

Encinitas Energy Roadmap



Prepared through the SANDAG
Energy Roadmap Program

June 2011

This Program is a collaboration between SANDAG and San Diego Gas & Electric®.



Energy Roadmap for the City of Encinitas

Table of Contents

	Acknowledgements and Program Contacts	ii
	Introduction	1
	SAVING ENERGY IN CITY GOVERNMENT OPERATIONS	
	1. Save Energy in City Buildings and Facilities	5
	2. Demonstrate Emerging Energy Technologies	11
	3. Green the City Vehicle Fleet	13
	4. Develop Employee Knowledge of Energy Efficiency	21
	5. Implement a Commuter Benefit Program	25
	SAVING ENERGY IN THE COMMUNITY	
	6. Leverage Planning and Development Authority	23
	7. Market Energy Programs to Local Residents and Businesses	29
	8. Support Green Jobs and Workforce Training	35
	Looking Forward	39

APPENDICES (provided under separate cover)

- A. Energy Report Cards
- B. Phase 2 Energy Audit Findings
- C. Utility Rate Analysis Sheets
- D. Alternative Fuels and Infrastructure Needs
- E. Sample Energy-Saving Measures for Planning and Development Review
- F. Sample Transportation Demand Management Ordinances
- G. Local Government Resources for Building Energy Retrofit Projects

Acknowledgements and Program Contacts

Acknowledgements

The San Diego Association of Governments (SANDAG) would like to acknowledge and thank the following individuals for their contributions to this document.

City of Encinitas

Diane Langager, Principal Planner
 Patrick Murphy, Planning and Building Director
 Michael Strong, Associate Planner
 Bill Wilson, Public Works Management Analyst
 Jacy Bolden, Environmental Commission Coordinator
 Scott Vurbeff, Environmental Coordinator

San Diego Gas & Electric Company

Julie Yunker
 Lianna Rios
 Kraig Akers

The Energy Roadmap Program is a partnership between the San Diego Association of Governments and San Diego Gas & Electric Company (SDG&E). It is funded primarily by California utility customers under the auspices of the California Public Utilities Commission. Transportation components are funded by SANDAG.

Program Contacts

Energy Roadmap Coordinator

Andrew Martin, SANDAG, ama@sandag.org, (619) 699-7319

iCommute Program

Antoinette Meier, SANDAG, amei@sandag.org, (619) 699-7381

SDG&E Energy Efficiency Programs

Julie Yunker, JYunker@semprautilities.com, (858) 654-8302

SDG&E Account Representative

Kraig Akers, KWakers@semprautilities.com, (858) 654-1208

Building Energy Audits

Jason Knight, EFM Solutions, jason.knight@efm-solutions.com, (619) 549-6695

The following SANDAG staff contributed to this document.

Susan Freedman, Senior Regional Energy Planner

Midori Wong, Assistant Regional Planner II

Andrew Martin, Associate Regional Planner

ii City of Encinitas Energy Roadmap

Introduction

This energy management plan, or “Energy Roadmap,” prepared by the San Diego Association of Governments (SANDAG) in consultation with city staff, provides a framework for Encinitas to identify ways to save energy in government operations and in the community, resulting in cost savings and benefits to the environment. These wide-ranging, cost-effective opportunities to save electricity, natural gas, and transportation fuel include:

The Encinitas Energy Roadmap charts a path to saving energy in government operations and in the community.

- No-cost expert technical assistance, such as free energy audits of government buildings,
- Help identifying and applying for energy efficiency rebates and innovative programs like zero percent on-bill financing,
- Energy-saving resources for cutting edge topics like general plan updates, electric vehicles, alternative fuels, and transportation demand management (TDM) strategies to save energy and reduce greenhouse gas (GHG) emissions, and
- The latest information on critical subjects like financing energy efficiency projects, emerging technology demonstrations, and residential retrofit programs.

California’s Vision for Local Governments

By 2020, California’s local governments will be leaders in using energy efficiency to reduce energy use and global warming emissions both in their own facilities and throughout their communities.

California Long-Term Energy Efficiency Strategic Plan

While the Energy Roadmap could be used by cities without past energy project and planning experience, it is important to state upfront that Encinitas has taken actions to save energy and lower costs before participating in this program. Examples include energy-efficient lighting retrofits, installation of solar photovoltaic panels on city buildings, green building practices, and climate action planning.

By building on its existing energy-saving efforts and taking advantage of some or all of the opportunities identified herein, Encinitas can demonstrate leadership in energy efficiency and work toward greater sustainability in city government and throughout its community – saving money for taxpayers, households, and businesses, keeping the air clean, supporting green jobs, and improving quality of life for everyone in Encinitas.

Saving Energy in City Government Operations

City government can be a significant user of energy in its own buildings, facilities, and equipment. City employees also play a role, through their commute choices, equipment usage, and use of government vehicles. These and other energy-using activities required to operate city government provide the city with an opportunity to lead by example. The city can improve energy efficiency, and in the process, spend fewer taxpayer dollars on utilities and gasoline, contribute to cleaner air, and reduce climate change emissions. The city also can develop staff knowledge of energy efficiency and use its operations to showcase emerging energy-efficient technologies.

The first part of the Energy Roadmap identifies five opportunities for Encinitas to lead by example with government buildings and facilities, vehicles, and energy usage practices:

- 1. Save Energy in City Buildings and Facilities**
- 2. Demonstrate Emerging Energy Technologies**
- 3. Green the City Vehicle Fleet**
- 4. Develop Employee Knowledge of Energy Efficiency**
- 5. Implement a Commuter Benefit Program**

Saving Energy in the Community

Looking beyond its own operations, city government can play an important role in influencing the energy attitudes and actions of local residents and businesses. Opportunities for influence vary widely, from public education to adopting policies and implementing programs to save energy.

Energy use can be a major expense for households and businesses, and it is a predominant source of air pollution and GHG emissions. Saving energy benefits the environment, puts money in the pockets of households and businesses, and supports growing economic opportunities including well-paying green jobs.

The second part of the Energy Roadmap identifies the following opportunities to lead the community with innovative programs for energy efficiency, sustainability, and climate change:

- 6. Leverage Planning and Development Authority**
 - a. Integrate energy-saving measures into planning and development
 - b. Include TDM in development review
 - c. Enable building energy retrofit projects
- 7. Market Energy Programs to Local Businesses and Residents**
- 8. Support Green Jobs and Workforce Training**

Potential Uses of the Energy Roadmap

Examples of activities this Energy Roadmap could assist the city with include:

- Reducing government spending on energy use such as utilities and gasoline,
- Developing or assisting to implement measures to reduce GHG emissions from government operations and community activities as part of the City of Encinitas climate action plan,
- Integrating sustainability, energy efficiency, or GHG reduction measures into a general plan, community plan update, or zoning ordinance amendment,
- Using government operations to demonstrate the feasibility of energy-efficient and sustainable practices to local residents and businesses,
- Managing the city vehicle fleet including new vehicle purchases,
- Promoting energy efficiency programs through city communications such as newsletters, e-mail, and Web site,
- Training of employees that deal with energy issues,
- Offering commuter information and incentives as part of the city's employee benefits package,
- Staying on top of the latest developments, programs, and trends in energy efficiency,
- Applying and qualifying for future funding opportunities related to energy efficiency, and
- Facilitating discussions among local and regional agencies.

The Encinitas Web site can be a portal for local residents and businesses to access energy-saving programs and rebates

About the Energy Roadmap Program

The Energy Roadmap Program is a partnership between SANDAG and San Diego Gas & Electric (SDG&E) that offers local jurisdictions assistance in making their buildings and processes energy-efficient, implementing state energy codes through access to training and workshops, and being a conduit to their constituents on programs that help reduce their energy bills, as well as the environmental impact on the community as a whole.

The program provides free energy assessments of government buildings and online tools to monitor electricity, natural gas, and transportation fuel use. It provides continued access to experts that can assist jurisdictions in taking the next steps to implement building improvements, petroleum reduction measures, and community outreach.

Each participating jurisdiction receives a customized Energy Roadmap that offers a comprehensive framework for saving energy at city government facilities and in the community. Each Energy Roadmap is consistent with the SANDAG Regional Energy Strategy (2009), which serves as the San Diego region's energy policy blueprint, and the Climate Action Strategy (2010), SANDAG's first ever guide on the issue of climate change. Both strategies are available on the SANDAG Web site at www.sandag.org/energy.

The Energy Roadmap Program was developed based on existing, successful SDG&E local government partnerships with the cities of Chula Vista and San Diego and the County of San Diego and pilot projects undertaken through the SANDAG Sustainable Region Program with the California Center for Sustainable Energy for the cities of Carlsbad, Poway, and Solana Beach. The Energy Roadmap Program is funded primarily by California utility customers under the auspices of the California Public Utilities Commission. Transportation components are funded by SANDAG.

Save Energy in City Buildings and Facilities

Energy consumption is a major operating cost for local governments. By evaluating energy usage in city government buildings and facilities (“sites”) and identifying energy-saving opportunities, Encinitas can reduce its energy-related operating costs and use the savings for other government services. Toward this end, the San Diego Association of Governments (SANDAG) coordinated the following energy-saving services for Encinitas, at no cost to the city:

The energy performance of most city buildings is better than the national average.

