

Imperial Beach Energy Roadmap



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Energy Roadmap Program

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Energy Roadmap for Imperial Beach

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Introduction

This energy management plan, or “Energy Roadmap,” provides a framework for Imperial Beach 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 Imperial Beach Energy Roadmap charts a path to saving energy in city 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 cars, alternative fuels, and transportation demand management strategies to save energy and fight climate change, 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 Imperial Beach has taken actions to save energy and lower costs long before participating in this program.

Prior to undergoing energy assessments at city buildings in 2010, Imperial Beach had installed new heating and air-conditioning systems to reduce energy costs and provide system improvements. The city also installed:

- New "cool" roofs on city hall, the Sheriff station and community room
- Energy efficient double-pane argon windows
- Energy-efficient lighting equal or better than California’s building code

Imperial Beach has been using energy efficiency to save energy and lower costs prior to participating in the Energy Roadmap Program.

These proactive measures, performed by the city, directly contributed to the positive energy performance benchmarked at Imperial Beach's municipal buildings.

For the community, Imperial Beach manages the **Clean and Green Neighborhood**

Revitalization Program, which provides a ten-year grant for very low, low, and moderate-income individuals and families to improve energy and water efficiency, health and safety, and/or enhance the physical appearance of their home and property. Opportunities may exist for the city expand its clean and green services through new residential retrofit and finance programs (Energy Upgrade California) discussed in chapter six of this Roadmap.

Imperial Beach has conducted a greenhouse gas (GHG) inventory of city-operated and community-wide emissions, successfully completing the arduous step of identifying and quantifying local sources of greenhouse gases. The city accomplished this through its participation in the San Diego Regional Climate Protection Initiative, spearheaded by ICLEI-Local Governments for Sustainability USA (ICLEI). The Imperial Beach Energy Roadmap can help the city implement recommendations identified in its Greenhouse Gas Emissions Inventory.

In 2009, Imperial Beach applied to the Energy Commission for Energy Efficiency and Conservation Block Grant (EECBG) funds and received almost \$145,400 to undertake a street light retrofit project. The retrofit project will offer the city improved energy savings, lower maintenance, and reduced impact to the environment.

By building on its existing energy-saving efforts and taking advantage of some or all of the opportunities identified herein, Imperial Beach 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, protecting the global climate, supporting green jobs, and improving quality of life for everyone in Imperial Beach.

Section I. 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 section on saving energy in government operations identifies five distinct opportunities for Imperial Beach to lead by example with its buildings and facilities, vehicles, and its 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**

Section II. 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 its 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 climate change emissions in most communities. Therefore, saving energy benefits the environment, puts money in the pockets of households and businesses alike, and also supports growing economic opportunities, including well-paying, green jobs.

This section of the Energy Roadmap identifies the following opportunities for Imperial Beach to lead its community with innovative programs for energy efficiency, sustainability, and climate change:

- 6. Leverage City Authority over Planning and Development**
 - a. Integrate energy-saving measures into planning and development review
 - b. Include transportation demand management 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 like utility bills and gasoline
- Developing measures to reduce greenhouse gas (GHG) emissions from government operations and community activities, as part of a local 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 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 whose work deals with energy issues

Imperial Beach's Web site can be a portal for local residents and businesses to access energy-saving programs and rebates.

Handouts on green jobs and training opportunities can be located at the city hall campus and library.

- Offering commuter 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

About the Energy Roadmap Program

The Energy Roadmap Program is a partnership between the San Diego Association of Governments (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 through pilot Sustainable Region projects undertaken through SANDAG and the California Center for Sustainable Energy with 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

This chapter of the Energy Roadmap summarizes:

- Free building assessments provided to the city,
- Energy-saving opportunities identified at each site, and
- Costs and payback to the city to undertake the energy-saving projects.

Engineering review and rebate analysis was performed on audits from 2008 of the city hall campus, Sports Park Recreation Center, pumping station, Marina Vista Center, and public works building.

Energy is a major operating cost for local governments. By identifying energy-efficiency measures that reduce utility bills and greenhouse gases, the city can achieve lower energy costs and use those savings for other government services.

Energy Assessments

In 2010, three types of energy assessment services were provided at no cost to the city:

1) A review of energy audits performed by SDG&E in 2008 and update of rebate program information, 2) New preliminary energy assessments, called “Energy Report Cards,” of sites determined by municipal staff, and 3) More in-depth energy audits for a subset of government buildings based on their Report Cards and Public Works Department direction.

“Energy Report Cards” were created for the Imperial Beach City Hall campus, Marina Vista Center, Sports Park Recreation Center, and public works building.

