administration and financial consulting assistance. Grant funding may be available to cover this initial financial investment and staff time requirement. Oxnard could consider partnering with other municipalities or Ventura County in developing this fund, perhaps as part of a Regional Energy Network.
- **On-Bill Financing.** Oxnard should participate in SCE's On-Bill Financing program. In this program, SCE pays the upfront costs to install energy efficiency and renewable energy projects for nonresidential electrical customers. Customers make payments on the installed measures as a line-item on their monthly SCE bill. Loans are 0 percent interest and do not include extra fees. Customers enrolled in this program also receive applicable equipment rebates. This program provides 5-year loans from \$5,000 to \$100,000 to business customers, and 10-year loans from \$5,000 to \$250,000 to government and institutional customers. Although this program is currently not accepting new applications for Commercial, Industrial, and Agricultural customers and Non-Partner Government and Institutional customers, SCE anticipates reopening the program in 2013.<sup>6</sup>
- **Economically Disadvantaged Community (EDC) Energy Efficiency Grant Fund.** The City should develop a dedicated EDC grant fund to invest in energy-saving, cost-effective improvements in low-income areas of the community. Sources of funding might include Prop 39 grant funding EDC set-aside. This program could provide small bridge grants to qualifying low-income residents that are used in conjunction with other programs that require a resident contribution.

<sup>6</sup> <http://www.sce.com/business/onbill/about-on-bill.htm>

## Program C-5: Recycled Water Outreach and Education Program

<b>Program type:</b>	Promote existing City program (supporting)
<b>Annual savings by 2020 (community-wide):</b>	<b>Electricity:</b> (Supporting program) <b>Natural gas:</b> (Supporting program) <b>GHGs:</b> (Supporting program)
<b>Annual energy cost savings by 2020:</b>	(Supporting program)
<b>Estimated first cost to City:</b>	<\$50,000
<b>Potential source of funding:</b>	To be determined
<b>Implementation:</b>	2015
<b>Responsibility:</b>	Communication and Public Information Office, Public Works, Water and Wastewater

**Description:** The City's state-of-the art Advanced Water Purification Facility (AWPF) produces recycled water available to regional customers. This recycled water is piped separately through its own distribution system identifiable by purple pipes in compliance with California's building code. Using recycled water reduces the community's reliance on imported water and groundwater. Furthermore, the energy used to locally produce the recycled water is less than that used for pumping water through the California State Water Project.<sup>7</sup> Initially, recycled water will be used for irrigation and industrial processes. However, this water is so pure that it can be used to meet any water supply needs in the future, including replenishing Oxnard's groundwater supply

- Continue to require large new developments to install purple pipeline infrastructure for landscaping and then to connect to the City's recycled water when it is available. Per the California Dual Plumbing Code, which took effect in January 2011, recycled water may be used inside non-residential structures for toilet and urinal flushing, floor trap priming, cooling towers, and air conditioning devices.
- Complete the planned hook up of the City's two municipal golf courses and the 702-acre Riverpark Specific Plan area to receive recycled water for irrigation.
- Continue to research other uses for recycled water. The Southshore Specific Plan requires that recycled water landscape irrigation systems be installed in the common areas of all attached residential projects, as well as in public parks and open space areas, and commercial/mixed-use areas.
- Continue to work with the appropriate regulatory agencies to allow dual plumbing for new construction.
- Continue to actively educate the public regarding the availability and usefulness of recycled water.

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<sup>7</sup>

The comparison only accounts for additional energy required to treat water from secondary to tertiary levels.

## Program C-6: Promote Renewable Energy Generation

**Program type:** New clean energy program

**Annual savings by 2020 (community-wide):**

Electricity: 2,367,600 kWh      Natural gas: 0 therms      GHGs: 480 MT CO<sub>2</sub>e

**Annual energy cost savings by 2020:** \$0

**Estimated first cost to City:** <\$50,000

**Potential source of funding:** To be determined

**Implementation:** 2015

**Responsibility:** Development Services

**Description:** A possible barrier to installation of distributed renewable energy generation are zoning and building code regulations, up-front and financing costs, long cost-recovery periods, and access to information.

- Work with the energy engineering community and stakeholders to review City codes and regulations and identify changes that encourage renewable energy generation.
- Promote renewable energy generation (especially by photovoltaic [PV] and solar thermal) to residential and business communities through rebates, education and outreach, demonstration projects, and or other means.
- Update local zoning ordinances and/or development standards to support and encourage residential and commercial renewable energy installations.
- Update development standards to allow solar PV and solar thermal systems as accessory uses for both building-attached and ground-mounted systems.



**Energy Action in the Community: Oxnard Schools Reduce GHG Emissions and Save Money with Solar Arrays**

*In an effort to save money on energy costs, and protect the district's general fund, the Oxnard Union High School District is going green with solar panels at its six high school campuses.*

*Spending an average of \$24,000 per month on electricity, Oxnard High School is the first of six schools to install solar power facilities on their grounds. Oxnard High's ground-mounted installation sits on six acres in a field behind the school and is expected to significantly decrease its energy bills, which total \$300,000 a year. The District was able to take advantage of funding provided by Federal Qualified Energy Conservation Bonds, made available through the American Recovery and Reinvestment Act, and 2004 bond measures. In addition, the systems are eligible to receive \$6 million in California Solar Initiative rebates, payable over the first five years after installation. In total, the six systems are expected to generate 6 million kW per year and save \$36 million in energy costs over the 25 years. This will allow the district to repay the \$25 million project costs in 15 years, an economic gain for the District since the systems are guaranteed for 25 years and have a useful life expectancy of 35 to 40 years.*

## Program C-7: Support Electric Vehicle Infrastructure

**Program type:** New clean energy program

**Annual savings by 2020 (community-wide):**

Electricity: 0 kWh

Natural gas: 0 therms

GHGs: 120 MT CO<sub>2</sub>e

**Annual energy cost savings by 2020:** \$0

**Estimated first cost to City:** \$50,000 - \$999,999

**Potential source of funding:** State cap-and-trade proceeds

**Implementation:** 2015

**Responsibility:** Development Services

**Description:** Plug-in hybrid and electric vehicles (EVs) help reduce GHG emissions and other air pollutants and have the potential to take advantage of distributed sources of renewable energy, such as solar panels. A recent report by the Union of Concerned Scientists<sup>8</sup> illustrates that EVs in California would produce lower GHG emissions than even the most fuel-efficient hybrids. EVs charged entirely from renewable sources like wind and solar power produce virtually no GHG emissions. California is actively promoting plug-in hybrid and EVs to reduce dependence on foreign imported oil and meet the AB 32 GHG emissions reduction targets. To support this important statewide initiative, the City and community should:

- Support regional planning efforts to locate public EV charging stations for regional travel, mostly along the Highway 101 Corridor.
- Working with the community, especially the service station operators, identify locations for alternative fuel and EV fueling stations that encourage local public and commercial use of alternative fuel vehicles.
- Coordinate with local initiatives occurring with the Tri-County area of Ventura County, Santa Barbara County and San Luis Obispo County and with the Southern California Association of Governments to ensure consistent codes and development standards.
- Require new development projects provide EV charging stations as a percent of total parking spaces included in the project
- Advocate for local funding for EV charging stations from CARB cap-and-trade proceeds, among other sources.
- Work with local fleet operators, the Oxnard Harbor District and its clients, and the agricultural operators to convert fleet and agricultural vehicles to EV and alternatives fuels, including CNG and fuel cells.

<sup>8</sup> See report at: [http://www.ucsusa.org/assets/documents/clean\\_vehicles/electric-car-global-warming-emissions-report.pdf](http://www.ucsusa.org/assets/documents/clean_vehicles/electric-car-global-warming-emissions-report.pdf)



## Program C-8: INCF Neighborhood Vintage Assessment Program

**Program type:** New community program

**Annual savings by 2020 (community-wide):**

Electricity: 952,000 kWh    Natural gas: 79,000 therms    GHGs: 200 MT CO<sub>2</sub>e

**Annual energy cost savings by 2020:** \$207,500

**Estimated first cost to City:** <\$50,000

**Potential source of funding:** To be determined

**Implementation:** 2016

**Responsibility:** Neighborhood Services and Development Services

**Description:** The City is divided into 75 residential neighborhoods distinguished by geography and, in many cases, similar size and style of residential construction, referred to as housing and commercial “vintage”. The City’s neighborhoods are supported by the Inter-Neighborhood Council Forum (INCF), which serves as a venue for information exchange and coordination at the neighborhood level. Most neighborhoods are largely single-family subdivisions and often represent one or two vintage California and Oxnard development periods, such as 1920’s bungalows and wood frame homes, post-World War II small stucco homes, 1960’s ranch-style homes, 1970’s split foyer homes, and 1980’s multifamily condominiums. This program would engage the INCF and other stakeholders to:

- Identify specific neighborhoods by building age and type using building permit and Census 2010 data.
- Engage the INCF to organize example vintage energy assessments for interested residents.
- Prepare energy assessments of example vintage homes would identify energy efficiency upgrade opportunities related to refrigerators, dishwashers, hot water heaters, furnaces, or windows that are applicable across a wide number of homes in the same neighborhood.
- Partner with the INCF and VCREA to educate and promote energy efficiency and conservation actions that are cost-effective for specific neighborhoods, and support and provide no-cost or low-cost resources for “Do it yourself” energy efficiency and conservation projects.
- Based on initial assessment results, develop larger-scale energy upgrades and bulk purchasing initiatives for interested residents to install or upgrade energy-efficient equipment.

## Program C-9: Create Commercial PACE Program

**Program type:** New community program

**Annual savings by 2020 (community-wide):**

**Electricity:** 11,263,500 kWh    **Natural gas:** 279,500 therms    **GHGs:** 2,400 MT CO<sub>2</sub>e

**Annual energy cost savings by 2020:** \$710,000

**Estimated first cost to City:** \$50,000 - \$249,999

**Potential source of funding:** Low-interest municipal bonds

**Implementation:** 2016

**Responsibility:** Development Services

**Description:** Many property owners are interested in energy efficiency or conservation measures or installation of renewable energy systems for their environmental and economic benefits, but cannot afford the high initial costs of installation. Property Assessed Clean Energy (PACE) programs eliminate this barrier by allowing local governments to create financing districts where the costs of energy efficiency and conservation, and renewable energy projects are added to property owners' annual property tax assessment in loans amortized over 10 or 20 years. Upfront funding for energy efficiency and conservation, and renewable projects is provided by local governments. PACE programs are attractive because they add value to property assets by attracting tenants, save money for property owners and/or occupants, and help municipalities reach AB32 goals without spending money.

- Oxnard can implement a commercial PACE program either by linking with an existing program in a local municipality such as Los Angeles County, or by creating a new program. Financing through CaliforniaFIRST is available up to \$75,000 for businesses in 20 year loans with interest rates from 7 to 8 percent.
- Governments generally raise money for PACE funding using low-interest municipal bonds backed by the liens on participating commercial buildings. To develop an effective Commercial PACE program, City of Oxnard would need to set rates that are competitive with the market for general business loans.
- To receive PACE funding, the property owner submits an application to the municipality, whose staff reviews the scope of work and checks that the property owner has a clear property title. After the municipality approves the application, the work is completed, a lien is placed on the property, and a check is issued to the property owner. A special tax is added to future property bills. If the property is sold before the end of the repayment period, the new owner assumes responsibility for the property tax lien and pays the remaining special taxes as part of his/her property's annual tax bill.
- PACE programs were made possible in California through State Assembly Bill 811, which provided local governments with the authority to start clean energy financing programs.

## Program C-10: Create Residential PACE Program

**Program type:** New community program

**Annual savings by 2020 (community-wide):**

**Electricity:** 6,683,500 kWh      **Natural gas:** 301,500 therms      **GHGs:** 1,400 MT CO<sub>2</sub>e

**Annual energy cost savings by 2020:** \$794,000

**Estimated first cost to City:** \$50,000 - \$249,999

**Potential source of funding:** Low-interest municipal bonds

**Implementation:** 2016

**Responsibility:** Development Services

**Description:** Residential PACE programs are similar in concept to Commercial PACE programs (see EAP Program C-9), and are made possible through the same State Assembly Bill 811. Legal aspects, structure, and marketing of Residential PACE programs differ in several aspects. Residential PACE programs were delayed from 2010-2012 due to a ruling that the program may violate federal lending practices. However, funding is now available through the 14-county CaliforniaFIRST financing district funded by the California Energy Commission with Ventura County as the lead agency. Financing is available up to \$35,000 for homeowners in 20 year loans with interest rates from 7 to 8 percent.

- Implement a residential PACE program either by linking with an existing program in a local municipality such as Los Angeles County, or by creating a new program.
- The marketing and outreach of Residential PACE would focus on existing communications channels, including the INCF, community centers, and neighborhood newsletters. This program is synergistic with the Additional Outreach to Residents Program (C-2) and INCF Neighborhood Vintage Assessment Program (C-8).
- Governments generally raise money for PACE funding using low-interest municipal bonds backed by the liens on participating residential. To develop an effective Residential PACE program, City of Oxnard would need to set rates that are competitive with equity loans.
- To receive PACE funding, the property owner submits an application to the municipality, whose staff reviews the scope of work and checks that the property owner has a clear property title. After the municipality approves the application, the work is completed, a lien is placed on the property, and a check is issued to the property owner. A special tax is added to future property bills. If the property is sold before the end of the repayment period, the new owner assumes responsibility for the property tax lien and pays the remaining special taxes as part of his/her property's annual tax bill.
- PACE programs were made possible in California through State Assembly Bill 811, which provided local governments with the authority to start clean energy financing programs.

## Program C-11: Expedite Permitting

**Program type:** Use City codes, ordinances, and/or permitting

**Annual savings by 2020 (community-wide):**

Electricity: 3,621,500 kWh

Natural gas: 0 therms

GHGs: 750 MT CO<sub>2</sub>e

**Annual energy cost savings by 2020:** \$491,500

**Estimated first cost to City:** \$50,000 - \$249,999

**Potential source of funding:** To be determined

**Implementation:** 2016

**Responsibility:** Building and Engineering Services

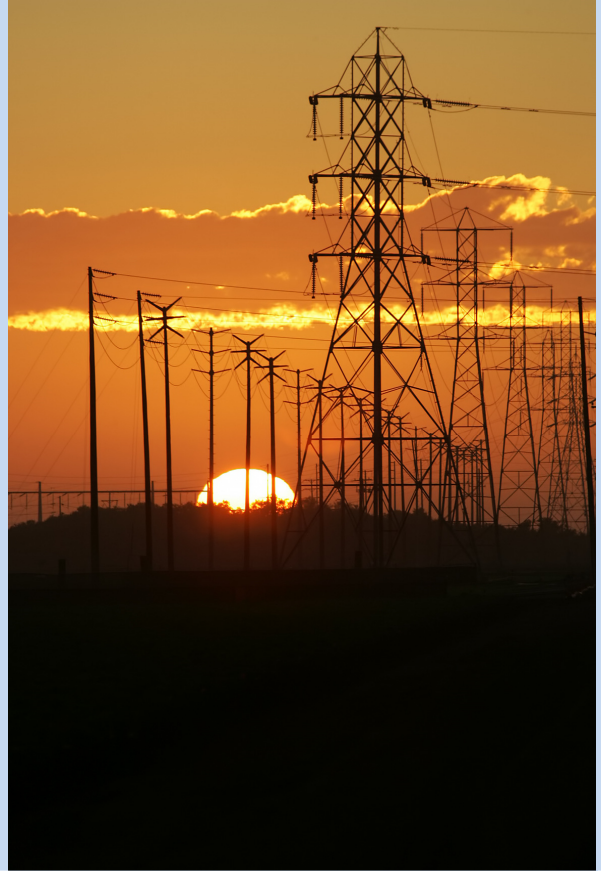
**Description:** Expedited permitting is a strong incentive to increase the number of energy efficiency, conservation and green building measures in construction projects, since the extra money spent to improve building performance is often offset by a shorter development timeline. Many California cities offer expedited permitting for green building projects using a checklist of green building/energy efficiency and conservation measures that must be included to be eligible for the expedited process.

- Working with the development community and other stakeholders, develop an expedited permitting program with a checklist of green building measures of special importance to the City or, alternatively, develop a program referencing an existing green building program such as LEED, GreenPoint Rated, or the voluntary CALGreen tiers.
- Develop checklists for new construction, major renovations and tenant improvement projects that directly correlate to CalEEMod version 2011.1.1 (or later versions) Mitigation and/or Project Description input screens. Staff should be able to input green building measures and provide additional energy efficiency and conservation program recommendations at the permit counter. CalEEMod is an emissions modeling software that provides a uniform platform for government agencies, land use planners, and environmental professionals to estimate potential emissions associated with both construction and operational use of land use projects. The checklist for the expedited permitting program would include data for user inputs and energy-related measures that align with CalEEMod inputs. Applicant responses to the checklist would allow the City to estimate and track GHG reductions associated with these measures.
- Use recurring subsequent energy use analysis to determine if projects are complying with green building measures and reducing GHG emissions by the requisite amount. The analysis would also be helpful for CEQA documentation in demonstrating that a project would contribute its expected amount of energy and GHG emissions reductions.

### ***Reducing Urban Heat Islands***

*Urban areas are particularly vulnerable to the phenomenon known as “urban heat island” where parking lots, rooftops, and other large paved areas absorb and retain the sun’s radiation and increase the surrounding temperature. Urban heat islands also retain heat at night, making it more difficult for cities to cool down, often leading to increased cooling energy loads on subsequent days.*

*The main causes of the heat island effect are dark asphalt roads and parking lots and black tar for roofs. Heat islands may be mitigated with lighter, high solar reflectance index (SRI) materials, and by using white coatings and other materials to create cool roofs. Planting shade trees near buildings also reduces solar heat gain during the hotter months, further reducing cooling costs in homes and businesses. If deciduous trees are planted, the tree does not reduce solar heat gain in the winter. Increasing the urban tree canopy improves air quality and sequesters CO<sub>2</sub>.*



## Program C-12: Develop Outreach to Agricultural Sector

**Program type:** New community program

**Annual savings by 2020 (community-wide):**

Electricity: 187,200 kWh

Natural gas: 0 therms

GHGs: 40 MT CO<sub>2</sub>e

**Annual energy cost savings by 2020:** \$21,000

**Estimated first cost to City:** <\$50,000

**Potential source of funding:** Utility rebates/incentives

**Implementation:** 2020

**Responsibility:** Development Services and Communication and Public Information Office

**Description:** SCE offers energy efficiency programs geared to small and large farms, ranches and dairies. Oxnard, working with stakeholders, would disseminate SCE's agricultural-related information and technical services such as pumping systems for water, refrigeration systems, and compressed air systems.

- Develop an education and outreach effort geared to the agricultural processing sector to raise awareness of local, utility, state and federal energy savings programs. Key strategies include increasing participation in SCE and SCG energy efficiency programs, and working closely with local agricultural industries and groups.
- Coordinate with the Farm Bureau of Ventura County, the County Agricultural Commissioner, and other local groups to disseminate energy efficiency and conservation information pertinent to this industry, such as programs for water conservation and pumping.
- Promote SCE's financial incentives, such as its Schedule TOU-PA-ICE, which offers a rate discount and a credit on electric line extension costs for customers that replace internal-combustion motors with clean-running electric motors.<sup>9</sup>

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<sup>9</sup> See <http://www.sce.com/b-rs/agriculture/agriculture.htm>



## Program C-13: Promote Green Jobs in the Community

**Program type:** New community program (supporting)

**Annual savings by 2020 (community-wide):**

**Electricity:** (Supporting program)   **Natural gas:** (Supporting program)   **GHGs:** (Supporting program)

**Annual energy cost savings by 2020:** (Supporting program)

**Estimated first cost to City:** <\$50,000

**Potential source of funding:** To be determined

**Implementation:** 2020

**Responsibility:** City Manager's Office

**Description:** The City's 2030 General Plan includes a goal of expanding employment and self-employment opportunities in the community, including local jobs that support efforts to retain residents who have completed higher education. Green jobs are generally defined as careers related to energy efficiency and conservation, renewable energy, clean technologies, green buildings, and/or sustainable business practices. Promoting local green jobs in Oxnard supports the goals of energy efficiency and conservation, and environmental sustainability, and helps grow the local economy.

- Modeled after or as part of City Corps, establish a Green City Corps (or equivalent, using high school students, interns, etc.) to support VCREA's and/or the City's lead in outreach and education, and perform energy efficiency and conservation projects.
- Expand the local availability of high quality, knowledgeable local contractors and energy efficiency technicians. Working with stakeholders in the contractor community, inform local contractors and those seeking employment about the availability of low- or no-cost trainings by VCREA and local utilities on energy efficiency and other energy-related topics.
- Promote educational opportunities:
  - ♦ SCE's Energy Education Centers offer basic and advanced classes on many topics, including lighting, heating ventilation and cooling, motors, electrical safety, solar photovoltaic (PV) and energy modeling.<sup>10</sup>
  - ♦ VCREA also offers local technical training seminars and has coordinated Building Operator Certification Courses for Ventura County.
  - ♦ Energy efficiency technical training programs offered, or that could be developed, by the Oxnard Community College.

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<sup>10</sup> SCE has Energy Education Centers in Tulare and Irwindale, and offers courses on-location in other cities throughout SCE's service territory. For a list of classes and descriptions, see <http://www.sce.com/b-sb/energy-centers/workshops-classes.htm>.

