



Compendium of Model Sustainability Practices

energy

ECO-CITY ALEXANDRIA
environment | economy | community



ENERGY

INTRODUCTION

Americans and Canadians consume more energy per capita than any other nation.⁸⁷ Our reliance on the use of oil, gasoline, and other fossil fuels as a primary source increases carbon emissions that contribute to green house gases and the impending threat of global warming. Energy also manifests itself in congested roads, urban sprawl, excessive heating, cooling, lighting, and building ventilation. The underlying policy goal for this section of the compendium is to find programs and projects that reduce consumption of non-renewable and polluting sources of energy and increase energy efficient buildings. Part of the challenge for local governments is how to encourage its residents and business community to meet these goals.

As consumers of energy local governments can alter the design and construction of city buildings/facilities to become more energy efficient and modify its vehicle fleets to use alternative fuels, such as bio-diesel. While it is difficult for local governments to sway national and even regional energy markets on their own, they can still purchase more power generated from renewal sources, such as wind and solar. When it comes to energy policy local governments can lead by example by ensuring that city facilities and services reduce energy use and increase alternative sources of energy and fuels. Alexandria took a major step in this direction in 2006 when Mayor Euille signed the U.S. Mayors Climate Protection Agreement, which is the local government equivalent of the Kyoto Protocol, demonstrating Alexandria's commitment to reducing emissions and use of clean energy technologies.⁸⁸

Sections one and two of the energy portion of this compendium showcase model programs and supplemental practices relating to alternative energy sources, renewable energy, solar power, green fleets, and biofuels. At the end of this section we provide a list of useful energy management resources and references.

ENERGY MANAGEMENT AND ALTERNATIVE ENERGY SOURCES

1. Comprehensive Energy Management Program and Fresh AIRE Initiative

(Arlington Initiative to Reduce Emissions)

Location: Arlington County, Virginia

Department: The Department of Environmental Services, Environmental Planning Office, which serves as a technical environmental resource for County agencies, the County Board, and residents. Staff provides

⁸⁷ Roseland, Mark. *Toward Sustainable Communities*, revised edition (Vancouver, 2007).

⁸⁸ Seattle, U.S. Mayors Climate Protection Agreement web site. Accessed December 2007 on: <http://www.seattle.gov/mayor/climate/>

support for the Environment and Energy Conservation Commission. Staff also manages the Green Building Incentive Program for commercial and multi-family development projects and reviews and monitors all site plan projects to ensure compliance with the green building requirements. The Facilities Management Bureau focuses on managing and maintaining the County's extensive community facilities. In addition, Arlington has an Environment and Energy Conservation Commission (E2C2), whose members review and provide advice to the County Board on a broad range of environmental and energy conservation issues.

Start Date: 2001

Budget and Staffing: Staff includes one Energy Manager and several supporting staff from the departments referenced above. The E2C2 includes 12 members.

The Environmental Planning Office is a division of the Utilities and Environmental Policy Office. For fiscal year 2008, Arlington aims to budget 33% of its Department of Environmental Services budget to the Utilities and Environmental Policy Office. Of this, \$40,055 is budgeted for electricity costs of new street lights and traffic signals built by developers or as part of the County's capital program and there will be an increase in the funding for wind energy (\$39,880).

Description: The County's comprehensive energy management program is incentive-based and was developed to instill more energy efficient management practices in County facilities and to provide public outreach to combat consumption and global climate change effects within Arlington. The Energy Management web site reports that Arlington's total energy bill is about \$7 million each year and that the majority of this expense is from electricity used to provide air conditioning, heating, lights, computers, printers, fans, vending machines, refrigerators, and many other appliances in every building.⁸⁹ In addition, the County reports that it has more than 10,000 streetlights, and 240 intersections have traffic signals.