Six municipal sites (the city hall campus includes the fire station and emergency operations center) underwent preliminary energy assessments that determined each site’s baseline energy use and benchmarked it against similar building types in the country. Benchmarking is a useful tool to judge a site’s energy performance compared to the national or state averages, and it is a new requirement to participate in SDG&E’s rebate and incentive

programs. Many of Imperial Beach’s buildings performed well on their assessments, provided as “Energy Report Cards” in **Appendix A**. These assessments included the updating of rebate information for the older audits so that Imperial Beach can access the rebates and incentives currently available.

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

Two online tools were employed to help determine how “good” or “bad” a site was performing. SDG&E’s *Energy Waves* program provided historical energy usage and will enable the city to continue monitoring energy consumption/site performance

online. The U.S. Environmental Protection Agency’s (EPA) *Portfolio Manager* program identified how each site compared against national averages for similar facilities, and provided climate change information in carbon dioxide equivalent (CO²E).

Through regular maintenance and inspection, most city buildings and facilities are running efficiently. Three city sites underwent more comprehensive energy audits to identify why their report cards showed high energy usage, high utility bill costs, or were inconsistent with energy benchmarks for that type of building. The audits were undertaken to find energy-efficiency improvements in indoor/outdoor lighting; heating, ventilation and air conditioning (HVAC); building controls; and overall building operations and performance. The engineering assessments, called “Energy Audit Findings,” included utility rate review, recommended retrofit projects, and rebate programs and costs. The Energy Audit Findings are included as **Appendix B** and summarized below.

Imperial Beach’s city hall campus, Marina Vista Center, and public works building underwent comprehensive energy audits in 2010.

EFM Solutions, an engineering firm and small business in San Diego, performed all site assessments on behalf of SANDAG and provided the Public Works Department with the project results in the form of the Energy Report Cards, Energy Audit Findings, and spreadsheets of current rebates for the older audits.

Energy Audit Findings

The city has the potential to save \$7,324 every year on its utility bills by implementing the energy conservation measures listed in the following *Potential Savings by Energy Conservation Measure* table. 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 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 shown in the *Energy Conservation Measure Economics* table. The simple payback is the estimated time it would take to pay-off the net costs through energy savings. 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.

Potential Savings by Energy Conservation Measure

Location	Measure	Annual Electricity Savings		Annual Greenhouse Gas Savings	
		kWh	Percent	Metric Tons CO ² E	Percent
Public Works Building	Building night-time shutdown	14,243	21%	4.70	12%
Public Works Building	Interior lighting retrofits	19,838	29%	6.54	16%
City Hall	Building night-time shutdown	10,678	5%	3.52	5%
City Hall	Interior lighting retrofits	9,217	5%	3.04	4%
Marina Vista Center	Interior lighting retrofits	2,684	5%	0.89	4%
Total		56,660	18%	18.69	14%

Notes.

1. Energy assessments included HVAC systems, indoor and outdoor lighting, and building controls.
2. No natural gas savings were found.
3. HVAC units were all in good condition.

Energy Conservation Measure Economics

Measure by Location	Annual Bill Savings		Gross Project Implementation Cost (est.)	Total Rebates and Incentives	Net Project Cost (est.)	Simple Payback (years)
	Dollars	Percent				
Public Works Bldg Shutdown	\$1,798	12%	\$14,000	\$1,282	\$12,718	7.1
Public Works Lighting Retrofits	\$2,344	16%	\$9,271	\$1,705	\$7,566	3.2
City Hall Bldg Shutdown	\$1,348	4%	\$14,000	\$961	\$13,039	9.7
City Hall Lighting Retrofits	\$1,433	4%	\$6,740	\$1,469	\$5,271	3.7
Marina Vista Center Lighting Retrofits	\$401	4%	\$3,013	\$625	\$2,388	6.0
Total	\$7,324	12%	\$47,024	\$6,042	\$40,982	5.6

Notes.

1. Gross and net installation and equipment costs are estimated and do not replace product specifications and contractor bids.
2. Above energy conservation measures can qualify for zero-percent financing through SDG&E program.

Potential Implementation Strategy for Increasing Energy Efficiency

1. Undertake lighting retrofit projects for the city hall campus, public works building, and Marina Vista Center.
2. Undergo further engineering study of night-time shutdown at public works building that includes additional energy and cost analysis of energy, security and fueling systems, as well as shutdown over-ride equipment.
3. If the engineering study confirms cost and efficiency benefits to the city, while not impeding building access or operation, undertake the night-time shutdown project at the public works building.
4. Monitor implementation of night-time shutdown and consider for city hall at a later date.