## Program C-14: Require Point-of-Sale Energy Use Disclosure

**Program type:** New community program

**Annual savings by 2020 (community-wide):**

Electricity: 782,900 kWh      Natural gas: 64,800 therms      GHGs: 170 MT CO<sub>2</sub>e

**Annual energy cost savings by 2020:** \$170,500

**Estimated first cost to City:** <\$50,000 - \$249,999

**Potential source of funding:** Utility incentives and rebates

**Implementation:** 2020

**Responsibility:** Development Services and Building and Engineering

**Description:** Real estate point-of-sale disclosure provides a potential property buyer with useful information on the energy performance of a building, and provides the seller with an added incentive to improve the energy efficiency of the property. The City of Berkeley has successfully implemented a disclosure ordinance, requiring certain energy conservation measures to be installed in residential and commercial properties upon the sale of the building or major renovations over \$50,000 in valuation.<sup>11</sup>

- Require home energy assessments and/or a more generic “vintage” energy use disclosure at the point of sale. The “vintage disclosure” requirement would disclose the age of the home and the City would provide information on the typical energy performance for that building vintage based on results of actual assessments from the INCF Neighborhood Vintage Assessment Program (C-8).
- Working with the realtor community, provide SCE rebate applications for eligible equipment during point-of-sale transactions, and/or links to the City website with up-to-date information.
- Homes with equipment far below a minimum efficiency threshold would be required to implement energy efficiency upgrades with financial assistance from utility rebate programs up to a fixed amount (similar to being required to spend up to a set cost to pass vehicle emissions inspection).
- For qualifying low-income applicants, fund or subsidize energy assessments and provide low-cost upgrading materials such as weather-stripping and CFL light bulbs to homeowners, along with educational information about energy efficiency and conservation.

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<sup>11</sup> Database of State Incentives for Renewables & Efficiency, [http://www.dsireusa.org/incentives/incentive.cfm?Incentive\\_Code=CA53R](http://www.dsireusa.org/incentives/incentive.cfm?Incentive_Code=CA53R).

## Program C-15: Develop Renewable Energy Ordinance

**Program type:** Use City codes, ordinances, and/or permitting

**Annual savings by 2020 (community-wide):**

Electricity: 804,500 kWh

Natural gas: 0 therms

GHGs: 170 MT CO<sub>2</sub>e

**Annual energy cost savings by 2020:** \$0

**Estimated first cost to City:** \$50,000 - \$249,999

**Potential source of funding:** To be determined

**Implementation:** 2020

**Responsibility:** Development Services

**Description:** A Renewable Energy Ordinance would require certain new developments in the City to incorporate clean renewable energy generation into their plans.

- Working with the development community and stakeholder, create a renewable energy ordinance that requires new master-planned commercial and industrial developments to include renewable energy generation. A master-planned community is a large scale development featuring a wide range of housing prices and styles, an array of amenities, and multiple non-residential land uses, and often developed as part of a specific plan.
- The ordinance could require an analysis of potential solar, wind, biomass, cogeneration and other types of clean or renewable energy generation within the development, as well as associated lifecycle costs, and require the developer to demonstrate why the renewable technologies are not feasible.
- The renewable energy ordinance may also require that a minimum percentage of electricity consumption be provided by clean or renewable energy sources. The exact percentage would be set in the future, and may require that 100 percent of the site energy requirements be met with on-site renewable energy generation (i.e., zero net energy building).

## Program C-16: Develop Partnerships for Renewable Energy Generation

**Program type:** New community clean energy program

**Annual savings by 2020 (community-wide):**

Electricity: 0 kWh

Natural gas: 0 therms

GHGs: 19,710 MT CO<sub>2</sub>e

**Annual energy cost savings by 2020:** \$0

**Estimated first cost to City:** > \$1,000,000

**Potential source of funding:** To be determined

**Implementation:** 2020

**Responsibility:** City Manager's Office

**Description:** In order to increase renewable energy consumption beyond the SCE power mix, the City and stakeholder community would investigate opportunities to develop public-private or public-public partnerships for renewable energy generation, especially related to large electricity users.

### Public-to-Private Partnerships:

- **Power Purchase Agreement (PPA):** Through a PPA, a property is able to install renewable energy equipment without having to pay up-front for the installation. In a PPA, the owner would contract with a private independent solar power producer. The producer would arrange financing, provide the upfront capital and would carry the financial risk required to own and operate a PV power plant. In return, the owners would buy this clean solar energy at a rate equal to or lower than the SCE electric rate, or sell excess power into the SCE grid and earn a credit against subsequent billings.
- **Community Choice Aggregation (CCA):** The California CCA program, established in 2002, allows cities and counties to purchase blocks of power to sell to residents and businesses. In this program, cities aggregate the buying power of individual customers within a defined jurisdiction in order to secure alternative energy supply contracts. A CCA can charge ratepayers less per kilowatt hour than investor-owned utilities. Formation of a CCA or municipal utility in California requires a majority vote and would require the City to thoroughly investigate and understand the associated legal and operational requirements.
- **Municipal Utility:** Alternatively, the City could consider forming a municipal renewable energy production utility, with the freedom to own and operate renewable energy power plants and potentially purchase a higher percentage of renewable energy. The City, as a municipal utility, might be able to increase its renewable portfolio without raising electricity prices for customers. Formation of a municipal utility would be cost and time-intensive and would require a major feasibility and legal analysis.

### Public-to-Public Partnerships:

- **Aggregated Procurement:** The City could consider joining together with other municipalities and agencies to secure bulk purchasing in order to bring lower costs to all participants. Joint procurement consolidates bidding requirements and project management services. Aggregated Procurement can help achieve savings by pooling together similar projects, performing economic analysis, coordinating the procurement process, identifying attractive financing, assisting with rebates, and implementing the upgrades.
- **Demonstration Pilot Projects:** Collaborate with businesses such as Gills Onions, with Naval Base Ventura County, and other adjacent municipal organizations, agencies, and non-profit organizations to develop pilot projects such as a multi-fuel service center for heavy-duty fleet vehicles along the Rice Avenue corridor between the 101 Freeway and the Port of Hueneme and NBVC.
- **Aggregated Municipal Funding Opportunities:** Collaborate with adjacent municipal organizations, agencies, and non-profit organizations to pool resources to secure attractive financing terms.

There are a variety of tools available to finance public-to-private or public-to-public partnership efforts. The City may consider leveraging On-Bill Finance programs, Clean Renewable Energy Bonds (CREBs), Qualified Energy Conservation Bonds (QECBs), revolving loan funds, Community Development Block Grant funds, and CARB Cap and Trade funds to encourage partnership to improve energy efficiency and conservation.

## Program C-17: Expand Business/Multi-Family Recycling Assessment Outreach

**Program type:** Expand existing City program (supporting)

**Annual savings by 2020 (community-wide):**

**Electricity:** (Supporting program)    **Natural gas:** (Supporting program)    **GHGs:** (Supporting program)

**Annual energy cost savings by 2020:** (Supporting program)

**Estimated first cost to City:** <\$50,000

**Potential source of funding:** To be determined

**Implementation:** 2015

**Responsibility:** Public Works Dept./Environmental Resources Division & Public Information Office

**Description:** State Mandated implementation of AB341 requires all businesses generating 4 cubic yard of trash per week and multi-family units of 5 or more to provide on site recycling programs. This will result in a reduction in the amount of trash processed at facilities which reducing garbage to the landfill and will reduce electricity generation.

- Continue to work with the appropriate departments and entities to expand business/multi-family recycling opportunities.
- Continue to actively educate the business/multi-family community regarding the availability and usefulness of recycled water.





## 6. Implementation, Program Evaluation, and Monitoring

Implementation of the adopted EAP policies and programs will require expanding existing initiatives, developing new programs, and working with partners and effective management systems for tracking and monitoring program implementation. The City will coordinate with residents, businesses and other government agencies to ensure that EAP programs are well-managed, cost-effective and responsive to the unique needs of Oxnard.

This chapter shows how the cumulative effects of existing community programs, successful implementation of EAP programs, and California statewide actions will help the City achieve its 2020 community-wide energy reduction target, and how this will effect community-wide GHG emissions. This chapter then identifies how the City will monitor, measure and verify progress towards its energy reduction target. Lastly, a section is provided on the broader planning actions and program development options that the City will consider as it charts a feasible course to achieving the target.

### 6.1 Reaching the 2020 Reduction Target

#### 6.1.1 Energy Reductions

As discussed in Chapter 2, the City proposes a reduction target of 10 percent below the 2005 baseline for electricity and natural gas consumption provided by SCE and SCG. With energy consumption expected to increase over time (see Chapter 2, Tables 2-9 and 2-10), the target is equivalent to approximately 16 percent below 2020 BAU electricity use projections, and 20 percent below 2020 BAU natural gas projections.

Table 6-1 shows anticipated energy reductions by 2020, by source, from EAP measures and state policy. Existing City programs implemented since 2005 are expected to result in reductions of 2.7 GWh/yr of electricity, and over 1,000 therms/yr of natural gas associated with City Government operations. The EAP programs presented in Chapters 4 and 5 that can be quantified are estimated to result in additional reductions of 37.5 GWh/yr of electricity, and 1.4 million therms/yr of natural gas. Updates to the State's Title 24 regulations for new construction will further reduce annual energy usage by approximately 10 GWh and 900,000 therms.

Table 6-1: Energy Reductions by 2020

Energy Reductions	Annual Electricity Reduction in 2020 (GWh/yr)	Percent of 2020 BAU Electricity Use	Annual Natural Gas Reduction in 2020 (therms/yr)	Percent of 2020 BAU Natural Gas Use
Existing City programs since 2005	2.7	0%	1,181	0%
New EAP programs by 2020	37.5	4%	1,389,600	2%
Title 24 updates	10.0	1%	909,522	1%
<b>Total energy reductions</b>	<b>50.1</b>	<b>5%</b>	<b>2,300,303</b>	<b>3%</b>

Combined, the reductions listed in Table 6-1 are not enough to compensate for the anticipated increase in community energy use under the BAU scenario. As shown in Figures 6-1 and 6-2, by 2020, the BAU scenario projects that annual electricity usage will increase by 64.2 GWh/yr, while natural gas usage will increase by almost 10 million therms/yr. The increase in energy use is due to growth in the City's population and economy. The reductions listed in Table 6-1 would represent approximately 50.1 GWh/yr (5 percent of the 2020 BAU for electricity), and approximately 2.3 million therms (3 percent of 2020 BAU natural gas use). However, this still represents an increase over the 2005 baseline.

Meeting a 10 percent energy reduction target will likely require the City to develop more aggressive programs or mandatory energy efficiency and conservation measures. Alternatively, higher-than-anticipated voluntary participation in the programs already included can close the gap. This would likely require more outreach, education, and support by the City than is currently included in this EAP. Section 6.4 of this chapter provides guidance on where the City may focus its efforts to increase energy reductions before and after 2020. Appendix F provides a list of additional programs that the City does not currently include in the EAP but which may be considered during future updates. Regardless, the City plans to closely monitor energy consumption patterns and implement the EAP programs to achieve energy and utility cost savings to the maximum feasible extent.

### 6.1.2 Implications for GHG Emissions

Although the EAP shows a challenge in reaching its energy reduction target, the EAP programs and statewide measures will result in substantial decreases in community-wide GHG emissions.

Oxnard's existing initiatives implemented since 2005 (described in Chapter 3) already contribute towards reducing the City's energy-related GHG emissions. While the effects of Oxnard's existing energy initiatives are largely captured in the observed 4 percent decrease in community-wide

Figure 6-1: Projected Annual Community-Wide Electricity Use under Various Scenarios

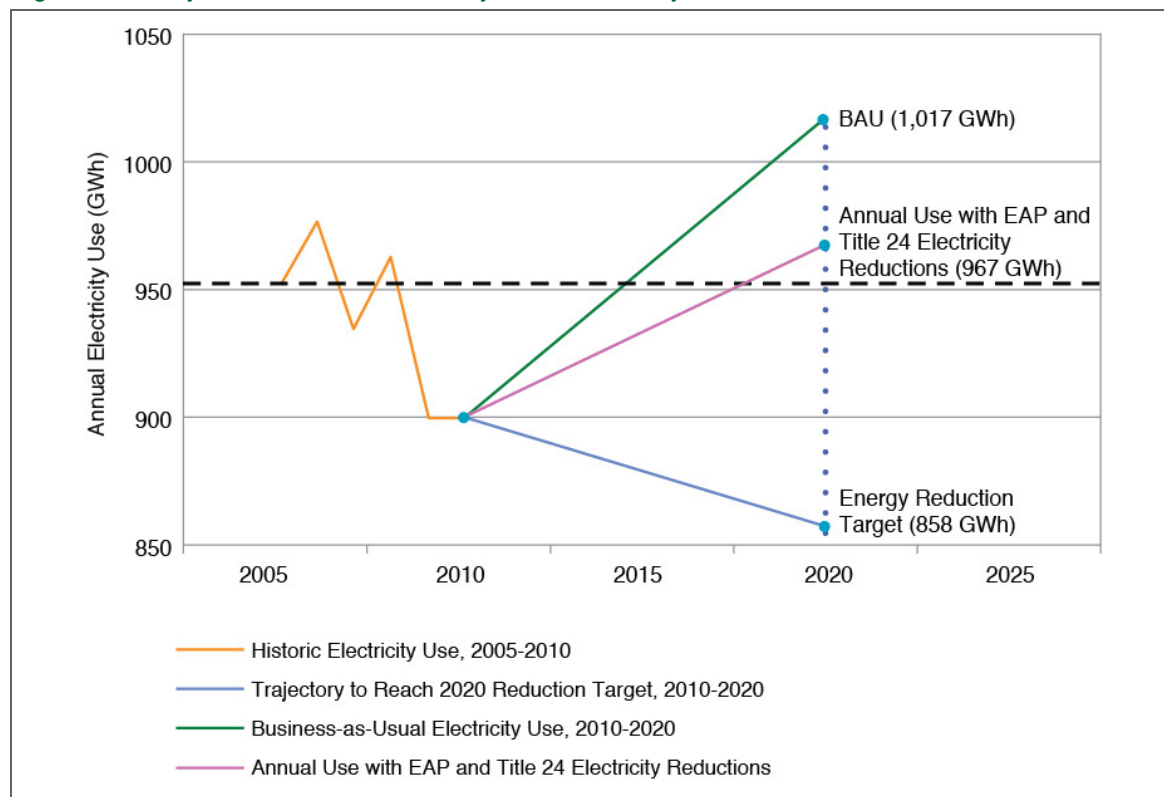
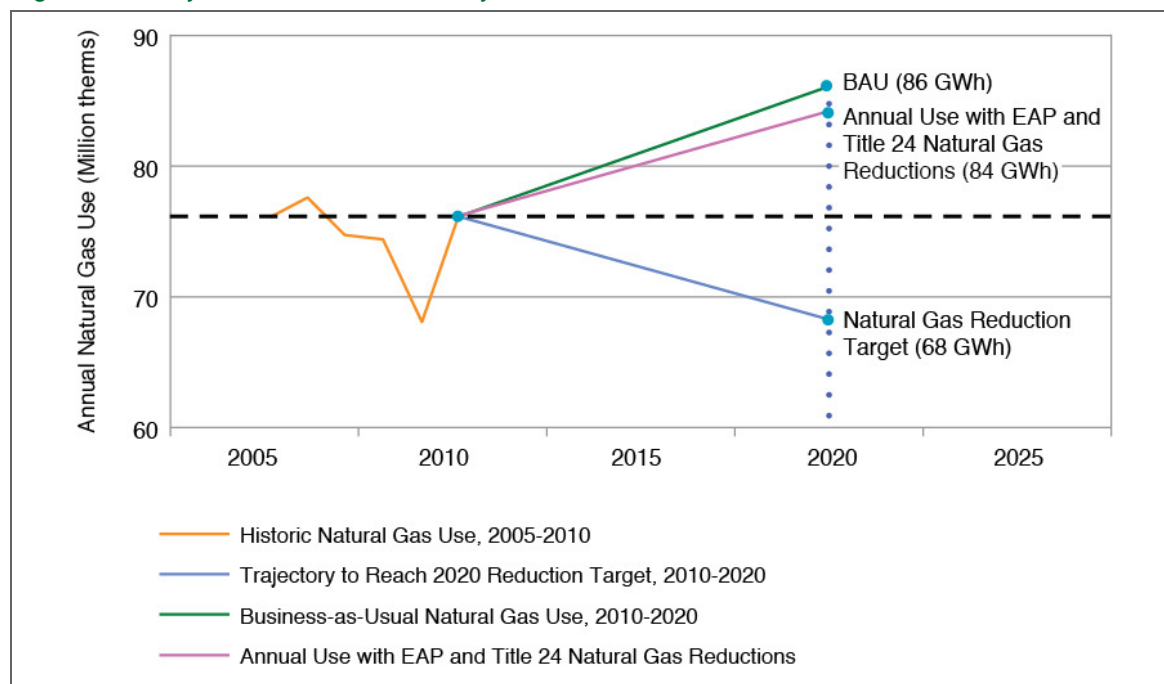


Figure 6-2: Projected Annual Community-Wide Natural Gas Use under Various Scenarios



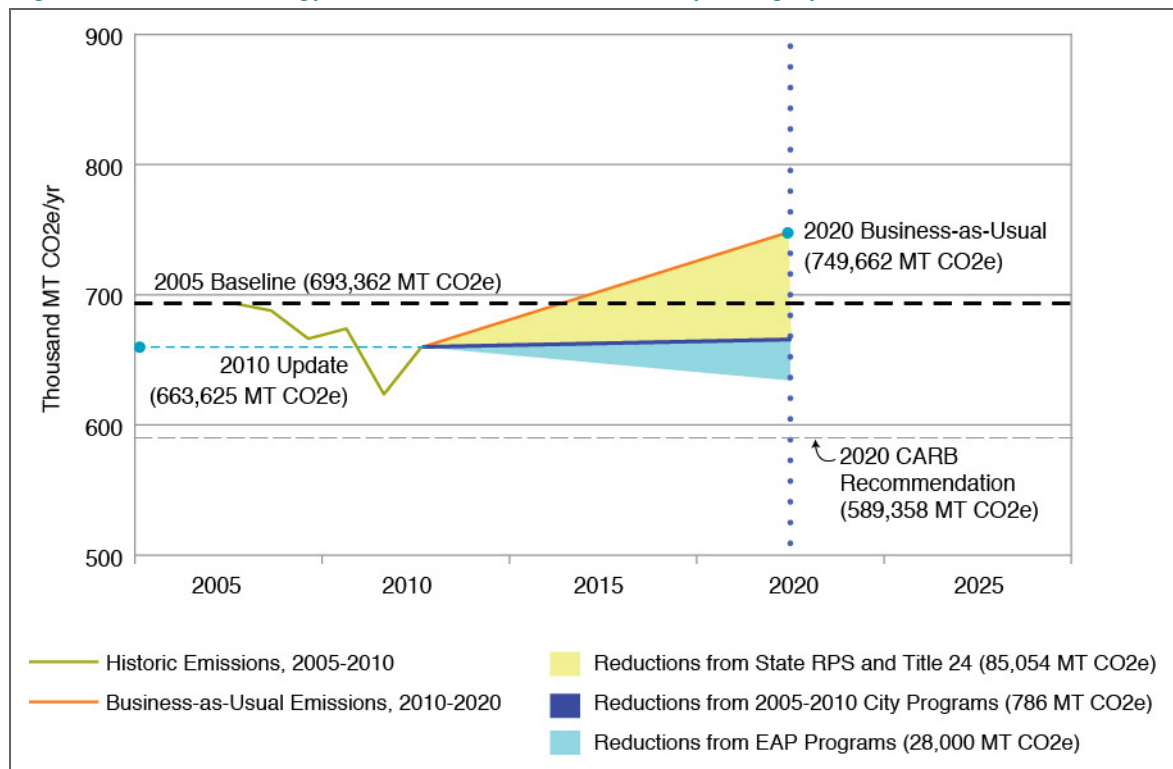
emissions between 2005 and 2010, several programs were either completed after 2010 or will continue to reduce energy use in the community beyond 2010. The City calculates that these programs will result in an additional reduction of 786 MT CO<sub>2</sub>e/yr by 2020.

In addition, implementation of the EAP programs described in Chapters 4 and 5 are expected to reduce community-wide emissions by approximately 28,000 MT CO<sub>2</sub>e/yr by 2020.

Finally, renewable energy policies being implemented statewide will further reduce community-wide GHG emissions. The California Renewable Portfolio Standard (RPS) mandates that 33 percent of electricity sold by the state's investor-owned utilities (including SCE) be generated from renewable resources by 2020. In addition, the state-wide Scoping Plan for AB 32 includes measures, such as updates to Title 24 that will improve energy performance of residential and non-residential buildings. State programs are expected to reduce community-wide GHG emissions by over 85,000 MT CO<sub>2</sub>e/yr by 2020.

The combined effect of these reductions is an anticipated decrease in community-wide GHG emissions of almost 114,000 MT CO<sub>2</sub>e per year by 2020. Applied against the 2020 BAU emissions scenario, this represents an 8 percent reduction from the 2005 baseline, and a 15 percent reduction from the 2020 BAU projection. This puts the City on a path towards achieving CARB's recommended goal of a 15 percent reduction (from 2005) in community-wide GHG emissions for all sectors. Figure 6-3 shows the sources of anticipated GHG reductions between 2010 and 2020. This reduction is largely due to more of SCE's electricity being generated by renewable solar and wind facilities.

