CURRENTS

AN ENERGY NEWSLETTER FOR LOCAL GOVERNMENTS

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Energy Efficiency and Global Climate Change

by Peter Asmus

The vast majority of Americans believe that global climate change is now a reality and that federal lawmakers are not showing adequate leadership in developing a credible strategy to deal with this crisis. At the same time, a growing number of local governments throughout California and the rest of the nation are taking matters into their own hands and instituting energy efficiency programs that not only help reduce emissions responsible for global warming, but offer communities a host of other benefits.

In a recent poll conducted by Research/Strategy/Management, Inc. of Rockville, Maryland, three-quarters of those surveyed said they believe that changes in weather patterns, such as hotter summers and more severe winters, are a result of global warming. And their most preferred remedy to this crisis is investments in energy efficiency.

While strategies to reverse global climate change are complex and daunting, requiring international cooperation sustained over the long-term, local governments can play a major role in reducing emissions of carbon dioxide (CO_2), the principal pollutant responsible for global warming. Cities and counties from around the world are already reporting significant reductions in CO_2

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WHAT'S INSIDE

TREE GUIDELINES BRING COMFORT TO SAN JOAQUIN VALLEY RESIDENTS

The Western Center for Urban Forest Research and Education has recently released *Tree Guidelines for San Joaquin Valley Communities*. This report discusses:

- ➢ How trees can improve environmental quality and conserve energy.
- ➢ Where trees should be placed to maximize their cost effectiveness.
- ➢ Which tree species will minimize conflicts with power lines, sidewalks and buildings.
- ➢ What makes a successful shade tree program.
- ➢ What sources of funding and technical assistance are available.

Tree Guidelines includes detailed information on the benefits and costs of maintaining a typical large, medium and small shade tree for a period of 40 years (and the same numbers at five year intervals while it's growing). It also contains a list of recommended species for various planting sites.

According to Greg McPherson, the Western Center's director and a leader in the movement to understand the relationships between

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San Joaquin Tree Guidelines

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trees, people, community and the environment, trees and other greenspace can lower air temperatures by 5-10 degrees in the San Joaquin Valley. Three strategically placed trees can reduce cooling energy needs in an energy efficient home by over $100 each year. And the savings in less efficient homes can be even greater.

Besides reducing the need for air conditioning in hot areas, trees planted in urban areas can protect the local environment. Trees improve air quality by absorbing pollutants and slowing the production of smog. They can also improve water quality by intercepting rainfall and thus reducing the amount of contaminated street water runoff. Other benefits of urban trees include:

- ➢ Reduced noise pollution.
- ➢ Decreased exposure to ultraviolet light.
- ➢ Increased wildlife habitat.
- ➢ Improved recreation opportunities.
- ➢ Job creation for skilled and unskilled labor.

Tree also bring neighborhoods together through tree planting and maintenance activities. In addition, they can increase property values. Research shows that home buyers will pay 1-2% of the sales price more for each large front yard tree.

To get your free copy of *Tree Guidelines for San Joaquin Valley Communities*, call Steve Hoyt at the Local Government Commission at ✆(916) 448-1198. For more information about the Western Center for Urban Forest Research and Education and its many tree programs, call Greg McPherson at ✆(530) 752-5897.

Where to Find ReLeaf

The California ReLeaf program was formed to promote the expansion, enhancement, and preservation of urban and community forests in California.

This statewide campaign aims to encourage individuals, organizations, industries, and government to contribute to the livability of our cities and the protection of our local and global environment by planting and caring for trees.

California ReLeaf produces *California Trees*, a quarterly newsletter that explores urban forestry issues. For more information about this newsletter and the ReLeaf program, call Stephanie Alting-Mees at ✆(415) 495-5660.

LEAP Funding in 1999

The Local Government Commission and ADM Associates have reapplied for funding to continue the Local Energy Assistance Program (LEAP) in 1999. The California Public Utility Commission (CPUC) will decide early this year on the types of energy efficiency programs it would like the investor-owned utilities to pursue in 1999 with public goods funds.

