U.S. Department of Energy

Tomorrow's Energy Today

for Cities and Counties

Blazing the Energy Trail: The Municipal Energy Management Program

The Urban Consortium Energy Task Force pioneers energy and environmental solutions for U.S. cities and counties. When local officials participate in the task force, they open the door to many resources for their communities.

The United States is entering a period of renewed interest in energy management. Improvements in municipal energy management allow communities to free up energy operating funds to meet other needs. These improvements can even keep energy dollars in the community through the purchase of services and products used to save energy.

With this idea in mind, the U.S. Department of Energy Municipal Energy Management Program has funded more than 250 projects that demonstrate innovative energy technologies and management tools in cities and counties through the Urban Consortium Energy Task Force (UCETF). UCETF helps the U.S. Department of Energy foster municipal energy management through networks with cities and urbanized counties and through links with three national associations of local governments—the National League of Cities, the National Association of Counties, and the International City/County Management Association.

UCETF provides funding for projects that demonstrate innovative and realistic technologies, strategies, and methods that help urban America become more energy efficient and environmentally responsible. The task force provides technical support to local jurisdictions selected for projects (for information on the selection process, see p. 5).

UCETF also shares information about successful energy management projects with cities and counties throughout the country via technical reports and project papers. The following descriptions capsulize a sample of UCETF's demonstration projects around the country.

Lewis Stewart, PG&E / VL682

Buildings, including lighting, represent an area of opportunity for achieving substantial energy and dollar savings.

"Communities are sitting on a gold mine of potential savings. One of the primary ways to save is to reduce the municipal government energy bill."

— Mike Lindberg
Chairperson
UCETF

Building on a Recycled Foundation in Austin, Texas

From the 40% fly ash concrete slab to the recycled-content roof, the Green Builder Model Home in Austin, Texas, is an example of what could be the future of home building in America. Each nuance of the design, which the city calls "green building," indicates the environmental friendliness of this house. Among the features are:

- A brick facade that is 20% coal bottom ash (residue left from burning coal)
- Doors made of reconstituted wood
- 100% recycled-content carpet in the bedrooms
- Natural linoleum (made from cork and other natural materials) instead of vinyl linoleum on the kitchen and bathroom floors and countertops
- Recycling centers built into the pantry
- Cotton for attic insulation
- Exposed concrete in the living area for passive solar heat storage
- Several south-facing windows
- A large porch on the western side to protect the home from the intense summer sun
- High-efficiency fluorescent lighting throughout.

The model home is part of the Green Builder Program, which is coordinated through Austin's Environmental and Conservation Services Department. The Green Builder Program seeks to shift home building practices to approaches that not only use energy, water, and other natural resources more efficiently, but also preserve the environment, strengthen the local economy, and enhance the quality of life for Austin citizens. This program also demonstrates sustainability concepts for the building community.

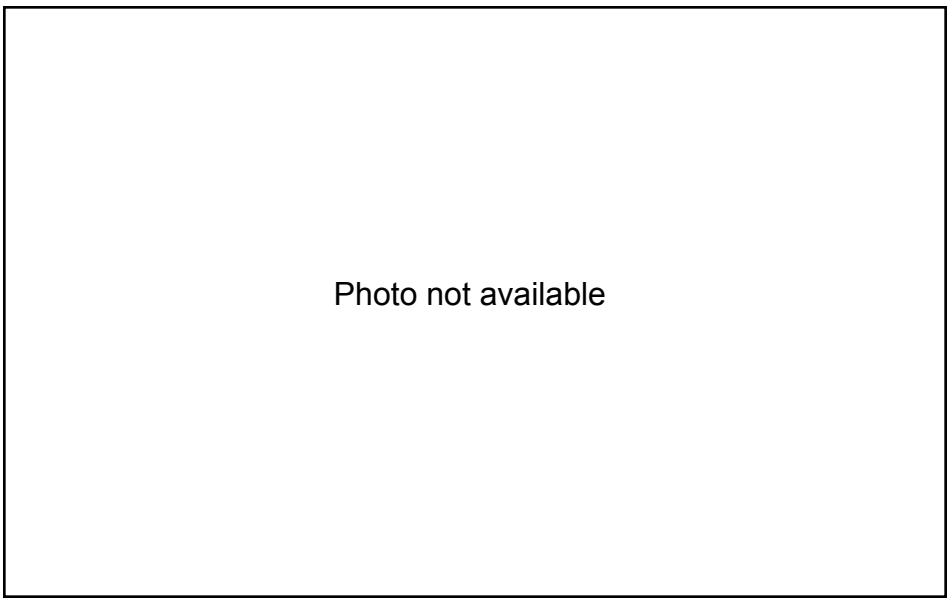
The 1100-square-foot (102-square-meter) home, which is located in an existing subdivision, took 6 months to build, "partly because of the learning curve of dealing with new materials," said Laurence Doxsey, Coordinator of Austin's Green Builder Program, "and partly because of untrained workers." Those workers consisted of at-risk youth, all on parole, from the American Institute for Learning, one of the project partners. Several private firms also donated some materials.