This program aims to take specific steps to reduce this consumption and overall impact on global climate change through the following activities:

⁸⁹ Arlington's Energy Management web site at: <http://www.arlingtonva.us/departments/EnvironmentalServices/epo/EnvironmentalServicesEpoEnergyEfficiency.aspx>

- Analyzing energy bills and taking inventory of energy-using equipment;
- Educating employees about energy efficiency and conservation;
- Evaluating energy-saving alternatives, including renewable energy options;
- Replacing inefficient equipment, lights, and appliances with new, energy-efficient models;
- Tuning systems to operate more efficiently, including the use of improved insulation;
- Installing energy-saving devices and/or controls on equipment and lighting; and
- Monitoring energy performance and results.

Arlington has taken several steps to reduce energy consumption in the County, including replacing incandescent lights with compact fluorescent light bulbs throughout the Madison Community Center, saving 2,000 kWh (and \$130) each month. The County has insulated hot water tanks and pipes in the Madison Community Center, and the amount of natural gas the County is saving each year from this measure could heat a typical Arlington home through a cold winter. The County also reports saving over 400,000 kWh of electricity each year (worth \$20,000) at the Central Library, a 14% reduction from prior years, after improved thermostat scheduling and fine-tuning the ventilation and air conditioning system.

The County reports that through improving energy efficiency in its buildings and facilities energy use per square foot fell 6% between 2000 and 2005. Energy use at traffic intersections has been cut dramatically where LED signals have been installed in place of incandescent signals. In addition, Arlington now purchases 3% of the County's electricity from wind power (as renewable energy credits). As part of the AIRE initiative, Arlington plans to expand its commitment to renewable energy sources by increasing purchase of wind-generated electricity from 3% to 5% of the County government's total electricity use in 2007. The County also plans to install solar water heating in one or two County facilities as a demonstration effort. In addition, Arlington is preparing a strategic energy plan and climate action plan for County operations and the community.

In addition to Arlington's internal energy program, the County also encourages private development to incorporate energy saving and other green components into buildings. For example, all multi-family residential projects must include appliances, fixtures, and/or building components, which have earned the U.S. EPA's Energy Star label. These appliances include clothes washers, dishwashers,

refrigerators, ceiling fans, ventilation fans (including kitchen and bathroom fans), light fixtures (halls and common areas), and exit signs. Developers must also choose to install two of the following Energy Star qualified components: programmable thermostats (in residential units); residential light fixtures; windows and doors; and HVAC systems.⁹⁰ (See the description of Arlington’s Green Building Incentive Program, below, for more information on how the County is providing incentives for the inclusion of green building components into private development.)

Arlington also aims to encourage residents to reduce their personal energy consumption by walking, biking, taking transit, or driving a fuel-efficient car, and by purchasing green power and green energy certificates. The County also plans on conducting free energy audits for 20 resident households and to share their stories with others as part of an outreach effort. The results of these case studies and audit results are not yet available.

Arlington also sponsors a “Hands on Green” workshop series for the public, which includes energy conservation related workshops such as how to conduct an energy audit, solar technology, several separate workshops on green building and sustainability designed architecture, and energy tax credits.

Also part of Arlington’s public outreach efforts is the Green Living Challenge, whereby residents are encouraged to take action to protect the environment through energy conservation, reducing solid waste, eliminating runoff, enhancing habitat, and protecting air quality.⁹¹ Through this program, residents of Arlington are challenged to complete as many of the actions as they can, earning “green points” for themselves and their neighborhood. Participants who earn one hundred points will be certified as green households. Some ways points can be earned include: changing the most frequently used light bulbs in a residence to compact fluorescent; buying renewable energy credits (e.g. wind power) equivalent to at least 50% of a resident’s electricity usage; replacing a gas-powered lawn mower with a push mower or electric mower; or by having an energy audit conducted for the resident’s household.

Another important component of Arlington’s Comprehensive Energy Management Program is the Environment and Energy Conservation

⁹⁰ Under the Green Building requirements for Arlington County, developers must also have at least one person on the project be LEED accredited; the LEED scorecard and tracking must be utilized to highlight and track green components of developments; and construction waste must be managed to minimize the amount of construction debris entering landfills. See program description, below, for more information.

