



Smart Energy Efficiency Investments

■ BENEFITTING FROM SMART ENERGY EFFICIENCY INVESTMENTS

American cities and counties spend billions of dollars annually on energy to operate public buildings, wastewater treatment plants, office machines, water pumps, street lights and the like. According to the California Energy Commission, energy costs for the state's local governments amount to more than \$1 billion annually, while its schools spend more per student on energy than on books and other instructional materials. The Philadelphia school district, the fifth largest in the country, spends \$33 million on energy each year. And in Chicago, the Center for Neighborhood Technology's Community Energy Program estimates that the area's local governments, including the city, Cook County, and local schools and special districts, spent \$235 million on energy in 1995.

Another issue for local governments is that a large portion of their energy expenditures flows out of the local economy. According to the Department of Energy (DOE), each dollar spent on natural gas and electricity results in only \$1.48 and \$1.75 of local economic activity, respectively. Similar economic multipliers for ordinary consumer goods and energy conservation are \$2.06 and \$2.32 for each dollar. Economists with the State of Nebraska estimate that the state economy loses as much as 80 percent of every dollar spent on energy.¹

Smart Energy Investments yield substantial financial returns. The potential financial returns on investments in energy efficiency are enormous. The National Science Foundation has estimated that cities can often reduce their total energy costs by as much as 15 percent through improvements in energy efficiency, without affecting the quality of services they provide. Some measures, such as the installation of energy efficient lighting, can save 60 percent or more in that category alone.

Smart Energy Investments yield public health and environmental benefits. Energy efficiency investments also benefit public health and the environment. The burning of fossil fuels to generate energy contributes to smog and acid rain, as well as to the greenhouse gas emissions that cause global warming. As the international community seeks to reduce pollution worldwide, and as fossil fuel sources are depleted, local efforts to improve energy efficiency become increasingly important.



RETURNS ON ENERGY EFFICIENCY INVESTMENTS

- Cost Savings up to 60%
- Pollution Prevention
- Resource Conservation

ENERGY INVESTMENTS WITH POTENTIALLY HIGH RETURNS

SHORT-TERM

- Make low-cost lighting upgrades in public buildings (compact fluorescents)
- Install LED traffic lights
- Promote energy awareness among public employees

LONG-TERM

- Install water supply SCADA systems
- Upgrade building HVAC systems
- Generate electricity from wastewater byproducts
- Construct AIP wastewater treatment systems

SMART ENERGY INVESTMENTS FOR PUBLIC BUILDINGS

Local governments have a large financial stake in reducing energy use in public office buildings, city halls, county courthouses, schools, and other public facilities. According to the Department of Energy (DOE), buildings consume 36 percent of all energy used in America, at an annual cost of \$200 billion. The Washington State Energy Office's Public Sector Program estimates that operation and maintenance costs account for 91 percent of the total cost of owning a building. Energy costs for lighting, heating, and cooling constitute a large portion of those expenses.² The potential for significant savings from Smart Energy Investments in building operations is clearly demonstrated by the programs and case studies below.

EPA/DOE JOINT INITIATIVES

THE GREEN LIGHTS PARTNERSHIP PROGRAM

The Green Lights Program is an innovative voluntary partnership of building owners and EPA that promotes the installation of energy efficient lighting. EPA provides technical assistance through energy efficiency manuals, free software for energy cost savings calculations, and information on lighting technologies. In return, program partners conduct lighting audits of their facilities and upgrade lighting to make it more energy efficient and cost-effective. With its focus on cost savings, Green Lights has grown from 39 partners in 1991 to more than 2,500 in 1997, including 250 local, state and federal government entities. Green Lights partners operate on more than six billion square feet of space, and have reduced their electricity use for lighting by an average of 48 percent.



RETURNS ON GREEN LIGHTS IN PUBLIC BUILDINGS

- Lighting electricity savings: 31% to 58%.
- Energy cost savings: \$10,000 to \$383,000 annually.
- Investment yields: IRR from 22% to 66%.

Many local governments have achieved great cost savings on energy through their Green Lights upgrades.

- **San Diego County, California** saves nearly \$100,000 in annual energy costs from the lighting upgrades in its County Operations Center Annex.