Figure 6-3: Oxnard Energy GHG Emissions Reductions, by Category



## 6.2 Implementation Responsibility

In order to implement this plan as eventually adopted by the City Council in whole or in part, the City will provide staff resources to ensure that policies and programs are implemented according to the schedule outlined. Per Program G-1, the City would develop or designate a staff Sustainability Manager to oversee implementation of this EAP and work directly with the City departments responsible for high-priority programs. The Sustainability Manager would meet regularly with the Oxnard Green Team, who would provide input and guidance for how specific programs in this EAP should be implemented and serve as an EAP working group to support the Sustainability Manager.

The Sustainability Manager would coordinate with both internal City departments and external community partners to ensure timely, efficient and effective program development. To support successful implementation of the EAP, Oxnard could commit to the following implementation actions:

- Dedicate City staff time within the departments responsible for implementing specific programs to oversee pursuit of funding (e.g., grant writing) and implementation of the EAP; ensure maximum leverage of local, utility, state, and federal programs.
- Advocate proactively with the CPUC and CEC to promote policies that support City efforts to promote energy efficiency and conservation, and renewable energy.
- Implement an employee awareness and education campaign; continue to partner with VCREA to take advantage of available training for City staff.

Although the City will be responsible for initiating the programs outlined in this EAP, success will ultimately depend on public participation. In addition to using its own Communication and Public Information Department to reach out to the community, the City recognizes that coordinating with outside agencies is critical for maximizing public participation in programs. The City will continue to partner with VCREA and SCE to leverage support for energy conservation and renewable energy programs. The City will also explore public-private partnerships as a means of funding and implementation.

## 6.3 Schedule

The start date for each program, as provided in Chapter 3, is used in this chapter to present an implementation schedule organized by Near-term (the upcoming bi-annual budget cycle of 2013 to 2015), Mid-term (by 2020) and Long-term (after 2020) programs. Actual implementation may depend on a variety of factors, including availability of funding and staff availability, community priorities, and changing economic conditions.

### 6.3.1 Near-term Programs

Table 6-2 presents EAP programs that are recommended for full implementation by end of 2015. These are programs that have been proven to be effective locally and in other communities, and are expected to be cost-effective and feasible for Oxnard.



**Table 6-2: EAP Programs to Be Implemented by End of 2015**

Program Number	Title	Implementation Timeframe	Responsible Department
<b>City Government Programs</b>			
G-1	Create a Staff Sustainability Manager Position	2013	City Manager's Office
G-2	Benchmark and Monitor City Government Facilities	2015	General Services
G-3	Continuous Improvements and Preventative Maintenance	2015	General Services
G-4	Update Computer and Office Equipment	2015	Information Systems
G-5	Increase Demand Response Participation	2015	General Services
G-6	Empower Oxnard "Green Team"	2015	Planning and Environmental Services
G-7	Upgrade City Government Facilities	2015	General Services
G-8	Incorporate Greening Guidelines	2015	Development Services
G-9	Install Solar Power	2015	General Services
<b>Community Programs</b>			
C-1	Additional Outreach to Commercial And Industrial Sector	2015	Development Services and Communication and Public Information Office
C-2	Additional Outreach to Residents	2015	Development Services, Neighborhood Services, and Communication and Public Information Office
C-3	Establish Partnerships between City Green Team and Local Agencies	2015	Development Services
C-4	Implement Alternative Financing Mechanisms	2015	Development Services
C-5	Recycled Water Outreach and Education Program	2015	Communication and Public Information Office, Public Works, Water and Wastewater
C-6	Promote Renewable Energy Generation	2015	Development Services
C-7	Support Electric Vehicle Infrastructure	2015	Development Services

### 6.3.2 Mid-term Programs

**Table 6-3** presents EAP programs that are recommended for implementation by end of 2020. These are promising programs based on a high level cost-effectiveness assessment, availability of potential funding, and/or ability to leverage an existing program.



**Table 6-3: EAP Programs to Be Implemented by End of 2020**

Program Number	Title	Implementation Timeframe	Responsible Department
<b>City Government Programs</b>			
G-10	Upgrade Street Lights	2020	Public Works
G-11	Develop Energy-Efficient Product Procurement Policy	2020	Information Systems
G-12	Net-Zero City Government Buildings by 2025	2020	Development Services
G-13	Install Solar Thermal Systems	2020	Housing Authority
G-14	Increase On-site Electricity Generation at City Wastewater Treatment and Materials Recovery Facilities	2020	Utility Services
<b>Community Programs</b>			
C-8	INCF Neighborhood Vintage Assessment Program	2016	Neighborhood Services and Development Services
C-9	Create Commercial PACE Program	2016	Development Services
C-10	Create Residential PACE Program	2016	Development Services
C-11	Expedite Permitting	2016	Building and Engineering Services
C-12	Develop Outreach to Agricultural Sector	2020	Development Services and Communication and Public Information Office
C-13	Promote Green Jobs in the Community	2020	City Manager's Office
C-14	Require Point-of-Sale Energy Use Disclosure	2020	Development Services and Building and Engineering
C-15	Develop Renewable Energy Ordinance	2020	Development Services
C-16	Develop Partnerships for Renewable Energy Generation	2020	City Manager's Office

### 6.3.3 Long-term Programs

**Table 6-4** presents City Government programs recommended for long-term implementation. (This EAP does not identify any community programs for long-term implementation.) These are new or innovative programs with potential, but requiring more analysis to determine costs and feasibility. The timeframe for implementation is to be determined, but would likely not be until after 2020.

Table 6-4: EAP Programs to Be Implemented after 2020

Program Number	Title	Implementation Timeframe	Responsible Department
G-15	Identify Bulk Purchasing Opportunities	After 2020	General Services and Housing Authority
G-16	Develop Energy Efficiency Fund	After 2020	City Manager's Office
G-17	Adopt LEED-Like Standards for City Government Facilities	After 2020	Development Services
G-18	Create Solar Ready Roofs	After 2020	Development Services and General Services

## 6.4 Monitoring and Measuring Progress

The City would monitor progress in meeting its relative energy reduction and resulting GHG emission reduction target. The Sustainability Manager would present an annual progress report to the City Manager describing the implementation of the EAP programs. The progress report would be provided to the public on the City's website, and may be disseminated to stakeholders such as VCREA, Oxnard residents and businesses, large partners such as Naval Base Ventura County, local utilities, or others as appropriate.

For programs recommended for near- and mid-term implementation, the City would work to define, monitor and report on measurable indicators of success, including program participation rates. A number of tools and practices exist that enable the City to track and report progress toward achieving the target. Tools may be as simple as a spreadsheet developed to monitor estimated annual electricity and natural gas savings, and associated GHG reductions. The City may quantify savings using the California Energy Commission (CEC) and California Public Utilities Commission (CPUC) Database on Energy Efficient Resources (DEER), which provides estimates for electricity and natural gas savings associated with energy efficiency measures.

The City would update the EAP, including revisions to the community and City Government energy and GHG inventories, at least every five years. Revisions would consider the need for additional programs, more aggressive programs, or mandatory energy efficiency and conservation measures, to meet the City's energy reduction target of 10 percent by 2020, if that is the eventual adopted target. As explained above in Section 6-1, even with implementation of the programs identified in this EAP, along with existing City programs and implementation of statewide measures, by 2020 annual energy use is projected to increase above the 2005 baseline. Achieving the 10 percent reduction target will require close monitoring of programs in place, along with strategic planning by the City. Future planning efforts should focus on the following actions, which have been identified as having a high potential to increase the City's annual energy reductions:

1. **Analyze the feasibility of EAP programs identified for long-term implementation.** This EAP does not quantify energy reductions associated with long-term programs, because they require additional analysis to determine costs and feasibility. Implementation of viable long-term programs would result in additional City Government energy reductions.

2. **Increase voluntary participation in the programs listed in this EAP.** Chapter 4, Chapter 5, and Appendix D provide anticipated energy and GHG reductions associated with each EAP program, based on program-specific assumptions about participation rates. Increasing participation rates will result in correspondingly higher levels of energy and GHG reductions.
3. **Revise Community Program C-11, Expedited Permitting, to include mandatory provisions.** In the future, the City may require certain types of energy efficiency and conservation upgrades for projects needing a City permit.
4. **Develop a new community program requiring more stringent energy standards for new construction and major remodels.** In the future, particularly as standards and protocols continue to evolve, the City may require performance above Title 24 standards for all new construction and major remodels. City standards could require a specific percent above Title 24, or use CALGreen Tier 1 or 2 standards.
5. **Develop new community and government programs.** Appendix F identifies a preliminary list of programs that the City may consider during future planning processes. This list will be updated as new opportunities are identified.

Implementation of actions such as these, in conjunction with increasing outreach, education, and support by City staff, will improve the City's ability to reach its energy reduction target.



## 7. Conclusion

With this Energy Action Plan, the City has taken a significant step towards reducing future energy consumption relative to growth; producing clean renewable energy; reducing taxpayers, residents, and businesses energy costs; and reducing GHG emissions. While sustainable development presents significant challenges, local leadership is crucial to providing workable solutions and real action. Local-level ideas and initiatives will increase energy efficiency and conservation, reduce GHG emissions, save residents and businesses money, promote economic development, and improve quality of life for Oxnard residents.

Building on the existing Oxnard initiatives that support energy efficiency and conservation, and environmental sustainability, this plan provides for efficient energy consumption and resulting reduced GHG emissions within the community and government operations. Complementary to Statewide efforts and the 2030 General Plan, the programs outlined in this plan will help the City achieve its EAP energy reduction target.





# Appendices

- A. Outreach and Stakeholder Engagement Report
- B. Energy and Greenhouse Gas Inventory Methodology
- C. City of Oxnard General Plan Goals and Policies pertaining to Energy Efficiency and Conservation
- D. Cost Benefit Analysis Methodology
- E. Financing Models and Mechanisms
- F. Programs for Future Consideration





# Appendix A

## Outreach and Stakeholder Engagement Report

Stakeholder engagement and outreach was a critical component to the development and implementation of the City of Oxnard Energy Action Plan (EAP). Since energy use, efficiency, and conservation are tied to such a wide array of issues – social, environmental, and economic – the range of stakeholders potentially impacted by a comprehensive energy planning effort is necessarily extensive.

Community engagement involved ongoing communication between the public and the City – a process that spanned the duration of the EAP project. Multiple engagement strategies targeted all sectors of the community, including traditionally underrepresented or underserved groups. Education and information sharing was an important aspect of this plan. Although many members of the community are conversant with energy issues affecting City operations and the community as a whole, there are many others who are just learning about these issues, or may be completely unaware of them. Thus, the need to educate and inform at every level was considered. The primary work products and components of the outreach effort are summarized below.

### Stakeholder Engagement Documents

Documents created for the stakeholder engagement, including the City website and two public workshops, are listed below.

- Stakeholder Engagement Plan;



- EAP website functional design and technical specifications;
- EAP website content;
- Earth Day Promotional Flyer, English and Spanish;
- Letter to Chamber of Commerce announcing EAP development;
- Press Release announcing public workshops;
- Workshop Agendas and worksheets (Commercial and Residential), English and Spanish;
- Workshop PowerPoint Presentations (Commercial and Residential);
- Workshop iSurvey and Results;
- Business Workshop Flip Chart Notes;
- Workshop Evaluation Form.

## Website

In coordination with the City's Communication and Public Information Office, ESA designed and constructed a website dedicated to the Community EAP (<http://energyaction.oxnard.org/>) to serve as a central clearinghouse for project information, gathering stakeholder input, and providing useful information on local programs, incentives, and workshops. The website keeps the City's residents and businesses up-to-date on local energy programs, provides information on state and utility programs and incentives for increasing energy savings, and directs users to outside resources for assessing and staying informed about energy savings potential. The user-friendly interface is consistent and compatible with the City's website.

## Workshops

Two community stakeholder engagement workshops were conducted in Oxnard on May 14th, 2012. The two workshops were dedicated to gathering stakeholder input and providing education and access to energy conservation information. The first workshop was focused on the Oxnard business community and the second was focused on the Oxnard residential community. Each was scheduled for two hours.

At the workshops, ESA presented the background and purpose of the Community EAP, including descriptions of the City's local government and community-wide energy efficiency goals; discussed the benefits of improving energy efficiency and increasing conservation; and developed a format to capture stakeholder input through discussions, breakout sessions, and electronic polling of the attendees. A formalized agenda developed in advance of the workshops was used to inform stakeholders about the content and to encourage attendance, as well as to guide each workshop and keep it on schedule and on task.

Leading up to the workshops, ESA provided workshop announcements targeted to various stakeholder groups that were distributed by the City. Specifically, ESA drafted and the City finalized and distributed announcements including:

- Press releases to local English and Spanish media announcing the workshops;
- An invitation letter sent to the Oxnard Chamber of Commerce and the Economic Development Corporation of Oxnard;

- An invitation flyer in English and Spanish made available at the City's Earth Day event;
- Announcements on the EAP website providing information on the workshop date and content, local programs, and incentives.

Workshop survey questions and responses are attached to this report, as are public responses to proposed EAP policies and strategies that were presented at the workshops.

## Workshop Lessons Learned

Substantial effort was made to develop and refine agendas, workshop content, and information-gathering tools such as electronic and written surveys. ESA solicited attendees' opinions, priorities, and expectations regarding City policies and programs, financial incentives, and personal behavior change with respect to energy use. Spanish translation by ESA was available at both workshops. Although the workshops were targeted to certain stakeholder groups, they were open to all interested community members.

# Workshop Survey Questions

## Residential iSurvey Questions

1. Are you a resident of Oxnard?
  - Yes
  - No
2. How long have you lived in Oxnard?
  - Less than a year
  - 1-5 years
  - 6-10 years
  - More than 10 years
  - I don't live in Oxnard
3. With what age group do you identify yourself?
  - 24 and under
  - 25-59
  - 60 and better
4. Do you rent or own your home?
  - Rent
  - Own
5. What kinds of energy improvements have you made to your home or residence in the past few years (check all that apply)?
  - Replace old appliances with Energy Star models
  - Weather stripping
  - Sealing electrical conduits, pipes, etc.
  - Attic insulation
  - Wall/floor insulation
  - Heating/Ventilation/Air Conditioning duct sealing or tune up
  - Window replacement
  - Efficient lighting
  - Install solar panels
  - Other
  - None
6. What energy improvements in your residence are you considering over the next 12 months (check all that apply)?
  - Replace old appliances with Energy Star models
  - Weather stripping
  - Sealing electrical conduits, pipes, etc.
  - Attic insulation
  - Wall/floor insulation
  - Heating/Ventilation/Air Conditioning duct sealing or tune up
  - Window replacement
  - Efficient lighting
  - Install solar panels
  - Other
  - None

7. If you have completed energy improvements for your residence, what was your main motivation?
  - Save money
  - Concern for the environment
  - American energy independence
  - Don't want to provide revenue to utilities
8. If you haven't completed energy improvements, what is the main reason why not?
  - Concerned that improvements might cost too much
  - Don't have enough information, or the information is confusing
  - Haven't got around to it
  - Not concerned about energy use, or its impact on the environment
  - I do not own my home so I'm not sure if can make improvements
9. What is the most important thing your local government be doing about energy efficiency?
  - Lead by example by making government facilities energy efficient
  - Use city budget to provide financial incentives to residents and businesses
  - Provide educational resources and assistance to the community
  - Provide assistance on how to access energy efficiency rebates and financial assistance
  - Require energy efficiency improvements in the community through building codes or city ordinance
10. How would you describe your awareness of energy efficiency incentives and rebates provided by your utility or local/state government?
  - Very aware
  - Somewhat aware
  - Not aware
11. Would you like to receive more information about the development of Oxnard's energy action plan?
  - Yes
  - No
12. Your e-mail address? (optional)

### Commercial iSurvey Questions

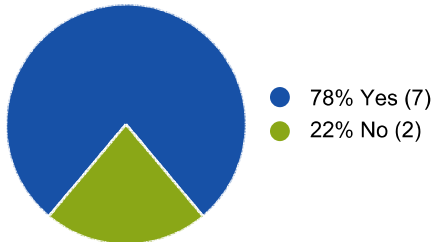
1. Is your business in Oxnard?
  - Yes
  - No
2. Do you lease or own your building/facility?
  - Lease
  - Own
3. Do you have a dedicated energy manager on your staff?
  - Yes
  - No

4. Have you benchmarked your building through energy star or similar benchmarking tool?
- Yes  
No
5. If you have completed (or are considering) energy improvements for your business, what is your main motivation?
- Save money
  - Business strategy
  - Concern for the environment
  - American energy independence
  - Don't want to provide revenue to utilities
6. If you haven't completed energy improvements, what is the main reason why not?
- Concerned that improvements might cost too much
  - Don't have enough information, or the information is confusing
  - Haven't got around to it
  - Not concerned about energy use, or its impact on the environment
  - I do not own my building/facility so I'm not sure if can make improvements
7. What is the one most important thing your local government be doing about energy efficiency?
- Lead by example by making government facilities energy efficient
  - Use city budget to provide financial incentives to residents and businesses
  - Provide educational resources and assistance to the community
  - Provide assistance on how to access energy efficiency rebates and financial assistance
  - Require energy efficiency improvements in the community through building codes or city ordinance
8. How would you describe your awareness of energy efficiency incentives and rebates provided by your utility or local/state government?
- Very aware
  - Somewhat aware
  - Not aware
9. Would you like to receive more information about the development of Oxnard's energy action plan?
- Yes  
No
10. If available, would you have an energy efficiency assessment performed at your business?
- Yes  
No
11. Your e-mail address? (optional)

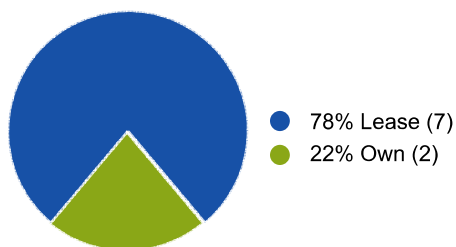
# Workshop Survey Responses

## Commercial Workshop

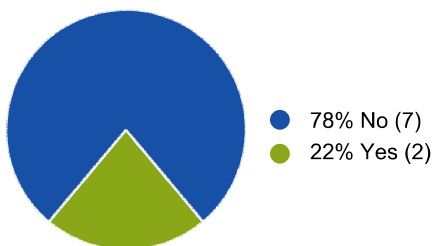
Is your business in Oxnard?



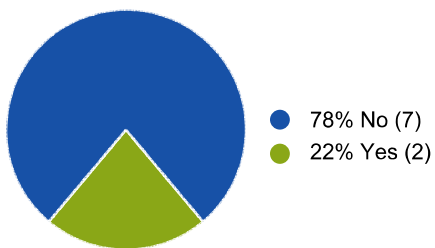
Do you lease or own your building/facility?



Do you have a dedicated energy manager on your staff?

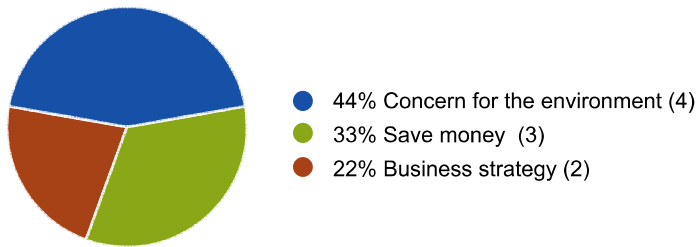


Have you benchmarked your building through Energy Star or similar benchmarking tool?

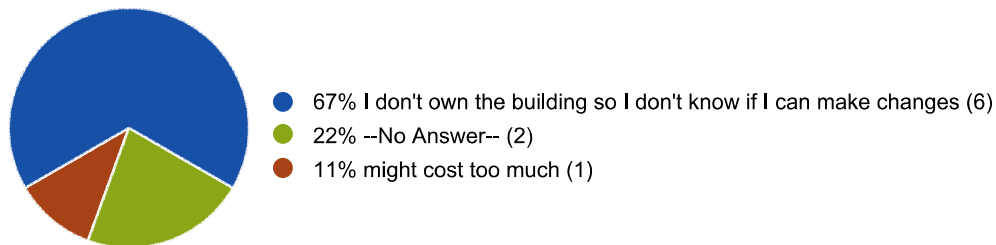




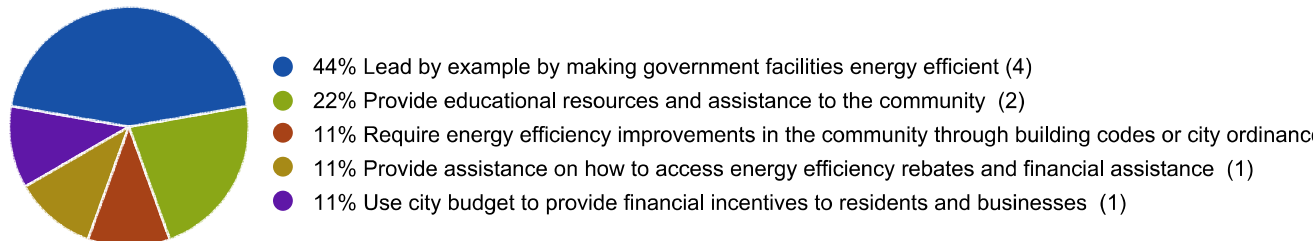
If you have completed (or are considering) energy improvements for your business, what is your main motivation?



