# Electric Cooperatives and Renewable Energy

OUR COMMITMENT TO AMERICA

## Fast Facts About Electric Co-ops and Renewable Power

88% of all local electric co-ops offer electricity generated from renewable sources

In 2005, 11% of electric co-op power sales came from renewable energy

Types of electric co-op renewable generation:

- wind
- solar
- hydro
- biomass*
- refuse-derived fuel
- geothermal and waste heat recovery

Electric co-ops work closely with and support local renewable energy projects:

- 120 current and planned ethanol plants, with total capacity of 3.9 billion gallons
- 38 current and planned bio-diesel plants, with total capacity of 244 million gallons

Co-ops aggressively promote energy efficiency and conservation:

- 92% actively educate consumers on energy conservation.
- 77% offer residential users energy-saving audits.
- 64% offer commercial and industrial users energy-saving audits.
- 49% offer financial incentives for consumer efficiency/conservation efforts.
- 41% offer weatherization services.

Many co-ops help consumers avoid expensive peak-demand power use through load control (a co-op can shut off energy-intensive appliances, equipment or processes for short periods of time):

- 37% of all co-ops have direct control over some member appliances (air conditioners or hot water heaters).
- 40% of all co-ops offer contracts that provide incentives in exchange for the right to turn off energy-intensive appliances or equipment.
- Co-ops are actively increasing their ability to control or interrupt consumer demand during periods of high demand.

Co-ops are making their own electric distribution systems more efficient:

- 72% are upgrading power lines with larger cables.
- 56% are upgrading or replacing transformers.
- 50% are using advanced technology to better control voltage fluctuations.

More than 40% of all electric co-ops have installed advanced metering devices at residential, commercial and industrial locations. According to a 2006 report from the Federal Energy Regulatory Commission, among utility sectors, “market penetration of advanced metering is highest among rural electric cooperatives.” The data these meters deliver are used to improve system reliability, streamline electrical system performance and promote end-user efficiency.

** Includes landfill gas, livestock waste, timber by-products and agricultural crops.*

*Co-op wind power projects are the leading source of renewable power for the industry. Basin Electric Cooperative, North Dakota*

*Landfill gas, bio-waste generation and anaerobic digesters are being used to take advantage of rural renewable fuels. Dairyland Power Cooperative, Wisconsin*

*Solar is being used for remote applications requiring electricity. Plumas Sierra Electric Cooperative, California*

*The Cooperative Research Network (CRN) works on end-use and efficiency projects for electric cooperatives. Pictured: CRN's plug-in hybrid test logo*


## NRECA EFFORTS

Electric co-ops have come down firmly on the side of renewable energy, calling for:

- "power developed from renewable energy,"
- renewable research,
- incentives to drive renewable technology development,
- energy security,
- fair policies on consumer-owned generation, and
- innovative efficiency and conservation programs.

As the electric co-op industry's national trade and services organization, NRECA is actively involved in expanding its involvement in renewable initiatives. On behalf of its members, NRECA participates in the Ag Energy Working Group, a coalition of 400 organizations focused on generating 25 percent of our nation's energy from renewable, homegrown resources by 2025.

NRECA works to develop renewable energy partnerships with the federal government. As part of the 2005 Energy Policy Act, NRECA led the development of the Clean Renewable Energy Bond (CREB), which is now being used by electric co-ops, state and local government to finance qualifying renewable energy facilities.

More than 600 co-ops invest in the Cooperative Research Network, a national electric co-op research and product development program with a major focus on end-use efficiency, improved utility system performance and approaches that ensure safety and reliability as new power sources become available.

NRECA works closely with Congress, regulators and the industry's extensive grassroots network to address members' collective interests as expressed in formal policy resolutions. These resolutions take a strong, supportive position on renewable energy, efficiency, conservation, national energy security and rural development.

*Cover photo: Blue Grass Ridge Wind Farm, Associated Electric Cooperative, Missouri*
*Photo courtesy of Wind Capital Group, NW Electric Power Co-op and Associated Electric Co-op.*

Across the nation, there is great excitement about the promise of renewable energy. The push for renewable energy is a grassroots mixture of innovation and creativity, state and federal incentives, grants and research, science and business, and most important, an expression of the nation's desire to be less dependent on imported oil.