⁹¹ See <http://www.arlingtonenvironment.org/greenchallenge/index.htm>

Commission (E2C2). Members of this commission are appointed by the County Board to review and provide advice on the quality of the natural environment of Arlington, taking into account the interrelationships among air, water, and land, energy conservation in public and private buildings, environmental issues impacting the health of Arlington citizens, and county projects impacting the environment.

Arlington received the U.S. Environmental Protection Agency's first National Award for General Excellence in Smart Growth in 2002. In January 2007, Senator Harry Reid recognized Arlington for the AIRE initiative.

Alexandria

Match: See "Alexandria Match" section under Arlington's Green Building Incentive Program, above.

References: Arlington County Energy Management and AIRE web site:
<http://www.arlingtonva.us/portals/Topics/Climate.aspx>

Work plan and annual report of the Environment and Energy Conservation Commission:
<http://www.arlingtonva.us/departments/Commissions/e2c2/EnvironmentalServicesE2c2Main.aspx>

2. Comprehensive Energy Policy

Location: Montgomery County, Maryland

Department: Department of Environmental Protection for Montgomery County, Environmental Policy and Compliance Division

Start Date: January 1, 2007 (*Montgomery County Executive Regulation 2-06AM* was enacted July 11, 2006)

Budget and Staffing: The Environmental Policy and Compliance division is comprised of 12 employees.

Description: Montgomery County has a large comprehensive energy program and policy, of which the Clean Energy Rewards program (discussed below) is part.⁹² One component of the comprehensive program is the purchase of green power—specifically wind power. The Department of Environmental Protection also routinely conducts workshops to educate the public on energy efficiency measures that can be implemented in homes and businesses. Additionally, the County implements a *Shade to Save* program, which aims to

⁹² See Montgomery County's Energy Policy Review at:
http://www.montgomerycountymd.gov/content/dep/Energy/policy_review.pdf

strategically plant shade trees in multi-family housing communities with little existing canopy coverage and a high volume of impervious surface. As with many other jurisdictions as part of their energy programs, Montgomery County is replacing standard incandescent signal lamps with light-emitting diodes on 250 intersections throughout the County by 2008. Lastly, public buildings and private buildings over 10,000 square feet will soon be required to achieve a U.S. Green Building Council LEED NC 2.2 Silver rating.

In 2004, Montgomery County received several awards in recognition of programs and activities undertaken to implement elements of the Montgomery County Energy Policy. These included the Clean Air Partnership Award from the Washington Metropolitan Council of Governments; the Green Power Partner of the Year Award from the Green Power Partnership; the Citizens for Pennsylvania's Future (PennFuture) Award for Landmark Clean Electricity Purchase, for which they specifically were designated the "Cleanest County in Maryland;" the U.S. EPA's recognition for the largest local government purchase of wind power in the U.S.; the Pegasus Award: Award of Excellence from the Green Man Show - Energy Vampires.

Alexandria

Match:

See "Alexandria Match" section under Montgomery County's Green Energy Rewards program, below.

References:

Montgomery County's Department of Environmental Protection web site:
<http://www.montgomerycountymd.gov/deptmpl.asp?url=/content/de/p/rewards.asp>

See Montgomery County Executive Regulation 2-06AM at:
<http://www.dsireusa.org/documents/Incentives/MD15F.pdf>

3. Clean Energy Rewards

Location:

Montgomery County, Maryland

Department:

Department of Environmental Protection for Montgomery County, Environmental Policy and Compliance Division

Start Date:






January 1, 2007 (*Montgomery County Executive Regulation 2-06AM* was enacted July 11, 2006)

Budget and Staffing:

The Environmental Policy and Compliance division is comprised of 12 employees. Susan Kirby, Planning Specialist III is the Clean Energy Rewards Program Coordinator.