1. **Preliminary energy assessments** of all city government sites, the results of which were provided to Encinitas in the form of “Energy Report Cards” that evaluate, and provide important information for, each site’s energy performance, and
2. **Energy audits and utility rate analyses** targeted at a subset of city government sites based on their Energy Report Cards or city staff input.

This section summarizes the preliminary energy assessments, targeted energy audits, and utility rate analyses performed for Encinitas, including energy-saving measures (“energy conservation measures”) identified for each site and their cost, potential energy and utility bill savings, and greenhouse gas emissions avoided. EFM Solutions, LLC performed all site assessments on behalf of SANDAG. In addition to the summary below, the results of the energy-saving services, including the Energy Report Cards, findings of the energy audits, and utility rate analysis spreadsheets, are provided in full as appendices A, B, and C to this document. Copies were provided to Bill Wilson of the Public Works Department.

Energy Assessments

Energy assessments were performed to determine an energy use baseline for each site and a benchmark for comparison with energy used by similar building types nationwide. The energy assessments included the following 16 sites:

- Civic Center
- Encinitas Library
- Moonlight Beach
- Community & Senior Center
- Public Works Yard
- Glen Park
- Swami’s Park
- Cottonwood Creek Park
- Cardiff Sports Park
- Ecke Sports Park
- Leo Mullens Sports Park
- Fire Stations No. 1-5

Site evaluations and the following online tools were used to complete the energy assessments: *Energy Waves*, from San Diego Gas & Electric (SDG&E), and *ENERGY STAR® Portfolio Manager*, from the United States Environmental Protection Agency. *Energy Waves* provides historical energy usage and enables the city to continue online monitoring of energy consumption and site performance online. *Portfolio Manager* identifies how sites compare against national averages for similar facilities, and provides GHG emissions measured in carbon dioxide equivalent (CO₂e).

In order to qualify for SDG&E rebate and incentive programs, a site must be benchmarked with ENERGY STAR® Portfolio Manager.

In general, the energy assessments indicate that city government sites are performing well. In response to an issue discovered through the assessment process or communicated by city staff, five sites were targeted for additional evaluation in the form of a comprehensive energy audit or utility rate analysis. Further analysis was conducted due to higher than expected energy use, utility bill costs, or a relatively poor benchmark compared to similar buildings. The detailed results of the energy assessments, called “Energy Report Cards,” are provided in **Appendix A**.

Energy Audits and Utility Rate Analyses

Of the five sites identified for additional evaluation, three underwent a comprehensive energy audit: the Community and Senior Center, Encinitas Library, and the Public Works Building. The Cardiff Sports Park and Ecke Sports Park received a utility rate analysis.

Energy Audits

The energy audits for the Community and Senior Center, Encinitas Library, and Public Works Building focused on the identification of energy conservation measures for overall site operations and performance, as well as the following individual building and facility components: indoor and outdoor lighting, heating, ventilation and air conditioning (HVAC) systems, and building controls.

In addition, the energy audits included utility rate review, identification of energy conservation measures, and identification of available rebate, incentive, and financing programs as well as cost information. The results of the energy audits including energy conservation measures are summarized in the tables that follow. Information regarding available rebate, incentive, and financing programs for the energy conservation measures is provided later in this section.

Energy audits were performed at the Community and Senior Center, Encinitas Library, and Public Works Building. Cardiff Sports Park and Ecke Sports Park received a utility rate analysis.

Potential Savings and Costs of Energy Conservation Measures for the Community and Senior Center, Public Works Building, Encinitas Library

Location	Potential Annual Savings						Costs to Achieve Annual Savings ¹		
	Electricity (kWh) ²		Utility Bill		Greenhouse Gases (MTCO ₂ e)		Net Cost ³	Simple Payback (years)	SDG&E On-Bill Financing ⁴
Community and Senior Center	117,053	15.3%	\$14,230	10%	38.6	10.4%	\$37,959	2.7	Yes
Public Works Building	19,512	10.1%	\$1,393	4.1%	6.4	10.1%	\$4,024	2.9	No
Encinitas Library	46,695	10.7%	\$2,277	2.3%	15.4	7.9%	\$12,995	5.7	No
Total	183,260	13.2%	\$17,900	7%	60.4	11.4%	\$54,978	3.1	1 of 3 sites

Notes: kWh = kilowatt hours, MTCO₂e = metric tons of carbon dioxide equivalent.

1. Details regarding individual energy conservation measures are provided in the table.
2. No opportunities for natural gas savings were identified during the energy audits.
3. Net cost includes qualifying rebates and incentives. Installation and equipment costs are estimates and are not intended as substitutes for contractor bids.
4. Estimate of qualification for this program. An application must be approved by the city's SDG&E Account Representative.

As shown in the table above, Encinitas could realize annual savings of up to \$17,900 by implementing the energy conservation measures identified through the energy audit. The energy conservation measures, including their estimated annual electricity and cost savings, are listed in the table on the following page.

The upfront costs for the purchase and installation of energy-saving equipment could be financed on the city's SDG&E bills through a zero-percent, on-bill financing program available to the city. The program is cash-flow neutral, so monthly utility bills would not rise while the city pays off the energy efficiency loan, if it chooses to implement the efficiency measures. Once that loan is paid off (using zero-percent on-bill financing), the city's utility bills would reflect annual bill savings identified above. The simple payback of 3.1 years is the estimated time it would take to pay-off the net costs of implementing the energy conservation measures through energy cost savings. If interested, the city would work with SDG&E to determine exact financing and payback amounts. EFM Solutions is available to assist in the city with project specifications, application materials, and other elements necessary for project implementation.

Energy Conservation Measures Identified for the Community and Senior Center, Public Works Building, Encinitas Library

Location	Energy Conservation Measures	Potential Annual Savings			
		Electricity (kWh)		Utility Bill	
Community and Senior Center	Lighting retrofits	56,672	7.4%	\$6,877	5%
	Control for chiller	8,383	1%	\$599	<1%
	Controls for chilled water and hot water pumps	16,448	2.2%	\$1,174	<1%
	Replace controls for air handlers and enter retrocommissioning program	35,550	4.7%	\$5,581	4%
Encinitas Library	Outdoor sensor placement and calibration to better control indoor air temperature	32,193	7.4%	\$5,054	6%
	Re-calibrate air handlers and add sensors to improve control of air flow throughout building	14,502	3.3%	\$2,277	3%
Public Works Building	Rewire lighting circuit to reduce evening energy use when building is unoccupied	19,512	10%	\$1,393	4%

Notes: kWh = kilowatt hours

Utility Rate Analysis

Utility rate analyses were performed for the Cardiff and Ecke Sports Parks because the preliminary energy assessments showed that demand charges are a relatively high proportion of the annual utility bill costs for these sites: 73 percent for Cardiff Sports Park and 67 percent for Ecke Sports Park. Actual electricity consumption represents only 23 percent and 29 percent of the annual utility bill costs for these sites, respectively.

The installation of solar photovoltaic (PV) systems at these sites would allow the city to switch to a new utility rate schedule with significantly lower demand charges and therefore lower total annual utility bill costs. The estimated upfront costs of installing solar PV systems and the resulting lower annual utility bill costs at the two sports parks are shown in the following table and included in full in **Appendix C**.

Utility Rate Analyses for Cardiff and Ecke Sports Parks: Potential Savings and Costs of Solar Photovoltaic (PV) Installation and Utility Rate Change					
Costs		Cardiff Sports Park		Ecke Sports Park	
		Existing Rate (AL-TOU)	Rate Change (DG-R)	Existing Rate (AL-TOU)	Rate Change (DG-R)
ANNUAL UTILITY BILLS					
Electricity Use		\$8,006	\$8,508	\$7,994	\$8,838
Demand Charge		\$31,321	\$11,475	\$24,235	\$8,880
Total (Use + Demand)		\$39,327	\$19,983	\$32,229	\$17,719
Savings of Rate Change (AL-TOU to DG-R)		\$19,344		\$14,511	
SOLAR PV INSTALLATION					
Estimated System Size		18 kW		14 kW	
Upfront Cost of System		\$126,000		\$98,000	
Simple Payback (Upfront Cost/Annual Savings)		6.5 years		6.8 years	

Notes: AL-TOU = Alternative Time of Use Rate, DG-R = Distributed Generation Rate.

Rebates, Incentives, and Financing Options

SDG&E provides rebates, incentives, and financing options to pay for all or part of the costs of energy conservation measures. The SDG&E On-Bill Financing Program provides zero-percent financing for the installation of energy efficiency improvements meeting certain criteria. Financial assistance also is available from other agencies like the California Energy Commission. Additionally, Energy efficiency and Conservation Block Grants have been used by many jurisdictions to pay for the upfront costs of energy conservation measures.

No-cost assistance with rebates, incentives, and financing options is available to the city as part of the Energy Roadmap Program. Please contact your Energy Roadmap coordinator with requests for assistance or questions.