Finance Options for Energy Projects

Many SDG&E rebates and incentives exist to cover all or part of the costs for various energy-efficiency improvements. Additionally, Energy Efficiency and Conservation Block Grants (EECBG) are used by many jurisdictions to pay for remaining upfront costs. If EECBG and other grant funds are not available and funding is still needed, Imperial Beach could have upfront project costs addressed through the SDG&E On-Bill Financing Program. EFM Solutions has been contracted by SANDAG to assist local governments in identifying the processes and steps to receive rebates, participate in on-bill financing, and/or apply for California Energy Commission low-interest loans. Your Energy Roadmap coordinator can facilitate this.

San Diego Gas and Electric TM Rebates and Incentives

As part of the energy audit findings, EFM Solutions identified the appropriate SDG&E rebates and incentives for each municipal site. SDG&E energy-efficiency programs are reviewed and updated every two to three years, so current programs differ from those of 2009, and will likely change again in 2012, when the next update is expected to occur. This is why the city received additional review of energy audits from 2008, and a spreadsheet of the incentives for which it now qualifies. Generally, programs that apply to commercial businesses also apply to public agencies. To review all of SDG&E's rebate and incentive programs, see chapter 7 of this Energy Roadmap or visit www.sdge.com/business/rebatesincentives/.

Zero Percent Interest On-Bill Financing from SDG&E

SDG&E provides interest-free, unsecured financing to qualified commercial and taxpayer-funded customers for the installation of energy-efficient upgrades. Financed equipment must qualify for a rebate or incentive from SDG&E's rebate/incentive program(s). EFM Solutions and the city's SDG&E account representative, Kraig Akers, have met with Public Works Department and discussed on-bill financing. The program for public agencies includes:

- Zero-percent financing on qualifying measures for up to ten years
- Offsets to energy-efficient upgrade costs after rebates and incentives through SDG&E
- Loan amounts that range from a minimum of \$5,000 up to \$250,000 per meter
- Loan installments that are added to monthly SDG&E bills
- For more information, contact Kraig Akers at KWakers@semprautilities.com or visit www.sdge.com/business/rebatesincentives/programs/onbillfinancing.shtml.

Low Interest Loans from California Energy Commission

The 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. Again, EFM Solutions can assist Imperial Beach with applying for this loan, if needed. For more program information, contact the California Energy Commission's Special Projects Office, (916) 654-4104, e-mail: pubprog@energy.state.ca.us, or www.energy.ca.gov/efficiency/financing.

Post-assessment assistance in identifying energy project financing and implementation is a service provided to Imperial Beach through the Energy Roadmap Program. Contact your Energy Roadmap coordinator for further assistance.

Demonstrate Emerging Energy Technologies

In addition to energy assessments and improving efficiency at city government facilities, Imperial Beach can showcase emerging energy-efficient technologies at suitable locations through SDG&E's Emerging Technologies Program. The city also can encourage interested local businesses and residents to demonstrate emerging energy technologies through this program.

If Imperial Beach is interested in hosting a demonstration or knows of sites in the community that may be interested, your Energy Roadmap coordinator can arrange a meeting with the SDG&E emerging technologies staff. SDG&E will provide all of the relevant information, including how to participate, eligible technologies, and any associated costs.

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 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 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

Imperial Beach manages fleet vehicles for several city departments and services.

Excluding trailers, specialized equipment, and emergency vehicles, there are 30 vehicles composed of light duty sedans, small and large pick-up trucks, and one sport utility vehicle. The city can achieve transportation-related energy savings through actions that promote fuel conservation, efficiency, and an increased use of clean 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 chargers in history and approximately \$40 million worth of equipment and services have been dedicated to the San Diego region. As of this report writing, there are still opportunities to both become an EV Project participant, and/or to host a publicly accessible EV charging site(s).

Fuel Conservation and Efficiency

Fleet Planning

There are many conservation and efficiency measures that a city, or fleet manager, can use to reduce petroleum use in the municipal fleet. To increase overall fleet fuel efficiency, the Federal Energy Management Program (FEMP) recommends focusing on increasing the fuel efficiency of the least efficient vehicles first. Also, the U.S. Department of Energy's Petroleum Reduction Planning Tool (<https://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 one or a combination of methods bulleted below.

- 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 (VMT) 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 percent savings), and the free online tool will identify how much savings are achieved based on the fleet information entered and measures selected. Your Energy Roadmap coordinator can assist the city with the online tool.

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 spending on transportation. The fleet manager can review the scheduling and routing of applicable vehicles to determine if improvements to fuel economy can be made. Before grabbing for the keys, employees can consider the following:

- Other communication options that could serve the trip's purpose (e.g., conference call, e-mail or Web cast),
- Non-vehicle options available (e.g., walking, bicycling and transit),
- Shared vehicle options like carpooling with other staff, and
- Using the most efficient (best miles per gallon or MPG) fleet 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 can offer its employees.