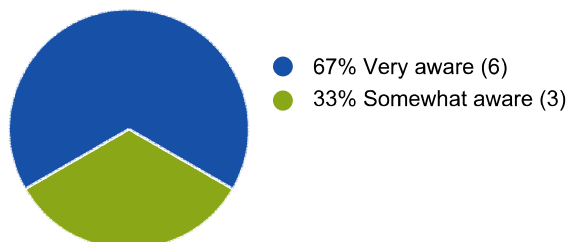
If you haven't completed energy improvements, what is the main reason why not?



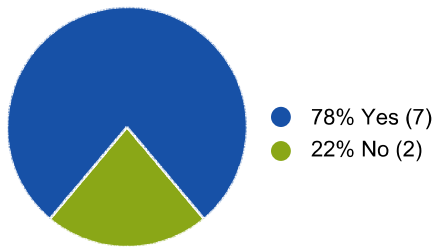
What is the one most important thing your local government can be doing about energy efficiency?



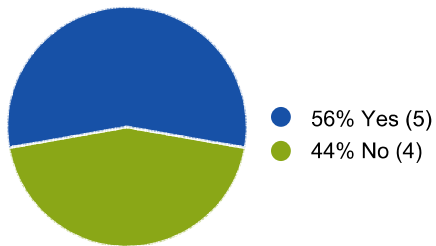
What's your level of awareness about energy efficiency incentives and rebates?



Would you like periodic updates about Oxnard's Energy Action Plan?



If available, would you have a professional energy efficiency review performed at your business?





# Workshop Responses to Candidate EAP Strategies

## Oxnard EAP Workshop: Commercial Energy Efficiency Strategies

(Collected six responses)

**Part 1:** As we go through the examples on the back of this page, indicate which programs you:

-  Like
-  Do not like or support
- ? Do not understand or need more information to decide

**Part 2:** After completing Part 1, please score the following energy strategies as follows:

1. Strongly in favor
2. In favor
3. Neutral. No opinion.
4. Against
5. Strongly against

STRATEGY (and example programs)	Score (1 - 5)
Use City Codes, Ordinances & Permitting to Enhance Green Building and Energy Efficiency	2,4,3,4,3,3 Avg = 3.2
Leverage federal, state and local programs to increase energy efficiency and conservation	1,2,2,2,1,1 Avg = 1.5
Develop programs to increase community energy efficiency and conservation, including better access to financing	1,1,2,3,1,2 Avg = 1.8
Encourage renewable energy through City policies, codes and programs	2, 3,2,1,1,3 Avg = 2.0
City government as energy leader: Promote green building, energy efficiency, and use of renewable energy for government operations and city infrastructure	1,3,2,1,2,3 Avg = 2.0

**Part 3:** Please provide your additional ideas for improving energy efficiency in Oxnard

There is too much light pollution in Oxnard!

The devil is in the details – how much and how long until there is a return? Biggest challenge is to educate – I like the idea of point-of-sale energy audit.

			<b>Use City Codes, Ordinances &amp; Permitting to Enhance Green Building, Energy Efficiency</b>
3	2	1	Local Green Building Code for commercial buildings that goes beyond Title 24 (Note: could require specific features, such as drought tolerant landscaping, or use of natural ventilation)
5	1	0	Expedite building permits for “green” projects (e.g., solar PV; green building projects)
3	1	2	Reduce the urban heat island effect by requiring light-colored paving material for roads and parking areas, cool roofs, and parking lot shade trees.
3	1	1	Ordinance requiring point of sale energy use disclosure, energy efficiency audit, and /or efficiency upgrades (CECO type ordinance)
			<b>Leverage federal, state, local programs to increase energy efficiency &amp; conservation</b>
5	0	0	Participate in Energy Upgrade California or similar rebate program
3	0	2	Dedicate City staff time to oversee implementation of Energy Action Plan and ensure maximum leverage of utility, state, and federal programs
4	0	0	Increase City outreach/education to raise awareness of utility, state, and federal programs
			<b>Develop programs to increase community energy efficiency and conservation, including better access to financing</b>
3	0	1	Establish revolving loan fund for commercial energy performance audits and system upgrades
4	0	0	Provide comprehensive outreach and education to local businesses and residents on how they can improve energy efficiency and save money on energy bills.
4	0	0	Encourage commercial and industrial energy audits
3	0	1	Develop a checklist of voluntary energy actions and upgrades recommended for businesses
3	0	1	Develop a bulk purchasing program for energy efficiency equipment and/or renewable energy installations.
1	1	1	Implement a citywide tree planting program, with a focus on shade trees.
			<b>Encourage renewable energy through City policies, codes and programs</b>
1	0	3	Adopt local zoning ordinances that encourage residential & commercial renewable energy installations
2	0	2	Consider Community Choice Aggregation to increase the proportion of clean, renewable resources in the electricity used by the City.
2	0	2	Promote distributed generation (especially by PV and solar thermal) through rebates, education and outreach, demonstration projects and or other means.
1	1	2	Require that master planned commercial and industrial developments incorporate solar, wind, and other renewable energy generation
2	0	2	Encourage development of a Commercial Property Assessed Clean Energy (PACE) program in Ventura County
			<b>City government as energy leader: Promote green building, energy efficiency, and use of renewable energy for government operations and city infrastructure.</b>
4	0	0	Energy efficiency audits and upgrades for municipal buildings
3	0	1	Retrofit streetlights with more energy efficient equipment
3	0	1	Eliminate illuminated street signs, where feasible, or use more energy efficient lighting (e.g., LEDs)
2	1	1	Set renewable goal for city facilities; install renewable energy generation where possible (e.g., rooftops)

## Candidate Strategies Response Analysis

Of six responses, according to the unscientific results, the EAP strategies rank as follows:

1. Leverage federal, state and local programs to increase energy efficiency and conservation (avg. score 1.5)
2. Develop programs to increase community energy efficiency and conservation, including better access to financing (avg. score 1.8)
3. Encourage renewable energy through City policies, codes and programs (avg. score 2.0)
4. (tie with #3) City government as energy leader: Promote green building, energy efficiency, and use of renewable energy for government operations and city infrastructure (avg. score 2.0)
5. Use City Codes, Ordinances & Permitting to Enhance Green Building and Energy Efficiency (avg. score 3.2)

## Business Workshop Flip Chart Notes

Why isn't Commercial/industrial sector motivated?

- Regulatory/lack of feed-in tariffs
- Developers not convinced of economics of energy efficiency
- Lack of education
- Development community is overwhelmed from other issues (MS4)

What is the school district doing?

- Solar panels-6 high schools (4.1 MW)
- more favorable rate plans from SCE
- Receiving CSI incentives and producing more electricity than consuming
- Energy conservation and efficiency
- HVAC management with energy management systems
- educating teachers and custodians
- educating the students at the high schools about energy

How would energy efficiency work at other businesses in Oxnard?

- Lots of small businesses of 25 or fewer employees
- They don't take advantage of SCE programs (audits, etc)

How to get more projects in older buildings?

- Example-How to do energy efficiency in older buildings like schools? They are inefficient by design need to focus on insulation, windows and HVAC before looking at PV
- Oxnard USD is getting over \$30K/month from PV production
- District paid \$19 million for PV project up-front through a bond and CSI rebates

City Codes and Ordinances

- Need to reach and train contractors on energy efficiency
- Economics favor the use of day laborers that are not trained in construction
- Contractors are in favor of local codes
- At Earth Day, people said they do not want to hire a contractor that costs too much
- Can City have vision of higher quality for buildings?

What are businesses think about?

- Not much about Electric Vehicles
- Grumbling about AB32 – Diesels
- Larger businesses take advantages of programs
- They don't find good climate for infill and redevelopment in Oxnard

How to get traction with the business community?

- Financing like PACE could help but people don't understand what it is
- Need more education
- Education and information is key
- People (including elected officials) are making decisions based on outdated information



How to approach national Big Box stores? Lots of inertia and decisions made at national level EE could need re-branding to create civic attitude and vision

- There are lots of good case studies and stories to tell
- EAP is not “sexy”
- Gil’s Onions won major award and they are doing some tours
- New projects can put Oxnard on the map
- Use green message to do economic development – water & renewable energy
- Mild climate
- Strong, young workforce could benefit from green training
- 8 ½ million square ft of new buildings-in new specific plan
- City could incentivize doing the right thing – green building checklist and expedite permits
- Try to cut down the entitlement process-a real incentive
- Riverpark development
- City could do some targeted outreach to businesses

Could some City staff do audits? Would there be in interest in that? Could help business community?

What is the appropriate and helpful role for the City?

- Should not be marketing only
- Want an energy professional to do audits

Green City Corps

- High school kids
- Train interns
- Water monitoring and public works projects
- Great model because vendors are always out there; good to have non-vendors out there (more trusted)
- Not enough contractors trained in EE
- How do we encourage building to be done with long-term vision?
- Large businesses engage in innovative EE projects, but small businesses may not participate
- Has council been given the opportunity to consider codes and ordinances?

PACE Programs: need more education on this!

How to market Energy efficiency?

- Case studies of businesses, schools and municipal
- Education and marketing
- Reward re-development (example of 5% penalty that should have been 5% incentive)



# Appendix B

## Energy and Greenhouse Gas Inventory Methodology

This appendix describes the methodology used to develop the City of Oxnard Energy Action Plan (EAP) baseline of energy use and associated greenhouse gas (GHG) emissions for the greater community and for City Government operations.

The purpose of the energy and GHG baseline inventories is to identify sources, distribution, and overall magnitude of energy (electricity and natural gas) consumption within the City. The baseline will enable policy makers to implement cost-effective energy reduction programs pertaining to residential, commercial, industrial, and municipal sectors within the community.

### Energy Consumption

Energy consumption data was collected directly from the utility companies serving the City, including Southern California Edison (SCE) and Southern California Gas Company (SCG). Each utility provided reports detailing community and City Government energy consumption for calendar years 2005 through 2010, as described below.

#### Electricity

SCE provided electricity consumption data for the community as annual kWh for all SCE-installed service accounts within the City's boundaries (including municipal), via Electricity Usage Reports for 2005-2010. Pages from these reports that show community energy use data are provided at the end of this appendix. The accounts included in the dataset were extracted from SCE's Customer Service System, and include both electricity purchased from SCE as well as electricity purchased from direct access providers using SCE infrastructure. SCE tracks electricity consumption by "rate group," which is defined based on type of usage and demand (see [Table B-1](#)).

**Table B-1: Assignment of SCE Rate Groups into EAP Categories and Sectors**

EAP Sector/ Category	SCE Rate Group	SCE Rate Group Description
Residential	Domestic Service (DOMESTIC)	For all residential service including lighting, heating, cooking, and power or combination thereof in a single-family accommodation; also to domestic farm service when supplied through the farm operator's domestic meter.
Commercial - Small Facility	General Service Non-Demand (GS-1)	Includes single- and three-phase general service including lighting and power, except that the customer whose monthly maximum demand, in the opinion of SCE, is expected to exceed 20kW or has exceeded 20 kW in any three months during the preceding 12 months.
Commercial - Large Facility	Time-of-use General Service - Large (TOU-8) [Per Application of the 15/15 rule, the TOU GS and GS-2 rate groups were combined into the TOU-8 rate group.]	TOU-8: Includes general service, lighting and power, except agricultural water pumping accounts. This Schedule is mandatory for all customers whose monthly maximum demand, in the opinion of SCE, is expected to exceed 500 kW or has exceeded 500 kW in any three months during the preceding 12 months.
		TOU GS: Time of Use, General Service.
		General Service-Demand (TOU GS-2): As of August 2006, includes single- and three phase general service including lighting and power customers whose monthly maximum demand registers, or in the opinion of SCE is expected to register, above 20 kW and below 200 kW. In 2005, this rate group included customers with monthly maximum demands above 20 kW through 500 kW.
Agricultural and Pumping	Time-of-use Agricultural and Pumping (AG TOU) [Per Application of the 15/15 rule, the TOU-PA-5, PA-1 and PA-2 rate groups were combined into AG TOU rate group.]	AG TOU: Includes accounts where SCE determines that: 70% or more of the customer's electrical usage is for water pumping used for agricultural purposes, except where the customers Maximum Demand is expected to exceed 500kW or has exceeded 500kW for any three months during the preceding 12 months. These accounts are time-of-use agricultural pumping accounts that do not qualify for the TOU-PA-5 tariff.
		Time-of-Use Agricultural and Pumping - Demand Metered (TOU-PA-5): Includes accounts where SCE determines that: 70% or more of the customer's electrical usage is for general agricultural purposes or for general water or sewerage pumping or for oil pumping by customers with a Standard Industrial Classification (SIC) Code of 1311; none of any remaining electrical usage is for purposes for which a domestic schedule is applicable; and, the customer's account has 35 horsepower or more of total connected load or 35 kW or more of Maximum Demand.
		Power - Agricultural and Pumping Connected Load Basis (PA-1): Includes accounts where SCE determines that 70% or more of the customer's electrical usage is for general agricultural purposes or for general water or sewerage pumping and none of any remaining electrical usage is for purposes for which a domestic schedule is applicable.
		PA-1 (Power - Agricultural and Pumping Connected Load Basis): Includes accounts where SCE determines that 70% or more of the customer's electrical usage is for general agricultural purposes or for general water or sewerage pumping and none of any remaining electrical usage is for purposes for which a domestic schedule is applicable. The Customer whose monthly Demand, in the opinion of SCE, is expected to, or has reached, 200 kW or above in any three months during the preceding 12 months shall have a Real Time Energy Meter (RTEM) or other type of interval meter installed and shall become ineligible for service under this schedule.
Street and Outdoor Lighting	Lighting - Street and Highway (STREET LIGHTING)	Includes service for the lighting of streets, highways, and publically-owned and publically-operated automobile parking lots which are open to the general public where SCE owns and maintains the street lighting equipment and associated facilities include under this schedule.
Traffic Lighting	Traffic Control Service (TC-1)	Includes single- and three-phase service: for traffic directional signs or traffic signal systems located on streets, highways and other public thoroughfares and to railway crossing and track signals; for public thoroughfare lighting that is utilized 24 hours per day or is not controlled by switching equipment, such as tunnel or underpass lighting; and, to public authorities for the illumination of bus stop shelters located in the dedicated road right-of-way where such service is combined with other traffic control service as described above.

Source: SCE, 2012. Electricity Use Reports for City of Oxnard, Years 2005 through 2010; City of Oxnard Billing History – January 2005 through December 2010. Provided April 11, 2012.

SCE provided City Government operations electricity data for each billing period from 2005-2010 as annual kWh for all Oxnard City Government service accounts. While SCE provided the community data aggregated at the rate group level, the City Government electricity consumption data was provided at the account level and manually aggregated. Electricity data for a number of street lighting accounts was not available for 2005 and 2006. Since data from 2007 through 2010 showed a 1.9 percent annual increase in electricity use, a linear growth in street lighting was assumed and used to estimate the 2005 and 2006 annual electricity use for the missing accounts. In addition, the first billing period of each year contained electricity use for December of the previous year and January of the current year. To properly account for calendar year electricity usage, the data for the first billing period was divided between the two calendar years based on the number days per billing period that occurred during each year.

In the EAP, SCE rate groups were redefined as EAP categories and sectors (e.g., Residential, Commercial – Small Facility), as shown in Table B-1. In Table B-1, the left-most column provides the energy sectors and categories used in the EAP, the middle column provides the corresponding SCE rate group, and the right-hand column provides SCE's definitions of each rate group.

As shown in Table B-1, some rate groups represent a combination of other rate groups; for example the TOU GSD and GS-2 rate groups were combined into the AG TOU rate group. This is because data released for the community of Oxnard is subject to the California Public Utilities Commission (CPUC) 15/15 Rule. The 15/15 Rule was adopted by the CPUC in the Direct Access Proceeding (Commission Decision 97-10-031) to protect customer confidentiality. The 15/15 rule requires that: (1) any aggregated information provided by a utility must be made up of at least 15 customers, and (2) a single customer's load must be less than 15 percent of an assigned category. If a number of customers in the compiled data is below 15, or if a single customer's load is more than 15 percent of the total data, categories must be combined before the information is released. The 15/15 Rule further requires that if the 15/15 Rule is triggered for a second time after the data has been screened using 15/15 Rule, the customer data be dropped from the information provided.

## Natural Gas

SCG provided community-wide natural gas data in annual therms, aggregated into four categories: single-family residential, multi-family residential, non-residential, and municipal. Copies of the raw data for community natural gas consumption provided by SCG are shown at the end of this appendix. Non-residential data excludes accounts that trigger the CPUC 15/15 Rule described above.

SCG provided City Government-related natural gas data at the account level, in annual therms, and was manually aggregated into two categories: residential and non-residential. The annual natural gas data was not available for the Oxnard Housing Authority Plaza Vista Housing complex for 2005 through 2008. Because natural gas use for this facility for 2009 and 2010 showed no significant decrease or increase, the annual natural gas use for 2005 through 2008 was estimated using the average consumption in 2009 and 2010.



# Greenhouse Gas Emissions

## Overview

The community and City Government operations GHG inventories were developed using principles from two internationally-recognized protocols: (1) the Global Protocol for Community-Scale GHG Emissions (GPC), which was developed by C40 Cities Climate Leadership Group and ICLEI Local Governments for Sustainability, in collaboration with World Bank, UNEP, UN-HABITAT, and World Resources Institute;<sup>1</sup> and (2) the Local Government Operations Protocol (LGOP) developed by the California Air Resources Board, Climate Action Reserve, The Climate Registry and ICLEI Local Governments for Sustainability.<sup>2</sup> These protocols are designed to provide a standardized set of accounting and reporting standards for developing internationally recognized and accepted community-scale and City Government operations GHG inventories. Since the EAP's GHG inventories only include emissions associated with electricity and natural gas usage, emissions associated with other sectors and sources (such as transportation) were not evaluated.

The community and City Government energy-related GHG inventories were developed for the calendar years 2005 (baseline year) through 2010 (update years) using the energy data described above. GHG emissions were also projected to 2020 and 2030. The specific methodology used to develop the baseline inventories and projections is described below.

## Base Year

The LGOP recommends that a city government's emissions inventory include all GHG emissions occurring during a selected calendar year. Reporting GHG inventories on a calendar year basis follows international protocol.<sup>3</sup> The community and City Government baseline inventories were prepared for the year 2005, to be consistent with GHG inventories developed for climate action plans (CAPs) being prepared in the region and across California. Because of the significant time elapsed since 2005 and the general availability of data, annual inventory updates were compiled for calendar years 2006 through 2010. The updated inventories provide Oxnard with valuable trend information and a means for evaluating the effectiveness of programs implemented between 2005 and the revision year.

## Emissions Boundaries and Sources

The organizational boundary of the community GHG inventory is the City's geopolitical boundary, including all residential, commercial, industrial, and municipal sectors existing within City limits. Oxnard is comprised of 26 square miles in southwest Ventura County, and has a population of almost 200,000. Although the City does not have full operational control over all of these sectors, it does have the ability to influence and facilitate GHG reductions via public policies and community outreach.

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<sup>1</sup> GPC, 2012. Global Protocol for Community-Scale GHG Emissions, Version 0.9, March 20, 2012.

<sup>2</sup> LGOP, 2012. Local Government Operations Protocol, For the quantification and reporting of greenhouse gas emissions inventories. Version 1.1. May 2010. Available at: <http://www.theclimateregistry.org/downloads/2010/05/2010-05-06-LGO-1.1.pdf>

<sup>3</sup> The United Nations Framework Convention on Climate Change (UNFCCC), the Kyoto Protocol, The European Union Emission Trading System (EU ETS), The Climate Registry, California Climate Action Registry (CCAR), and the state of California's mandatory reporting regulation under AB 32 all require GHG inventories to be tracked and reported on a calendar year basis.

The organizational boundary of the City Government GHG inventory encompasses the GHG emissions resulting from actions that the City Government owns or controls operationally, such as municipal buildings streetlights, or leased office space.

The GHG Protocol defines the operational boundary as the sum of all sources of direct and indirect emissions that are included in the organizational boundary. The GHG Protocol divides the operational boundary into three different Scopes, defined as follows:<sup>4</sup>

**Scope 1:** All direct GHG emission sources from activities taking place within the community's geopolitical boundary.

**Scope 2:** Energy-related indirect emissions that result as a consequence of consumption of grid-supplied electricity, heating and/or cooling, within the community's geopolitical boundary

**Scope 3:** All other indirect emissions that occur as a result of activities within the community's geopolitical boundary.

Community and City Government energy use is captured by Scope 1 emissions from natural gas and Scope 2 emissions from electricity. Scope 3 emissions were not relevant for this electricity- and natural gas-specific inventory.

## Data Collection and Emissions Estimation

The GPC and LGOP identify calculation-based methodologies as the most appropriate technique for quantifying GHG emissions, following the basic formula:

$$GHG\ Emissions = Activity\ Data \times Emissions\ Factor$$

Activity data are the relevant measurements of energy use or other processes that are associated with the emission of GHGs, such as metered annual energy consumption (kWh of electricity and therms of natural gas). As described above, activity data for community-wide and City Government electricity was provided by SCE, and activity data for natural gas was provided by SCG.

Emission factors are calculated ratios relating GHG emissions to a proxy measure of activity by emissions source. The inventories focus on the three GHGs most relevant and significant to City Government policymaking: carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), and nitrous oxide (N<sub>2</sub>O). These gases comprise a large majority of GHG emissions from the community. Most GHG reporting protocols also include methods for estimating three additional GHGs: hydrofluorocarbons, perfluorocarbons, and sulphur hexafluoride. However, these GHGs, largely comprised of fugitive emissions that leak from equipment, are generally not included in a community or city government inventory because the data needed to quantify them is typically incomplete or difficult to obtain.