The utilities will then decide how to implement those programs. Proposals were sent to PG&E, Edison, and The Gas Company for funding to continue LEAP services, and to San Diego Gas & Electric to start the program in the San Diego area. An update on the decisions of the CPUC and utilities will be included in our next issue.

Hot Off the Presses!

Order your copy of *Improving Energy Efficiency in Buildings: Untapped Energy Opportunities for Local Governments.*

Call ✆(916) 448-1198 for more information (or see page 5).

Energy Efficiency and Global Climate Change

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emissions in their communities due to innovative energy efficiency endeavors and other programs that rely more on renewable energy resources and cleaner transportation options.

The Cities For Climate Protection Campaign, developed by the International Council for Local Environmental Initiatives (ICLEI), has enlisted 55 cities and counties in the U.S. to develop their own climate protection action plan. Each of these local governments has pledged to establish a local emission reduction target and develop a local plan to meet the target.

DID YOU KNOW?

The United States, with less than six percent of the world's population, consumes one-third of the world's energy and one-third of the world's natural resources.

The 55 local governments (ten in California), represent 25 million people and 8% of U.S. global warming-related emissions. These local governments have already reduced their communities' contributions to global warming by 5.4 million tons of CO_2 per year. In the process, they have also saved $25.7 million in energy and fuel costs and prevented the release of 7,000 tons of other types of air pollution linked to urban smog and acid rain.

Urban areas are a key part of the global warming problem. The ten largest cities in the U.S., for example, represent 10% of the total emissions linked to global warming for the entire country. Since local governments set the building codes

that determine the energy efficiency of structures and facilities, issue permits that shape land-use patterns, and authorize and operate mass transit systems, they will help determine whether the U.S. can do its share to slow global warming.

■ San Jose

One California city that has already adopted an emission reduction target is San Jose, which instead of meeting the proposed U.S. goal of a 7% reduction from 1990 levels by 2012, instead plans to meet a 20% reduction from 1990 levels by 2010. When this target is achieved, the City of San Jose alone would cut global warming pollution by 6,450,799 tons annually.

The City's In-House Energy Management project is one component of the local plan to meet the reduction target. This project promotes the installation of energy efficiency measures in existing city-owned facilities and upgraded standards for air conditioning, lighting, and energy management systems in new city buildings. So far, the City of San Jose has achieved 70% of all energy saving opportunities and is saving over $3 million per year in avoided electricity expenditures.

DID YOU KNOW?

Today, the average American is responsible for the annual release of 22 tons of CO_2 into the atmosphere — six times the global average. A third of these emissions can be attributed to transportation. More than half result from energy usage.

■ Chula Vista

The City of Chula Vista had adopted the same reduction target as San Jose, with a net emission reductions of 528,289 tons. The City has taken a number of innovative steps to help meet the target, including the strategic placement of shade trees to reduce need for electric heating and/or cooling and landscaping techniques that reduce need for mowing and trimming.

■ Berkeley

The City of Berkeley has adopted an emissions target of 15% below 1990 levels by 2010. Among the energy efficiency efforts that will reduce emissions is a program that requires building owners to make energy efficient upgrades to their residential and commercial building at the time of sale.

■ Across the State

Other California cities that are incorporating energy efficiency into their plans to respond to global climate change include Los Angeles, Oakland, Sacramento, San Diego, San Francisco, Santa Monica and West Hollywood.

For more information about how local governments are using energy efficiency to help slow global climate change, call ICLEI at (510) 540-8843.

New Street Design Guidebook Now Available

Street Design Guidelines for Healthy Neighborhoods is now available through the Local Government Commission. Developed by Dan Burden, a nationally known bicycle and pedestrian street design specialist, and his team of experts, the guidebook features the latest ideas and design specifications for building healthy, safe neighborhoods for pedestrians, bicycles and children.