- Drive sensibly. Aggressive driving (speeding, rapid acceleration, and braking) wastes gas. It can lower gas mileage by 33 percent at highway speeds and by five percent around town.
- Observe the speed limit. While each vehicle reaches its optimal fuel economy at a different speed, gas mileage usually decreases rapidly 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 gas.
- Remove excess weight. Avoid keeping unnecessary and heavy items in vehicles. An extra 100 pounds can reduce MPG 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. Idling gets zero miles per gallon. Cars with larger engines typically waste more gas at idle than do cars with smaller engines.
- Use cruise control. Using cruise control on the highway helps to maintain a constant speed and, in most cases, save gas.

- Use overdrive gears. Engine speed goes down when in overdrive gears. This saves gas and reduces engine wear.
- Keep tires properly inflated. Check tires monthly for proper inflation. Under-inflated tires can lower gas mileage 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 is dependent on several factors including:

- Cost of vehicles,
- Availability of fuel supply,
- Grant and tax credits available,
- Whether considering purchase of new vehicles,
- Whether considering retrofits/conversions of existing fleet vehicles, and
- Ability to address any vehicle maintenance that may differ from standard practice.

The following tables summarize fleet uses for alternative fuels, local refueling availability, and infrastructure costs. **Appendix C** provides a description of each alternative fuel and more detail about their applications.

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 traditional diesel fuel respectively.

3. E.g., traffic checker, neighborhood vehicle, other off-road 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 Availability and Infrastructure

Fuel	Existing Fueling Infrastructure within ten miles of Imperial Beach ¹ and In County	Cost of Additional Fueling/Charging Infrastructure	Availability of Production-Distribution Infrastructure
Electric Charging	Sites not publicly listed yet. Potential opportunity to still have chargers (EVSE) sited at municipal sites. 1,450 public Level 2 EVSE, 50 public DC Fast Charge EVSE, and 1,000 home Level 2 EVSE in county by 12/31/11. ²	Public Level 2: \$2,500-\$5,000 ³ Residential Level 2: \$800 to \$1,500 ³	Existing electricity grid and distributed energy sources.
Biodiesel	Two existing private sites in vicinity. Two public, five private in county. Also, four cities replacing some diesel fuel with biodiesel: 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 Fuels.
CNG	One public, six private within ten miles of city. Total of seven public, 15 private in county.	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	One public in vicinity, 19 public in county	\$65,000	Existing
E85	Three public in county.	\$100,000 to \$250,000	Storage and distribution facilities needed in order to scale-up consumption
LNG	Two private in county.	Large station: \$1,200,000 Combined LCNG and LNG station: \$1,600,000	Existing, but West Coast off-shore LNG terminals needed
Hydrogen	One private in county.	\$500,000 to \$5,000,000	Significant investment required

Notes:

1. Site names, addresses, and distances are provided in **Appendix C**.
2. Numbers represent all of San Diego County and are being deployed as part of the EV Project, described on following page. Contact your Energy Roadmap coordinator if interested in having chargers at public sites in city.
3. Some if not all costs for installation and charging equipment listed in table are currently subsidized through the EV Project.

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 has funded a grant program (the AB 118 Program) to help address barriers to the production and deployment of alternative fuels, vehicles, and infrastructure.

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 lease term and average annual mileage scenarios. The user chooses the applicable fuel cost for his/her location, selects vehicles individually, or by a vehicle 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 both Automotive Lease Guide and Black Book guidebook estimates.
- *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 good online 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 and California Energy Commission offer alternative transportation grants and rebates through 2015 under the AB118 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. The Air Resources Board (ARB) manages about \$85 million in rebates and projects through the Air Quality Improvement Program (www.arb.ca.gov/msprog/aqip/aqip.htm).

Locally, the California Center for Sustainable Energy manages ARB's Clean Vehicle Rebate Program (www.energycenter.org), which provides rebates for electric vehicle 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 across the state 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 electric vehicle (EV) rollout in history, through the EV Project (www.theevproject.com). Beginning in December 2010, two major automobile manufacturers began selling EV sedans, the *Nissan Leaf* and *Chevy 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 ARRA 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. SANDAG and 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 San Diego, UCSD, Qualcomm, SDG&E, SANDAG, and other stakeholders. The EV charger installations are underway and will be completed by December 31, 2011. Many public sites have been determined including marinas, restaurants, community and regional shopping centers, large venue entertainment, transportation corridors, schools, hotels, airports, convenience retail, and retail shopping.