- **The City of Provo, Utah** reduced lighting energy use in its City Hall by 59 percent by upgrading to a mix of T-8 lamps and electronic ballasts, compact fluorescent and high-pressure sodium lamps.
- **Baltimore County, Maryland** cut its annual lighting energy use by nearly six million kilowatt hours and its energy costs by about \$400,000 after upgrades in over two million square feet of floor space.
- **Denver, Colorado**, after reducing its energy costs by \$52,000 per year and achieving a 50 percent internal rate of return on lighting upgrades at its City and County Building, retrofitted several other facilities for combined savings of nearly \$1 million annually. Denver received EPA's Local Government Green Lights Partner of the Year award in 1996.

Such investments at local government facilities have yielded internal rates of return of 22 to 66 percent, as shown below.

EXAMPLES OF LOCAL GOVERNMENT SAVINGS FROM REPRESENTATIVE GREEN LIGHTS PROJECTS					
LOCATION/ JURISDICTION	UPGRADE AREA (SQ. FT.)	ELECTRICITY SAVED(KWH/YR)	ELECTRICITY SAVED (%)	ANNUAL ENERGY COST SAVINGS	INTERNAL RATE RATE OF RETURN (%)
Baltimore County, MD	2,026,652	5,877,989	39	\$ 383,428	46
Provo, UT	199,996	709,077	59	\$ 36,678	22
Gilbert, AZ	66,102	95,119	37	\$ 10,213	66
San Diego County, CA	350,870	1,062,898	40	\$ 99,009	NA
Leon County, FL	276,910	679,792	58	\$ 91,782	NA
Denver City & County, CO	450,000	900,125	35	\$ 52,353	50
Memphis, TN	410,600	294,613	31	\$ 20,000	25
Sarasota, FL	71,063	246,240	58	\$ 17,236	50

SOURCE: U.S. EPA, GREEN LIGHTS/ENERGY STAR PROGRAM OFFICE

ENERGY STAR® PROGRAMS

Lighting represents only one component of overall energy use in buildings. To continue and expand the adoption of cost-effective energy technologies, EPA and DOE established the Energy Star® Program, targeting five different areas of energy consumption.




- **The ENERGY STAR® Buildings Program** promotes comprehensive energy management and efficiency upgrades of lighting, HVAC, and energy control systems through partnerships with building owners.
- **The ENERGY STAR® Homes Program** improves energy efficiency in new residential construction through partnerships with builders.



- **The ENERGY STAR® Product Labeling Program** identifies the most energy efficient products in a wide range of product categories, including personal computers, office equipment, residential heating and cooling equipment, appliances, TVs and VCRs, and exit signs.
- **The ENERGY STAR® Transformer Program** encourages the manufacture and use of high-efficiency electrical transformers by electric utilities.
- **The ENERGY STAR® Purchasing Initiative** promotes energy efficiency as an important criterion in state and local government procurement, and provides the information and other tools state and local governments need to make specifying energy efficient products and equipment standard practice. This program complements many existing federal, state, and local energy conservation programs and gives state and local governments another avenue for reaping the multiple benefits of energy efficiency.

To popularize the ENERGY STAR® programs, EPA conducts workshops and training courses, offers free analytical software for calculating energy and financial savings, and operates a hotline for technical assistance, information on energy saving technologies, and mailing of efficiency upgrade manuals.

More than 75 ENERGY STAR® Buildings partners have so far upgraded 400 million square feet of floor space. EPA launched the program in 1994 with a series of ENERGY STAR® Showcase projects to demonstrate the economic potential of whole-building energy efficiency upgrades. One noteworthy local government showcase project is the Hungerford Office Building in Montgomery County, Maryland. In 1994, the county retrofitted the 84,000 square foot social services facility with energy efficient equipment. The improvements save the county \$90,000 annually on energy bills and have increased the facility's asset value by \$8.82 per square foot, at a total cost of only \$1.82 per square foot. With a project cost of approximately \$153,000, the payback period was less than two years.³



RETURN ON ENERGY EFFICIENCY INVESTMENT

Hungerford Office Building, Montgomery County, MD

- Comprehensive upgrade of 84,000 square feet.
- \$90,000 in annual savings on energy bills.
- Payback of \$153,000 cost within two years.
- \$8.82 per square foot increase in facility's asset value

INNOVATIVE LOCAL INITIATIVES

● **THE PHILADELPHIA SCHOOL DISTRICT'S SAVE ENERGY CAMPAIGN**

HIGHLIGHTS

- ▶ No initial funding required.
- ▶ Incentive program returns 40% of savings to individual schools.
- ▶ First-year savings of \$3 million.
- ▶ \$85 million in savings over 13 years.