Rebates and Incentives

In addition to performing energy audits and developing energy conservation measures, EFM Solutions identified rebates, incentives, and financing programs from SDG&E and other sources available to pay for all or a portion of the energy conservation measure

implementation costs. The net costs of energy conservation measures shown in the tables above take into account SDG&E rebates and incentives for which the city qualifies.

Generally, programs that apply to commercial businesses also apply to public agencies. In addition, SDG&E rebates and incentives are reviewed and potentially updated every two or three years, so rebates and incentives for which the city currently qualifies are subject to change when the next scheduled update occurs in 2012. To review all of SDG&E's rebate and incentive programs, see Chapter 7, Market Energy Programs to Local Residents and Businesses, or visit www.sdge.com/business/rebatesincentives/.

Zero-Percent Interest On-Bill Financing from SDG&E

As shown in the table above, the energy conservation measures identified for the Community and Senior Center qualify for the SDG&E On-Bill Financing Program, which provides interest-free, unsecured financing to qualified commercial and taxpayer-funded customers for the installation of energy-efficient improvements. On-bill financing offsets energy-efficient upgrade costs after rebates and incentives and adds loan installments to monthly SDG&E bills. In order to qualify for on-bill financing, measures must first qualify for an SDG&E rebate or incentive and have a minimum loan amount of \$5,000 up to a maximum of \$250,000 per meter, with a simple payback of no more than ten years.

EFM Solutions and the city's SDG&E account representative, Kraig Akers, have met with Public Works Department and discussed on-bill financing. For more information, contact Kraig Akers at KWAKers@semprautilities.com or visit www.sdge.com/obf.

Low Interest Loans from the California Energy Commission

The California Energy Commission Energy Efficiency Financing Program provides financing for local governments, schools, and hospitals through low-interest loans for feasibility studies and installation of energy-saving measures. As of October 2010, terms included an interest rate of three percent fixed, a maximum loan of \$3 million per application, and a maximum loan term of 15 years. EFM Solutions can assist with the loan application process.

For more program information, visit www.energy.ca.gov/efficiency/financing or contact the California Energy Commission's Special Projects Office at (916) 654-4104 or pubprog@energy.state.ca.us.

2

Demonstrate Emerging Energy Technologies

In addition to energy assessments and improving efficiency in city government buildings and facilities, Encinitas also can save energy by using its operations to showcase emerging energy-efficient technologies through the San Diego Gas & Electric (SDG&E) Emerging Technologies Program. The city also can encourage interested local businesses and residents to demonstrate an emerging energy efficiency technology.

If the city government or community members living in Encinitas want to host a demonstration, your Energy Roadmap coordinator can arrange for a meeting with SDG&E Emerging Technologies Program staff. SDG&E will provide all of the relevant information, including how to participate, eligible technologies, and any costs to the city or participating business or resident.

California's Vision on Research & Technology

Technology advancement related to energy use and demand will match—or even eclipse—the consumer electronics industry in innovation, time to market, and consumer acceptance.

California Long-Term Energy Efficiency Strategic Plan

The goal of the Emerging Technologies Program is to accelerate the adoption of advanced technologies that increase grid stability, reduce overall energy use, and reduce demand for energy at peak times. The technology demonstrations are short-term projects that provide SDG&E with necessary real-world applications of promising energy-saving technologies. These new technologies have not achieved market penetration, but their potential benefits make them worthwhile to test. Demonstrations are critical because they enable utilities like SDG&E to evaluate and determine which emerging technologies are viable and worth supporting for wider deployment.

The following table lists a variety of projects in lighting, air-conditioning, communications, and others that are being demonstrated through 2012. For more information, contact A.Y. Ahmed, SDG&E's emerging technologies program manager directly at AAhmed1@semprautilities.com, or your Energy Roadmap coordinator.

SDG&E Emerging Technologies Program: Technologies Eligible for Demonstration

City Government or Commercial Sites

Lighting	Addressable Electronic Ballast for HID Fixtures: Demonstration on three building types: distribution warehouse, gymnasium, and big-box retail. Advanced electronic ballast with high bay HID (high intensity discharge) fixture that permits day lighting, dimming, and demand response measures.
Air Conditioning	Aquachill Air Conditioner: For small commercial buildings. Advanced split system air conditioning (AC) that uses water cooled condenser, resulting in demand and energy savings (three, four, and five ton units; EER 14.0-14.5).
Refrigeration	VRF Conveni-Pack System: For supermarkets and mini-markets. Advanced refrigeration and space cooling technology in one combined unit that can be used for refrigeration cases, freezers, and space conditioning (three to five ton units).
Communications and Controls	Commercial Energy Control Systems: For medium and large commercial buildings that utilize refrigeration (refrigerant flow technology) and smart meter technology.
	Commercial Energy Management System: For a company that utilizes a wireless network and controllers to manage and optimize a building's energy systems. To be demonstrated at medium-size commercial building with multiple packaged roof-top units and large commercial building with central plant equipment.

Residential Sites

Air Conditioning	Aquachill Air Conditioner: For homes and multi-family apartment buildings. Advanced split system AC that uses water-cooled condenser, resulting in demand and energy savings (three, four, and five ton units; EER 14.0-14.5).
	VRF Mini-Split Air Conditioners: For residential single and multi-family homes. Advanced room AC that uses zoned cooling coils with air handlers and central compressor. Cooling capacity is varied and to be demonstrated in residences with one to four zones (two to five ton units).
Communications and Controls	Single Vendor Residential HAN Pilot: For single-family homes. Home Area Network (HAN) technology with in-home display, programmable communicating thermostat, appliance controllers, battery storage, and back-office operation; resulting in demand and energy savings. To be demonstrated at 28 homes.
	Residential Energy Management Technologies Evaluation: For single-family homes. Technologies can include home area network, in-home display, programmable communicating thermostat and appliance controllers; resulting in demand and energy savings. Based on evaluation of energy management systems from 150 companies, SDG&E will work with up to ten companies to test one to five systems each.
	Multi-Vendor HAN Pilot: HAN technologies that include IHD, PCT, load controllers from different vendors to be operated in a coordinated manner. Planned evaluation: test multi-vendor systems in 12 residential homes.
	Residential Zonal Controls: Convert central forced air heating, ventilation, and air conditioning (HVAC) systems into smart multi-zone HVAC systems. Senses conditions in each room, analyzes real-time and historical room-occupancy, and actuates vents in each room to regulate room temperature. Planned evaluation: test systems in 12 residential homes with single zone HVAC systems.
Zero Energy Home Showcase	Net Zero Energy Home Demonstration/Showcase: SDG&E plans to renovate up to five existing single-family homes to evaluate and demonstrate a variety of energy-saving technologies. Renovations to include building envelope improvements, high efficiency space conditioning, water heating and appliances, appliance integration with smart meters, solar PV/thermal systems, and home energy management systems.

Green the City Vehicle Fleet

The City of Encinitas Public Works Department currently maintains a fleet of over 100 vehicles that range from sedans to fire apparatus. The city can achieve transportation-related energy savings through actions that promote fuel conservation, efficiency, and an increased use of clean, alternative fuels in its vehicle fleet.

Special attention is given to the Electric Vehicle Project at the end of this section. It is the largest deployment of electric vehicles (EV) and EV charging infrastructure in U.S. history and approximately \$40 million worth of equipment and services have been dedicated to the San Diego region. The city may want to consider participating in the EV Project, as there are still opportunities to become an EV Project participant or host a publicly accessible EV charging infrastructure as of this writing.

Fuel Conservation and Efficiency

Fleet Planning with the Petroleum Reduction Planning Tool

There are many conservation and efficiency measures that could be deployed to reduce petroleum use in the municipal fleet. To increase overall fleet fuel efficiency, the Federal Energy Management Program (FEMP) recommends focusing on increasing fuel efficiency of the least efficient vehicles as a first step. Also, the U.S. Department of Energy's Petroleum Reduction Planning Tool (www.afdc.energy.gov/afdc/prep/), at the Alternative Fuels and Advanced Vehicles Data Center, can help fleet managers evaluate and calculate petroleum reductions through the following methods:

- Alternative fuels
- Hybrid electric vehicles
- Biodiesel blends
- Fuel economy
- Vehicle miles traveled reduction
- Truck stop electrification
- Idling time reduction
- Onboard idle reduction

The methods fall under efficiency (e.g., fuel economy, idling reductions), conservation (e.g., vehicle miles traveled reductions), and alternative fuels (e.g., vehicles that run on electricity, compressed natural gas). The fleet manager can set a petroleum reduction goal (e.g., 10% savings), and the free online tool will identify potential savings based on the fleet information entered and petroleum reduction measures selected.

Additionally, FEMP has dedicated resources to assist federal agency fleet managers in developing and implementing petroleum reduction strategies. Through Executive Order 13514 and other mandates, federal agencies are required to

reduce petroleum usage and increase alternative fuel use in their fleets. Local jurisdictions are not impacted by the federal mandates, but may find FEMP's resources helpful if developing a petroleum reduction plan. FEMP provides guidance and a handbook on fleet management, which are available online at www1.eere.energy.gov/femp/regulations/guidance.html#fm.