CO<sub>2</sub> emissions from electricity were calculated using SCE-specific emission factors taken from the Climate Registry's (TCR) Global Reporting Protocol (GRP).<sup>5</sup> Because SCE-specific emission factors for CH<sub>4</sub> and N<sub>2</sub>O were not available, emission factors from the LGOP version 1.1 were

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<sup>4</sup> GPC, 2012

<sup>5</sup> TCR GRP, 2012 Default Emission Factors: Table 12.1:



used to calculate those emissions.<sup>6</sup> SCG-specific emission factors for CO<sub>2</sub>, CH<sub>4</sub>, or N<sub>2</sub>O were also not available, and calculations consequently used emission factors from TCR GRP, based on weighted U.S. averages. TCR is designed as to provide a standardized, internationally-recognized set of guidelines for carbon emissions reporting for North America.

For the community and City Government inventories and projections, all emissions are converted to CO<sub>2</sub> equivalent (CO<sub>2</sub>e) so that GHGs can be compared using a common metric. Non-CO<sub>2</sub> gases are converted to CO<sub>2</sub>e using internationally recognized 100-year global warming potential (GWP) factors. GWPs are developed by the Intergovernmental Panel on Climate Change (IPCC) to represent the heat-trapping ability of each GHG relative to that of CO<sub>2</sub>. For example, the GWP of CH<sub>4</sub> is 21 because one metric ton of CH<sub>4</sub> has 21 times more capacity to trap heat in the atmosphere than one metric ton of CO<sub>2</sub>.

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<sup>6</sup> LGOP 1.1, May 2010: Table G-7. Source: [http://www.arb.ca.gov/cc/protocols/localgov/pubs/lgo\\_protocol\\_v1\\_1\\_2010-05-03.pdf](http://www.arb.ca.gov/cc/protocols/localgov/pubs/lgo_protocol_v1_1_2010-05-03.pdf)



# Appendix C

## City of Oxnard 2030 General Plan Goals and Policies pertaining to Energy Efficiency and Conservation

The City of Oxnard (City) provides goals and policies pertaining to energy efficiency and conservation in the City of Oxnard 2030 General Plan Goals and Policies document published in October of 2011, as well as the City of Oxnard Housing Element, Draft No. 4, published in February 2012. Specific goals and policies are provided below, by document. Below each 2030 General Plan policy is a list of EAP programs that directly or indirectly support that policy.

### City of Oxnard California, 2030 General Plan Goals and Policies, October 2011

#### Chapter 2. Sustainable Community

*General Plan Goal SC-1: Supporting and Participating in Global Warming and Climate Change Adaptation analysis and programs.*

*General Plan Policy SC-1.1: Inventory and Monitor GHG Emissions. Inventory and monitor GHG emissions in City operations and in the community consistent with Ventura County Air Pollution Control District and/or State guidelines.*

- The EAP directly supports this policy by providing an inventory of community and government energy-related GHG emissions, and a plan for calculating and monitoring future emissions.

- EAP Programs with Direct Applicability:
  - ♦ G-2: Benchmark and Monitor City Government Facilities
- EAP Programs with Indirect Applicability:
  - ♦ G-6: Empower Oxnard “Green Team”
  - ♦ C-4: Update Computer and Office Equipment

*General Plan Policy SC-1.3: Develop a Climate Action and Adaptation Plan (CAAP) That Supports the Regional SB 375 Sustainable Communities Strategy. Develop a Climate Action and Adaption Plan that implements requirements adopted by the California Air Resources Board and/or the Ventura County APCD that establishes a GHG emissions qualitative and quantitative threshold of significance, establishes GHG reduction targets, and supports the regional SB 375 Sustainable Communities Strategy.*

- The EAP directly supports this policy, by providing an inventory of community and government energy-related GHG emissions, and establishing a GHG reduction target. The EAP does not include GHG emissions or reduction targets pertaining to transportation, however.
- EAP Programs with Direct Applicability:
  - ♦ G-2: Benchmark and Monitor City Government Facilities
- EAP Programs with Indirect Applicability:
  - ♦ G-6: Empower Oxnard “Green Team”
  - ♦ C-4: Update Computer and Office Equipment

*General Plan Goal SC-3: Energy efficiency performance standards and generation from renewable sources.*

*General Plan Policy SC-3.1: New Residential Development. Encourage incorporation of passive and active energy and resources conservation design and devices in new residential development and substantial remodels and/or expansions.*

- EAP Programs with Direct Applicability:
  - ♦ C-2: Additional Outreach to Residents
  - ♦ C-10: Create Residential PACE Program
  - ♦ C-11: Expedite Permitting
  - ♦ C-14: Require Point-of-Sale Energy Use Disclosure
- EAP Programs with Indirect Applicability:
  - ♦ G-1: Create a Staff Sustainability Manager Position
  - ♦ G-6: Empower Oxnard “Green Team”
  - ♦ C-4: Implement Alternative Financing Mechanisms

*General Plan Policy SC-3.3: Develop a Community Energy Action Plan. Develop a Community Energy Action Plan that identifies feasible programs that reduce private sector and institutional consumption of energy.*

- The EAP represents implementation of this policy, and identifies feasible programs that reduce private sector and institutional consumption of energy.
- EAP Programs with Direct Applicability:
  - ♦ G-2: Benchmark and Monitor City Government Facilities
- EAP Programs with Indirect Applicability:
  - ♦ G-1: Create a Staff Sustainability Manager Position
  - ♦ G-6: Empower Oxnard “Green Team”

*General Plan Policy SC-3.4: Alternative Energy for Public Buildings. As part of the City and Community EAP’s, transition City and other semipublic and large energy users to solar and wind energy sources over a reasonable and feasible time period.*

- EAP Programs with Direct Applicability:
  - ♦ G-9: Install Solar Power
  - ♦ G-13: Install Solar Thermal Systems
  - ♦ G-14: Increase On-site Electricity Generation at City Wastewater Treatment and Materials Recovery Facilities
  - ♦ G-18: Create Solar Ready Roofs
  - ♦ C-6: Promote Distributed Clean Energy Generation
  - ♦ C-9: Create Commercial PACE Program
  - ♦ C-16: Develop Partnerships for Renewable Energy Generation
- EAP Programs with Indirect Applicability:
  - ♦ G-1: Create a Staff Sustainability Manager Position
  - ♦ G-6: Empower Oxnard “Green Team”
  - ♦ C-4: Implement Alternative Financing Mechanisms
  - ♦ C-15: Develop Renewable Energy Ordinance

*General Plan Policy SC-3.7: Renewable Energy Production Requirement. As part of the City and Community EAP’s, require that master planned commercial and industrial developments incorporate solar, wind, and other renewable energy generation and transmission equipment unless demonstrated to the satisfaction of a qualified renewable energy consultant to be infeasible.*

- EAP Programs with Direct Applicability:
  - ♦ C-15: Develop Renewable Energy Ordinance
- EAP Programs with Indirect Applicability:
  - ♦ G-1: Create a Staff Sustainability Manager Position
  - ♦ G-6: Empower Oxnard “Green Team”

- ♦ G-17: Adopt LEED-Like Standards for City Government Facilities
- ♦ C-16: Develop Partnerships for Renewable Energy Generation

*General Plan Policy SC-3.8: Require Use of Passive Energy Conservation Design. As part of the City and Community EAP's, require the use of passive energy conservation by building material massing, orientation, landscape shading, materials, and other techniques as part of the design of local buildings, where feasible.*

- EAP Programs with Direct Applicability:
  - ♦ G-17: Adopt LEED-Like Standards for City Government Facilities
  - ♦ C-11: Expedite Permitting
- EAP Programs with Indirect Applicability:
  - ♦ G-1: Create a Staff Sustainability Manager Position
  - ♦ G-6: Empower Oxnard "Green Team"
  - ♦ C-4: Implement Alternative Financing Mechanisms

*General Plan Policy SC-3.9: Promote Voluntary Incentive Programs. Promote voluntary participation in incentive programs to increase the use of solar photovoltaic systems in new and existing residential, commercial, institutional and public buildings, including continued participation in the Ventura County Regional Energy Alliance (VCREA).*

- EAP Programs with Direct Applicability:
  - ♦ G-8: Incorporate Greening Guidelines
  - ♦ G-9: Install Solar Power
  - ♦ G-18: Create Solar Ready Roofs
  - ♦ C-6: Promote Distributed Clean Energy Generation
  - ♦ C-9: Create Commercial PACE Program
  - ♦ C-10: Create Residential PACE Program
  - ♦ C-15: Develop Renewable Energy Ordinance
- EAP Programs with Indirect Applicability:
  - ♦ G-1: Create a Staff Sustainability Manager Position
  - ♦ G-6: Empower Oxnard "Green Team"
  - ♦ C-4: Implement Alternative Financing Mechanisms

*General Plan Policy SC-3.10: Alternatives to Power Plant Generation. Evaluate the feasibility of incorporating alternative sources of power generation such as wind and tidal power into the regional existing power supply grid to reduce reliance on GHG emission producing public utility and privately-owned power plants.*

- EAP Programs with Direct Applicability:
  - ♦ C-15: Develop Renewable Energy Ordinance
  - ♦ C-16: Develop Partnerships for Renewable Energy Generation

- EAP Programs with Indirect Applicability:
  - ♦ G-1: Create Staff Sustainability Position
  - ♦ G-6: Empower Oxnard “Green Team”
  - ♦ C-9: Create Commercial PACE Program
  - ♦ C-10: Create Residential PACE Program

*General Plan Policy SC-3.11: Waste Conversion to Energy Facility. As part of the City and Community EAP’s, evaluate the feasibility for the design and construction of a conversion technology capable of converting municipal solid waste into alternative sources of energy.*

- EAP Programs with Direct Applicability:
  - ♦ G-14: Increase On-site Electricity Generation at City Wastewater Treatment and Materials Recovery Facilities
- EAP Programs with Indirect Applicability:
  - ♦ G-1: Create a Staff Sustainability Manager Position
  - ♦ G-6: Empower Oxnard “Green Team”

*General Plan Policy SC-3.12: Encourage Natural Ventilation. Review and revise applicable planning and building policies and regulations to promote use of natural ventilation in new construction and major additions or remodeling consistent with Oxnard’s temperate climate.*

- EAP Programs with Direct Applicability:
  - ♦ G-17: Adopt LEED-Like Standards for City Government Facilities
  - ♦ C-11: Expedite Permitting
- EAP Programs with Indirect Applicability:
  - ♦ G-1: Create a Staff Sustainability Manager Position
  - ♦ G-6: Empower Oxnard “Green Team”

*General Plan Goal SC-4: Implementation of the California Green Building Code.*

*General Plan Policy SC-4.1: Green Building Code Implementation. Implement the 2010 California Green Building Code as may be amended (CALGREEN) and consider recommending and/or requiring certain developments to incorporate Tier I and Tier II voluntary standards under certain conditions to be developed by the Development Services Director.*

- EAP Programs with Direct Applicability:
  - ♦ G-17: Adopt LEED-Like Standards for City Government Facilities
  - ♦ C-11: Expedite Permitting
- EAP Programs with Indirect Applicability:
  - ♦ G-1: Create a Staff Sustainability Manager Position
  - ♦ G-6: Empower Oxnard “Green Team”



*General Plan Goal SC-5: Share ownership and responsibility for designing, developing, and delivering a successful sustainable community by creating planning and implementation partnerships.*

*General Plan Policy SC-5.4: Coordinate with Local Utility Providers and VCREA. Coordinate with local utility providers and the Ventura County Regional Energy Alliance (VCREA) to promote public education and energy conservation programs to increase the use of solar photovoltaic systems and other technology in new and existing residential, commercial, institutional and public buildings.*

- EAP Programs with Direct Applicability:
  - ♦ G-6: Empower Oxnard “Green Team”
  - ♦ C-1: Additional Outreach to Commercial and Industrial Sector
  - ♦ C-2: Additional Outreach to Residents
  - ♦ C-8: INCF Neighborhood Vintage Assessment Program
  - ♦ C-12: Develop Outreach to Agricultural Sector
  - ♦ C-13: Promote Green Jobs in the Community
  - ♦ C-14: Require Point-of-Sale Energy Ordinance
- EAP Programs with Indirect Applicability:
  - ♦ G-1: Create a Staff Sustainability Manager Position
  - ♦ G-2: Benchmark and Monitor City Government Facilities
  - ♦ G-3: Continuous Improvement and Preventative Maintenance
  - ♦ G-5: Increase Demand Response Participation

## Chapter 4. Infrastructure & Community Services

*General Plan Policy ICS-11.6: Water Conservation and/or Recycling Connection as Mitigation. Require the use of water conservation offset measures (efficient low flow fixtures and irrigation systems, drought tolerant landscaping, leak detection programs, water assessments, and public awareness and education programs) and/or proportional contributions to recycled water production and/or conveyance infrastructure related to the GREAT Program as mitigation for water supply shortage as determined by a Water Supply Assessment, CEQA documentation, or similar analysis as part of new or master plan development review.*

- EAP Programs with Direct Applicability:
  - ♦ C-5: Recycled Water Outreach and Education Program
- EAP Programs with Indirect Applicability:
  - ♦ G-1: Create a Staff Sustainability Manager Position

*General Plan Policy ICS-11.7: Water Wise Landscapes. Promote water conservation in landscaping for public facilities and streetscapes, residential, commercial and industrial facilities and require new developments to incorporate water conserving fixtures (low water usage) and water-efficient plants into new and replacement landscaping.*

- EAP Programs with Direct Applicability:

- ◆ C-5: Recycled Water Outreach and Education Program
- EAP Programs with Indirect Applicability:
  - ◆ G-1: Create a Staff Sustainability Manager Position
  - ◆ G-6: Empower Oxnard “Green Team”

*General Plan Policy ICS-12.1: Water Recycling and Resource Recovery. Require water recycling and resource recovery where possible in industrial operations to minimize sewer flows and sewer treatment demands.*

- EAP Programs with Direct Applicability:
  - ◆ None identified
- EAP Programs with Indirect Applicability:
  - ◆ G-1: Create a Staff Sustainability Manager Position
  - ◆ G-6: Empower Oxnard “Green Team”
  - ◆ C-5: Recycled Water Outreach and Education Program

*General Plan Policy ICS-17.1: Electric Facilities. Ensure that electric facilities (such as the Southern California Edison generating facilities located within the City) are built in accordance with the California Public Utilities Commission regulations and incorporate feasible solar, wind, and other renewable sources of energy.*

- EAP Programs with Direct Applicability:
  - ◆ None identified
- EAP Programs with Indirect Applicability:
  - ◆ G-1: Create a Staff Sustainability Manager Position
  - ◆ C-11: Expedite Permitting

*General Plan Policy ICS-17.3: Promoting Renewable Energy Production. Encourage the use of renewable solar, wind, and other electric generation technologies instead of new or expansion of fossil fuel-based generation facilities.*

- EAP Programs with Direct Applicability:
  - ◆ G-9: Install Solar Power
  - ◆ G-18: Create Solar Ready Roofs
  - ◆ C-6: Promote Distributed Clean Energy Generation
  - ◆ C-9: Create Commercial PACE Program
  - ◆ C-10: Create Residential PACE Program
  - ◆ C-15: Develop Renewable Energy Ordinance
  - ◆ C-16: Develop Partnerships for Renewable Energy Generation
- EAP Programs with Indirect Applicability:
  - ◆ G-1: Create a Staff Sustainability Manager Position
  - ◆ G-6: Empower Oxnard “Green Team”

## City of Oxnard California Housing Element, Draft No. 4, February 2012

The Draft City of Oxnard California Housing Element includes the following General Plan goals and policies that promote the production of energy efficient homes, commercial, and industrial buildings:

*Energy Usage Goal. Encourage improved energy performance standards above and beyond the California Title 24 Requirements.*

- EAP Programs with Direct Applicability:
  - ♦ C-2: Additional Outreach to Residents
  - ♦ C-10: Create Residential PACE Program
  - ♦ C-11: Expedite Permitting
  - ♦ C-14: Require Point-of-Sale Energy Use Disclosure
- EAP Programs with Indirect Applicability:
  - ♦ G-1: Create a Staff Sustainability Manager Position
  - ♦ G-6: Empower Oxnard “Green Team”
  - ♦ C-4: Implement Alternative Financing Mechanisms

*Remain Ahead of Environmental Standards. Exceed California Title 24 standards by remaining ahead by 10% currently and by future amended standards.*

- EAP Programs with Direct Applicability:
  - ♦ C-11: Expedite Permitting
- EAP Programs with Indirect Applicability:
  - ♦ G-1: Create a Staff Sustainability Manager Position
  - ♦ G-6: Empower Oxnard “Green Team”
  - ♦ C-2: Additional Outreach to Residents
  - ♦ C-4: Implement Alternative Financing Mechanisms
  - ♦ C-10: Create Residential PACE Program
  - ♦ C-11: Expedite Permitting
  - ♦ C-14: Require Point-of-Sale Energy Use Disclosure

*New Residential Development. Incorporate passive and active energy and resources conservation design and devices in new residential development and substantial remodels and/or expansions.*

- EAP Programs with Direct Applicability:
  - ♦ C-11: Expedite Permitting
- EAP Programs with Indirect Applicability:
  - ♦ G-1: Create a Staff Sustainability Manager Position
  - ♦ G-6: Empower Oxnard “Green Team”

- ◆ C-2: Additional Outreach to Residents
- ◆ C-4: Implement Alternative Financing Mechanisms
- ◆ C-10: Residential PACE Program
- ◆ C-11: Expedite Permitting
- ◆ C-14: Require Point-of-Sale Energy Ordinance

*Promote Energy Reduction Programs. Promote local and state programs that strive to reduce the consumption of natural or man-made energy sources.*

- EAP Programs with Direct Applicability:
  - ◆ C-2: Additional Outreach to Residents
  - ◆ C-10: Create a Residential PACE Program
- EAP Programs with Indirect Applicability:
  - ◆ G-1: Create a Staff Sustainability Manager Position
  - ◆ C-4: Implement Alternative Financing Mechanisms

*Energy-Efficient Buildings. Encourage the development of energy-efficient buildings and communities.*

- EAP Programs with Direct Applicability:
  - ◆ C-2: Additional Outreach to Residents
  - ◆ C-10: Create Residential PACE Program
  - ◆ C-11: Expedite Permitting
- EAP Programs with Indirect Applicability:
  - ◆ G-1: Create a Staff Sustainability Manager Position
  - ◆ G-6: Empower Oxnard “Green Team”
  - ◆ C-4: Implement Alternative Financing Mechanisms
  - ◆ C-14: Require Point-of-Sale Energy Use Disclosure

*Promoting Clean Energy. Encourage the use of solar water heating technologies to lessen the demand for fossil fuels.*

- EAP Programs with Direct Applicability:
  - ◆ G-13: Install Solar Thermal Systems
- EAP Programs with Indirect Applicability:
  - ◆ G-1: Create a Staff Sustainability Manager Position
  - ◆ G-6: Empower Oxnard “Green Team”

*Solar and Green Power Assistance. Provide financial assistance to residents and businesses to install photovoltaic systems that connect to the utility.*

- EAP Programs with Direct Applicability:
  - ◆ C-4: Implement Alternative Financing Mechanisms

- ◆ C-6: Promote Distributed Clean Energy Generation
  - ◆ C-9: Create Commercial PACE Program
  - ◆ C-10: Create Residential PACE Program
- EAP Programs with Indirect Applicability:
  - ◆ G-1: Create a Staff Sustainability Manager Position
  - ◆ G-6: Empower Oxnard “Green Team”
  - ◆ G-9: Install Solar Power

*Power Generation Goal. Ensure the generation of electricity from renewable local sources such as solar panels, wave and tidal forces, co-generation, and / or wind farms.*

- EAP Programs with Direct Applicability:
  - ◆ G-9: Install Solar Power
  - ◆ C-6: Promote Distributed Clean Energy Generation
- EAP Programs with Indirect Applicability:
  - ◆ G-1: Create a Staff Sustainability Manager Position
  - ◆ G-6: Empower Oxnard “Green Team”
  - ◆ C-9: Create Commercial PACE Program
  - ◆ C-10: Create Residential PACE Program
  - ◆ C-15: Develop Renewable Energy Ordinance
  - ◆ C-16: Develop Partnerships for Renewable Energy Generation

*Promote Energy Efficiency Standards. Work with the California Energy Commission and other public and non-profit agencies to promote the use of programs that encourage developers to surpass Title 24 Energy Efficiency standards by utilizing renewable energy systems and more efficient practices that conserve energy, including, but not limited to, hybrid, natural gas, hydrogen or electric vehicles.*

- EAP Programs with Direct Applicability:
  - ◆ C-2: Additional Outreach to Residents
  - ◆ C-3: Establish Partnership between City Green Team and Local Agencies
  - ◆ C-6: Promote Distributed Clean Energy Generation
  - ◆ C-11: Expedite Permitting
- EAP Programs with Indirect Applicability:
  - ◆ G-9: Install Solar Power
  - ◆ C-1: Additional Outreach to Commercial And Industrial Assessments
  - ◆ C-4: Implement Alternative Financing Mechanisms
  - ◆ C-7: Support Electric Vehicle Infrastructure
  - ◆ C-9: Create Commercial PACE Program
  - ◆ C-10: Create Residential PACE Program
  - ◆ C-15: Develop Renewable Energy Ordinance

*Coordinate with Local Utility Providers. Coordinate with local utility providers to promote public education energy conservation programs.*

- EAP Programs with Direct Applicability:
  - ♦ G-2: Benchmark and Monitor City Government Facilities
  - ♦ G-3: Continuous Improvement and Preventative Maintenance
  - ♦ G-5: Increase Demand Response Participation
  - ♦ C-1: Additional Outreach to Commercial and Industrial Sector
  - ♦ C-2: Additional Outreach to Residents
  - ♦ C-12: Develop Outreach to Agricultural Sector
  - ♦ C-13: Promote Green jobs in the Community
  - ♦ C-14: Require Point-of-Sale Energy Use Disclosure
- EAP Programs with Indirect Applicability:
  - ♦ G-1: Create a Staff Sustainability Manager Position
  - ♦ G-6: Empower Oxnard “Green Team”

*Encourage Use of Solar Devices. Encourage the use of passive and active solar devices such as solar collectors, solar cells, and solar heating systems into the design of local buildings, where feasible.*

- EAP Programs with Direct Applicability:
  - ♦ G-9: Install Solar Power
  - ♦ C-6: Promote Distributed Clean Energy Generation
- EAP Programs with Indirect Applicability:
  - ♦ G-1: Create a Staff Sustainability Manager Position
  - ♦ G-6: Empower Oxnard “Green Team”
  - ♦ G-16: Develop Energy Efficiency Fund
  - ♦ G-18: Create Solar Ready Roofs
  - ♦ C-4: Implement Alternative Financing Mechanisms
  - ♦ C-9: Create Commercial PACE Program
  - ♦ C-10: Create Residential PACE Program
  - ♦ C-15: Develop Renewable Energy Ordinance
  - ♦ C-16: Develop Partnerships for Renewable Energy Generation

*Promote Voluntary Incentive Programs. Promote voluntary participation in incentive programs to increase the use of solar photovoltaic systems in new and existing residential, commercial, institutional and public buildings, including participation in the Ventura County Regional Energy Alliance (VCREA).*

- EAP Programs with Direct Applicability:
  - ♦ G-9: Install Solar Power
  - ♦ G-18: Create Solar Ready Roofs



- ♦ C-1: Additional Outreach to Commercial And Industrial Sector
- ♦ C-2: Additional Outreach to Residents
- ♦ C-6: Promote Distributed Clean Energy Generation
- ♦ C-9: Create Commercial PACE Program
- ♦ C-10: Create Residential PACE Program
- ♦ C-15: Develop Renewable Energy Ordinance
- EAP Programs with Indirect Applicability:
  - ♦ G-1: Create a Staff Sustainability Manager Position
  - ♦ G-6: Empower Oxnard “Green Team”
  - ♦ G-16: Develop Energy Efficiency Fund



# Appendix D

## Cost Benefit Analysis Methodology

This appendix describes the key assumptions, methodology and data sources used to estimate the energy and greenhouse gas (GHG) savings associated with City of Oxnard (City) Energy Action Plan (EAP) programs.