In 1983, while looking for ways to trim its budget and provide better educational services, the Philadelphia School District discovered that it was spending more than twice as much on energy for heating and lighting as it was on books and supplies. With energy costs rising and no money available for capital investments

to improve the energy efficiency of its 258 schools, the District created the Save Energy Campaign, a voluntary incentive-based energy conservation program that has become a model for communities across the country.

The cornerstone of the campaign is the provision of financial incentives for schools to reduce their energy consumption. Schools that save over their three previous years' average energy bills keep 40 percent of the savings. The School District's general fund also gets 40 percent, with the remaining 20 percent going into a special revolving fund earmarked for capital improvements that result in additional energy conservation. With no start-up funds at the beginning of the campaign, the district encouraged schools to focus initially on the simplest and least expensive conservation measures, such as turning off unused lights, turning down boilers earlier in the day, and maintaining better overall temperature control. In the campaign's first year, these measures yielded savings of \$3 million. Over 13 years, the program has brought cumulative savings of \$85 million, much of which has been used to purchase computers, textbooks, sound systems, film projectors, and other equipment and supplies.⁴

● THE CITY OF PHOENIX'S ENERGY MANAGEMENT PROGRAM

HIGHLIGHTS

- ▶ \$150,000 in first-year savings from low cost lighting upgrades.
- ▶ Savings Reinvestment Plan uses 50% of energy savings for further upgrades.
- ▶ Annual energy cost savings exceeded \$1 million by 1986.
- ▶ Net savings of \$18.4 million returned to city's general fund over 16 years.

In the late 1970s, city officials in Phoenix, Arizona realized that if energy use in city-run facilities were treated as a single expense, it would be the largest budget item after payroll. To bring down these costs, the city instituted its Energy Management Program to audit energy use and begin upgrades of its 300 buildings. Starting with simple, low cost projects, such as replacing incandescent light bulbs with compact fluorescent lighting, the program saved \$150,000 in its first year. The city has since reaped tens of thousands of dollars in additional savings simply by assigning a "utilities monitor" to check all electric bills for errors and overcharges.

In 1983, the City Council used \$50,000 in state oil overcharge funds as seed money to create the Savings Reinvestment Plan (SRP), a revolving fund that uses energy cost savings to finance additional capital improvements and efficiency upgrades. Each year the SRP reinvests half of all energy savings back into the fund, up to a cap of \$500,000. By 1986, energy savings had already exceeded \$1 million annually, surpassing the reinvestment cap. The City Council recently voted to raise the cap by \$50,000 annually over five years, to a new limit of \$750,000.

Phoenix has achieved phenomenal returns on its investment in energy efficiency. By 1994, the Energy Management Program had yielded \$22.8 million in cumulative energy savings. The city put \$18.4 million of this savings into its general fund, and reinvested about \$4.4 million in the SRP. By annually investing \$500,000 of its energy savings in energy efficiency (the equivalent of 1.25 percent of its \$40 million energy bill), the city now saves \$4 million, or 10 percent of its energy costs, each year.⁵

● CITY OF PORTLAND: CITY ENERGY CHALLENGE

HIGHLIGHTS

- ▶ Funded through a fee of 1% of each city department's annual energy bill.
- ▶ Provides energy audits, annual energy use reports, and technical assistance.
- ▶ Energy cost savings returned to individual departments for discretionary use.
- ▶ Annual energy savings approaching \$1.2 million after five years.
- ▶ \$3 million in cumulative savings over five years.
- ▶ 5.7% average IRR on investments of \$2.6 million; payback within four years.

The City of Portland, Oregon is a leader in promoting sustainability and environmental awareness. Portland adopted a formal energy policy in 1990, setting a goal of 10 percent reduction in energy consumption for both the public and private sectors. To demonstrate its own commitment to energy efficiency and to serve as an example to local business leaders, the city initiated its City Energy Challenge (CEC) in 1991, with a goal of reducing its own annual energy bill by \$1 million (more than 11 percent) within five years.