UCETF supplied $25,000 of the money needed for this endeavor. Austin's Habitat for Humanity picked up the rest, which came to $42,500. That's about $5,000 more than Habitat for Humanity would normally put into a house. Doxsey says the increase can be attributed to a budget overrun on the house's foundation. Otherwise, the home would have been less costly to build than a comparable home using traditional materials (e.g., lumber). In addition, projections indicate that the home will require 30% less electrical energy than a traditional home of the same size at the same location.

Part of this project will include an analysis of the economic development potential of using the regional waste stream as a source for building materials. Builders will be able to

At-risk youth constructed the Green Builder Model Home for Austin's Habitat for Humanity. This photo shows at-risk youth working on another Green Builder house.

Laurence Doxsey / VL684



Richard Wisdom, San Jose Mercury News

Designers of the San Jose Sharks' new hockey arena used the city's Innovative Design & Energy Analysis Service (IDEAS) to increase the building's energy efficiency, with minimal cost to builders.

learn more about building green homes from a video that's being produced about the Green Builder Model Home, Doxsey says. The video will be available from the city of Austin (see *For More Information*).

Proposing IDEAS in San Jose, California

The city of San Jose, California, supports construction of energy-efficient commercial and industrial buildings through the Innovative Design & Energy Analysis Service (IDEAS). IDEAS was established in 1988 with a $75,000 award from UCETF. The program provides general information on energy efficiency alternatives for design, lighting, and heating, ventilating, and air conditioning to builders and developers. IDEAS uses computer simulation to determine which technologies are most appropriate for a building given the building's size, location, and purpose.

IDEAS staff members learn of construction projects through the city's planning department. After reviewing plans, they approach the project design team early in the process with recommendations for specific technologies that can improve energy performance. The hope is to become involved as early as possible with construction projects and recommend changes that can increase a building's energy efficiency.

And that's exactly what happened during construction of an arena for the San Jose Sharks, the local professional ice hockey team. "We were able, through computer analysis, to convince the architects and engineers to put in high-efficiency chillers and efficient lighting that were not part of the original design," says Rita Norton, Division Head in San Jose's Conservation and Resource Management Program.

Norton says the biggest obstacle was the initial cost—$60,000—of the energy efficiency measures. However, through a rebate from Pacific Gas and Electric Company (PG&E), IDEAS staff worked out the financing and convinced designers to modify the original plans. City officials estimate an annual savings of approximately $320,000, largely the result of the PG&E rebates.

Running Out of Greenhouse Gas in Metro-Dade County, Florida

The cornerstone of President Clinton's Global Climate Change Action Plan is the reduction of greenhouse gas emissions to 1990 levels by the year 2000. Although many chemicals contribute to the greenhouse gas effect, carbon dioxide is one of the most prevalent. But long before the President announced his plan, Metro-Dade County in southern Florida was taking steps necessary to reduce its carbon dioxide emissions.

With money supplied by UCETF, Metro-Dade participates in the Urban CO_2 Reduction Program of the International Council for Local Environmental Initiatives. Twelve other cities around the world are part of this international effort to mitigate the

Since its inception more than 10 years ago, the Task Force and the U.S. Department of Energy have sponsored more than 250 projects.

"The most important thing about UCETF is that it allows energy staff from different areas to get together and share information."

—John Deakin
Director
Bureau of Energy Conservation
City of San Francisco

potential for global warming by reducing carbon dioxide emissions. As a low-lying coastal community, the county is particularly vulnerable to some potential effects of global warming—flooding, saltwater intrusion, population shifts, water shortages, and agricultural damage. And as the only subtropical city in the project, Metro-Dade is a potential model for similar metropolitan areas around the world. UCETF initially awarded $50,000 for the project in 1992, then awarded another $50,000 in 1993 for continuation of the project.