For fiscal year 2007, \$361,000 was approved for this program. A fiscal impact statement was generated, which included certain assumptions for the reward such as the idea that the incentive would be available for up to 20,000 kWh for residential and 100,000 kWh for non-residential customers. The average use was assumed to be 10,000 kWh for residential consumers, though because the program is so new it is difficult to estimate the potential enrollment of the program. The program will be tracked and evaluated annually.⁹³

Description: This program is a component of Montgomery County’s Comprehensive Energy Program, discussed above. Participants in this program automatically receive Clean Energy Rewards when they sign up to buy clean energy from one of the following certified Clean Energy Rewards suppliers or marketers:

<i>Consumer Type</i>	<i>Clean Energy Rewards Energy Suppliers</i>	<i>Clean Energy Products</i>
Commercial		50% or 100% Wind Energy
Residential or Commercial		50% or 100% New Wind Energy™
Residential or Commercial		100% Local Wind RECs
Residential or Commercial		Chesapeake Wind Current: 100% Local Wind or Wind+Solar RECs
Residential or Commercial		MD Clean Choice™ for residents & for businesses and others

⁹³ Montgomery County Executive Regulation 2-06AM: <http://www.dsireusa.org/documents/Incentives/MD15F.pdf>

Customers may choose the type of clean energy they want. All consumers are eligible, even if they do not own a home. The same utility company (PEPCO or Baltimore Gas) will continue to bill the user for the distribution portion of the service, though bills will also include the new generation and transmission charges from the clean energy electricity supplier. The additional cost for clean energy is about 2.5 cents per kWh, depending on the percentage of clean energy one chooses. If a customer does not want to change electricity suppliers or if s/he is an Allegheny Power customer, then s/he can choose renewable energy certificates, which represent clean energy.⁹⁴ Renewable energy certificates support clean energy generation thus canceling out emissions associated with fossil fuels.

County residents will receive 1 cent, and businesses and other organizations will receive 1.5 cents for each kilowatt-hour (kWh) of eligible clean energy consumed. On average, the additional cost of clean energy is 2.5 cents per kWh. Due to the uncertainty of demand for the rebate at this early stage, the County does not know how the present appropriation will need to be adjusted in the future.

**Alexandria
Match:**

Montgomery County is looking at ways to promote sustainability through the development of a comprehensive energy policy, incorporating a mixture of both mandated ordinances and incentive programs. The County's energy policy includes clean performance measures for several of their programs, although many programs are new and have not yet yielded significant utility savings or other environmental results.

Alexandria is on its way to developing its own comprehensive energy program. The City has hired an Energy Manager to look at internal energy use and to start planning a public outreach campaign. Furthermore, knowing that energy consumption and the built environment are inextricably linked, the City has required that all new City facilities be LEED certified and encourages private developers to build green through its green building checklist. Alexandria could incorporate some of the components of Montgomery County's program into its own. If the City decides to develop a program component similar to the Clean Energy Reward program, it would have to partner with Dominion Power or other private energy providers. The public outreach portion of Alexandria's comprehensive energy program could begin with a link on the City web site, which directs users to current and planned

⁹⁴ Clean Energy Rewards electricity suppliers are not offering a residential clean energy product option in the Allegheny Power utility area.

energy conservation initiatives (currently, there is no “Energy” link on the web site).

References: Montgomery County’s Department of Environmental Protection web site:
<http://www.montgomerycountymd.gov/deptmpl.asp?url=/content/dept/rewards.asp>

See Montgomery County Executive Regulation 2-06AM at:
<http://www.dsireusa.org/documents/Incentives/MD15F.pdf>

4. Biodiesel Conversion Plant

Location: Denton, Texas

Description: Denton, Texas is the governmental seat of Denton County and home to many workers at the nearby Dallas-Forth Worth Airport (DFW). Located northwest of Dallas, the city covers 62.3 square miles. Denton's population of 110,000 is 75% white, 16% Hispanic and 9% black, with a median income of \$51,000 indicating a middle class majority.

Denton, Texas stood in violation of federal clean air standards for 2004 and 2005. Major contributors to the pollution problem included methane gas from the city's landfill (LFG) and emissions from the city's fleet of heavy vehicles. A study estimated the cost of updating the vehicles to meet current emission standards at over \$2 million, not including mitigation of the LFG problem.