To fund salaries for CEC staff, the City Council charges each of the city's eight bureaus a fee equal to one percent of its annual energy bill, up to a limit of \$15,000 per bureau. In return, the CEC staff provides each bureau with an annual report on its energy use, energy audits of its facilities, and energy conservation training. The CEC staff also assists the bureaus in preparing bid solicitations and selecting contractors for capital improvements. In addition, the CEC publishes a newsletter with information on energy conservation technologies and project successes. As an incentive for the bureaus to implement CEC recommendations, all energy cost savings are returned to them for their own use.

CEC staffers have also worked with the city's Office of Fiscal Administration (OFA) to help bureaus obtain financing for capital improvements. By "piggy-backing" funding for energy efficiency on larger municipal debt sales, OFA has created a low-interest loan fund; bureaus repay the loans out of their energy savings. By the end of 1996, the city's annual energy savings under the CEC topped its five-year goal of \$1 million, with a total of \$3 million in cumulative savings. The city has invested \$2.6 million in capital improvements, but has achieved an

average internal rate of return of 25.7 percent, yielding payback in less than four years.⁶

SMART ENERGY INVESTMENTS IN PUBLIC SERVICES

Local governments incur substantial energy-related expenses in the operation of public utilities and infrastructure. The Department of Energy has estimated that energy consumption accounts for 50 to 75 percent of municipal water system operating costs, with pumps consuming as much as 80 percent of the electricity used in drinking water treatment and distribution.⁷ Similarly, electricity to power pumps and aerators accounts for a large portion of wastewater treatment system operating costs. A single streetlight or traffic light consumes only a small amount of energy, but collectively they can cost some communities more than a million dollars a year. The examples of energy efficiency investments presented below include cost-saving success stories for each of these energy applications.

WATER SUPPLY SYSTEMS

By installing a Supervisory Control and Data Acquisition (SCADA) computer network on its water distribution system, the City of Fresno, California is saving \$725,000, or 13 percent of its water supply electricity costs each year. Energy savings paid for the \$3.2 million cost of the network within five years.⁸

The California Water Service Company is saving an average of \$47,000 annually in energy costs, following installation of a SCADA network at a cost of \$100,000. During the first four years of its operation, the cost per pumped gallon of water averaged 29 percent lower than in the prior four years.⁹

LOCAL GOVERNMENT SUCCESS STORIES: ENERGY SAVINGS IN PUBLIC SERVICES

- Fresno, California; Water supply SCADA

 - Annual savings = \$725,000 (13%)
 - Project cost = \$3.2 million
 - Payback period = 5 years
- California Water Service Co.; SCADA

 - Annual savings = \$47,000 (29%)
 - Project cost = \$100,000
 - Payback period = 2+ years
- Philadelphia Wastewater Treatment Plants;
Standby electrical generation using methane

 - Expected savings = \$44.7 million over 20 years
- San Jose, California; Energy efficient streetlights

 - Annual savings = \$1.5 million
- City and County of Denver; LED traffic lights

 - Annual savings = \$300,000
- Santa Monica, California; LED traffic lights

 - Annual savings = \$200,000 (estimated)
 - Project cost = \$500,000 to \$600,000
 - Payback period = 2 to 3 years

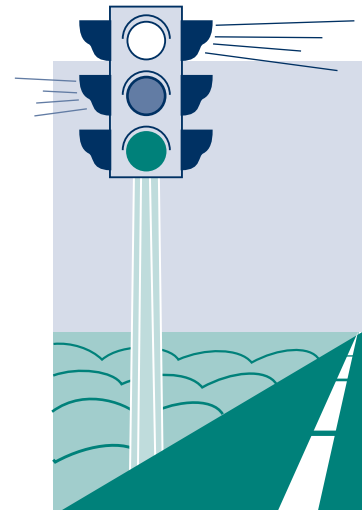
WASTEWATER TREATMENT

In 1993, the Philadelphia Water Department instituted an innovation to generate additional electricity at two of its three wastewater treatment plants. Methane from sludge digesters is used to power a standby electrical generator. This standby generating capacity allows the department to purchase power at low interruptible rates, which are expected to save \$44.7 million over 20 years.¹⁰

Advanced Integrated Pond (AIP) wastewater treatment systems use microalgae in place of conventional electro-mechanical systems to aerate wastewater. According to DOE, because aeration often accounts for over 60 percent of the energy used in conventional treatment plants, AIP systems may use as little as 20 to 25 percent of the total energy consumed by conventional plants. As a result, AIP systems have substantially lower costs. The total operating costs, excluding payroll, for the AIP wastewater treatment plant in St. Helena, California, for example, are less than \$100,000 per year to treat flows of 500,000 gallons per day.¹¹