Through the EV Project, about 2,500 electric vehicle (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 homes.

Over the next five years, most major automobile manufacturers will introduce plug-in electric vehicles and all vehicles will be able to utilize 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 report.

EV Project participants are qualifying electric vehicle 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 (fleet location or residence) EV charger and installation at little to no cost. If the city is interested in test-driving an EV, the Enterprise location on Balboa Avenue will have a rental Nissan Leaf later this year.

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.

4

Develop Employee Knowledge of Energy Efficiency

The purpose of this chapter is to provide the city with sample educational and training opportunities (many at no cost) available to municipal employees at the San Diego Energy Resource Center, a resource provided by the California Center for Sustainable Energy and SDG&E. In addition, energy training classes and certifications that are available in the region are identified. SDG&E and/or the Energy Roadmap Program may be able to facilitate these opportunities for the city or cover enrollment costs.

In order to provide municipal employees with pertinent education opportunities, the Energy Roadmap coordinator is asking for Imperial Beach to:

- Identify staff positions (or staff) that could benefit from workshops and trainings at the San Diego Energy Resource Center and/or other venues;
- Identify any types of energy efficiency workshops or training of interest to Imperial Beach (even if not listed in this section); and
- Identify any types of workshops or training that the city would be interested in hosting at a municipal site or within South County.

The largest source of energy workshops in the region is at the San Diego Energy Resource Center, located at the California Center for Sustainable Energy (CCSE) in Kearny Mesa. The Energy Resource Center is a partnership program between SDG&E and CCSE. In addition, local colleges and universities host educational programs.

For more information on programs hosted by the Energy Resource Center, contact CCSE at (858) 244-1177 or visit www.energycenter.org. CCSE and SDG&E publish a quarterly workshop calendar and provide the information online. Typically, the workshops are provided at no cost, but if there is a fee, it is posted. An RSVP is generally requested for workshops to ensure that adequate space and food are provided.

The following page provides examples of quarterly workshops offered locally, as well as specific training and certification programs in which municipal staff can participate.

Free Educational Seminars at the 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	CCSE and SDG&E conduct hundreds of expert-facilitated seminars on a broad spectrum of energy topics at the Energy Resource Center. To view upcoming workshops from both organizations, visit www.energycenter.org/attend .	
Training and Certification Program	Description	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/certifications to city staff at a reduced rate. Building Operator Certification 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 (AEE). 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® Accredited Professional (AP)	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 LEED AP training. Your Energy Roadmap coordinator can facilitate this for the city.	City administration, planning, facilities, public works, environmental services

Implement a Commuter Benefit Program

The city can achieve transportation-related energy savings by offering a commuter benefit program for its employees. Such a program provides alternative choices to the drive-alone commute, and can include everything from helping connect employees who want to carpool with one another, to offering flexible work schedules and telework options, to providing free or reduced-cost transit passes. Some programs are offered

Benefits of a Commuter Program

By facilitating more transportation choices for its employees, Imperial Beach can:

- Improve traffic flow
- Set an example for residents and local businesses
- Reduce oil consumption
- Help employees save time, reduce stress, and spend less money on their commute
- Reduce air pollution and climate changing emissions

free by SANDAG and others are inexpensive or come with subsidies.

For example, SANDAG provides a \$400 per month subsidy for qualifying vanpools.

How it Works

Your Energy Roadmap coordinator will bring SANDAG iCommute program representatives to the city to explain the program, commuter options, incentive options, and program-tracking options. Based on

what the city is interested in pursuing, iCommute will identify programs that meet both city and employee needs. These programs can be bundled together for inclusion in a city's employee benefits package.

The iCommute online system (www.icommutesd.com) offers free and convenient ride-matching and trip-tracking tools for both the city and its employees. Reporting features are available to track the level of employee participation, identify associated financial savings, and identify environmental savings, such as the amount of air pollution and greenhouse gas emissions avoided.

When the city would like to get started by hearing more details about the local commuter programs available, your Energy Roadmap coordinator will arrange a meeting with iCommute program representatives. Imperial Beach also may contact Antoinette Meier, SANDAG iCommute program, at (619) 699-7381 or amei@sandag.org. The iCommute program is a transportation demand management (TDM) program offered to employers in the region including cities, businesses, universities, hospitals, the military and others.

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 details several ways in which the City of Imperial Beach could use its planning and development authority 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 in development review**
3. **Enable building energy retrofit projects**

First, the Roadmap has identified current projects in which the city is using its planning and development review authorities to promote energy savings.