An alternative proposal came from Detroit Edison and Biodiesel Industries of Greater Dallas/Fort Worth (BDI). A biodiesel conversion plant would be constructed at the city's landfill, powered by captured LFG to recycle used cooking oil from local restaurants. In return for providing a site for the plant and \$650,000 in startup capital, the city received a guarantee of 300,000 gallons of fuel per year at a fixed price. The fuel output is not pure biodiesel but "B20", a mix of 80% diesel and 20% biodiesel. As of fall 2007, Denton's biodiesel conversion plant has produced 500,000 gallons of B20 since opening in March 2005. Additionally, Denton's city vehicle emissions are projected to drop by 12 tons per year with the use of B20 fuel. The power source for the plant is methane gas recovered from city landfill. According to Detroit Edison and Biodiesel Industries of Greater Dallas/Fort Worth biofuel output is nontoxic, biodegradable. The fuel from the plant is primarily used by city vehicle fleet.

Alexandria

Match: One of the challenges is the closest biodiesel refinery is the Virginia Biodiesel Refinery in West Point, Virginia. Its distributors are based out of Callao, Kilmarnock, and Warsaw, Virginia. Given the increasing interest in biodiesel perhaps the city of Alexandria can work with MWCOG and other local jurisdictions to facilitate the development of regional biodiesel facility.

Points of Contact:

Katherine Barnett
(940) 349-8202
katherine.barnett@cityofdenton.com

Jake Stewart, Biodiesel Industries
(940) 390-8284

Jenna Higgins-Rose, National Biodiesel Board
(800) 841-5849

Vance Kemler, City of Denton
(940) 349-8003

References: City of Denton web site:
<http://www.cityofdenton.com/pages/mygoenvironmentalairbiodieselfac.cfm>

Presentation by Vance Kemler / Director of Solid Waste Services, Denton:
<http://files.harc.edu/Documents/EBS/TREIA2005/BiodieselAlternative.pdf>

Grainnet news:
http://www.grainnet.com/articles/World_s_First_Fully_Renewable_Biodiesel_Facility_Set_for_March_29_Opening_in_Denton_TX-25652.html

SUPPLEMENTAL ENERGY PROGRAMS AND PRACTICES

1. Biodiesel Initiative

Location: Tacoma, Washington

Description: Tacoma was one of the first government fleet operators in the nation to use biodiesel for its entire fleet of utility vehicles. Over 700,000 gallons of biodiesel is consumed annually. A majority of the fuel is used by the Department of Solid Waste Management to power its 85-truck garbage fleet, which runs on a blend of 80-percent diesel and 20-percent biodiesel. (Biodiesel is an alternative to petroleum diesel made from vegetable oil that can be used in any diesel engine.)

Since the conversion to biodiesel in 2001, Tacoma's garbage and recycling trucks have helped create cleaner air by emitting fewer harmful pollutants such as carbon dioxide, carbon monoxide, sulfur dioxide and hydrocarbons. It is estimated that approximately 1,500 tons of greenhouse gas emissions are eliminated annually.

Points of Contact:

Gary Kato, Assistant Division Manager
(253) 593-7713
gkato@cityoftacoma.org

References:

City of Tacoma web site
<http://www.cityoftacoma.org/Page.aspx?hid=2091>

2. Green Power Switch Generation Partners Program

Location: Various

Description: The Tennessee Valley Authority and participating power distributors currently offer a dual-metering option to residential/small-commercial and commercial consumers through the Green Power Switch Generation Partners program. This program provides support and incentives for the installation of solar and wind generating facilities, though participation in this program is entirely up to the discretion of the power distributor.

A solar or wind generation source must first be installed by a residential or small commercial power customer served by a participating distributor of TVA power. Under the residential/small-commercial contract, TVA purchases the entire green energy output of a qualifying system at 15 cents per kilowatt-hour (\$0.15 per kWh) through a participating power distributor for a minimum of 10 years from the signing of the contract. Residential users may also qualify for an additional \$500 incentive to help offset start-up costs. Under the larger commercial contract, TVA purchases the output at \$0.20 per kWh. The consumer receives payment for the power generated through a credit issued by the local power distributor on the monthly power bill for the home or business where the generation system is located.