Besides discussing traffic calming and the importance of community spaces where neighbors can interact, the guidebook makes the connection between street design and a community's energy efficiency. Narrower, tree-lined streets reduce local ambient temperatures, resulting in lower energy bills for cooling as well as reduced road construction and maintenance costs.

The table below compares the energy and monetary costs between conventional San Joaquin Valley streets that do not require street trees, and healthy neighborhood streets that are narrower and include trees.

To order a free copy of the Healthy Neighborhoods guidebook, or for assistance with comparing your local street standards with the healthy neighborhood streets, call Josh Meyer at the Local Government Commission at (916) 448-1198, or toll free (877) 674-5159.

STREET NAME	Right of Way	Paved Width	Sidewalk Width	Cost Per Mile	Annual Cooling Efficiency	Savings for Residences
Central Valley City – Residential Street	50'	36'	4'	$309,000	—	—
Healthy Neighborhood – Lane*	40'	18'	5'	$219,000	17%	$48
Healthy Neighborhood – Street**	48'	26'	5'	$283,000	16%	$47

* A "lane" for short blocks providing access to single-family homes saves $90,000 per mile in construction and maintenance costs.

** A "street" serving residential areas with multiple housing types saves $26,000 per mile in construction and maintenance costs.

Chula Vista Takes Lead in Renewable Energy Purchase for Municipal Facilities

Chula Vista is the first city in San Diego County to officially call for the purchase of "green power" for its municipal buildings. Following City Council direction, staff is reviewing proposals to purchase power generated from renewable resources for City Hall and other facilities.

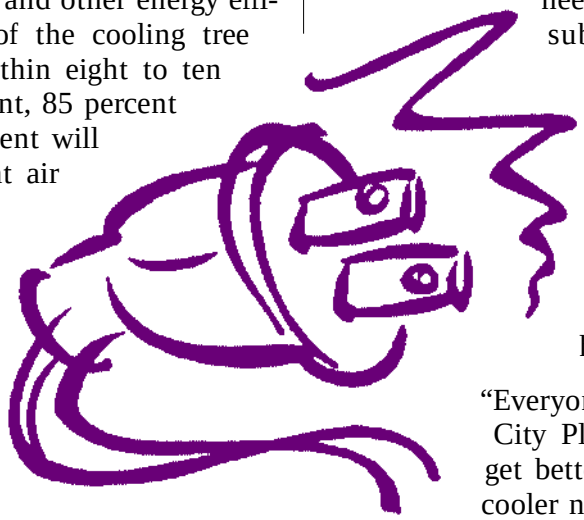
In addition, City Councilmember John Moot has been working throughout the region to encourage other cities, school districts and public agencies to use renewable energy sources, including hydroelectric, geothermal, wind and solar. "For the first time, cities now have the ability to influence the future of electric power production," Moot said. "Chula Vista plans to use its purchasing power to move the market in the direction of clean energy."

"The benefits of purchasing energy generated from cleaner sources will have two main results — create a demand for 'green power' and limit future investments of taxpayer dollars into more polluting industries," according to Barbara Bamberger, the City's Environmental Resource Manager. "Power generation is one of the most critical environmental issues of our time, given that climate change, air pollution and a whole host of related issues are affected by the type of power generated within the United States."

For more information about Chula Vista's energy program, call Barbara Bamberger at (619) 691-5296.

City of Escalon Paves the Way for Staying Cool and Saving Money

On December 7th, the City of Escalon's City Council approved the Farinelli Ranch Plan, a 145 new residential development that incorporates narrower, tree-lined streets and other energy efficiency strategies. As a result of the cooling tree canopies that will grow out within eight to ten years of the project's development, 85 percent of heat generating street pavement will be shaded. With cooler ambient air temperatures, annual energy use for cooling will be reduced by an average of 18 percent per home. Even on the hottest days, families will enjoy outdoor afternoon temperatures approximately seven degrees cooler than nearby neighborhoods with few trees.