After 2 years of gathering data, Metro-Dade has come up with a 35-point plan to reduce carbon dioxide emissions to 1988 levels by 2005. Much of that plan addresses transportation, alone responsible for 45% of Metro-Dade's carbon dioxide emissions in 1988. Currently, more than 97% of the county's population travels via single-occupancy vehicles.

Because vehicle emissions are a major contributor to carbon dioxide accumulation, the Metro-Dade Board of Commissioners sent a resolution to the President, and to the county's Congressional delegation, that advocates increasing Corporate Average Fuel Economy (CAFE) standards for cars from 27.5 miles per gallon (44 kilometers per gallon) to 45 miles per gallon (72 kilometers per gallon). CAFE standards are federal regulations that specify a minimum average fuel economy to be met by car and light-truck manufacturers.

The county also plans to change transportation patterns by encouraging transit use, group travel, and telecommuting through a combination of employer incentives and county programs. The carbon dioxide reduction plan even calls for professional office buildings to add shower facilities to make cycling more attractive to commuters.

The carbon dioxide reduction plan has precipitated several more changes for Metro-Dade. The county is revising its landscape ordinance to require strategic tree planting, street trees, and parking lot trees, which can provide shading and cooling to help reduce energy demands. Metro-Dade is also expanding the solid-waste recycling program and is planning to capture and use landfill gases such as methane.

Walter Marks, Metro-Dade / VL683

Rail systems help Metro-Dade County reduce carbon dioxide emissions from transportation, responsible for 45% of Metro-Dade's carbon dioxide emissions in 1988.

Conclusion

UCETF provides a unique, creative forum to define and ameliorate common urban problems and to validate practical ways to enhance local government services. The Task Force's accomplishments have led the way in creating strategic energy programs that save scarce resources and create revenue for cities and counties. By working with UCETF, local governments gain tangible benefits such as peer networking and participating in priority energy research and development. ■

Making Local Energy Issues Its Business

The Urban Consortium Energy Task Force (UCETF) has completed more than 250 demonstration and technology transfer projects in urban jurisdictions. These projects explore, test, and validate new energy management approaches, technologies, and policies.

The task force shares information about its projects with cities and counties throughout the country via technical reports, project papers, video teleconferencing, videos, conferences, presentations to city and county governments, and news articles.

And, through UCETF's peer-to-peer assistance teams, officials from cities and counties can sit down face to face and discuss the challenges they're experiencing. "This peer-to-peer exchange is one of the most important components of this task force," says John Deakin, Director of San Francisco's Bureau of Energy Conservation. "You can find somebody from a city who's facing the same kind of problems you are."

The premise is simple: *Why reinvent the wheel?* UCETF arranges discussion among project participants so that **all** can benefit from another's experiences. Each year, cities and counties that receive UCETF project funds get together for a kickoff meeting. At this meeting, the individual projects are subdivided into "programmatic units" of similar projects. Then, during the following spring and fall, the programmatic units meet again "to hear what everyone else is doing and offer help," Deakin adds.

Leading the Pack

At the helm of UCETF is Michael Lindberg, also Commissioner of Public Utilities for the city of Portland, Oregon. Lindberg says the Task Force's activities actually demonstrate to cities and counties ways to save energy and dollars. "Communities are sitting on a gold mine of potential savings. One of the primary ways to save is to reduce the municipal government energy bill," he adds.

Lindberg believes UCETF provides a needed forum that allows energy officials from America's cities and counties to exchange information and ideas. "And whatever level of government you're in, you'll find people like yourself," he says.

The group directly responsible for UCETF activities comprises 20 management and technical professionals from urban cities and counties. These experienced energy professionals are committed to developing local strategies responsive to the national energy situation. Staff members from Public Technology, Inc., handle day-to-day operations and provide support services to the UCETF chairperson and Task Force members.

Applying for UCETF Funds

Each year, UCETF requests proposals from major urban jurisdictions. After a rigorous review process, UCETF funds those projects that best define and demonstrate innovative and realistic technologies, strategies, and methods that can facilitate urban America's attempts to become more energy efficient and environmentally responsible.

Cities and counties with populations of more than 250,000 are eligible for the applied research and demonstration projects; those with populations of more than 100,000 are eligible for technology transfer projects. Smaller municipalities may join together to submit proposals. Local governments can receive up to $75,000 for UCETF applied research and development projects, which are designed to improve local government services and economic climate; they can receive up to $25,000 for technology transfer projects, which are designed to transfer information from previous projects to other cities and counties.

For each year's program, projects are organized around a specific theme. For example, the 1994 demonstration projects are focused on sustainable communities (communities that preserve a livable environment for future generations) and economic development.