References:

Green Power Switch Generation Partners[®] web site
<http://www.tva.gov/greenpowerswitch/partners/index.htm>

3. Solar Manufacturing Incentive Grant (SMIG) Program

Location: Virginia

Description: Under Virginia Code § 45.1-392, as of January 1, 1996, the Virginia Department of Mines, Minerals and Energy, and the Virginia Economic Development Partnership, established this program. It offers up to \$4.5 million per year to encourage the production of photovoltaic panels in Virginia. The incentive is paid at a rate of up to \$0.75 per watt for panels sold in a calendar year, with a maximum of 6 MW. New manufacturers that meet certain production and other criteria are eligible to receive annual incentive grants for six years. The amount awarded is based on which year the participant is established in the program. It should be noted that while some states offer financial incentives for manufacturing renewable energy equipment, Virginia is the only state that bases benefits on actual sale levels.

References: Virginia Solar Photovoltaic Manufacturing Incentive Grant Program (SPMIGP) program website
<http://www.dmme.virginia.gov/de/smig.html>

4. Net Metering in Virginia

Location: Virginia

Description: "Net-metering" is a simplified method of metering the energy consumed and produced at a home or business that has its own renewable energy generator, such as a wind turbine. Under net metering, excess electricity produced by the wind turbine will spin the existing home or business electricity meter backwards, effectively banking the electricity until the customer needs it. This provides the customer with full retail value for all the electricity produced.⁹⁵

An example is as follows: if a customer-generator bought 1,500 kilowatt-hours (kWh) from a utility during the first 11 months of the annual period, and then generated 2,000 kWh of excess electricity in the 12th month, the customer could carry forward 1,500 kWh to the following month, and the remaining 500 kWh would be granted to the utility.

Virginia Code § 56-594 (enacted 1999; amended 2004, 2006, 2007), specifies Virginia's net-metering law. Net metering is available to customers of investor-owned utilities and electric cooperatives, but not to customers of municipal utilities. It applies to residential generating systems up to 10 kilowatts (kW) in capacity and non-residential systems up to 500 kW in capacity. The maximum capacity for non-residential systems was raised from 25 kW to 500

⁹⁵ American Wind Energy Association (<http://www.awea.org/>)

kW by SB 651 of 2004. Enrollment is open on a first-come, first-served basis until the rated generating capacity owned and operated by customer-generators in Virginia reaches 1% of each electric distribution company's adjusted Virginia peak-load forecast for the previous year.

References: Virginia Department of Mines, Minerals, and Energy
<http://www.mme.state.va.us/de/>

Commonwealth of Virginia State Corporation Commission
<http://www.scc.virginia.gov/>

American Wind Energy Association
<http://www.awea.org/faq/netbdef.html#Whatismetring>

Small Wind in Virginia
http://www.awea.org/smallwind/virginia_sw.html

5. Solar Easements and Access Ordinances

Location: Virginia and Boulder, Colorado

Description: Under Virginia Code § 55-352 et. seq. (since 1978), property owners can create binding solar easements for the purpose of protecting and maintaining proper access to sunlight. Easements must be executed in writing and must include: (1) the vertical and horizontal angles, expressed in degrees, at which the solar easement extends over the real property subject to the solar easement; (2) any terms or conditions or both under which the solar easement is granted or will be terminated; and (3) any provisions for compensation of the owner of the property subject to the solar easement.

The City of Boulder enacted a solar access ordinance that guarantees access to sunlight for homeowners and renters in the city by setting limits on the amount of permitted shading by new construction. A solar access permit is available to those who have installed or who plan to install solar energy systems and need more protection than the ordinance.