Driving Suggestions for City Employees

Trip planning, efficient driving habits, and routine maintenance can reduce petroleum use and transportation costs. Fleet managers can review vehicle scheduling and routing to determine potential fuel efficiency improvements. In addition, employees can consider the following:

- Alternatives to an in-person meeting or event such as a conference call or Web cast,
- Alternative transportation options such as carpooling, walking, bicycling, and public transit,
- Shared vehicle options like carpooling with other staff and staff from other agencies, and
- Using the most fuel efficient vehicle that will serve the trip purpose.

The official U.S. government source for fuel economy information is www.fueleconomy.gov. The site provides data on new and used cars and trucks and provides the following fuel efficiency tips that the city make its employees aware of.

- **Drive sensibly**
Aggressive driving habits like speeding, rapid acceleration, and braking can lower fuel efficiency by 33 percent at highway speeds and by five percent around town.
- **Use cruise control**
Using cruise control on the highway helps to maintain a constant speed and, in most cases, saves fuel.
- **Observe the speed limit**
While each vehicle reaches optimal fuel economy at a different speed, fuel efficiency usually decreases at speeds above 60 miles per hour (mph). As a rule of thumb, each five-mph increase over 60 mph can cost the city about \$0.21 per gallon of gasoline.
- **Remove excess weight**
Avoid keeping unnecessary and heavy items in vehicles. An extra 100 pounds can reduce fuel efficiency by up to two percent. The reduction is based on the percentage of extra weight relative to the vehicle's weight and affects smaller vehicles more than larger ones.

- **Avoid excessive idling**
Vehicles with larger engines typically waste more fuel while idling than vehicles with smaller engines.
- **Use overdrive gears**
Engine speed goes down when in overdrive gears, thereby saving fuel and reducing engine wear.
- **Properly inflate tires**
Check tires monthly for proper inflation. Under-inflated tires can lower fuel efficiency by 0.4 percent for every one-psi drop in pressure of all four tires.

Alternative Fuels for Fleet Applications

Alternative fuel and vehicle selection may depend on several factors including:

- Vehicle cost,
- Availability and proximity of refueling infrastructure,
- Availability of grants and tax credits,
- Whether new purchase or retrofit/conversion is being considered, and
- Vehicle maintenance.

The following tables summarize potential fleet applications, nearby refueling infrastructure, and estimated infrastructure costs. **Appendix D** provides a description of alternative fuels, potential fleet applications, and the locations of available refueling infrastructure.

Summary of Potential Alternative Fuel Fleet Applications

Fleet Application ¹	Biodiesel ²	Electricity	Ethanol (E85)	Hydrogen	Natural Gas	Propane
Passenger Vehicle	--	PHEV, BEV	FFV	FCV	CNG	LPG
Taxicab	--	HEV	--	--	CNG	LPG
Vanpool-Shuttle	B20	n/a	FFV	--	CNG	--
Refuse Hauler	B20	HEV	--	--	CNG, LNG	--
Sweeper	B20	n/a	--	--	CNG, LNG	--
Other Medium/Heavy-Duty	B20	HEV	--	--	CNG, LNG	--
Forklift	--	BEV	--	--	CNG	LPG
Low-speed Vehicle ³	--	NEV	--	--	CNG	LPG

Notes:

1. Check with original equipment manufacturer (OEM) regarding vehicle warranty and alternative fuels.
2. Diesel blends that are five to twenty percent biodiesel and 95 to 80 percent petroleum diesel, respectively.
3. Examples include a traffic checker and neighborhood electric vehicle.
 B20 = twenty percent biodiesel blend
 BEV = battery electric vehicle
 E85 = 85 percent ethanol, 15 percent gasoline
 FFV = flex fuel vehicle
 LPG = liquefied petroleum gas
 PHEV = plug-in hybrid electric vehicle
 HEV = hybrid electric vehicle
 FCV = fuel cell vehicle
 CNG = compressed natural gas
 LNG = liquefied natural gas

Summary of Alternative Fuel Infrastructure Availability and Costs

Fuel	Existing Fueling/Charging Infrastructure Sites ¹	Cost of Additional Fueling/Charging Infrastructure	Availability of Production-Distribution Infrastructure
Electricity	EVSE sites not yet final or publicly available; siting process is ongoing through 2011. Opportunity to install publicly accessible sites at city government locations through the EV Project.	Publicly Available, Level 2: \$2,500-\$5,000 ³	Existing electricity grid and distributed energy sources.
Biodiesel	No fueling sites in or near the city. Four cities plan to or already use blends of B5 or B20 to offset diesel fuel use: Oceanside, San Diego, Escondido, and Chula Vista.	Information not available on new infrastructure. Potential to have biodiesel brought to city, blended onsite within existing diesel storage tanks.	Storage and blending terminals, port off-loading sites needed. Local producer is New Leaf Biofuel.
CNG	Public access station (SDG&E Service Center) located at Cannon Road in City of Carlsbad.	Small station: \$350,000 Medium station: \$500,000 Large station: \$950,000 Add public fast-fill dispenser: \$125,000	Existing natural gas pipeline network
Propane	Public access station (Westmart) located at Avenida Encinas and Cannon Road in City of Carlsbad.	\$65,000	Existing
E85	Public access station (Shell – Bressi Ranch – Pearson Fuels) located at Gateway Road and El Fuerte in City of Carlsbad	\$100,000 to \$250,000	Storage and distribution facilities needed in order to scale-up consumption
LNG	No fueling sites in or near the city	Large station: \$1,200,000 Combined LCNG and LNG station: \$1,600,000	Existing, but West Coast off-shore LNG terminals needed
Hydrogen	No fueling sites in or near the city	\$500,000 to \$5,000,000	Significant investment required

Source: fdc.energy.gov/afdc/locator/stations/.

Notes:

1. Site names, addresses, and distances are provided in **Appendix D**.
2. Contact your Energy Roadmap coordinator for information regarding the installation of publicly available EVSE at city government sites. Approximately 1,450 publicly available Level 2 EVSE, 50 public DC Fast Charge EVSE, and 1,000 residential Level 2 EVSE are anticipated to be installed in the San Diego region by 2012.
3. Installation and equipment costs of qualifying EVSE can be paid in entirety or in part by the EV Project.

California Goals for Transportation Fuels

California has adopted several transportation fuel laws and goals, and the California Energy Commission has been the responsible agency for the targets shown in the *California Goals and Transportation Fuels* table. In order to meet these goals the state allocates grants funds through the Assembly Bill 118 (AB 118) Program to help address barriers to the production and deployment of alternative fuels, vehicles, and infrastructure. Additional information on AB 118 is provided later in this section.

California Goals for Transportation Fuels	
Objective	State Goals and Milestones
Petroleum Reduction	Reduce petroleum fuel use to 15 percent below 2003 levels by 2020
Alternative Fuel Use	Increase alternative fuel use to 20 percent of on-road fuel demand by 2020 and 30 percent by 2030
In-State Biofuels Use	Increase biofuel use to one billion gasoline gallons equivalent (gge) by 2010, 1.6 billion gge by 2020, and two billion gge by 2050
In-State Biofuels Production	In-state production of 20 percent of biofuels used in California by 2010, 40 percent by 2020, 75 percent by 2050

Online Vehicle Comparison Tool

When considering a new fleet vehicle purchase, the Cool Fleets Web site (www.coolfleets.com/) has a free online calculator that can help the city identify the most cost-effective vehicle with the best environmental performance. It provides helpful information on a variety of indicators, including costs and greenhouse gas emissions. The user can compare each vehicle to itself or other models using different variables such as the lease term and average annual mileage scenarios. The user chooses the applicable fuel cost for their location and selects vehicles individually or by category.

Data provided by Cool Fleets include:

- *Total of all costs* - Sum of total fuel cost, total maintenance cost, total actual depreciation, and total interest cost.
- *Invoice amount* - Includes standard equipment with typical fleet options.
- *Manufacturer incentive* - Programs offered by each manufacturer. Additional incentives can be modified based on purchasing needs.
- *Monthly cost* - Total of all costs divided by months in service.
- *Total fuel cost* - Based on user input for cost per gallon, mileage, and months in service.

- *Effective depreciation rate* - The rate of depreciation for the portion of the vehicle's value that is consumed in use.
- *Total depreciation* - Total actual depreciation is the amount of the vehicle's value that is consumed in use.
- *Total maintenance* - Maintenance expenditures are based on Donlen's recommended service intervals at average national account prices. Includes tires at appropriate intervals.
- *Guide book average* - Based on the average of estimates from the Automotive Lease Guide and the Black Book Commercial Vehicle Value Guide (the industry standard for the field of Fleet/Remarketing).
- *Total interest cost* - Assumes a six percent annual fixed lending rate and a two percent depreciation rate.

The fleet manager can print vehicle comparison sheets from Cool Fleets that include the information bulleted above and use it to help in their new vehicle selection process. Another helpful resource for relevant data on new and used cars and trucks from current and prior model years is www.fueleconomy.gov. The user cannot manipulate as many features as Cool Fleets, but users can access data on used vehicles.