Mike Lindberg, Chairperson, UCETF

Selected projects are funded for 1 year. If a project requires more than 1 year to complete, it should be phased to allow for tangible deliverables by the end of the first year. Second-year funding is not guaranteed, however, and depends on submission of a new proposal, satisfactory completion of the first phase, and the availability of funds.

For all proposals, partnerships with other public- or private-sector entities are required and are intended to challenge participating cities and counties to form joint ventures to enhance project success and implementation. These partnerships encourage mutually developed solutions and creation of an infrastructure to effectively support projects and ensure their continuation beyond the funding period. Partners can contribute resources other than money. For more information about UCETF's request for proposals, contact Public Technology, Inc., at (202) 626-2400, or Mike Lindberg, UCETF Chairperson, at (503) 823-4890.

For More Information

Mike Lindberg, Chairperson
Urban Consortium Energy Task Force
Portland, OR 97204
(503) 823-4145

Public Technology, Inc.
1301 Pennsylvania Avenue, NW
Washington, DC 20004-1793
(202) 626-2400

Linda Graves
Municipal Energy Management Program
U.S. Department of Energy, EE-522
1000 Independence Avenue, SW
Washington, DC 20585
(202) 586-1851

John F. Deakin
Bureau of Energy Conservation
1155 Market Street, 4th Floor
San Francisco, CA 94103
(415) 554-3180

Laurence Doxsey
Green Builder Program
Environmental Conservation and Services Department
206 East 9th Street, Suite 17.102
Austin, TX 78701
(512) 499-3504

Susan Berryman-Rodriguez
Urban CO_2 Reduction Program
Department of Environmental Resources
33 SW 2nd Avenue
Miami, FL 33130
(305) 372-6758

Rita Norton
Conservation and Resource Management Program
777 North 1st Street, Suite 450
San Jose, CA 95112
(408) 277-5533

EREC
P.O. Box 3048
Merrifield, VA 22116
(800) 363-3732

The Energy Efficiency and Renewable Energy Clearinghouse (EREC) is a service funded by the U.S. Department of Energy to provide information on renewable energy and energy efficiency technologies.

DOE Regional Support Offices

The DOE Office of Energy Efficiency and Renewable Energy reaches out to the states and private industry through a network of regional support offices. Contact your DOE regional support office for information on energy efficiency and renewable energy technologies.

Atlanta DOE Support Office
730 Peachtree Street NE, Suite 876
Atlanta, GA 30308
(404) 347-2837
(AL, FL, GA, KY, MS, NC, PR, SC, TN; Territory: VI)

Boston DOE Support Office
One Congress Street, 11th Floor
Boston, MA 02114
(617) 565-9700
(CT, MA, ME, NH, RI, VT)

Chicago DOE Support Office
9800 South Cass Avenue
Argonne, IL 60439
(708) 252-2000
(IL, IN, MI, MN, OH, WI)

Dallas DOE Support Office
1420 West Mockingbird Lane, Suite 400
Dallas, TX 75247
(214) 767-7245
(AR, LA, NM, OK, TX)

Denver DOE Support Office
2801 Youngfield Street, Suite 380
Golden, CO 80401
(303) 231-5750
(CO, MT, ND, SD, UT, WY)

Kansas City DOE Support Office
911 Walnut Street, 14th Floor
Kansas City, MO 64106
(816) 426-4784
(IA, KS, MO, NE)

New York DOE Support Office
26 Federal Plaza, Room 3437
New York, NY 10278
(212) 264-1021
(NJ, NY)

Philadelphia DOE Support Office
1880 JFK Boulevard, Suite 501
Philadelphia, PA 19103
(215) 656-6950
(DC, DE, MD, PA, VA, WV)

San Francisco DOE Support Office
1301 Clay Street, Room 1060 North
Oakland, CA 94612
(510) 637-1960
(AZ, CA, HI, NV; Territories: AS, CM, GU, RP)

Seattle DOE Support Office
800 Fifth Avenue, Suite 3950
Seattle, WA 98104
(206) 553-1004
(AK, ID, OR, WA)

This document was produced for the U.S. Department of Energy (DOE) by the National Renewable Energy Laboratory, a DOE national laboratory. The document was produced by the Technical Information Program, under the DOE Office of Energy Efficiency and Renewable Energy.

DOE/CH10093-273
DE94000271
December 1994

Printed with a renewable source ink on paper containing at least 50% wastepaper, including 10% postconsumer waste