Current Projects

Imperial Beach already uses its local authority to promote energy efficiency. Two current projects in the city demonstrate the integration of energy considerations into local planning activities and development projects, the **Commercial Zoning Review** and the proposed **Bikeway Village Project**.

Commercial Zoning Review (draft)

Currently underway, the Commercial Zoning Review recommends zoning, general plan, and local coastal plan amendments that would increase the potential for higher quality developments in the commercial zones of the city. Several of the recommendations promote a more energy-efficient community by fostering higher densities, active commercial areas, high levels of pedestrian activity, mixed-use development, as well as reduced parking requirements. While the recommendations are subject to change until the review is final, incorporating these types of provisions into



the city's ordinances and planning documents will result in a more energy-efficient community.

The Bikeway Village Project (proposed)

The Bikeway Village is a proposed cyclist-oriented rest park, hostel, and multi-unit commercial building in Imperial Beach. The project is intended as a rest stop and haven for bicyclists using the adjacent Bayshore Bikeway with amenities like a water bottle refill station, seating areas, and public restrooms.



Possible uses include a bike shop, a variety of fitness retailers, a gym, cafes, and a boutique hostel oriented toward bicycle tourists. With its orientation to bicyclists and the Bayshore Bikeway, and site features like rooftop solar and LEED certification, this proposed project demonstrates the integration of energy-saving principles into a development project in the city.

1. Integrate Energy-Saving Measures into Planning and Development

As the city undertakes future planning activities, and development projects continue to be proposed, Imperial Beach may consult the menu of sample policy measures in **Appendix D** for additional opportunities to increase energy efficiency in the community. Measures 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 (CEQA).

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

Including transportation demand management (TDM) measures in the development review process may offer developers creative, affordable, and effective ways to reduce vehicle trips and their impacts.

Through the building permit process, Imperial Beach could require or provide voluntary incentives for inclusion of TDM measures as a method for reducing environmental impacts of vehicle traffic generated by new projects. Sample mandatory and voluntary ordinances for including TDM measures in new development projects are provided in **Appendix E**.

3. Enable Building Energy Retrofit Projects

Two actions that Imperial Beach could take to expand energy-efficient building retrofit projects in the community are:

1. Determine whether its Clean and Green Program can serve as a match to receive additional retrofit program services through the Energy Upgrade California program.
2. Support financing programs that enable interested property owners to finance the installation of energy improvements on their homes or businesses.

Through its Redevelopment Agency, Imperial Beach runs the **Clean and Green Neighborhood Revitalization Program**, which provides ten-year grants for very low, low, and moderate-income individuals and families to improve energy and water efficiency, health and safety, and/or enhance the physical appearance of their home and property. This program already helps qualifying residents to undertake energy- and water-saving building retrofits.

The federal stimulus act of 2009 dedicated funds to building energy retrofit activities, which California has compiled under the Energy Upgrade California program (www.energyupgradecalifornia.org). Energy Upgrade California is a one-stop shop to coordinate federal, state, utility, and local government retrofit program outreach, incentives, contractor training, and participant qualifications.

Home and business owners often need technical and financial assistance to identify and implement energy-saving projects due to lack of knowledge on appropriate improvements and lack of upfront capital to cover equipment and installation costs.

Examples of Clean and Green improvements include:

- Roofing (except tile)
- Double-paned energy-efficient windows
- Exterior solid core doors and fencing
- Central heating and cooling systems
- Attic insulation
- Caulking and weather stripping
- Solar photovoltaics
- Solar and tankless water heaters
- Clean-up/ removal of trash or debris
- Accessibility (railing and ramps)

According to industry forecasts and experts such as the Harvard University Joint Center for Housing Studies, homeowners are interested in making their homes energy efficient. With the influx of ARRA funds, existing federal, state and local energy efficiency programs are being expanded upon and coordinated to bring down the costs of home energy assessments, capital purchases, installations, and inspections. Three types of inter-related programs to address energy retrofits are:

1. Energy Upgrade California, which includes energy incentives available from federal, state, utility, and local government sources.
2. Financing mechanisms that address net costs through 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.*)



Available energy retrofit program programs, as well as local resources, are described in **Appendix F**. Your Energy Roadmap coordinator can assist the city in identifying the opportunities and resources from which the government and residents can take advantage.

Market Programs and Rebates to Residents and Local Businesses

The purpose of this chapter is to provide Imperial Beach with internet links to existing energy-efficiency resources that the city could include on its municipal Web site and be of benefit to local constituents. The chapter also provides one-stop internet access points to:

- Residential resources
- Business resources
- Educational resources

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

Imperial Beach may help promote messages of efficiency and sustainability to foster a greater local understanding of the connection between energy use and environmental impact. The city also could become a local government partner with national energy-saving educational campaigns like *Energy Star* and *Water Sense*. The following five outreach mechanisms are possible ways that the city can engage its constituents. Your Energy Roadmap coordinator can suggest ways to implement any and all of these outreach mechanisms and information.