As discussed in EAP Chapters 4 and 5, programs categorized as ‘supporting programs’ do not result in direct reductions in energy use but are necessary to support implementation of other EAP programs. Therefore, this appendix does not include calculations of energy and cost savings for supporting programs, including:

- Program G-1: Create a Staff Sustainability Manager Position
- Program G-6: Empower Oxnard “Green Team”
- Program C-3: Establish Partnerships Between City Green Team and Local Agencies
- Program C-4: Implement Alternative Financing Mechanisms
- Program C-5: Recycled Water Outreach And Education Program
- Program C-13: Promote Green Jobs in the Community

Furthermore, programs targeted for long-term implementation (i.e., after 2020), are also not quantified at this time. These include:

- Program G-15: Identify Bulk Purchasing Opportunities
- Program G-16: Develop Energy Efficiency Fund
- Program G-17: Adopt LEED-Like Standards For City Government Facilities
- Program G-18: Create Solar Ready Roofs

Program G-2	Benchmark and Monitor City Government Facilities
Key assumptions and calculation methodology	<p>This program assumes the 20 largest energy consuming facilities will be benchmarked, representing 500,000 square feet of floorspace. It was assumed the benchmarking alone will result in 0.5% in energy savings. All benchmarking costs are assumed to be internal staff costs related to completing the Energy Star Portfolio Manager for the 20 selected facilities.</p> <p>Of the 500,000 square feet of space benchmarked, it was assumed 20,000 square feet would be selected for detailed energy assessments. No energy savings were attributed to the assessments and the cost of \$0.15 per square foot was obtained from Facility Energy Associates.</p> <p>Assume program is implemented by 2015 and in effect for 6 years by end of 2020.</p>
Annual electricity savings by 2020 (kWh):	36,500 kWh
Annual natural gas savings by 2020 (therms):	400 therms
Annual GHG savings by 2020 (MTCO <sub>2</sub> e):	10 MTCO <sub>2</sub> e
Annual energy cost savings:	\$4,850
Upfront and first cost to City:	<\$50,000
Three-year electricity savings (kWh):	109,500
Five-year electricity savings (kWh):	182,500
Ten-year electricity savings (kWh):	365,000
Supporting information:	<p>Additional information is available on the SCE and Energy Star websites:  SCE. <a href="http://www.sce.com/business/energy-solutions/benchmarking.htm">http://www.sce.com/business/energy-solutions/benchmarking.htm</a>  Energy Star Portfolio Manager. <a href="http://www.sce.com/business/energy-solutions/benchmarking.htm">http://www.sce.com/business/energy-solutions/benchmarking.htm</a></p>
Data Sources:	<p>SCE, 2012.  SCG, 2012.  Hughel, Gregory J., (2009) Commissioning vs. Energy Audits, <i>Facility Energy Associates</i></p>

Program G-3	Continuous Improvements and Preventative Maintenance
Key assumptions and calculation methodology	<p>This program assumes 25% of total government electricity use and 70% of total government gas use is attributed to packaged HVAC space conditioning. Norris Public Power estimates energy savings for HVAC system optimization in the range of 10-20%. Costs for the HVAC optimization were obtained from Mechanical Solutions, Inc.'s website and do not include SCE incentives.</p> <p>PG&amp;E estimates energy savings associated with upgrading inefficient pumps to be between 20 to 35% of the total pre-upgrade pumping energy. This analysis assumes that half of all pumps on pumping rates are tested and upgraded.</p> <p>Assume program is implemented by 2015 and in effect for 6 years by end of 2020.</p>
Annual electricity savings by 2020 (kWh):	994,900 kWh
Annual natural gas savings by 2020 (therms):	13,900 therms
Annual GHG savings by 2020 (MTCO <sub>2</sub> e):	215 MTCO <sub>2</sub> e
Annual energy cost savings:	\$134,900
Upfront and first cost to City:	\$250,000 - \$999,999
Three-year electricity savings (kWh):	2,984,700 kWh
Five-year electricity savings (kWh):	4,974,500 kWh
Ten-year electricity savings (kWh):	9,949,000 kWh
Supporting information:	<p>Additional information can be found on the SCE website:</p> <p>SCE Retrocommissioning - <a href="http://www.sce.com/rcx/default.htm">http://www.sce.com/rcx/default.htm</a></p> <p>SCE Continuous Energy Improvement.- <a href="http://www.sce.com/business/energy-solutions/continous-energy-improvement.htm">http://www.sce.com/business/energy-solutions/continous-energy-improvement.htm</a></p> <p>SCE HVAC Optimization - <a href="http://www.sce.com/b-rs/commercial/hvac-optimization.htm">http://www.sce.com/b-rs/commercial/hvac-optimization.htm</a></p>
Data Sources:	<p>SCE, 2012.</p> <p>SCG 2012.</p> <p>US DOE Energy Efficiency and Renewable Energy, <i>Retro-Commissioning for Regulators of Ratepayer-Funded Programs</i>, May 2012, <a href="http://www1.eere.energy.gov/seeaction/pdfs/commercialbuildings_factsheet_retrocommissioning_regulators.pdf">http://www1.eere.energy.gov/seeaction/pdfs/commercialbuildings_factsheet_retrocommissioning_regulators.pdf</a></p> <p>Norris Public Power, <i>HVAC Optimization Program</i>, <a href="http://www.norrisppd.com/downloads/HVAC%20System%20Optimization%20Brochure%20-Guidelines.pdf">http://www.norrisppd.com/downloads/HVAC%20System%20Optimization%20Brochure%20-Guidelines.pdf</a></p> <p>Mechanical Solutions, Inc., <i>Installed Equipment Replacement Cost Guidelines</i>, <a href="http://www.msicolorado.com/newpricing.htm">http://www.msicolorado.com/newpricing.htm</a></p> <p>PG&amp;E, <i>PG&amp;E Energy Management Solutions for Pumps &amp; Pumping Systems</i>, September 2006, <a href="http://www.pge.com/includes/docs/pdfs/mybusiness/energysavingsrebates/incentivesbyindustry/agriculture/agPumping.pdf">http://www.pge.com/includes/docs/pdfs/mybusiness/energysavingsrebates/incentivesbyindustry/agriculture/agPumping.pdf</a></p>

Program G-4	Update Computer And Office Equipment
Key assumptions and calculation methodology	<p>The number of government personal computers was obtained from the City of Oxnard's 2011-2013 Adopted Budget for a total of 600. Energy Star's Computer Power Management Savings Calculator estimates energy savings of approximately 245 kWh per computer for this program. South Bay Environmental Services Center lists a cost of \$15 per computer for software licenses. It was assumed an additional 80 hours of internal staff time will be required. The costs do not include SCE incentives.</p> <p>Assume program is implemented by 2015 and in effect for 6 years by end of 2020.</p>
Annual electricity savings by 2020 (kWh):	147,000 kWh
Annual natural gas savings by 2020 (therms):	0 therms
Annual GHG savings by 2020 (MTCO <sub>2e</sub> ):	35 MTCO <sub>2e</sub>
Annual energy cost savings:	\$17,500
Upfront and first cost to City:	<\$50,000
Three-year electricity savings (kWh):	441,000 kWh
Five-year electricity savings (kWh):	735,000 kWh
Ten-year electricity savings (kWh):	1,470,000 kWh
Supporting information:	<p>Additional information on computer and office equipment:</p> <p>Energy Star - <a href="http://www.energystar.gov">http://www.energystar.gov</a>.</p>
Data Sources:	<p>US EPA Energy Star, <i>ENERGY STAR Computer Power Management Savings Calculator</i>, <a href="http://www.google.com/url?sa=t&amp;rct=j&amp;q=&amp;esrc=s&amp;source=web&amp;cd=1&amp;ved=0CClQFiAA&amp;url=http%3A%2F%2Fwww.energystar.gov%2Fia%2Fproducts%2Fpower_mgt%2FLowCarbonITSavingsCalc_v26_with_5_0v2.xls&amp;ei=XB RaUN3LMIW69QSe04DABg&amp;usq=AFQjCNGiaR7VMUd4UIm-7aHa_Q7cNntTWw&amp;sig2=0dTHIPHTZQoXicHH4SecBg">http://www.google.com/url?sa=t&amp;rct=j&amp;q=&amp;esrc=s&amp;source=web&amp;cd=1&amp;ved=0CClQFiAA&amp;url=http%3A%2F%2Fwww.energystar.gov%2Fia%2Fproducts%2Fpower_mgt%2FLowCarbonITSavingsCalc_v26_with_5_0v2.xls&amp;ei=XB RaUN3LMIW69QSe04DABg&amp;usq=AFQjCNGiaR7VMUd4UIm-7aHa_Q7cNntTWw&amp;sig2=0dTHIPHTZQoXicHH4SecBg</a></p> <p>South Bay Environmental Services Center, <i>Computer Network Power Management Software Initiative</i>.</p> <p>City of Oxnard, <i>2011-2013 Adopted Budget</i>.</p>

Program G-5	Increase Demand Response Participation
Key assumptions and calculation methodology	<p>A list of eligible sites and registered kW was provided by the City of Oxnard that showed the following facilities as likely to participate: Wastewater Treatment Plant, Service Center, Public Safety Building, Civic Center, Branch Library and Corporate Yard. This analysis assumes energy savings resulting from lighting load shedding activities only. The energy savings are based on the following assumptions:</p> <ol style="list-style-type: none"> <li>1. 30% of eligible kW attributed to lighting activities.</li> <li>2. 20% of lighting can be shed during an event.</li> <li>3. Six three hour events called annually.</li> </ol> <p>Assume program is implemented by 2015 and in effect for 6 years by end of 2020.</p>
Annual electricity savings by 2020 (kWh):	3,200 kWh
Annual natural gas savings by 2020 (therms):	0 therms
Annual GHG savings by 2020 (MTCO2e):	5 MTCO2e
Annual energy cost savings:	\$380
Upfront and first cost to City:	<\$50,000
Three-year electricity savings (kWh):	9,600 kWh
Five-year electricity savings (kWh):	16,000 kWh
Ten-year electricity savings (kWh):	32,000 kWh
Supporting information:	<p>Additional information on demand response:  SCE - <a href="http://www.sce.com/b-rs/demand-response-programs/demand-response-programs.htm">http://www.sce.com/b-rs/demand-response-programs/demand-response-programs.htm</a>  DOE - <a href="http://energy.gov/oe/technology-development/smart-grid/demand-response">http://energy.gov/oe/technology-development/smart-grid/demand-response</a></p>
Data Sources:	City of Oxnard, <i>DR ELIGIBLE ACCOUNTS revised-5-23-12.xls</i> .



Program G-7	Upgrade City Government Facilities
Key assumptions and calculation methodology	<p>The following upgrade projects were quantified:</p> <ul style="list-style-type: none"> <li><i>Oxnard Transportation Center</i> - Install new efficient water-source heat pumps and boiler; convert to variable flow system; install programmable thermostats or other automated controls.</li> <li><i>Performing Arts Center</i> – Upgrade lighting Oxnard and Ventura rooms; replace 30 year old furnaces in classrooms; replace lobby heat pump.</li> <li><i>Palm Vista Housing Complex</i> - Replace T12 lighting in living units; convert to variable speed hot water pumping.</li> <li><i>Colonia Multi-Service Center</i> - Install programmable thermostats or other automated controls.</li> <li><i>Public Safety Building</i> – Complete SCE HVAC Optimization program.</li> <li><i>Civic Center</i> - Convert to variable air volume and variable speed pumping system; replace east wing air cooled chiller; install automated digital controls.</li> <li><i>Civic Annex</i> - Convert to variable air volume and variable speed pumping system; install automated digital controls.</li> </ul> <p>Energy savings and cost data were collected from the California Database for Energy Efficient Resources (DEER), Energy Star and U.S. Department of Energy. The estimated costs do not include any available incentives. Assume program is implemented by 2015 and in effect for 6 years by end of 2020.</p>
Annual electricity savings by 2020 (kWh):	218,400 kWh
Annual natural gas savings by 2020 (therms):	3,100 therms
Annual GHG savings by 2020 (MTCO <sub>2e</sub> ):	50 MTCO <sub>2e</sub>
Annual energy cost savings:	\$29,680
Upfront and first cost to City:	\$250,000 - \$999,999
Three-year electricity savings (kWh):	655,200 kWh
Five-year electricity savings (kWh):	1,092,000 kWh
Ten-year electricity savings (kWh):	2,184,000 kWh
Supporting information:	<p>SCE Energy Management Solutions - <a href="http://www.sce.com/business/ems/default.htm">http://www.sce.com/business/ems/default.htm</a></p> <p>Energy Star – <a href="http://www.energystar.gov">www.energystar.gov</a></p>
Data Sources:	<p>California Database for Energy Efficient Resources (DEER), <a href="http://www.deeresources.com/">http://www.deeresources.com/</a>, 2008-2011</p> <p>Energy Star, <a href="http://www.energystar.gov/">http://www.energystar.gov/</a></p>

Program G-8	Incorporate Greening Guidelines
Key assumptions and calculation methodology	<p>This analysis assumes the new guidelines will result in buildings built to achieve 20% savings over ASHRAE 90.1 2007 standards. The energy savings are based on a total of 20,000 square feet of new building space. The upfront cost reflects only the staff time required to create the design guidelines.</p> <p>Assume program is implemented by 2015 and in effect for 6 years by end of 2020.</p>
Annual electricity savings by 2020 (kWh):	43,900 kWh
Annual natural gas savings by 2020 (therms):	200 therms
Annual GHG savings by 2020 (MTCO2e):	15 MTCO2e
Annual energy cost savings:	\$5,470
Upfront and first cost to City:	<\$50,000
Three-year electricity savings (kWh):	131,700 kWh
Five-year electricity savings (kWh):	219,500 kWh
Ten-year electricity savings (kWh):	439,000 kWh
Supporting information:	<p>Additional information on Greening Guidelines:</p> <p>SCE Energy Centers - <a href="http://www.sce.com/b-sb/energy-centers/ctac/tour-ctac/innovation-center.htm">http://www.sce.com/b-sb/energy-centers/ctac/tour-ctac/innovation-center.htm</a></p> <p>DOE Municipal Solid-State Street Lighting Consortium - <a href="http://www1.eere.energy.gov/buildings/ssl/consortium.html">http://www1.eere.energy.gov/buildings/ssl/consortium.html</a></p> <p>Designlights Consortium - <a href="http://www.designlights.org/">http://www.designlights.org/</a></p> <p>Lighting Facts - <a href="http://lightingfacts.com/">http://lightingfacts.com/</a></p>
Data Sources:	<p>Department of Energy Prototype Building Models, <a href="http://www.energycodes.gov/development/commercial/90.1_models">http://www.energycodes.gov/development/commercial/90.1_models</a></p>

Program G-9	Install Solar Power
Key assumptions and calculation methodology	<p>The following facilities were identified as potential sites for solar photovoltaic (PV) installations along with the rough estimates for potential PV system sizes.</p> <p><i>Performing Arts Building – 36kW</i>  <i>Main Library – 28kW</i>  <i>Civic Center – 32kW</i>  <i>Transportation Building – 14kW</i>  <i>Campus 2-story – 110kW</i>  <i>City Yard – 108kW</i>  <i>Parking Building – 133kW</i></p> <p>Available rooftop spaces were identified during the April walk through assessments and system sizes were estimated using Google Maps. All of the systems were assumed to be roof mounted except for the parking building, which would require the installation of rooftop canopies.</p> <p>The estimated performance of the PV systems was calculated using the Go Solar California CSI Standard PV Calculator using the following assumptions :</p> <ol style="list-style-type: none"> <li>1. All systems oriented due south with the exception Performing Arts Building which was oriented 15 degrees off of south due to the roof orientation.</li> <li>2. All flat roof systems at a 15 degree tilt and all pitched roof systems at a 25 degree tilt.</li> <li>3. 3ft x 8ft 230W PV panel</li> <li>4. \$7 per watt cost for rooftop systems and \$8 per watt cost for canopy systems (from Go Solar California website).</li> </ol> <p>Assume program is implemented by 2015 and in effect for 6 years by end of 2020.</p>
Annual electricity savings by 2020 (kWh):	791,200 kWh
Annual natural gas savings by 2020 (therms):	0 therms
Annual GHG savings by 2020 (MTCO <sub>2</sub> e):	170 MTCO <sub>2</sub> e
Annual energy cost savings:	\$94,310
Upfront and first cost to City:	>\$1,000,000
Three-year electricity savings (kWh):	2,373,600 kWh
Five-year electricity savings (kWh):	3,956,000 kWh
Ten-year electricity savings (kWh):	7,912,000 kWh
Supporting information:	<p>Additional information on net-zero buildings:</p> <p>SCE Go Solar, California - <a href="http://www.sce.com/solarleadership/gosolar/gosolar.htm?from=csithermal">http://www.sce.com/solarleadership/gosolar/gosolar.htm?from=csithermal</a></p> <p>DOE SunShot Initiative - <a href="http://www1.eere.energy.gov/solar/sunshot/">http://www1.eere.energy.gov/solar/sunshot/</a></p>
Data Sources:	<p>Go Solar California, CSI Standard PV Calculator, <a href="http://www.gosolarcalifornia.ca.gov/">http://www.gosolarcalifornia.ca.gov/</a>, April 2012</p> <p>Google Maps, <a href="https://maps.google.com/">https://maps.google.com/</a></p>

Program G-10	Upgrade Street Lights
Key assumptions and calculation methodology	<p>The analysis for this program assumes all 471 city street lights are 200W HPS fixtures and will be replaced with 139W LED fixtures. The energy savings are based on a twelve hour nightly run time. The upgrade costs were obtained from the City of Beaverton, OR.</p> <p>Assume program is implemented by 2020 and in effect for 1 year by end of 2020.</p>
Annual electricity savings by 2020 (kWh):	229,000 kWh
Annual natural gas savings by 2020 (therms):	0 therms
Annual GHG savings by 2020 (MTCO2e):	50 MTCO2e
Annual energy cost savings:	\$27,300
Upfront and first cost to City:	\$250,000 - \$999,999
Three-year electricity savings (kWh):	687,000 kWh
Five-year electricity savings (kWh):	1,145,000 kWh
Ten-year electricity savings (kWh):	2,290,000 kWh
Supporting information:	<p>Additional information on LED street lighting:</p> <p>SCE Energy Centers - <a href="http://www.sce.com/b-sb/energy-centers/ctac/tour-ctac/innovation-center.htm">http://www.sce.com/b-sb/energy-centers/ctac/tour-ctac/innovation-center.htm</a></p> <p>DOE Municipal Solid-State Street Lighting Consortium - <a href="http://www1.eere.energy.gov/buildings/ssl/consortium.html">http://www1.eere.energy.gov/buildings/ssl/consortium.html</a></p> <p>Designlights Consortium - <a href="http://www.designlights.org/">http://www.designlights.org/</a></p> <p>Lighting Facts - <a href="http://lightingfacts.com/">http://lightingfacts.com/</a></p>
Data Sources:	<p>City of Los Angeles DWP Bureau of Street Lighting, <a href="http://www.ci.la.ca.us/bsl/">http://www.ci.la.ca.us/bsl/</a></p> <p>City of Beaverton, Or - <a href="http://apps.beavertonoregon.gov/bids/priorBidDocs/LEDSTREETLIGHTFIXTURES_Bidtabs100610.pdf">http://apps.beavertonoregon.gov/bids/priorBidDocs/LEDSTREETLIGHTFIXTURES_Bidtabs100610.pdf</a></p>