State Grants and Rebates

The California Air Resources Board (ARB) and California Energy Commission offer alternative transportation grants and rebates through 2015 under the AB 118 Program. Funding is allocated annually and the FY 2010-2011 budget for the Energy Commission AB 118 Program (www.energy.ca.gov/altfuels/) is about \$108 million. ARB manages about \$85 million in rebates and projects through the Air Quality Improvement Program (www.arb.ca.gov/msprog/aqip/aqip.htm).

The California Center for Sustainable Energy manages ARB's Clean Vehicle Rebate Project (www.energycenter.org/index.php/incentive-programs/clean-vehicle-rebate-project), which provides rebates for EV purchases. The Energy Commission has allocated funding for light-, medium-, and heavy-duty vehicles that use natural gas (\$13 million), as well as light- and medium-duty vehicles that use propane (\$3 million). Expanding alternative fuel infrastructure is another funding priority with allocations for electric chargers, CNG station upgrades/expansions, and additional E85 dispensers.

The Electric Vehicle Project

The San Diego region was selected to take part in the largest EV rollout in U.S. history, through the EV Project (www.theevproject.com). Beginning in December 2010, two major automobile manufacturers began selling EV sedans, the *Nissan Leaf* and *Chevrolet Volt*, in San Diego County.

The national project targets 16 major population areas in the U.S. as first markets for EVs. As such, the project includes deployment of nearly 15,000 EV chargers to create robust charging networks for EV drivers to utilize. Half of the EV Project funding (over \$100 million) comes from a competitive American Recovery & Reinvestment Act grant awarded to Ecotality North America, an EV charger manufacturer. Nissan North America, General Motors/Chevrolet, and the U.S. Department of Energy are national project partners. The San Diego Association of Governments (SANDAG) and San Diego Gas & Electric (SDG&E) are local project partners providing in-kind assistance.

In 2009, Ecotality organized a San Diego Electric Vehicle Advisory Committee that provides input to the EV Project. The EV Advisory Committee includes representation from local governments, the California Center for Sustainable Energy, the Port of

Through the EV Project, about 2,500 EV chargers will be installed around San Diego County before January 2012. Almost 1,500 will be at publicly-accessible sites and about 1,000 will be at residences.

San Diego, UCSD, Qualcomm, SDG&E, SANDAG, and other stakeholders. The EV charger installations are underway and expected to be completed by December 31, 2011. Many public sites throughout the region have been identified as potential locations for EV charging stations including marinas, restaurants, community and regional shopping centers, large venue entertainment, transportation corridors, schools,

hotels, airports, convenience retail, and retail shopping.

Over the next five years, most major automobile manufacturers are expected to introduce plug-in electric EVs. All EVs will be compatible with the standardized EV chargers installed through the EV Project. If the city would like to become an EV Project participant or host a publicly accessible EV charging site, opportunities are still available as of the writing of this document.

EV Project participants are qualifying EV purchasers that agree to have data on their charging habits aggregated into a U.S. Department of Energy study. The study includes the 15,000 vehicles in U.S. markets and will provide needed information on where future EV chargers should be sited across the country. In return for study participation, the EV purchaser receives its “home” (i.e., fleet location or residence) EV charger and installation at little to no cost.

For more information on the EV Project, contact your Energy Roadmap coordinator or Andy Hoskinson, San Diego Stakeholder Services Area Manager for the EV Project and Ecotality North America at (619) 559-2118 or ahoskinson@etecevs.com.

[THIS PAGE INTENTIONALLY LEFT BLANK]

4

Develop Employee Knowledge of Energy Efficiency

Developing employee knowledge of energy efficiency is another way for Encinitas to promote energy savings in city government operations and throughout the community.

Overview

This chapter identifies free educational seminars available to city employees at the San Diego Energy Resource Center (SDERC), located at the California Center for Sustainable Energy (CCSE) in Kearny Mesa in the City of San Diego. The SDERC is a program jointly provided by CCSE and San Diego Gas & Electric (SDG&E). In addition, local colleges and universities host educational programs. Also identified herein, are professional certifications on energy-related issues. SDG&E or the Energy Roadmap Program can help facilitate participation in certification programs and may be able to assist with enrollment costs.

Getting Started

As a first step in identifying educational, training, and certification opportunities, the city is asked to please identify the following:

- Staff positions or employees that could benefit from energy-related workshops and trainings such as those listed in this section,
- Other workshops or trainings of interest (even if not listed here); and
- Workshops or trainings that Encinitas may be interested in hosting at a city facility.

SDG&E and CCSE conduct hundreds of expert-facilitated seminars on a broad spectrum of energy topics at the SDERC. Workshop costs are covered by the SDERC and funded by California utility customers under the auspices of the California Public Utilities Commission unless otherwise posted. An RSVP is generally requested for workshops to ensure that adequate space and food are provided. For more information on programs hosted by the SDERC, contact CCSE at (858) 244-1177. For SDG&E workshops e-mail: seminars@sdge.com. CCSE and SDG&E publish a quarterly workshop calendar in print and online at: www.energycenter.org/erc.

The following table identifies quarterly workshops offered at the SDERC as well as energy-related training and certification programs that could benefit city employees.

Free Educational Seminars at the San Diego Energy Resource Center		Audience
Building Performance and Monitoring	- Energy management systems - SDG&E's kWickview energy management tool - Energy Star Portfolio Manager - Benchmarking tools - Building information modeling (BIM)	Facilities, public works
General Energy Workshops	- Energy Efficiency 101 - Electricity 101 - Basics of solar, basics of solar water heating - Lunch and learn topics	Layperson
Best Practices and Programs	- ENERGY STAR best practices - Rebate programs	Planning, public works, city administration
Online Workshop Calendar	To view upcoming workshops, visit www.energycenter.org/attend .	
Training and Certification Programs		Audience
Building Code Inspector Training	SDG&E offers free inspector training for city employees. Curriculum includes equipment identification and compliance, residential and commercial California Energy Code documentation and compliance, building plan verification for energy efficiency standards, and 2010 California Green Building Code.	Code inspectors, planning staff
Building Operator Certification (BOC)	SDG&E offers BOC Level 1 and 2 trainings and certifications to city staff at a reduced rate. BOC is a nationally-recognized training and certification program offering improved job skills and more comfortable energy-efficient facilities. The training is led by experienced, professional instructors.	Facilities, public works staff
Certified Energy Manager (CEM)	Certification is through the Association of Energy Engineers. CEM distinguishes high levels of competency and proficiency in energy management, demonstrating expertise in several areas ranging from standards, air quality, energy audits, lighting, procurement, and financing.	Facilities, public works staff
NATE Certification Exam (HVAC)	SDG&E and the Institute of Heating and Air Conditioning Industries, Inc. (IHACI) co-sponsor seminars designed to help experienced HVAC professionals prepare for successfully completing the North American Technician Excellence (NATE) Certification Exam.	Facilities, public works staff
LEED® Professional Credentials	The Leadership in Energy and Environmental Design (LEED®) designation acknowledges expertise in green planning, design, construction, operations, neighborhood development, and other sustainable practices. SDG&E will cover the cost of appropriate city employees to undergo training for a LEED® Professional Credential.	City administration, planning, facilities, public works, environmental services

Implement a Commuter Benefit Program

The city can achieve transportation-related energy savings by building on the Commuter Benefit Program offered to its employees. Such programs provide alternative transportation options to driving alone – and incentives to use them. As part of the Energy Roadmap Program, Encinitas will be offered free assistance and tools to design and implement a customized commuter benefit program, also known as a Transportation Demand Management program.

Implementing a program is an easy and cost-effective way to reduce energy consumption at the city: many commuter policies and benefits can be offered at no or little cost to Encinitas.

How it Works

A Commuter Benefit Program provides employees with alternative transportation options for their commute, as well as incentives for using them. It starts by bundling various commuting-related programs that meet the needs of your city and employees,

Commuter Program Benefits

By providing alternative transportation choices for its employees, Encinitas can:

- Improve traffic flow
- Set an example for residents and businesses
- Reduce commuter-related expenses
- Reduce oil consumption
- Help employees save time and reduce stress
- Reduce air pollution and greenhouse gas emissions

and including them in the benefits package for city employees.

A commuter program stands side-by-side with your agency's health benefits, helping to attract and retain talented staff, as well as improve overall employee satisfaction. A custom program could include everything from helping connect employees who want to carpool or vanpool with one another, to offering flexible work schedules and telework options, to providing free or reduced-cost transit passes.

Some of the programs are offered free by the San Diego Association of Governments (SANDAG). Others are inexpensive or come with subsidies. For example, SANDAG provides a \$400 per month subsidy for qualifying vanpools. The Commuter Benefit Starter Kit for Employers available through iCommute provides your agency with the tools to get started, including an overview of your options, sample policies, promotional materials, and tax benefit information.

The iCommute online system offers employees free and convenient ridematching and trip tracking tools. The site also allows your agency to create customized incentive programs for rideshare participants. Its convenient reporting feature details how many of your employees are participating and measures the agency's and employees' financial and environmental savings, including the amount of air pollution and greenhouse gas emissions avoided, cost savings, and fuel savings.