The City of Escalon received help in designing the Farinelli Plan through the Local Energy Assistance Program (LEAP). LEAP is funded by public goods funds collected from ratepayers' electric and gas bills, and provides free technical assistance to city and county planning departments to promote energy-efficient design in new development. The LEAP redesign of the Farinelli Plan reduced street widths and added shade trees, as well as faced most of the homes north and south, the best building orientation for receiving natural lighting and heating from the winter sun and for preventing overheating in the summer.

The redesign also converted the land above an underground irrigation pipeline within the proposed development into a tree-lined parkway. This eliminates the need to reroute the line around the subdivision, saving the developer hundreds of thousands of dollars in replacement costs. The developer will, however, be asked to reinvest some of the savings into building upgrades, such as window sun screens, and high efficiency water heaters and air conditioners, for more comfortable homes with lower energy bills.

"Everyone wins," says City of Escalon's City Planner J.D. Hightower. "Residents get better homes, lower energy bills, and cooler neighborhoods with plenty of green space. Narrower streets and a shorter pipeline means lower installation costs, so the developer gets a subdivision that's cheaper to build. And the City ends up with less streets to maintain and a standard for future development that maintains the community's existing high quality of life."

For more information about how your community can receive free LEAP assistance, call the Local Government Commission at ✆(916) 448-1198, or toll free ✆(877) 674-5159.

Improving Energy Efficiency: Untapped Energy Opportunities for Local Governments

Buildings present an enormous opportunity for energy conservation, consuming 35% of the energy used in the United States. To help local governments increase energy performance in new buildings and through building retrofits, the Local Government Commission has produced a new, free publication entitled, *Improving Energy Efficiency in Buildings: Untapped Energy Saving Opportunities for Local Governments*.

This document provides tools and resources to improve compliance with state energy codes for new and retrofitted buildings (commonly referred to as Title 24). It includes guidelines for creating programs to encourage developers and contractors to construct buildings that exceed these standards. Problems that prevent buildings from performing efficiently, such as improperly installed air duct systems, are also discussed.

Improving Energy Efficiency highlights exciting and innovative local government initiatives that are creating super energy-efficient homes and workplaces that move beyond Title 24. Besides reducing energy costs, these projects are spurring local economic growth, improving indoor air quality, occupant comfort and fire safety, and reducing air pollution. To order your free copy, call Steve Hoyt at the LGC at ✆(916) 448-1198.

Innovative Design Practices Can Help Put Renewable Energy to Work in Buildings

By carefully applying design principles that capture the sun's energy and light as well as natural breezes, energy use in buildings can be dramatically reduced. These renewable energy practices save money, improve the environment and strengthen the economy by reducing the needs for fossil fuels and nuclear energy.

To provide local governments, developers and other members of the building community an overview of these important practices, the Union of Concerned Scientists produced *Putting Renewable Energy to Work in Buildings*, a briefing paper on design considerations for environmentally responsible buildings and communities.

The briefing paper emphasizes approaches that do not significantly alter the initial cost of a structure but provide substantial long-term savings and a more comfortable living environment. Topics include passive solar design, active systems, daylighting, and energy efficiency measures.

To order a copy of this briefing paper, call the Union at (617) 547-5552 or check out their website at www.ucsusa.org.

The following renewable energy checklist was adapted from their briefing paper:

DID YOU KNOW?

Buildings use more than one-third of the energy consumed in the United States. Heating and cooling systems account for about 60 percent of this energy; lights and appliances use nearly 40 percent.

■ Orientation

➢ Is the long face of the building oriented to within 30' of due south? (15' is even better)

➢ Is there unobstructed southern exposure? Will trees grow to block the sun? Might a building be built in the future that could block the sun?

■ Energy Efficiency

➢ Is the development going beyond the code requirements for insulation? For the performance of windows?

■ Air Filtration

➢ Is extra care being taken to ensure tight construction?

■ Windows

➢ Has the south-facing windows area been increased to the maximum?