Program G-11	Develop Energy-Efficient Product Procurement Policy
Key assumptions and calculation methodology	<p>Energy savings for individual appliances were obtained from NREL's <i>Reducing Plug and Process Loads for a Large Scale, Low Energy Office Building</i> whitepaper. The whitepaper calculates energy saving per square foot of space. It was assumed that 85% of Oxnard's building area is office type space and that ten percent of the appliances would be replaced.</p> <p>The upfront cost reflects only the staff time required to create an updated procurement plan and does not include any cost associated with the purchased equipment.</p> <p>Assume program is implemented by 2020 and in effect for 1 year by end of 2020.</p>
Annual electricity savings by 2020 (kWh):	204,000 kWh
Annual natural gas savings by 2020 (therms):	0 therms
Annual GHG savings by 2020 (MTCO2e):	45 MTCO2e
Annual energy cost savings:	\$24,300
Upfront and first cost to City:	<\$50,000
Three-year electricity savings (kWh):	612,000 kWh
Five-year electricity savings (kWh):	1,020,000 kWh
Ten-year electricity savings (kWh):	2,040,000 kWh
Supporting information:	<p>Additional information on procurement:</p> <p>Energy Star – <a href="http://www.energystar.gov">www.energystar.gov</a></p> <p>FEMP Procurement – <a href="http://www1.eere.energy.gov/femp/technologies/procuring_eeproducts.html">http://www1.eere.energy.gov/femp/technologies/procuring_eeproducts.html</a></p>
Data Sources:	NREL, <i>Reducing Plug and Process Loads for a Large Scale, Low Energy Office Building</i> ; NREL's Research Support Facility, 2011

Program G-12	Net-Zero City Government Buildings By 2025
Key assumptions and calculation methodology	<p>The energy savings for this program is based on a single 5,000 sq ft net-zero energy building. The energy saving calculations assume the building would have been built to achieve 20% savings over ASHRAE 90.1 2007. A net-zero building by definition produces as much energy as the building uses and so results in 100% savings over a standard code compliant building.</p> <p>The upfront cost reflects only the staff time required to create the building code. Costs associated with building a net-zero building are not included. Assume program is implemented by 2020 and in effect for 1 year by end of 2020.</p>
Annual electricity savings by 2020 (kWh):	41,200 kWh
Annual natural gas savings by 2020 (therms):	200 therms
Annual GHG savings by 2020 (MTCO2e):	15 MTCO2e
Annual energy cost savings:	\$5,130
Upfront and first cost to City:	<\$50,000
Three-year electricity savings (kWh):	123,600 kWh
Five-year electricity savings (kWh):	206,000 kWh
Ten-year electricity savings (kWh):	412,000 kWh
Supporting information:	<p>Additional information on net-zero buildings:            Zero Energy Buildings Database - <a href="http://zeb.buildinggreen.com/">http://zeb.buildinggreen.com/</a>            Living Building Challenge - <a href="https://ilbi.org/lbc">https://ilbi.org/lbc</a></p>
Data Sources:	<p>Department of Energy Prototype Building Models,  <a href="http://www.energycodes.gov/development/commercial/90.1_models">http://www.energycodes.gov/development/commercial/90.1_models</a></p>



Program G-13	Install Solar Thermal Systems
Key assumptions and calculation methodology	<p>This analysis looks at the feasibility of installing solar thermal technologies at the following two facilities : Palm Vista and Pleasant Valley Housing Complexes.</p> <p>The energy savings analysis assumes each residential unit uses 37 gallons of hot water per day. Google Maps was used to estimate the available roof space. A standard system was sized using a 27 square foot flat plate collector. Solar thermal water production was based on weather data for California Climate Zone 6. The cost is estimated at \$75 per square foot. Assume program is implemented by 2020 and in effect for 1 year by end of 2020.</p>
Annual electricity savings by 2020 (kWh):	0 kWh
Annual natural gas savings by 2020 (therms):	6,200 therms
Annual GHG savings by 2020 (MTCO <sub>2</sub> e):	2 MTCO <sub>2</sub> e
Annual energy cost savings:	\$7,300
Upfront and first cost to City:	\$50,000 - \$249,999
Three-year electricity savings (kWh):	0 kWh
Five-year electricity savings (kWh):	0 kWh
Ten-year electricity savings (kWh):	0 kWh
Supporting information:	<p>Additional information on net-zero buildings:</p> <p>Go Solar, California - <a href="http://gosolarcalifornia.com/equipment/solar_water/">http://gosolarcalifornia.com/equipment/solar_water/</a></p> <p>SCG Solar Water Heating - <a href="http://www.socalgas.com/for-your-home/rebates/solar-water-heating/index.shtml">http://www.socalgas.com/for-your-home/rebates/solar-water-heating/index.shtml</a></p>
Data Sources:	<p>Go Solar California, <a href="http://www.gosolarcalifornia.ca.gov/">http://www.gosolarcalifornia.ca.gov/</a>, April 2012</p> <p>Google Maps, <a href="https://maps.google.com/">https://maps.google.com/</a></p>

Program G-14	Increase On-Site Electricity Generation at City Wastewater Treatment and Materials Recovery Facilities
Key assumptions and calculation methodology	<p>This analysis is based on a review of the City's commercial hauling list and likely commercial food scrap generators. Assume that 30% of trash is food-based waste and a 60% participation rate. Assume an average of 105 cubic meters of methane production per metric ton of food waste.</p> <p>Financial savings to City is based on reduced landfill disposal costs using a gate rate of \$19/ton.</p> <p>Assume program is implemented by 2020 and in effect for 1 year by end of 2020.</p>
Annual electricity savings by 2020 (kWh):	656,400 kWh
Annual natural gas savings by 2020 (therms):	0 therms
Annual GHG savings by 2020 (MTCO <sub>2e</sub> ):	140 MTCO <sub>2e</sub>
Annual energy cost savings:	\$40,000
Upfront and first cost to City:	\$50,000 - \$249,999
Three-year electricity savings (kWh):	1,969,200 kWh
Five-year electricity savings (kWh):	3,282,000 kWh
Ten-year electricity savings (kWh):	6,564,000 kWh
Supporting information:	<p>City of Hayward program to increase the amount of fats, oil and grease accepted at the local wastewater treatment program.</p> <p><a href="https://www.hayward-ca.gov/CITY-GOVERNMENT/CITY-COUNCIL-MEETINGS/rp/2012/cca091812-P03.pdf">https://www.hayward-ca.gov/CITY-GOVERNMENT/CITY-COUNCIL-MEETINGS/rp/2012/cca091812-P03.pdf</a></p>
Data Sources:	<p>City of Palo Alto and East Bay Municipal Utility District (2008)</p> <p><a href="http://www.cityofpaloalto.org/civica/filebank/blobdload.asp?BlobID=19879">http://www.cityofpaloalto.org/civica/filebank/blobdload.asp?BlobID=19879</a></p> <p>City of Oxnard commercial trash rates</p> <p><a href="http://publicworks.cityofoxnard.org/Uploads/ER/O-2817_er.pdf">http://publicworks.cityofoxnard.org/Uploads/ER/O-2817_er.pdf</a></p>

Program C-1	Additional Outreach to the Commercial And Industrial Sector
Key assumptions and calculation methodology	<p>Data provided by City staff and data on commercial and industrial energy use to determine average annual energy use per business. Assume 1% of additional commercial and industrial facilities take action each year to reduce energy consumption, and achieve on average 15% energy savings.</p> <p>Assume program is implemented by 2015 and in effect for 6 years by end of 2020. Multiply annual savings associated with additional participants by 6 years for total 2020 savings.</p>
Annual electricity savings by 2020 (kWh):	5,993,400 kWh
Annual natural gas savings by 2020 (therms):	520,200 therms
Annual GHG savings by 2020 (MTCO <sub>2</sub> e):	1,260 MTCO <sub>2</sub> e
Annual energy cost savings:	\$164,000
Upfront and first cost to City:	<\$50,000
Three-year electricity savings (kWh):	2,809,400 kWh
Five-year electricity savings (kWh):	4,682,400 kWh
Ten-year electricity savings (kWh):	9,364,800 kWh
Supporting information:	<p>Many resources are available to support energy reductions in non-residential buildings in the City, such as:</p> <p>SCE. <a href="http://www.sce.com/business/default.htm">http://www.sce.com/business/default.htm</a></p> <p>VCREA. <a href="http://www.vcenergy.org">http://www.vcenergy.org</a></p>
Data Sources:	<p>SCE usage data, 2010.</p> <p>SGC usage data, 2010.</p> <p>Provided directly from City staff.</p> <p>City's Greenhouse Gas Inventory data.</p> <p><a href="http://www.energy.ca.gov/2012_energypolicy/documents/demand-forecast/mid_case/03_SCE_Mid.xls">http://www.energy.ca.gov/2012_energypolicy/documents/demand-forecast/mid_case/03_SCE_Mid.xls</a></p> <p><a href="http://www.energy.ca.gov/2012_energypolicy/documents/demand-forecast/mid_case/10_Natural_Gas_Planning_Area_and_Sector_Mid.xls">http://www.energy.ca.gov/2012_energypolicy/documents/demand-forecast/mid_case/10_Natural_Gas_Planning_Area_and_Sector_Mid.xls</a></p>

Program C-2	Additional Outreach to Residents
Key assumptions and calculation methodology	<p>Used Census data and data on residential energy use to determine average annual energy use per household. Assume 1% of residential sector take action each year to reduce energy consumption, and achieve on average 10% energy savings.</p> <p>Assume program is implemented by 2015 and in effect for 6 years by end of 2020. Multiply annual new savings by 6 years for total 2020 savings.</p>
Annual electricity savings by 2020 (kWh):	1,458,000 kWh
Annual natural gas savings by 2020 (therms):	120,600 therms
Annual GHG savings by 2020 (MTCO <sub>2</sub> e):	300 MTCO <sub>2</sub> e
Annual energy cost savings:	\$52,917
Upfront and first cost to City:	<\$50,000
Three-year electricity savings (kWh):	729,100 kWh
Five-year electricity savings (kWh):	1,215,100 kWh
Ten-year electricity savings (kWh):	2,430,300 kWh
Supporting information:	<p>Many resources are available to support energy reductions in residential buildings in the City, such as:</p> <p>SCE. <a href="http://www.sce.com/residential/residential.htm">http://www.sce.com/residential/residential.htm</a></p> <p>VCREA. <a href="http://www.vcenergy.org">http://www.vcenergy.org</a></p>
Data Sources:	<p>SCE usage data, 2010.</p> <p>SGC usage data, 2010.</p> <p>City's Greenhouse Gas Inventory data.</p> <p><a href="http://quickfacts.census.gov/qfd/states/06/0654652.html">http://quickfacts.census.gov/qfd/states/06/0654652.html</a></p> <p><a href="http://www.energy.ca.gov/2012_energy_policy/documents/demand-forecast/mid_case/10_Natural_Gas_Planning_Area_and_Sector_Mid.xls">http://www.energy.ca.gov/2012_energy_policy/documents/demand-forecast/mid_case/10_Natural_Gas_Planning_Area_and_Sector_Mid.xls</a></p> <p><a href="http://www.dof.ca.gov/research/demographic/reports/estimates/e-5/2001-10/documents/E-5_2010.xls">http://www.dof.ca.gov/research/demographic/reports/estimates/e-5/2001-10/documents/E-5_2010.xls</a></p>

Program C-6	Promote Distributed Clean Energy Generation
Key assumptions and calculation methodology	<p>Used Census data and data on residential, commercial and industrial energy use to determine average annual energy use per household and commercial/industrial facility. Assume a total of 10 participants from all sectors combined to take action each year to install clean energy systems, and achieve on average 50% renewable capacity to offset annual community energy load.</p> <p>Assume program is implemented by 2015 and in effect for 6 years by end of 2020. Multiply annual new savings by 6 years for total 2020 savings.</p> <p>Electricity savings represent reductions in the use of conventional grid electricity.</p>
Annual electricity savings by 2020 (kWh):	2,367,600 kWh
Annual natural gas savings by 2020 (therms):	0 therms
Annual GHG savings by 2020 (MTCO <sub>2e</sub> ):	480 MTCO <sub>2e</sub>
Annual energy cost savings:	\$0
Upfront and first cost to City:	\$50,000-249,000
Three-year electricity savings (kWh):	1,183,900 kWh
Five-year electricity savings (kWh):	1,973,100 kWh
Ten-year electricity savings (kWh):	3,946,300 kWh
Supporting information:	<p>Many resources are available to support energy reductions in residential buildings in the City, such as:</p> <p>SCE. <a href="http://www.sce.com/residential/residential.htm">http://www.sce.com/residential/residential.htm</a></p> <p>VCREA. <a href="http://www.vcenergy.org">http://www.vcenergy.org</a></p>
Data Sources:	<p>SCE usage data, 2010.</p> <p>City's Greenhouse Gas Inventory data.</p> <p><a href="http://quickfacts.census.gov/qfd/states/06/0654652.html">http://quickfacts.census.gov/qfd/states/06/0654652.html</a></p>

Program C-7	Support Electric Vehicle Infrastructure
Key assumptions and calculation methodology	<p>No direct electricity savings calculated, only GHG emission reductions. Assumed 5 new Electric Vehicle Plug-In Stations would be installed annually, resulting in additional 3 electric vehicles per station, each driving 10,000 miles per year. Assume 30% reduction in GHG emissions per vehicle from electricity compared with conventional vehicle fuels.</p> <p>Assume program is implemented by 2015 and in effect for 6 years by end of 2020. Multiply annual new savings by 6 years for total 2020 savings.</p>
Annual electricity savings by 2020 (kWh):	0 kWh
Annual natural gas savings by 2020 (therms):	0 therms
Annual GHG savings by 2020 (MTCO <sub>2e</sub> ):	120 MTCO <sub>2e</sub>
Annual energy cost savings:	\$0
Upfront and first cost to City:	\$50,000-249,000
Three-year electricity savings (kWh):	0 kWh
Five-year electricity savings (kWh):	0 kWh
Ten-year electricity savings (kWh):	0 kWh
Supporting information:	<p>Many resources are available to support energy reductions in residential buildings in the City, such as:</p> <p>SCE. <a href="http://www.sce.com/residential/residential.htm">http://www.sce.com/residential/residential.htm</a></p> <p>VCREA. <a href="http://www.vcenergy.org">http://www.vcenergy.org</a></p>
Data Sources:	<p>Department of Energy- Argonne National Laboratory Report. PHEV reduces GHG emissions 30-60% (page 47)</p> <p><a href="http://www.transportation.anl.gov/pdfs/TA/559.pdf">http://www.transportation.anl.gov/pdfs/TA/559.pdf</a></p> <p>Composite emission factor; MT CO<sub>2</sub> per VMT (EMFAC 2007)</p> <p><a href="http://www.arb.ca.gov/msei/onroad/downloads/docs/user_guide_emfac2007.pdf">http://www.arb.ca.gov/msei/onroad/downloads/docs/user_guide_emfac2007.pdf</a></p>



Program C-8	INCF Neighborhood Vintage Assessment Program
Key assumptions and calculation methodology	<p>Used Department of Finance data to establish historical number of households based on vintage year pre-1990 and SCE data to calculate residential energy use to determine average annual energy use per household. Assumed a 1% annual participation rate targeting a 10% electricity and 10% natural gas reduction.</p> <p>Assume program is implemented by 2016 and in effect for 5 years by end of 2020. Multiply annual new savings by 5 years for total 2020 savings.</p>
Annual electricity savings by 2020 (kWh):	952,000 kWh
Annual natural gas savings by 2020 (therms):	79,000 therms
Annual GHG savings by 2020 (MTCO <sub>2e</sub> ):	200 MTCO <sub>2e</sub>
Annual energy cost savings:	\$41,500
Upfront and first cost to City:	<\$50,000
Three-year electricity savings (kWh):	571,300 kWh
Five-year electricity savings (kWh):	952,200 kWh
Ten-year electricity savings (kWh):	1,904,500 kWh
Supporting information:	<p>Many resources are available to support energy reductions in residential buildings in the City, such as:</p> <p>SCE. <a href="http://www.sce.com/residential/residential.htm">http://www.sce.com/residential/residential.htm</a></p> <p>VCREA. <a href="http://www.vcenergy.org">http://www.vcenergy.org</a></p>
Data Sources:	<p>SCE usage data, 2010.</p> <p>SGC usage data, 2010.</p> <p>Department of Finance:  <a href="http://www.dof.ca.gov/research/demographic/reports/estimates/e-8/documents/E-8_90-00main.xls">http://www.dof.ca.gov/research/demographic/reports/estimates/e-8/documents/E-8_90-00main.xls</a></p>

Program C-9	Create Commercial PACE Program
Key assumptions and calculation methodology	<p>Combined the calculation methodologies of two types of PACE projects: energy efficiency and renewable energy. For energy efficiency, used City staff supplied data to establish number of commercial businesses and SCE data to calculate commercial energy use to determine average annual energy use per facility. Assumed a 1% annual participation rate targeting a 10% electricity and 10% natural gas reduction.</p> <p>For renewable energy, used City staff supplied data to establish number of commercial facilities and SCE data to calculate commercial energy use to determine average annual energy use per facility. Assumed an 0.5% annual participation rate targeting a 50% renewable energy generation capacity to offset conventional usage from grid electricity.</p> <p>Assume program is implemented by 2016 and in effect for 5 years by end of 2020. Multiply annual new savings by 5 years for total 2020 savings.</p>
Annual electricity savings by 2020 (kWh):	11,263,500 kWh
Annual natural gas savings by 2020 (therms):	279,500 therms
Annual GHG savings by 2020 (MTCO <sub>2</sub> e):	2,400 MTCO <sub>2</sub> e
Annual energy cost savings:	\$142,000
Upfront and first cost to City:	\$50,000-249,000
Three-year electricity savings (kWh):	6,758,100 kWh
Five-year electricity savings (kWh):	11,263,500 kWh
Ten-year electricity savings (kWh):	22,527,000 kWh
Supporting information:	<p>Many resources are available to support the development and implementation of PACE Programs, such as:</p> <p>CaliforniaFIRST:  <a href="https://californiafirst.org/overview">https://californiafirst.org/overview</a></p> <p>Renewable and Appropriate Energy Laboratory UC Berkeley:  <a href="http://rael.berkeley.edu/files/berkeleysolar/HowTo.pdf">http://rael.berkeley.edu/files/berkeleysolar/HowTo.pdf</a></p> <p>Department of Energy:  <a href="http://www.eecbg.energy.gov/solutioncenter/financialproducts/">http://www.eecbg.energy.gov/solutioncenter/financialproducts/</a></p> <p>Policy Framework for PACE Financing Programs:  <a href="http://www.whitehouse.gov/assets/documents/PACE_Principles.pdf">http://www.whitehouse.gov/assets/documents/PACE_Principles.pdf</a></p> <p>National Renewable Energy Laboratory:  <a href="http://www.nrel.gov/docs/fy10osti/47097.pdf">http://www.nrel.gov/docs/fy10osti/47097.pdf</a></p> <p>PACE Now:  <a href="http://pacenow.org/about-pace/">http://pacenow.org/about-pace/</a></p>
Data Sources:	<p>City Staff supplied data</p> <p>SCE usage data, 2010.</p> <p>SGC usage data, 2010.</p> <p>Department of Finance,  <a href="http://www.dof.ca.gov/research/demographic/reports/estimates/e-5/2001-10/documents/E-5_2010.xls">http://www.dof.ca.gov/research/demographic/reports/estimates/e-5/2001-10/documents/E-5_2010.xls</a></p>