STREET LIGHTING AND TRAFFIC CONTROL

- Between 1981 and 1984, the City of San Jose, California, replaced 48,000 incandescent and mercury vapor streetlights with more efficient low- and high-pressure sodium lights, achieving annual savings of \$1.5 million.
- The City of Hanford, California is saving \$11,700 per year after replacing incandescent lights in its traffic signals with energy efficient light-emitting diodes (LED). The \$80,000 project was funded with a loan from the California Energy Commission and a rebate from the local electric utility.
- The City and County of Denver have replaced their entire stock of 17,000 traffic signals with new LED lights, saving over \$300,000 per year in energy and maintenance costs.
- Santa Monica, California planned to retrofit all of its red traffic signals with LED lights in 1997. The city estimated that the project would cost \$500,000 to \$600,000 and have a payback period of three years or less.
- In 1989 the City of Albuquerque, New Mexico installed 21 lights powered by photovoltaic cells over its Tramway Boulevard Bike and Walking Path. The \$2,500 cost of each solar light was \$500 less than the cost of connecting conventional lights to the closest underground line, yielding up-front savings of \$10,500. In addition, the solar cells eliminate the cost of electricity to power the lights.
- The City of Carrollton, Texas has installed 80 solar-powered school zone flashers at 40 schools, saving more than \$3,500 apiece compared to the cost of flashers connected to the electrical grid.
- As part of California's Service Authority for Freeway Emergencies (SAFE) project, 26 of the state's 58 counties installed photovoltaic emergency call boxes along freeways. The solar call boxes cost from \$2,200 to \$2,300 to purchase and install, and about \$350 per year to maintain. They reportedly have a 10-year life-cycle and cost about 75 percent less than conventional grid-connected call boxes.



FINANCING SMART ENERGY INVESTMENTS

Local governments can use a variety of innovative tools to finance energy efficiency improvements and upgrades, and thus reap significant savings on energy costs at minimal expense. Leasing and performance contracts, revolving funds and state loans are three popular financing options that can be paid for with energy savings, requiring little or no up-front cash outlay.

LEASING AND PERFORMANCE CONTRACTS

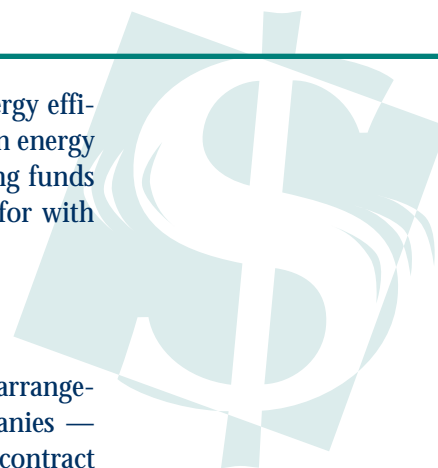
Among the most widely used and successful financing tools are leasing arrangements through which contractors — known as energy service companies — fund and provide the capital equipment for the upgrade, and may also contract to operate and maintain the equipment, in exchange for lease payments from the local government. Leases may take any of several forms, but they generally allow local governments to make lease payments out of the energy cost savings accrued from the project. At the end of the lease term, the lessee (in this case the local government) typically takes ownership of the capital equipment, which normally has a useful life substantially longer than the lease term.


There are three basic lease options. The best one for any given situation will depend on several questions such as the cost of the project, the desired lease term and whether the local government wishes to take over the capital equipment at the end of the lease. Under a **financing lease**, the lessee pays for the equipment in equal monthly installments, and usually purchases the equipment at the end of the term for a nominal fee. **Operating leases** are often used for shorter terms, with the lessor (the contractor) retaining ownership of the equipment and the lessee (the local government) having the option to purchase the equipment at market value, upgrade to other equipment or renegotiate the lease when it expires. Under a **guaranteed savings lease**, also known as a performance contract, the contractor guarantees that the annual lease payments for the improvements will not exceed the energy savings, and there is often a clause stating that if the savings exceed the lease payment, the local government keeps the difference. As with a financing lease, the local government takes ownership of the capital equipment at the end of the lease.¹² The guaranteed savings lease is often the most attractive financing option for cash-strapped local governments, since it has no up-front cost and is risk-free.