Getting Started

At the request of city staff, SANDAG staff made an overview presentation on the iCommute program at the January 12, 2011, meeting of the Encinitas City Council. The iCommute team has since begun working with city staff to learn more about the city's existing commuter benefits and discuss potential ways to enhance the city's existing commuter policies through the iCommute program.

For more information on iCommute programs and services and to download the Commuter Benefit Starter Kit for Employers, visit www.icommutesd.com, or contact Antoinette Meier at (619) 699-7381 or amei@sandag.org.

Leverage Planning and Development Authority

Local governments have the opportunity to promote energy efficiency in their communities by leveraging their authority over local planning and development activity. This chapter identifies the following ways in which the City of Encinitas could use its role in planning and development to promote energy savings from electricity, natural gas, and transportation fuel.

- 1. Integrate energy-saving measures into planning and development**
- 2. Include Transportation Demand Management (TDM) in development review**
- 3. Enable building energy retrofit projects**

First, it is important to note that the city already uses its role in planning and development to promote energy savings, such as its Green Building Incentive Program and Climate Action Plan.

1. Integrate Energy-Saving Measures into Planning and Development

As the city undertakes future planning activities and evaluates goals and policies related to energy efficiency and conservation, it is recommended that the menu of sample policy measures provided in **Appendix E** be referenced as additional opportunities to increase energy efficiency in the community. Opportunities include regulation of private development projects, amendments to local ordinances and the general plan, preparation of specific plans, and development of measures to mitigate significant environmental impacts under the California Environmental Quality Act.

The sample measures reflect the goals of state agencies like the California Public Utilities Commission, California Energy Commission, and Office of the Attorney General, and are organized into the following categories:

- Energy-efficient buildings
- Renewable energy and distributed generation
- Smart growth and livable communities
- Clean transportation options
- Energy-efficient use of water

2. Include Transportation Demand Management in Development Review

TDM is the application of strategies to reduce single occupancy vehicle travel by encouraging alternative transportation options. Including TDM measures in the development review process may offer developers creative, affordable, and effective ways to reduce vehicle trips and their impacts. Sample mandatory and voluntary ordinances for including TDM measures in new development projects are provided in **Appendix F**.

Through the entitlement, discretionary, or building permit process, Encinitas could require or provide voluntary incentives for inclusion of TDM measures as a method for reducing environmental impacts of vehicle traffic. The San Diego Association of Governments iCommute program offers free assistance to San Diego regional businesses and agencies in establishing and implementing customized TDM programs that reduce traffic congestion, fuel use, air pollution, and greenhouse gas (GHG) emissions.

3. Enable Building Energy Retrofit Projects

Existing buildings represent a significant energy-savings opportunity. Building energy retrofit programs facilitate energy efficiency projects in existing buildings, which in addition to saving energy can help property owners lower utility bills, improve comfort and indoor air quality, and support climate action planning by lowering community-wide GHG emissions. Participation in the planning of building energy retrofit programs would help the city take advantage of services and resources as they become available. Examples of services and resources include energy assessments for property owners, financing for the upfront costs of energy efficiency and renewable energy projects, and training for local contractors to perform installation and maintenance.

Three types of inter-related programs to promote building energy retrofits are:

1. Energy Upgrade California, which includes energy incentives available from federal, state, utility, and local government sources.
2. Financing mechanisms to address upfront costs of energy retrofits such as energy efficiency loans, liens, or mortgages.
3. Workforce development programs that train local contractors to perform energy assessments, product installations, maintenance, and other duties. (*Discussed in Chapter 8.*)

With the influx of federal stimulus funds that began in 2009, existing federal, state, and local energy efficiency programs have been expanded and are being coordinated in an effort to bring down the costs of home energy assessments, capital purchases, installations, and inspections. California has compiled all available programs under one program named Energy Upgrade California (www.energyupgradecalifornia.org). Energy Upgrade California coordinates federal, state, utility, and local government retrofit program outreach, incentives, contractor training, and participant qualifications.

Appendix G describes energy retrofit program resources and financing mechanisms.

[THIS PAGE LEFT INTENTIONALLY BLANK]

Market Energy Programs to Local Residents and Businesses

This section provides information to help the city become a resource on energy-saving programs and rebates available to local residents and businesses. Programs, rebates, and other resources for residents are identified in the tables below, including links for more information. Information regarding local and national educational resources such as ENERGY STAR is provided at the end of this section.

The city could help improve awareness and program participation by becoming an information source for energy-saving programs. For example, the city could make summary descriptions about available rebates and links to more information easily accessible through the City of Encinitas Web site, enhance and maximize the use of *EncinitasEnvironment.org*, or provide information through another convenient online portal.

California's Vision for Marketing, Education, and Outreach

Californians will be engaged as partners in the state's energy efficiency, demand-side management, and clean energy efforts by becoming fully informed of the importance of energy efficiency and their opportunities to act.

California Long-Term Energy Efficiency Strategic Plan

The following five outreach mechanisms are provided as sample ways in which the city can engage residents and businesses in energy programs:

1. Provide summary descriptions and links to San Diego Gas & Electric (SDG&E) programs and rebates and related resources on the City of Encinitas Web site or *EncinitasEnvironment.org*.
2. Include articles about opportunities to save energy with links to existing programs and community resources, like the California Center for Sustainable Energy (CCSE), in city newsletters (print or e-mail) or similar media.
3. Provide educational materials on saving energy at city venues such as the permit desk, parks and recreation areas, libraries, and the civic center. SDG&E, CCSE, and the San Diego Association of Governments (SANDAG) iCommute can provide materials about programs and services for residents and businesses.
4. Invite SDG&E, SANDAG iCommute staff, and CCSE to host an information booth on energy-saving programs or commuter programs at community events.

5. Help coordinate presentations by SDG&E and SANDAG iCommute staff to community organizations such as a neighborhood planning group or local chamber of commerce.

Comprehensive Energy Program Web Sites

Residential Energy-Saving Programs	www.sdge.com/residential/rebates.shtml
Commercial Energy-Saving Programs	www.sdge.com/business/rebatesincentives
Educational Resources for All - San Diego Energy Resource Center (SDERC) Online Workshop Calendar	Every year, the CCSE and SDG&E conduct hundreds of expert-facilitated seminars on a broad spectrum of energy topics at the Energy Resource Center. Use the online calendar to view workshops from both organizations. www.energycenter.org/attend
SANDAG iCommute	Free online gateway to commuter choices in the San Diego region; hosted by SANDAG. Includes 511, transit trip planner, online ride matching service, and cost of commute calculator. www.icommutesd.com/
Energy Upgrade California	www.energyupgradecalifornia.org

Resources for Businesses and Residents

Renewable Energy Programs

Self-Generation Incentive Programs	www.energycenter.org/index.php/incentive-programs/self-generation-incentive-program
The California Solar Initiative (CSI)	www.energycenter.org/index.php/incentive-programs/california-solar-initiative
CSI Thermal Program (Solar Water Heating)	www.energycenter.org/index.php/incentive-programs/solar-water-heating
Sustainable Communities Program	www.sdge.com/environment/sustainablecommunities/
California Energy Commission's Emerging Renewables	www.consumerenergycenter.org/erprebate/index.html
SDG&E Solar Initiative	www.sdge.com/environment/solar/sdSolarInitiative.shtml
Net Energy Metering (NEM)	www.sdge.com/nem/

Clean Transportation and Petroleum Reduction Programs

Clean Vehicle Rebate Project	www.energycenter.org/index.php/incentive-programs/clean-vehicle-rebate-project
SANDAG iCommute	www.icommutesd.com/
SDG&E Clean Transportation	www.sdge.com/cleantransportation/
The EV (Electric Vehicle) Project	www.theevproject.com/

Energy and Water

20-Gallon Challenge	The 20-Gallon Challenge is a call for residents and businesses to reduce our region's water use on average by 20 gallons per person, per day. Hosted by the San Diego County Water Authority. www.20gallonchallenge.com/
---------------------	---

Smart Grid

SDG&E Smart Grid Program	Smart meter and smart grid technologies are being deployed throughout the San Diego region and across the state. www.sdge.com/smartgrid
--------------------------	--

Energy Programs and Assistance for Local Businesses

Energy Efficiency and Demand Response

Business Incentives	www.sdge.com/business/rebatesincentives
Critical Peak Pricing	www.sdge.com/cpp
Technical Assistance and Technology Incentives	www.sdge.com/tati
Project Management Builder Services	www.sdge.com/builderservices
Summer Saver	www.sdge.com/vendor/summersaver/
On-Bill Financing	www.sdge.com/obf
Energy Savings Bid	www.sdge.com/bid
Energy Challenger (energy audit tool)	www.sdge.com/audit
Energy Efficiency Seminars	www.sdge.com/training

New Construction

Savings by Design	www.sdge.com/builderservices/savingsBD.shtml
Sustainable Communities Program	www.sdge.com/environment/sustainablecommunities/