References: Code of Virginia: Title 55 – Property and Conveyances; Chapter 20 – Virginia Solar Easements Act
<http://www.dsireusa.org/documents/Incentives/VA08R.htm>

6. Green Power Purchase by City Government Via Aggregation

Location: Fairfax and Arlington, Virginia; Seattle, Washington; Chicago, Illinois

Description: In 2004, Fairfax, Arlington and Prince William Counties and Alexandria participated in drafting an agreement for local government in Virginia to purchase wind power through the Virginia Energy Purchasing Governmental Association (VEPGA.) Fairfax and Arlington Counties ultimately followed up with the purchase of 5% of their total municipal government load from the Mountaineer Wind Farm in West Virginia. The purchase agreement required changes to the VEPGA bylaws, which were unanimously approved by the VEPGA board.

The fundamental nature of the electric grid is that the power generated is exactly equal to the energy demand. Because of this, any purchase of green generation capacity functionally takes an equivalent amount of “dirty power” capacity offline, eliminating its emissions. Fairfax County estimates that its wind power purchase has reduced 6.3 million pounds of carbon dioxide, 23,200 pounds of sulfur dioxide, and 11,600 pounds of oxides of nitrogen over a 2-year contract period, for an additional annual cost of \$82,000.

Alexandria might want to consider participating in the VEPGA green power purchase program, matching Fairfax and Arlington’s 5% purchase. EPC members have said that city government should lead by example in reducing emissions. Purchasing wind power for a small budgetary increase over normal electricity costs would make a real dent in energy-related pollution, becoming an additional feather in the City’s cap on top of the Covanta WTE plant.

7. Energy Education and Green Builder Programs

Location: Ashland, Oregon and Austin, Texas

Description: City of Ashland offers workshops on energy efficiency for homeowners, including energy audits and analysis done by an energy specialists; they also offer complimentary programs on financing and energy rebates.

The Austin Green Builders Program provides training in energy-efficient and environmentally responsible construction techniques. Participants receive guidebooks, product and service sourcebooks, and attend training seminars and workshops.

References: *Resource Conservation in Ashland, Oregon* (1998) available from www.toolsofchange.com; *Austin Energy’s Green Building Program* (2004) available from www.ci.austin.tx.us/greenbuilder/.

8. Energy Planning and Financing of Sustainable Energy Management

Location: Eugene, Oregon and Ashland, Oregon

Description: Eugene's Water and Electric Board finances the city's Energy Resource Management Plan with a \$150 million bond issue. After a citizen-based resource planning effort, residents voted overwhelmingly to support financing for energy efficient buildings and projects, renewable, cogeneration and hydro power.

The energy conservation division within Ashland's department of community development integrates energy-efficiency with city planning by offering audits and rebates for homes and businesses. They offer assistance with weatherization and smart building design. They also administer building codes and zoning standards that promote energy efficiency. The city council and planning commission consider energy issues through the planning and land development processes. Ashland estimates they save over 8 million kilowatt-hours per year.

References: *Toward Sustainable Communities, 2nd Edition* by Mark Roseland (New Society Publishers, Gabriola Island, British Columbia, 2007)

9. Lights Out San Francisco

Location: San Francisco

Description: Lights Out San Francisco is a citywide energy conservation event, during which the entire city of San Francisco is invited to install one compact fluorescent light bulb (CFL) and turn off all non-essential lighting for one hour. It is estimated that turning lights out in San Francisco for even one hour could save as much as 15 percent of the energy consumed on an average Saturday night. The first campaign, in October 2007, asked residents to turn off their lights between 8 and 9 p.m and to install one low-watt fluorescent bulb in their homes. Organizers gave away 100,000 lightbulbs in advance, donated by Pacific Gas and Electric Co. This year's Lights Out San Francisco will be on March 29, 2008. Since the first Lights Out San Francisco was such a success, eleven cities have so far agreed to join in on this year's Lights Out, including New York, Atlanta, Chicago, Denver, Seattle and Los Angeles.

References: [Lights Out San Francisco web site](http://www.lightsoutsf.org/)
<http://www.lightsoutsf.org/>