The Iowa Energy Bank provides one example of a leasing contract. The bank finances projects through leasing agreements, with lease payments structured to be less than or equal to the energy savings. Originally created to finance energy projects in public schools and community colleges, the Energy Bank now operates separate lease-finance programs for hospitals, local government facilities and private colleges.¹³

REVOLVING FUNDS

Revolving funds, such as those employed in the Philadelphia School District's Save Energy Campaign and the City of Phoenix's Energy Management Program,





FINANCING SMART ENERGY INVESTMENTS

- Leasing and performance contracts
 - Capital improvement costs paid out of energy cost savings.
- Revolving funds
 - Energy cost savings from no-cost or low-cost efficiency upgrades used to finance later capital investments.
- State loan programs
 - Loans repaid out of energy cost savings.

are other popular and effective financing mechanisms that often require little or no initial funding. The essence of a revolving fund is that the initial savings generated from implementation of simple, low-cost energy efficiency improvements, or no-cost behavioral and operational changes, are used to fund subsequent, more capital-intensive improvements. Thus, early savings leverage even greater energy efficiency gains over time.

A Canadian program similar to Philadelphia's Save Energy Campaign, Destination Conservation, was started in Alberta in 1987 by the Environmental Resource Center. This program promotes the use of simple, no-cost or low-cost "lifestyle" changes in schools, such as turning off unneeded lights, to generate savings that are subsequently used for low cost retrofits such as the installation of occupancy sensors for classroom lights. Savings from these low cost retrofits are in turn used to finance more capital intensive retrofits, such as lighting upgrades. Two hundred and twenty schools from 24 districts in Alberta have participated in the program, with the 87 schools in TransAlta Utilities' service territory saving an average of 25 percent on their baseline utility bills.¹⁴

STATE LOAN PROGRAMS

Local governments may be able to finance capital-intensive energy efficiency investments in public facilities through loan programs administered by state energy offices. For example, the Texas State Energy Conservation Office administers the Statewide Retrofit Demonstration and Revolving Loan Program, better known as the Loan to Save Taxes and Resources (LoanSTAR) program. LoanSTAR uses a portion of the state's oil overcharge payments as a revolving loan fund to finance energy efficiency upgrades of public facilities such as hospitals, schools and libraries. The low-interest loans are repaid out of energy cost savings. Under a separate initiative, the Texas Education Agency is using \$23 million in oil overcharge funds to provide School Energy Management grants to public schools for energy efficiency projects.¹⁵

Other states have similar programs. The Oregon Department of Energy offers the Small Scale Energy Loan Program, providing loans at 5.9 percent interest for up to 15 years. The California Energy Commission has three separate initiatives to provide energy efficiency funding and technical assistance to local governments. The Energy Partnership Program provides loans to cities and counties to retrofit existing facilities, as well as energy efficiency design assistance for new facilities. The Schools and Hospitals Program provides grants and loans for energy projects at public schools and hospitals. The Water Energy Efficiency Program provides technical assistance to cities, counties, and water districts to improve the energy efficiency of municipal water and wastewater facilities. Using an Energy Partnership loan, the City of Riverside completed energy efficiency retrofits of its seven story City Hall building in 1993, gaining annual savings of \$85,649 that paid for the project in 2.5 years and saved three jobs in the city's building services department.¹⁶



GETTING STARTED

TIPS FOR MAKING \$SMART ENERGY EFFICIENCY INVESTMENTS

From the case studies presented in this chapter, local governments can extract some general guidelines:

- Start with simple, low-cost measures. Using a revolving fund is a cost-effective way to leverage early savings from low-cost retrofits to finance more capital intensive projects as the program proceeds.
- Take advantage of state loan programs and innovative financing mechanisms, such as leasing arrangements that allow energy efficiency upgrades of public facilities at no cost to local governments.
- Educate government units (e.g., schools or departments) about energy and ways to reduce its use. Perform audits and allow departments to track their progress in improving energy efficiency to promote awareness of energy consumption.
- Provide financial incentives to government units by returning to them a portion of their energy cost savings, thus increasing their commitment to energy conservation.
- Adopt alternatives to the extension of power lines, such as the use of solar cells, for small scale electricity uses in remote locations. Many communities find that the cost savings can be immediate and substantial.
- Publicize successes through public forums, newsletters or information campaigns. Use the example of the local government to spur energy efficiency improvements across the whole community.