Program C-10	Create Residential PACE Program
Key assumptions and calculation methodology	<p>Combined the calculation methodologies of two types of PACE projects: energy efficiency and renewable energy. For energy efficiency, used Department of Finance data to establish number of households and SCE data to calculate residential energy use to determine average annual energy use per household. Assumed a 3% annual participation rate targeting a 10% electricity and 10% natural gas reduction.</p> <p>For renewable energy, used Department of Finance data to establish number of households and SCE data to calculate residential energy use to determine average annual energy use per household. Assumed a 0.5% annual participation rate targeting a 50% renewable energy generation capacity to offset conventional usage from grid electricity.</p> <p>Assume program is implemented by 2016 and in effect for 5 years by end of 2020. Multiply annual new savings by 5 years for total 2020 savings.</p>
Annual electricity savings by 2020 (kWh):	6,683,500 kWh
Annual natural gas savings by 2020 (therms):	301,500 therms
Annual GHG savings by 2020 (MTCO <sub>2</sub> e):	1,400 MTCO <sub>2</sub> e
Annual energy cost savings:	\$158,800
Upfront and first cost to City:	\$50,000-249,000
Three-year electricity savings (kWh):	4,009,900 kWh
Five-year electricity savings (kWh):	6,683,200 kWh
Ten-year electricity savings (kWh):	13,366,500 kWh
Supporting information:	<p>Many resources are available to support the development and implementation of PACE Programs, such as:</p> <p>CaliforniaFIRST:  <a href="https://californiafirst.org/overview">https://californiafirst.org/overview</a></p> <p>Renewable and Appropriate Energy Laboratory UC Berkeley:  <a href="http://rael.berkeley.edu/files/berkeleysolar/HowTo.pdf">http://rael.berkeley.edu/files/berkeleysolar/HowTo.pdf</a></p> <p>Department of Energy:  <a href="http://www.eecbg.energy.gov/solutioncenter/financialproducts/">http://www.eecbg.energy.gov/solutioncenter/financialproducts/</a></p> <p>Policy Framework for PACE Financing Programs:  <a href="http://www.whitehouse.gov/assets/documents/PACE_Principles.pdf">http://www.whitehouse.gov/assets/documents/PACE_Principles.pdf</a></p> <p>National Renewable Energy Laboratory:  <a href="http://www.nrel.gov/docs/fy10osti/47097.pdf">http://www.nrel.gov/docs/fy10osti/47097.pdf</a></p> <p>PACE Now:  <a href="http://pacenow.org/about-pace/">http://pacenow.org/about-pace/</a></p>
Data Sources:	<p>SCE usage data, 2010.  SGC usage data, 2010.  Department of Finance,  <a href="http://www.dof.ca.gov/research/demographic/reports/estimates/e-5/2001-10/documents/E-5_2010.xls">http://www.dof.ca.gov/research/demographic/reports/estimates/e-5/2001-10/documents/E-5_2010.xls</a></p>

Program C-11	Expedite Permitting
Key assumptions and calculation methodology	<p>Used Census data and data on residential, commercial and industrial energy use to determine average annual energy use per household and commercial/industrial facility. Assumed 1% of households and 3% of commercial facilities participate to achieve 50% reduction.</p> <p>Also quantified benefits of reducing heat island effect by assuming a 50% residential and 55% commercial load factor ratio between annual and peak load to determine Peak Load. Assumed 4 months (744 hours) of hot summer to calculate kWh usage during the summer and a 3% residential and 6% commercial peak demand savings to calculate total kWh savings annually.</p> <p>Assume program is implemented by 2016 and in effect for 5 years by end of 2020. Multiply annual new savings by 5 years for total 2020 savings.</p>
Annual electricity savings by 2020 (kWh):	3,621,500 kWh
Annual natural gas savings by 2020 (therms):	0 therms
Annual GHG savings by 2020 (MTCO2e):	750 MTCO2e
Annual energy cost savings:	\$153,300
Upfront and first cost to City:	\$50,000-249,000
Three-year electricity savings (kWh):	3,388,300 kWh
Five-year electricity savings (kWh):	5,647,300 kWh
Ten-year electricity savings (kWh):	11,294,600 kWh
Supporting information:	<p>Many resources are available to support expedited permitting and heat island reduction strategies, such as:</p> <p>ICLEI CAPPA software:  <a href="http://www.icleiusa.org/tools/cappa">http://www.icleiusa.org/tools/cappa</a></p> <p>ICLEI Urban Heat Island Initiative:  <a href="http://www.hotcities.org">www.hotcities.org</a></p> <p>City of Sacramento, Tree Shading Ordinance:  <a href="http://www.qcode.us.codes/sacramento">http://www.qcode.us.codes/sacramento</a></p> <p>EPA:  Heat Island Reduction Activities chapter (PDF)</p> <p>LBNL:  Energy Saving Potentials and Air Quality Benefits of Urban Heat Island Mitigation (PDF)</p>
Data Sources:	<p>SCE usage data, 2010.</p> <p>Akbari, H. 2005. Energy Saving Potentials and Air Quality Benefits of Urban Heat Island Mitigation (PDF) (19 pp, 251K). Lawrence Berkeley National Laboratory.</p> <p>Load Factor Ratio. <a href="http://enduse.lbl.gov/info/LBNL-47992.pdf">http://enduse.lbl.gov/info/LBNL-47992.pdf</a></p>

Program C-12	Develop Outreach to Agricultural Sector
Key assumptions and calculation methodology	<p>Used SCE data related to Agricultural Pumping Time-of-Use rates and associated energy use for all accounts. Assume all combined Agricultural accounts achieve additional 1% kWh savings annually for each year of implementation.</p> <p>Assume program is implemented by 2020 and in effect for 1 year by end of 2020.</p>
Annual electricity savings by 2020 (kWh):	187,200 kWh
Annual natural gas savings by 2020 (therms):	0 therms
Annual GHG savings by 2020 (MTCO <sub>2e</sub> ):	40 MTCO <sub>2e</sub>
Annual energy cost savings:	\$21,00
Upfront and first cost to City:	<\$50,000
Three-year electricity savings (kWh):	561,500 kWh
Five-year electricity savings (kWh):	935,800 kWh
Ten-year electricity savings (kWh):	1,871,600 kWh
Supporting information:	<p>Many resources are available to support energy reductions in non-residential buildings in the City, such as:</p> <p>SCE. <a href="http://www.sce.com/business/default.htm">http://www.sce.com/business/default.htm</a></p> <p>VCREA. <a href="http://www.vcenergy.org">http://www.vcenergy.org</a></p>
Data Sources:	<p>SCE usage data, 2010.</p> <p>Provided directly from City staff.</p> <p>City's Greenhouse Gas Inventory data.</p> <p><a href="http://www.energy.ca.gov/2012_energy_policy/documents/demand-forecast/mid_case/03_SCE_Mid.xls">http://www.energy.ca.gov/2012_energy_policy/documents/demand-forecast/mid_case/03_SCE_Mid.xls</a></p> <p><a href="http://www.energy.ca.gov/2012_energy_policy/documents/demand-forecast/mid_case/10_Natural_Gas_Planning_Area_and_Sector_Mid.xls">http://www.energy.ca.gov/2012_energy_policy/documents/demand-forecast/mid_case/10_Natural_Gas_Planning_Area_and_Sector_Mid.xls</a></p>

Program C-14	Require Point-Of-Sale Energy Use Disclosure
Key assumptions and calculation methodology	<p>Used data on residential energy use to determine average annual energy use per household. Used annual number of homes sold of 1,700 and assumed a target energy savings of 10% to be achieved through prescriptive energy upgrade measures prior to the time of sale, yet information is made available at the time of sale.</p> <p>Assume program is implemented by 2020 and in effect for 1 year by end of 2020.</p>
Annual electricity savings by 2020 (kWh):	782,900 kWh
Annual natural gas savings by 2020 (therms):	64,800 therms
Annual GHG savings by 2020 (MTCO <sub>2e</sub> ):	170 MTCO <sub>2e</sub>
Annual energy cost savings:	\$5,500
Upfront and first cost to City:	\$50,000-249,000
Three-year electricity savings (kWh):	76,000 kWh
Five-year electricity savings (kWh):	126,600 kWh
Ten-year electricity savings (kWh):	253,300 kWh
Supporting information:	<p>Many resources are available to support the development and implementation of renewable energy ordinances, such as:</p> <p>California Energy Commission:  <a href="http://www.energy.ca.gov/localgovernment/planning_resources/example_or_dinances.html">http://www.energy.ca.gov/localgovernment/planning_resources/example_or_dinances.html</a></p> <p>California Solar Permitting Guidebook:  <a href="http://www.opr.ca.gov/docs/California_Solar_Permitting_Guidebook.pdf">http://www.opr.ca.gov/docs/California_Solar_Permitting_Guidebook.pdf</a></p>
Data Sources:	<p>SCE usage data, 2010.  SGC usage data, 2010.  <a href="http://www.trulia.com/sold/Oxnard,CA/77_p/">http://www.trulia.com/sold/Oxnard,CA/77_p/</a></p>

Program C-15	Develop Renewable Energy Ordinance
Key assumptions and calculation methodology	<p>Used data provided by the City for number of commercial facilities data and SCE data on commercial and industrial energy use to determine average annual energy use per commercial/industrial facility. Assume a 0.5% annual growth rate for new construction within Master Planned Developments and a 25% generation capacity for all renewable energy systems to offset grid based energy load.</p> <p>Assume program is implemented by 2020 and in effect for 1 year by end of 2020.</p> <p>Electricity savings represent reductions in the use of conventional grid electricity.</p>
Annual electricity savings by 2020 (kWh):	804,500 kWh
Annual natural gas savings by 2020 (therms):	0 therms
Annual GHG savings by 2020 (MTCO <sub>2</sub> e):	170 MTCO <sub>2</sub> e
Annual energy cost savings:	\$0
Upfront and first cost to City:	\$50,000-249,000
Three-year electricity savings (kWh):	2,413,600 kWh
Five-year electricity savings (kWh):	4,022,700 kWh
Ten-year electricity savings (kWh):	8,045,400 kWh
Supporting information:	<p>Many resources are available to support renewable energy such as:</p> <p>California Solar Permitting Guidebook: <a href="http://www.opr.ca.gov/docs/California_Solar_Permitting_Guidebook.pdf">http://www.opr.ca.gov/docs/California_Solar_Permitting_Guidebook.pdf</a></p> <p>SCE Go Solar, California: <a href="http://www.sce.com/solarleadership/gosolar/go-solar.htm?from=csithermal">http://www.sce.com/solarleadership/gosolar/go-solar.htm?from=csithermal</a></p> <p>DOE SunShot Initiative: <a href="http://www1.eere.energy.gov/solar/sunshot/">http://www1.eere.energy.gov/solar/sunshot/</a></p> <p>CALGreen Code: <a href="http://www.iccsafe.org/cs/codes/Errata/State/CA/5570S1002.pdf">http://www.iccsafe.org/cs/codes/Errata/State/CA/5570S1002.pdf</a></p>
Data Sources:	<p>City's Greenhouse Gas Inventory data.</p> <p>SCE usage data, 2010.</p>



Program C-16	Develop Partnerships for Renewable Energy Generation
Key assumptions and calculation methodology	<p>Used 2010 data on total residential, commercial and industrial energy use to calculate renewable portions of SCE energy portfolio annually with 50% participation from all sectors. Calculated GHG emission reductions in parallel with SCE 2010 and 2020 Renewable Portfolio Standard (RPS) energy portion percentages in relation to conventional energy portion percentages.</p> <p>Assume program is implemented by 2020 and in effect for 1 year by end of 2020.</p>
Annual electricity savings by 2020 (kWh):	804,500 kWh
Annual natural gas savings by 2020 (therms):	0 therms
Annual GHG savings by 2020 (MTCO <sub>2</sub> e):	19,710 MTCO <sub>2</sub> e
Annual energy cost savings:	\$0
Upfront and first cost to City:	\$50,000-249,000
Three-year electricity savings (kWh):	0 kWh
Five-year electricity savings (kWh):	0 kWh
Ten-year electricity savings (kWh):	0 kWh
Supporting information:	<p>Many resources are available for the development and implementation of Community Choice Aggregation to support energy reductions in residential buildings in the City, such as:</p> <p>SCE: <a href="http://www.sce.com">http://www.sce.com</a></p> <p>SunShot Resource Center: <a href="http://www4.eere.energy.gov/solar/sunshot/resource_center/">http://www4.eere.energy.gov/solar/sunshot/resource_center/</a></p> <p>California Public Utilities Commission- Resources <a href="http://www.cpuc.ca.gov/PUC/energy/Retail+Electric+Markets+and+Finance/070430_ccaggregation.htm">http://www.cpuc.ca.gov/PUC/energy/Retail+Electric+Markets+and+Finance/070430_ccaggregation.htm</a></p> <p>Guide to Community Shared Solar: <a href="http://www1.eere.energy.gov/solar/pdfs/54570.pdf">http://www1.eere.energy.gov/solar/pdfs/54570.pdf</a></p>
Data Sources:	<p>City's Greenhouse Gas Inventory data.</p> <p>SCE usage data, 2010.</p>



# Appendix E

## Financing Models and Mechanisms

A number of financing models and mechanisms exist that may be used to fund the City of Oxnard Energy Action Plan (EAP) programs. The following sections summarize those most relevant to the City.

### 1.1 Grants and Low-interest Loans

Grants and loans are available from federal, state, and regional agencies for investment in numerous types of climate-related projects. Grants and loans can provide short-term funding for program development and program testing. The program planning phase would require development of an alternative financial framework for the program's continued operation after the grant expires.

For example, the federal Department of Housing and Urban Development (HUD) administers the Sustainable Communities Regional Planning Grant Program. One of the key purposes of this program is to empower jurisdictions to consider the independent challenges of energy use and climate change. In the San Joaquin Valley, a coalition of 14 cities received a \$4 million grant from the Sustainable Communities Regional Grant Program; some of these funds will be allocated toward developing local government Climate Action Plans.

### 1.2 State Agencies

The California Energy Commission (CEC) has a well-established loan program that supports energy upgrades for local governments. The program provides low interest loans for feasibility studies and the installation of cost-effective energy projects in public care institutions, public schools and colleges, public hospitals, special districts, and local government facilities. The loans are repaid out of the energy cost savings. The program finances a variety of types of energy

efficiency upgrades including lighting, pumps and motors, building insulation, heating and air conditioning modifications, waste water treatment modifications, streetlights and LED traffic signals, and certain energy generation projects, including renewable energy projects and cogeneration. Loans can cover up to 100% of project costs, with a maximum loan amount of \$3 million.

California Senate Bill 732 established the Strategic Growth Council (SGC), a cabinet level committee that coordinates the activities of several state agencies. The SGC aims to achieve multiple objectives, including improving air and water quality, protecting natural resources and agricultural lands, increasing the availability of affordable housing, improving infrastructure systems, promoting public health, and assisting state and local entities in the planning of sustainable communities and meeting AB 32 goals. The SGC operates the Sustainable Communities Planning Grant and Incentives Program. This program is a competitive grant program that supports a range of local government activities, including climate action planning.

California Proposition 39, passed in November 2012, establishes the Clean Energy Job Creation Fund. The fund will be used to support projects that create jobs in California improving energy efficiency and expand clean energy generation, including but not limited to: energy efficiency upgrades and clean energy installations at schools and public facilities; job training and workforce development to train and employ disadvantaged youth, veterans, and others on energy efficiency and clean energy projects; and assistance to local governments in establishing and implementing Property Assessed Clean Energy (PACE) programs or similar financial and technical assistance for cost-effective upgrades.<sup>1</sup>

## 1.3 Regional Organizations

Oxnard is a member of the Ventura County Regional Energy Alliance (VCREA), a local government partnership in which Southern California Gas Company (SCG) and Southern California Edison (SCE) help local governments achieve a joint vision of sustainability.

Oxnard is also participating in SCE's Energy Leader Partnership (ELP) Program which sets goals related to energy reductions and participation in energy efficiency programs. A key goal in local government partnerships is helping cities and counties lead by example in addressing energy efficiency and conservation first in their own municipal facilities. Future funding for energy efficiency upgrades, training and technical support will be available through these partnerships.

Other financing options are available through SCE. On-bill financing is a program in which a zero-interest loan is available for the purchase of qualified energy efficiency equipment. The cost of the purchase is repaid through the monthly utility bill; the loan term is based on the effective useful life of the equipment as well as the qualified project costs and estimated annual energy savings. No other loan fees or loan costs are incurred. Off-bill financing is a loan program in which the loan is repaid through a separate monthly bill. Numerous rebate programs are available for certain types of energy efficiency upgrade projects. Some assistance is also available to incorporate energy efficiency aspects into the design of new buildings.

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<sup>1</sup> <http://vig.cdn.sos.ca.gov/2012/general/pdf/text-proposed-laws-v2.pdf#nameddest=prop39>

## 1.4 Renewable Energy Municipal Financing and Revolving Fund Programs

In some cases, an initial investment in energy efficiency and renewable energy projects results in cash savings after a payback period is complete. A self-funding loan program could be developed to implement such projects. Under a self-funding loan program, the loan payments are equal to the eventual cost savings. The City would provide an initial outlay for the loan program, which would be repaid through the energy cost savings and then reinvested in additional projects.

## 1.5 Public Financing

The California Statewide Communities Development Authority is a joint powers authority sponsored by the California State Association of Counties and the League of California Cities. The mission of the Statewide Communities Development Authority is to provide local governments and private entities access to low-cost, tax-exempt financing for projects that provide a tangible public benefit, contribute to social and economic growth, and improve the overall quality of life in local communities throughout California.

California Communities® offers a pooled securitization program to assist local agencies in bonding against future payments, to obtain funding for more infrastructure and transportation related projects today.

Because they require the approval of two-thirds of voters, local bond and tax measures can be challenging to pass at this time, but they are another useful financing mechanism. For example, the voters of the City of Boulder, Colorado approved Initiative 202 in November 2006. This initiative created the Climate Action Tax Plan, which went into effect on April 1, 2007. The revenues generated through the tax are used to reduce GHG emissions from energy use in buildings, the operation of vehicles, and landfill gas emissions. The tax is implemented by a surcharge that is based on per-kWh electricity usage (with an annual cap), and is collected by the local utility as part of the normal billing process. The customers who subscribe to the utility's premium priced renewable energy portfolio are exempt from the tax.

As discussed in Chapter 5 of this EAP, a local government may provide an innovative funding mechanism for energy efficiency projects implemented by residential homeowners and commercial building owners through a Property Assessed Clean Energy (PACE) program. A PACE program allows residential and commercial property owners to finance energy efficiency upgrades through a loan that is repaid on the property tax bill. CaliforniaFIRST is the pilot program for PACE that will include 14 counties and over 100 cities, including Ventura County. Once the pilot phase is complete, any city may participate in CaliforniaFIRST.<sup>2</sup>

## 1.6 Municipal Fees

Revenues from public services fees (e.g., parking fees, utility fees) could be used to fund programs such as energy efficiency and water use efficiency. Some local governments impose an internal surcharge on departmental energy bills. For example, the City of Portland, Oregon imposed a 1% surcharge (with a ceiling of \$15,000 per department) on departmental energy bills and used the funds to support a City energy specialist. The role of the specialist is to provide

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<sup>2</sup> <https://californiafirst.org/overview>

technical support for departmental energy projects, to help obtain utility energy rebates and other technical assistance available from local utilities, and to serve as an energy expert.

## 1.7 Private and Non-Governmental Support

Numerous organizations such as non-profit organizations, foundations, or businesses, could provide funding for new projects. In addition, private investors may provide funding to local governments for projects that are expected to generate a positive return on investment. For example, energy service companies (ESCOs) can provide the initial investments in energy efficiency, and are then reimbursed by the local government over a contract period. In some cases, private companies finance renewable energy installations, and then recoup their investment by selling the resulting power to the building owner.

## 1.8 Carbon Offsets and Banking

Due to the new cap-and-trade program in the State of California administered by the Air Resources Board (CARB), certain types of projects will be allowed to create monetized credits due to the reduction of GHG emissions. Specifically, an Urban Forest Project Protocol was approved in 2010 to outline the parameters related to urban tree planting and maintenance under which a project may be eligible for carbon credits. These projects could then be financed through the sale or trade of the carbon credits generated by the project.

In addition, the State of California is developing an investment plan for the auction proceeds from the cap-and-trade program that may include support of long-term, transformative efforts to develop a clean energy economy. This may take the form of additional funding incentives for low-carbon power generation or energy efficiency improvements administered by the likes of the Strategic Growth Council, or proceeds could be used to offset expected increases to water and power bills for the higher cost of green power. Allowance auctions began in November 2012.<sup>3</sup>

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<sup>3</sup> <http://www.arb.ca.gov/cc/capandtrade/capandtrade.htm>





# Appendix F

## Programs for Future Consideration

The following energy-related programs were evaluated during the EAP development process but for a variety of reasons were relegated to lower priority during the cost-benefit analysis phase. Any of these programs may be further considered by the City of Oxnard during future planning processes.

### Oxnard City Government

1. Identify further opportunities for private-public partnerships to generate renewable energy at City Government facilities and sell to the local community, including using energy storage technologies.
2. Install electric charging stations at City Government facilities and purchase plug-in electric vehicles.
3. Explore the feasibility of wind energy generation.
4. If/when it becomes available in Ventura County, support the California Green Business program, which certifies local green businesses and provides on-site assessments that address issues such as environmental purchasing policies, energy conservation, pollution prevention, and waste reduction.
5. Require City Government facilities to purchase “white tags” or “energy efficiency certificates.”

## Oxnard Community

1. Adopt a local Green Building Code for commercial buildings that goes beyond Title 24. This may include requiring specific features, such as drought tolerant landscaping, or use of natural ventilation.
2. Require new development to meet aggressive levels of energy efficiency, or purchase “white tags” or “energy efficiency certificates.”
3. Develop specific checklists and provisions to ensure that the CALGreen building code is enforced.
4. Develop a strategy for engaging with large corporations and national ‘Big Box’ stores to improve energy efficiency at local stores.
5. If/when it becomes available in Ventura County, support the California Green Business program, which certifies local green businesses and provides on-site assessments that address issues such as environmental purchasing policies, energy conservation, pollution prevention, and waste reduction.
6. In the absence of a Ventura County Green Business program, develop an Oxnard-specific green business program to promote energy conservation, pollution prevention, an environmental purchasing policy, and other environmentally responsible business practices.
7. Establish community lighting standards that provide specified lighting levels while reducing excessive lighting and conserving electricity.
8. Implement a City-wide tree planting program to provide free or low-cost trees, with a focus on shade trees, to reduce the urban heat island effect.