1. On the city internet site, post links to SDG&E rebate and incentive programs, as well as the other resources provided here.
2. Through city newsletters or other outreach mechanisms, include articles about opportunities to save energy with links to existing programs and community resources, like the California Center for Sustainable Energy.
3. At city venues, such as the permit desk, parks and recreation areas, libraries, and city hall, provide educational materials on saving energy. SDG&E, California Center for Sustainable Energy (CCSE), and SANDAG iCommute have materials about programs and services available to residents and businesses in the region.

4. At community events, SDG&E, CCSE, and SANDAG iCommute can provide booths and/or information on energy-saving programs and commuter programs available to your constituents
5. Through an introduction from the city, SDG&E and SANDAG iCommute can engage your local business organizations on low- and no-cost programs tailored to businesses.

The following tables identify Web links to energy, fuel, and water efficiency programs available to local businesses, residents and the general public. By providing this information on its Web site, the city would serve as another access point for its community to find out about, and take advantage of, energy-saving programs and services.

One-Stop Shop 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's Online Workshop Calendar. Center for Sustainable Energy (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 additional workshops from both organizations. www.energycenter.org/attend
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
The Solar Energy Project	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/ Free online gateway to commuter choices in the San Diego region.
SDG&E Clean Transportation	www.sdge.com/environment/cleanTransportation.shtml
The EV (Electric Vehicle) Project	www.theevproject.com/

Energy and Water

20-Gallon Challenge	http://20gallonchallenge.com/ 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.
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Smart Grid

SDG&E Smart Grid Program	www.sdge.com/smartgrid Smart meter and smart grid technologies are being deployed throughout the San Diego region and across the state.
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Energy Programs and Assistance for Local Businesses

Energy Efficiency and Demand Response

SDG&E's Business Incentives Site	www.sdge.com/business/rebatesincentives All SDG&E business programs can be accessed from this Web site.
Critical Peak Pricing	www.sdge.com/business/rebatesincentives/programs/criticalPeakPricing.shtml
Technical Assistance and Technology Incentives	www.sdge.com/business/rebatesincentives/programs/technicalAssistanceIncentives.shtml
Project Management Builder Services	www.sdge.com/builderservices/index.shtml
Summer Saver	www.sdge.com/vendor/summersaver/
On Bill Financing	www.sdge.com/business/rebatesincentives/programs/onbillfinancing.shtml
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/residential/rebates.shtml
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 California Center for Sustainable Energy. 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. http://energycenter.org/index.php/incentive-programs/pace-property-assessed-clean-energy

Energy Efficiency and Demand Response

Advanced Home Program	www.sdge.com/builderservices/newHomes.shtml
Air Conditioning Tune-Ups	www.actimeprogram.com/ProjectCenter/
Summer Saver Program	www.sdge.com/vendor/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/residential/lightingTurnIn.shtml
Earn 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. http://www.wecalc.org/
SoCal Water Smart for Residential Customers	www.socalwatersmart.com/ Available water efficiency product rebates.
Clothes Washer Rebate Program	www.20gallonchallenge.com/programs_residential.html or (888) 376-3314

New Construction Programs

Advanced Home Program	www.sdge.com/builderservices/newHomes.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 (ERC) 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, LEED certification, and solar installation training. The ERC is located at 8690 Balboa Avenue, Suite 100, San Diego, CA 92123. Contact Tel (858) 244-1177, www.energycenter.org. Center hours are from 8 a.m. to 5 p.m. weekdays excluding national holidays. Resources 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 Energy Resource Center.
- 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. www.energystar.gov

The EPA and DOE 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 (www.epa.gov/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.

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. Visit www.epa.gov/watersense/partners/promotional.html.

8

Support Green Jobs and Workforce Training

Imperial Beach can increase local awareness of workshops, training, and employment resources available to its constituents. The city can make this information more widely available by including it on its Web site and/or providing handouts at local libraries and city hall.

Some of the training available in the region has been funded through the American Recovery and Reinvestment Act (ARRA), and may be discontinued after December 2012. Many other local resources identified in this section are available long term.

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

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 (HVAC) 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 (www.greencareernetwork.org) brings together green job seekers and green employers. Hosted by the California Center for Sustainable Energy, this online portal provides job listings, trainings, and research in green jobs in renewable energy, energy efficiency, green building, transportation, sustainability, and environmental studies.