■ SOURCES OF ADDITIONAL INFORMATION

U.S. EPA GREEN LIGHTS AND ENERGY STAR® PROGRAMS

EPA Green Lights/ENERGY STAR® Buildings
Atmospheric Pollution Prevention Division
Office of Air and Radiation
Contact: Doug Gatlin,
Manager, State & Local Government sector
Phone: (202) 564-9619

EPA ENERGY STAR® Purchasing Initiative
Atmospheric Pollution Prevention Division
Office of Air and Radiation
Contact: Jennifer Dolin,
Program Manager
Phone: (202) 564-9073

U.S. DEPARTMENT OF ENERGY PROGRAMS

U.S. Department of Energy Programs
Office of State and Community Programs
Office of Building Technology
U.S. Department of Energy
1000 Independence Avenue, SW
Washington, DC 20585
Phone: (202) 586-4074
Internet Site: <http://www.eren.doe.gov/buildings>

The Office of State and Community Programs provides funding to state governments for energy programs and low income housing weatherization assistance. Individual states may distribute these funds to local governments. OSCP's Internet site currently provides a directory of more than 90 computer software tools for evaluating energy efficiency in buildings. The site also provides information about advanced building technologies, case studies, technical and financial assistance opportunities, and partnership opportunities that promote energy efficiency and pollution prevention.

Energy Efficiency and Renewable Energy
Clearinghouse
PO Box 3048
Merrifield, VA 22116
Phone: (800) 363-3732
Internet Site: <http://www.eren.doe.gov/consumerinfo/>

DOE's Office of Energy Efficiency and Renewable Energy administers the Energy Efficiency and Renewable Energy Clearinghouse to make available a wide range of documents on energy efficiency. The clearinghouse's Internet site contains 26 subject directories with over 500 files (text files and software) that can be downloaded. Many of these documents are also available in hard copy.

Center of Excellence for Sustainable Development
Office of Energy Efficiency and Renewable Energy
U.S. Department of Energy
Denver Regional Support Office
1617 Cole Boulevard
Golden, CO 80401
Phone: (800) 363-3732
Fax: (303) 275-4830
Internet Site: <http://www.sustainable.doe.gov>

DOE's Center of Excellence for Sustainable Development provides information on technical assistance and sources of funding. Its Internet site serves as a clearinghouse for articles concerning sustainable communities, energy efficiency, land use planning and management, transportation, green building and related topics.

Energy Efficiency and Renewable Energy Network (EREN)
Internet Site: <http://www.eren.doe.gov>

EREN is an extensive network of Internet sites that provides information related to DOE's Office of Energy Efficiency and Renewable Energy's initiatives.

U.S. DEPARTMENT OF ENERGY PROGRAMS *continued*

<p>National Renewable Energy Laboratory 1617 Cole Boulevard Golden, CO 80401 Phone: (303) 275-3000 Internet Site: http://www.nrel.gov</p>	<p>DOE's National Renewable Energy Laboratory (NREL), managed by the Midwest Research Institute, conducts research to develop renewable energy technologies and improve energy efficiency. NREL's Office of State and Local Partnerships was created in 1994 to provide information and technical assistance to state and local governments. As part of its Cities and Counties Project, NREL developed a series of 30 fact sheets describing innovative energy efficiency initiatives developed by city and county governments. These fact sheets are available in hard copies or online from the Energy Efficiency and Renewable Energy Clearinghouse.</p>
---	--

LOCAL ENERGY MANAGEMENT PROGRAMS

<p>Urban Consortium Energy Task Force (UCETF) Public Technology, Inc. 1301 Pennsylvania Avenue, NW Washington, DC 20004-1793 Phone: (202) 626-2400 Internet Site: http://www.pti.nw.dc.us/etf.htm</p>	<p>The Urban Consortium is a membership organization of 23 large municipal governments from around the country. Its Energy Task Force develops strategies to address local energy and environmental concerns. UCETF also offers publications on energy-related topics, including a workbook entitled, Sustainable Energy — A Local Government Planning Guide for a Sustainable Future.</p>
--	--