➢ Could casement windows be used to capture breezes?

➢ Is there a plan for cross-ventilation?

➢ Are using energy-efficient windows going to be used?

➢ Has using different windows for each face of the building been considered?

➢ Is there adequate shading on the south, east, and west windows?

■ Interior Design

➢ Are the main living spaces near south-facing windows?

➢ Are unused spaces such as closets and storage rooms on the north and west sides on the building?

➢ Does the floor plan allow for movement of heat in the winter and ventilation in the summer?

➢ Is the garage located on the east, west or north side?

■ Daylighting

➢ Does the design maximize the use of natural lighting?

➢ Are the interior surfaces light-colored?

■ Materials

➢ Are healthy building materials being used?

■ Mechanical

➢ Has a means for ventilation in all living spaces of the building been provided? Does the plan allow for ease of air movement?

■ Solar Water Heaters

➢ Has a solar water heater been considered?

■ Utilities

➢ Has financial incentive programs for energy-efficient construction or the use of solar energy been considered?

■ Financing

➢ Has lenders that offer lower-rate energy-efficiency mortgages been considered?

Resources: Helpful Publication from ICLEI

The following publications are available from the International Council for Local Environmental Initiatives:

■ From the U.S. Office

One-Stop Guide to Federal Energy Conservation Programs for Local Governments ($5)

The Economic Power of Energy Efficiency (Free)

Electric Industry Restructuring: Threat or Opportunity? (Free)

CONTACT:
✆(510) 540-8843
fax: (510) 540-4787
e-mail: iclei_us@iclei.org

■ From the International Office

Profiting from Energy Efficiency: A Financial Handbook for Municipalities, Dan Goldberger & Philip Jessup, 1994. ($17)

A Survey of Municipal Measures to Reduce Energy Use in Buildings. Philip S. Jessup. 1992. ($25)

Steps to Successful Municipal Energy Management. Ten case studies, 1996. (Shipping and handling only).

Energy Conservation/Finance: Saarbrucken, Germany, Case Study 4. ($3.50)

Housing Construction: Austin, Texas U.S.A., Case Study 5. ($3.50)

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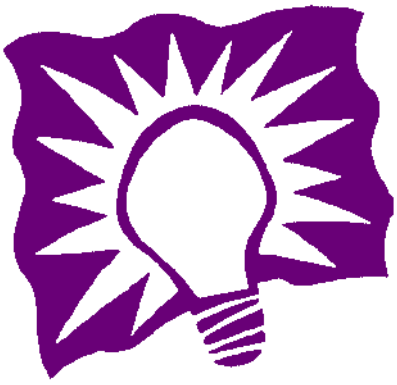
Energy Service Companies Help Cut CO_2 Emissions

The energy efficiency developed by private sector can make a significant down payment on meeting the proposed cuts in CO_2 emissions necessary to achieve the targets negotiated under the Kyoto Protocol in 1997, according to a study prepared for the U.S. Department of Energy and released this past summer. For the U.S., and other industrialized countries, that target represents a 7% reduction below 1990 levels of CO_2 by the year 2012.

The study, conducted by the Leonardo Academy of Madison, Wisconsin, focused on what is deemed "free market" energy efficiency typically provided by Energy Service Companies (ESCO) that rely upon a performance-based contracting approach. Under this scenario, the ESCO receives compensation by taking a portion of the financial value of energy savings.

As a result of the $31.5 billion that is expected to be invested in ESCO projects between 1990 and 2010, electricity consumption will lower by 1.4 million gigawatt hours, and more importantly, U.S. CO_2 emissions will be reduced by 110 million tons, a number that represents 5.5% of the total CO_2 cuts needed to meet the Kyoto Protocol.



DID YOU KNOW?

By installing energy efficient shower heads and faucet aerators, and insulating the water heater, a household can reduce its CO_2 emissions in half (if it has a natural gas water heater.) Total savings per year: $60.

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