On the **Green Career Network** job seekers can:

- Access job postings and a Green Employers list
- Read a step-by-step guide to finding a green job
- Identify available workforce training and education opportunities
- Access studies and reports on the green economy, industries, and market analyses
- Network through free educational programs and events

Employers can:

- Use an on-line job board to post job announcements and review resumes
- Find 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
- Find information on how to get help from groups like the Small Business Administration and the Small Business Development Center that provide free business counseling, workshops, and training to help grow businesses



San Diego Miramar College's Advanced Transportation Technology & Energy Center

Advanced Transportation Technology & Energy (ATTE) Centers were created as a means for keeping California competitive 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. San Diego Miramar College's ATTE Center 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/or 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, CA 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 (GCCCD) 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 San Marcos. Certificates of Achievement are awarded upon program completion. GCCCD plans to continue the green building training collaborative after ARRA funds are expended. Cuyamaca College already 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 (www.sandiegowork.com/) 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 (WIB).

The nearest One-Stop Career Center to Imperial Beach is the South County Career Center, operated by Arbor E&T at 1111 Bay Blvd., Suite E, Chula Vista, CA 91911. Center hours are Monday through Friday from 8 a.m. to 5 p.m. Call (619) 628-0300 or visit www.rescare.com/sccc.



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 (ERC) 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, LEED certification, and solar installation training. The ERC is located at the California Center for Sustainable Energy (CCSE) at 8690 Balboa Avenue, Suite 100, San Diego, CA 92123. For more information, contact (858) 244-1177 or visit www.energycenter.org. Center hours are from 8:00 a.m. to 5:00 p.m. weekdays.

Statewide Resources for Training and Education



Grid Alternatives

Grid Alternative (www.gridalternatives.org) offers volunteer opportunities to gain hands-on solar experience and network with others interested in renewable energy, the environment, and our communities.



Solar Training Institute

The Solar Training Institute (www.trainingforsolar.com) provides accelerated training classes for contractors, electricians, engineers, solar energy entrepreneurs, sales people and anyone who is considering a career change to the growing solar industry.



**ECONOMIC &
WORKFORCE
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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 (www.cccewd.net/) is the state program from which the local Advanced Transportation Technology and Energy Center, San Diego Workforce Partnership, and One-Stop Career Centers stem.

Looking Forward

Through the SANDAG Energy Roadmap Program, Imperial Beach has set a framework for continued efforts to save energy in local government operations and in the community. After completion of the Energy Roadmap Program in 2012, there are several funding opportunities for which the city may apply to continue energy-saving activities, either on its own or in partnership with SANDAG. These local, state, and federal funding sources for energy efficiency are described below, followed by non-financial resources that could be of service.

Energy-Saving Funding Opportunities

Local Government Partnerships with San Diego Gas and Electric TM

SANDAG's Energy Roadmap Program is primarily funded through a local government partnership with 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 of these partnerships is typically three years, and they are approved by the California Public Utilities Commission.

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, Imperial Beach 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 decide 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
3. Engage the community on energy efficiency

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

- Municipal facility retrofit for energy-efficiency improvements

- Strengthened building energy codes and enforcement
- Land use planning and design
- Education and outreach
- Compact fluorescent light bulb (CFL) recycling programs
- Green building / permit expedite / fee reduction programs
- Peer-to-peer best practices and networking
- Staff training programs
- 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 (SEP) solicitations that support transportation, residential, commercial, agricultural, industrial, institutional energy efficiency, and renewable 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. Review the Energy Commission's grants Web page (www.energy.ca.gov/contracts/index.html) regularly for program opportunities.

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 Imperial Beach to participate, or visit www.ca-ilg.org/BeaconAward for more information.

San Diego Gas and 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
- 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
- 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/.



San Diego Association of Governments

SANDAG Energy and Climate 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 planning, contact Susan Freedman at (619) 699-7387, sfr@sandag.org or visit www.sandag.org/energy.



iCommute

The SANDAG iCommute team can assist local governments with staff commuter programs, transportation demand management (TDM) ordinances, online tools, and outreach to your constituents on mobility choices in the region. 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 Public Utilities Commission'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 greenhouse gas emissions and save energy. SEEC (www.californiaseec.org/) serves as a statewide local government partnership and is an alliance among the Local Government Commission, ICLEI – Local Governments for Sustainability, the Institute for Local Government, and California's four investor-owned utilities, including San Diego Gas & Electric.

- Local Government Commission 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 greenhouse gas emissions
- Institute for Local Governments' California Climate Action Network (CCAN) is providing recognition for cities and counties through the Beacon Award

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www.sandag.org/energy



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