<p>International City/County Management Association (ICMA) 777 North Capitol Street, NE, Suite 500 Washington, DC 20002-4201 Phone: (202) 289-4262 Fax: (202) 962-3500 Internet Site: http://www.icma.org</p>	<p>ICMA is a professional and educational association for more than 8,000 local government administrators worldwide. ICMA provides training programs, technical assistance, data services and publications to improve the quality of local government management and administration.</p>
--	--

<p>City of Portland Energy Office 1211 SW Fifth Avenue, Suite 1170 Portland, OR 97212-3711 Phone: (503) 823-7222 Fax: (503) 823-5370 E-mail: pdxenergy@ci.portland.or.us Internet Site: http://www.ci.portland.or.us/energy/web</p>	<p>Portland, Oregon's energy office manages a variety of programs to reduce energy use in the public and private sectors.</p>
--	---

<p>National Association of Energy Service Companies (NAESCO) 1615 M Street, NW, Suite 800 Washington, DC 20036 Phone: (202) 822-0950 Fax: (202) 822-0955</p>	<p>NAESCO represents energy efficiency industries and energy products and service companies. It provides information about energy service companies and demand side management programs, and publishes the Energy Efficiency Journal.</p>
--	---

LOCAL ENERGY MANAGEMENT PROGRAMS *continued*

City of Minneapolis
 Center for Energy and Environment
 Butler Square, Suite 412A
 100 6 St. N
 Minneapolis, MN 55403-1520

The Center for Energy and Environment offers an assortment of energy efficiency programs to Minneapolis residents and businesses, including energy education and low cost weatherization assistance to low income households, and low interest financing of up to \$7,000 to residential property owners for efficiency improvements. The Fluorescent Lighting Installation Program helps businesses finance and install energy efficient lighting, and Operation Installation provides one stop service for residential energy conservation retrofits to cut the use of natural gas for heating.^{17,18}

ENDNOTES—CHAPTER 2

1. U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Technical Information Program. "Energy Efficiency Strengthens Local Economies," Cities and Counties Project Fact Sheet #3.
2. U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Technical Information Program. "Procurement Works Hand in Hand With Energy Efficiency," Cities and Counties Project Fact Sheet #15.
3. The Results Center, Division of IRT Environment, Inc. Montgomery County, Maryland. Resource Conservation Program. The Results Center Profile #125. 1996.
4. U.S. Department of Energy. The Rebuild America Financing Handbook. 1996. See also The Results Center, Division of IRT Environment, Inc. School District of Philadelphia. Save Energy Campaign. The Results Center Profile #114.
5. The Results Center, Division of IRT Environment, Inc. The City of Phoenix. Energy Management Program. The Results Center Profile #118.
6. U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Center of Excellence for Sustainable Development. "Cities and Counties: Portland, Oregon," accessed 5/16/97 at <http://www.sustainable.doe.gov/ss/pti/PORTLAND/index.html>.
7. U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Technical Information Program. "Cities Cut Water System Energy Costs," Cities and Counties Project Fact Sheet #13.
8. U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Technical Information Program. "Cities Cut Water System Energy Costs," Cities and Counties Project Fact Sheet #13.
9. Ibid.
10. The Results Center, Division of IRT Environment, Inc. Philadelphia Water Department. Conservation Assistance Program. The Results Center Profile #109.
11. George Milanes, Chief Operator of the AIP wastewater treatment plant in St. Helena, California. Personal Communication, July 16, 1997.
12. U.S. Department of Energy. The Rebuild America Financing Handbook. 1996
13. The Results Center, Division of IRT Environment, Inc. Iowa Department of Natural Resources. Energy Bank. The Results Center Profile #73.
14. The Results Center, Division of IRT Environment, Inc. Environmental Resource Center. Destination Conservation. The Results Center Profile #82.
15. The Results Center, Division of IRT Environment, Inc. The State of Texas. LoanSTAR Revolving Fund. The Results Center Profile #101.
16. The Results Center, Division of IRT Environment, Inc. California Energy Commission. Energy Partnership Program. The Results Center Profile #64.
17. City of Minneapolis, Center for Energy and Environment, "City of Minneapolis: Energy & Environment," Internet Site, <http://www.ci.mpls.mn.us/departments/city-coordinator/neighborhood/cee.html> (accessed 5/29/97).
18. International Council for Local Environmental Initiatives, "Minneapolis, USA: Residential Energy Conservation," Project Summary #47, Internet Site, <http://www.iclei.org/leicomm/lei-047.htm> (accessed 5/13/97).