Energy Programs and Assistance for Residents

Comprehensive Residential Web Sites

SDG&E's Residential Rebates and Services	All SDG&E residential programs can be accessed from this Web site. www.sdge.com/saveenergy
Retrofit Central	Retrofit Central is a one-stop shop for information on programs, incentives, technical assistance, and financing for energy efficiency and renewable residential retrofits. Once Energy Upgrade California is fully functional, it may be phased out. It is hosted by the CCSE at www.energycenter.org/retrofit .
PACE and AB 811 Programs	Property Assessed Clean Energy (PACE) or AB 811 programs were intended to give cities and counties the ability to offer low-interest loans for energy efficiency projects and solar panels to homeowners and small businesses. *PACE programs are currently on hold nationwide. CCSE provides current status of PACE and regional activities. www.energycenter.org/index.php/incentive-programs/pace-property-assessed-clean-energy

Energy Efficiency and Demand Response

Advanced Home Program	www.sdge.com/builderservices/programs/advancedhomes/index.shtml
Air Conditioning Tune-Ups	www.actimeprogram.com/ProjectCenter/
Summer Saver Program	www.sdge.com/summersaver/
Affordable Financing for Home Improvements	www.sdge.com/residential/homeImpFinance.shtml
Refrigerator-Freezer Recycling Program	www.arcaincutility.com/CA/SDGE/Step2_ZipCode.cfm?ServiceCompany=43
Clothes Washer Rebate Program	www.20gallonchallenge.com/programs_residential.html or (888) 376-3314
Residential Energy Survey	www.sdge.com/residential/resEnergyProfiles.shtml (800) 411-SDGE (7343)
Lighting Turn in Program	www.sdge.com/lighting
Tax Credits	www.energytaxincentives.org/

Energy and Water

WECalc Home Water-Energy-Climate Calculator	Free online tool from the Pacific Institute that estimates home water-related energy use and associated greenhouse gas emissions. www.wecalc.org/
SoCal Water Smart for Residential Customers	Available water efficiency product rebates. www.socalwatersmart.com/
Clothes Washer Rebate Program	www.20gallonchallenge.com/programs_residential.html or (888) 376-3314

New Construction Programs

Advanced Home Program	www.sdge.com/builderservices/programs/advancedhomes/index.shtml
New Solar Homes Partnership	www.sdge.com/environment/solar/solarForNewHomes.shtml

Low Income Assistance

Residential Rate Assistance Program	www.sdge.com/residential/assistance/assistServCare.shtml
The Energy Team Program	www.sdge.com/residential/energyTeam.shtml or (866) 597-0597
Programs for Customers with Special Needs	www.sdge.com/residential/assistance/otherCustomerServices.shtml
Neighbor to Neighbor	www.sdge.com/residential/assistance/financialAssistance.shtml
Multi-Family Affordable Solar Housing	www.energycenter.org/index.php/incentive-programs/multifamily-affordable-solar-housing

Local Educational Resource



San Diego Regional Energy Resource Center

Jointly provided by the California Center for Sustainable Energy and San Diego Gas & Electric

The San Diego Energy Resource Center (SDERC) is a community resource for energy information and provides a variety of workshops, continuing education, and certification courses in energy efficiency, renewable energy, and green building including HERS training, BPI certification, Leadership in Energy and Environmental Design certification, and solar installation training.

The SDERC is located at the CCSE at 8690 Balboa Avenue, Suite 100, San Diego, California 92123; call (858) 244-1177 or visit www.energycenter.org. SDERC hours are from 8 a.m. to 5 p.m. weekdays excluding national holidays.

Resources available from the SDERC include:

- Online workshop, training, and events calendar: CCSE and SDG&E conduct hundreds of expert-facilitated seminars on a broad spectrum of energy topics at the SDERC.
- Energy Connection eNewsletter: CCSE's free monthly eNewsletter provides current information on resources, regional energy issues, news, and other features.
- Reference and tool-lending library: The reference library offers books, DVDs, and periodicals on climate change, efficiency, green building, renewable energy, and transportation. Materials cover a broad range of information and are designed for those in a variety of professions and levels of education and knowledge.

National Educational Resources



ENERGY STAR Government Partnerships

In addition to appliance labeling, the ENERGY STAR program seeks partnerships with local businesses, congregations, industries, schools, and others. By becoming a Government ENERGY STAR Partner, a local government can receive recognition nationally and can co-brand local energy-saving initiatives with ENERGY STAR. More information is available at www.energystar.gov.

The U.S. Environmental Protection Agency and U.S. Department of Energy also host an annual ENERGY STAR Awards ceremony to honor organizations that have made outstanding contributions to protecting the environment through energy efficiency. For more information on government partnerships, visit www.energystar.gov/index.cfm?c=government.bus_government.

WaterSense® WaterSense Promotional Partners

WaterSense helps consumers identify water-efficient products and programs that meet WaterSense water efficiency and performance criteria. Products carrying the WaterSense label perform well, help save money, and encourage innovation in manufacturing. More information is available at www.epa.gov/watersense.

Local governments, utilities, and other organizations can become WaterSense Promotional Partners to help provide outreach on water efficiency measures. Jurisdictions can receive recognition nationally and can co-brand local water-saving initiatives with WaterSense as a promotional partner. For more information on promotional partners, visit www.epa.gov/watersense/partners/promotional.html.

8

Support Green Jobs and Workforce Training

Encinitas can increase local awareness of workshops, training, and employment resources available to its constituents. The city can make this information more widely available in several ways, such as including it on the city Web site, posting it on *EncinitasEnvironment.org*, or providing handouts at locations such as libraries and the Civic Center.

Most of the local resources identified in this section are available long-term. However, some workforce training was funded through the American Recovery and Reinvestment Act (ARRA) and may be discontinued after December 2012 if funding is not replaced.

California's Vision for Workforce Education and Training
By 2020, California's workforce is trained and fully engaged to provide the human capital necessary to achieve California's economic, energy efficiency, and demand-side management potential.
California Long-Term Energy Efficiency Strategic Plan

Training and Education Resources

The concept of green jobs is relatively new and includes a wide variety of professions. To help explain the concept and identify examples, the table below identifies sample green job fields and sample green jobs.

Sample Green Job Fields	Sample Green Jobs
Building retrofitting Mass transit-freight rail Smart grid Wind power Solar power Advanced biofuels Alternative transportation Vehicles and infrastructure	Electricians, heating, ventilation and air conditioning installers, carpenters, construction workers and managers, home builders, roofers, building inspectors, engineers (civil, mechanical, environmental, electrical), welders, metal fabricators, assemblers, transit and truck drivers, dispatchers, software engineers, technicians, machinists, power line installers and repairers, iron and steel workers, sheet metal workers, equipment operators, chemists, chemical technicians, agricultural workers, farm product purchasers, agricultural inspectors



The Green Career Network

The Green Career Network brings together green job seekers and green employers. Hosted by the California Center for Sustainable Energy (CCSE), this online portal provides job listings, trainings, and research for green jobs in renewable energy, energy efficiency, green building, transportation, sustainability, and environmental studies. More information is available at www.greencareernetwork.org.

Resources for job seekers on the Green Career Network include:

- Job postings and a list of green employers,
- A step-by-step guide to finding a green job,
- Available workforce training and education opportunities,
- Studies and reports on the green economy, industries, and market analysis, and
- Networking through free educational programs and events.

Resources for employers on the Green Career Network include:

- An online job board to post job announcements and review resumes,
- Information about on-the-job training programs that can reimburse up to 50 percent of wages or salaries earned by eligible new workers during training, and
- Information on how to get help from entities like the Small Business Administration and the Small Business Development Center that provide free business counseling, workshops, and training to help businesses.



Advanced Transportation Technology & Energy Center, San Diego Miramar College

Advanced Transportation Technology & Energy (ATTE) Centers were created to help California compete as a national leader in advanced transportation and energy technologies, and to transform the workforce in the rapidly developing, technology-driven transportation and energy industries. The ATTE Center at San Diego Miramar College is the regional center for San Diego County.

Courses, assistance, and outreach programs are tailored to the needs of regional employers and employees in California. The ATTE Center provides students, technicians, faculty, public, and other initiative centers with the education, training, and resources they need to effectively learn, teach, and work with advanced transportation and energy technologies, including:

- Electric, hybrid, and hydrogen fuel cell programs
- Gaseous fuel programs for light- and heavy-duty vehicles
- Intelligent transportation systems programs
- Railroad operation programs

- Light rail maintenance, aeronautics, and flight
- Technology programs and energy programs
- Motorcycle maintenance programs
- Automotive clean-air car emissions programs

The Miramar College ATTE Center is located at 10440 Black Mountain Road, San Diego, California 92126; call (619) 388-7673 or visit www.attemiramar.com for more information.



Cuyamaca Community College's San Diego Green Building Training Collaborative

The Grossmont-Cuyamaca Community College District (GCCCCD) was awarded ARRA funds to launch the San Diego Green Building Training Collaborative under California's Clean Energy Workforce Training Program. The collaborative trains unemployed or underemployed workers with previous construction experience to be building analyst professionals, water auditors, solar photovoltaic installers, and solar thermal installers.

Trainings serve all of San Diego County and are offered at Cuyamaca College in Rancho San Diego and Palomar College in the City of San Marcos. Certificates of achievement are awarded upon program completion. GCCCCD plans to continue the green building training collaborative after ARRA funds are expended. Cuyamaca College offers green workforce training certificates and degrees in water/wastewater technology, environmental health and safety, sustainable landscaping, and renewable energy. For more information, visit www.cuyamaca.edu/preview/cleanenergy/.

The San Diego Workforce Partnership

The San Diego Workforce Partnership works with public and private agencies, local businesses, and educational institutions to create workforce solutions for the San Diego region. It provides services for employers and job seekers, online access to workforce training and resource, and has ten One-Stop Career Centers located throughout San Diego County. The Workforce Partnership serves as this region's Workforce Investment Board. More information can be found at www.sandiegomatwork.com.

The nearest One-Stop Career Center to Encinitas is the North County Coastal Career Center, located at 1949 Avenida del Oro, Suite 106, Oceanside, California 92056. For more information, visit www.rescare.com/locations/nccc/index.php.



San Diego Regional Energy Resource Center

Jointly provided by the California Center for Sustainable Energy and San Diego Gas & Electric

The San Diego Energy Resource Center (SDERC) is a community resource for energy information and provides a variety of workshops, continuing education, and certification courses in energy efficiency, renewable energy, and green building, including HERS training, BPI certification, Leadership in Energy and Environmental Design certification, and solar installation training. The SDERC is located at CCSE, 8690 Balboa Avenue, Suite 100, San Diego, California 92123. For more information, contact (858) 244-1177 or visit www.energycenter.org. Hours are 8 a.m. to 5 p.m., Monday through Friday.

Statewide Resources for Training and Education



Grid Alternatives

Grid Alternatives offers volunteer opportunities to gain hands-on solar experience and network with others interested in renewable energy, the environment, and our communities. More information is available at www.gridalternatives.org.



Solar Training Institute

The Solar Training Institute provides accelerated training classes for contractors, electricians, engineers, solar energy entrepreneurs, sales people, or others considering a career change to the growing solar industry. More information is available at www.trainingforsolar.com.



California Community Colleges Economic and Workforce Development

The California Community Colleges Economic and Workforce Development (CCCEWD) program provides industry-specific workforce education, training, and consulting services to help California businesses compete. CCCEWD is the state program from which the local ATTE Center, San Diego Workforce Partnership, and One-Stop Career Centers stem. More information is available at www.cccewd.net.

Looking Forward

This Energy Roadmap provides Encinitas with a framework for continued efforts to save energy in government operations and the community. After the San Diego Association of Governments (SANDAG) Energy Roadmap Program ends in 2012, there are local, state, and federal funding opportunities for the city to continue energy-saving activities, either on its own or in partnership with SANDAG. These funding sources are described below, followed by non-financial resources.

Energy-Saving Funding Opportunities

Local Government Partnerships with San Diego Gas & Electric

The SANDAG Energy Roadmap Program is primarily funded through a local government partnership with San Diego Gas & Electric (SDG&E). The utility manages several local government energy efficiency partnerships in the region for jurisdictions, public agencies, and the California Center for Sustainable Energy. The duration is typically three years, and they are approved by the California Public Utilities Commission (CPUC).

Prior to the start of new program cycles, SDG&E announces a request for abstracts for future local government partnership programs. The next program cycle, which will be determined by the CPUC, will likely begin in January 2014. Using its Energy Roadmap as a guide, Encinitas can decide if it would like to propose to SDG&E its own local government partnership, have SANDAG continue to serve as a mechanism to provide member agencies with added energy efficiency services, or take on another course of action.

Local Government Energy Efficiency Partnerships have three focus areas:

1. Identify energy efficiency savings in municipal sites,
2. Utilize core energy efficiency programs, and
3. Engage the community on energy efficiency.

The County of San Diego, City of Chula Vista, and the City of San Diego have their own local government partnerships with SDG&E. Examples of programs funded through these partnerships include:

- Municipal facility retrofit for energy efficiency improvements,
- Strengthened building energy codes and code enforcement,
- Land use planning and design,

- Education and outreach,
- Compact fluorescent light bulb recycling programs,
- Green building, permit expedite, and fee reduction programs,
- Peer-to-peer best practices and networking,
- Staff training programs, and
- Energy plan development.



State Energy Program Grants and Energy Efficiency and Conservation Block Grants



The U.S. Department of Energy (DOE) and California Energy Commission release State Energy Program solicitations that support transportation, residential, commercial, agricultural, industrial, institutional energy efficiency, and renewable energy programs.

Both agencies also release Energy Efficiency and Conservation Block Grants (EECBG) solicitations. The EECBG provides local government grants to reduce fossil-fuel emissions, reduce total energy use, and improve energy efficiency and conservation in the transportation and building sectors. Grants originate from DOE and are released from both the Energy Commission and DOE. For program opportunities, visit www.energy.ca.gov/contracts/index.html.

Non-Financial Resources for Local Governments



The Beacon Award

The Institute for Local Governments' California Climate Action Network (CCAN) has created the Beacon Award to recognize cities and counties that reduce GHG emissions and save energy. To receive a silver, gold, or platinum Beacon Award, jurisdictions must achieve measurable GHG reductions and energy savings in agency facilities, and achieve measurable GHG reductions and promote energy conservation activities in the community.

Once a local government applies, it is designated as a Beacon Award program participant, and will then begin working toward achieving the first Beacon Award level. There is no deadline to apply; applications will be accepted on an ongoing basis. Your Energy Roadmap coordinator can identify necessary next steps for Encinitas to participate, or visit www.ca-ilg.org/BeaconAward for more information.

San Diego Gas & Electric

As described in previous chapters, SDG&E (www.sdge.com) manages a variety of energy-saving programs that:

- Promote energy efficiency, demand response, and conservation programs, services and resources, and
- Provide energy education and outreach to the community.



California Center for Sustainable Energy

The California Center for Sustainable Energy (CCSE) (www.energycenter.org) works with local governments on several initiatives including:

- The San Diego Regional Retrofit Advisory Committee, that includes several local jurisdictions, SANDAG, and SDG&E, and
- The Energy Upgrade California program.



Energy Policy Initiatives Center

The Energy Policy Initiatives Center (EPIC) is a nonprofit academic and research center of the University of San Diego, School of Law that studies energy policy issues affecting the San Diego region and California. EPIC serves as a source of legal and policy expertise, and provides information on the development of sustainable solutions that meet the region's future energy needs. For more information, contact (619) 260-4589 or visit www.sandiego.edu/epic/.



CleanTECH San Diego

CleanTECH San Diego is a non-profit organization that works to accelerate San Diego as a world leader in the clean technology economy. CleanTECH San Diego stimulates innovation and advances the adoption of clean technologies and sustainable industry practices for the economic, environmental, and social benefit of the greater San Diego region. For more information, visit www.cleantechsandiego.org.



San Diego Association of Governments

SANDAG Energy and Climate Change Planning Program staff is knowledgeable about federal, state, regional, and local issues and can be a resource for jurisdictions after their Energy Roadmaps are completed. For more information on SANDAG energy and climate change planning, contact Susan Freedman at (619) 699-7387, sfr@sandag.org or visit www.sandag.org/energy.



SANDAG iCommute Program

The SANDAG iCommute team can assist local governments with staff commuter programs, transportation demand management ordinances, online tools, and outreach on alternative transportation options for the commute. Contact Antoinette Meier at (619) 699-7381, amei@sandag.org or visit www.icommutesd.com.



Statewide Energy Efficiency Best Practices Coordinator

Patrick Stoner serves as the Statewide Local Government Energy Efficiency Best Practices coordinator. The position is part of the CPU's 2010 through 2012 statewide energy efficiency programs. Like SANDAG is available to you locally, Mr. Stoner is a statewide resource. The statewide coordinator develops and distributes best practices case studies, provides information and examples of energy efficiency policies and programs, provides materials that may help local governments implement climate action plans, and serves as a resource to help local government energy programs achieve success. Mr. Stoner is housed at the Local Government Commission (LGC) and has been part of the LGC since 1993. He can be reached at (916) 448-1198, extension 309 or e-mail pstoner@lgc.org.

Statewide Energy Efficiency Collaborative

The Statewide Energy Efficiency Collaborative (SEEC) was formed in 2010 as an alliance to help cities and counties reduce GHG emissions and save energy. SEEC (www.californiaseec.org/) serves as a statewide local government partnership and is an alliance among the LGC, Local Governments for Sustainability ICLEI, the Institute for Local Government, and California's four investor-owned utilities, including SDG&E. Resources provided by these agencies are described below.

- LGC provides free Webinars, holds an annual statewide conference, and provides peer-to-peer networking opportunities,
- ICLEI is conducting a series of workshops and trainings for local governments on taking key steps to reduce GHG emissions, and
- Institute for Local Governments' CCAN is providing recognition for cities and counties through the Beacon Award.

www.sandag.org/energy



This Program is a collaboration between SANDAG and San Diego Gas & Electric®.