America's electric cooperative network, which brings reliable, cost-effective electric power to more than 40 million consumers, has a deep appreciation for this desire to gain energy independence.

More than 70 years ago, the electric cooperative idea energized rural America, giving farms, ranches and small communities a way to gain electricity independence and do what large power companies would not — bring electricity to the countryside.

That idea grew, and today, more than 900 locally owned electric cooperatives in 47 states are bringing electric energy to 75 percent of America's landmass.

Because most renewable energy projects take root in the rural areas we serve, electric co-ops are naturally and increasingly at the forefront of local renewable developments, either through start-up loans, facility investment, partnerships, energy expertise and counsel, direct ownership or renewable-friendly policies and practices.

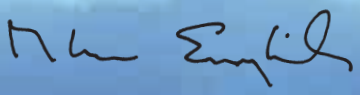
Electric co-ops support renewable energy development because they recognize that their consumer-owners and their communities can benefit from a rural renewable renaissance that will result in job creation, new markets, improved economies and a brighter future.

I have seen firsthand the leadership, experience and pragmatism electric co-ops have brought to the renewable energy industry. I am pleased to represent them as a member of the steering committee of the Ag Energy Working Group, a coalition of 400 organizations that support the goal of producing 25 percent of America's energy on America's working lands by 2025.

Our experience with the Ag Energy Working Group points to a need for an understanding between renewable supporters and those in the established utility industry, so that expectations are reasonable and achievable. To that end, electric co-ops are working at the state and federal levels to educate regulators and legislators on our support for renewables, electric utility industry realities and our plans to meet a growing demand for reliable, cost-effective power with improved technology.

Most important, our experience has taught us that the hoped-for innovation and growth in renewable energy will come only through a cohesive national policy driven by incentives.

This brochure is a snapshot in time. It highlights the electric cooperative industry's considerable involvement in and commitment to renewable energy. I believe you'll be surprised at depth of the electric co-op industry's involvement in advancing sustainable renewable energy. Not only is it good for the nation, it's also is good for the people and the communities we serve.



Glenn English, Chief Executive Officer, National Rural Electric Cooperative Association

## *AND THE SURVEY SAYS...*
## ELECTRIC CO-OPS EMBRACE RENEWABLE ENERGY

As the only private, consumer-owned segment of America's electric utility industry, electric co-ops have always responded to demands for safe, reliable and affordable electric power.

Traditional forms of electricity generation have helped co-ops meet these objectives. But electric co-ops know their consumers have a growing interest in renewable energy and the goal of independence from foreign sources of energy through home-grown efforts.

Because most renewable energy is produced in rural areas, they also see renewable energy as an opportunity for significant local economic development, a perspective shared by the electric co-op industry.

The electric co-op commitment to rural America and its relationship to renewable energy both started in the 1930s. In 1935, the Rural Electrification Administration was established. Two years later, a young electric co-op industry gained access to preference hydropower through the Federal Power Act

**NEW SOURCES OF RENEWABLE POWER**
Hydropower is now but one renewable resource in a growing portfolio of technologies being used by electric cooperatives.

A recent NRECA report, *Co-ops' Efforts in Renewable Energy and Energy Efficiency,* cites growth in wind power, biomass, solar and geothermal as part of an increasingly diverse co-op generation mix.

The report shows that 88 percent of all electric co-ops offer renewable power and that 11 percent of the total electricity delivered to co-op members nationwide comes from renewable sources.

The report found that 66 percent of electric cooperatives are looking beyond the sale of renewable power, building their own renewable energy programs or working with their power supplier.

Wind power leads all co-op renewable energy efforts with 136 projects. Almost 80 electric cooperatives are involved in various ways in biomass projects, and 25 are involved in solar.

**EFFICIENCY AND CONSERVATION:**
Electric co-ops have a history of helping consumers control their energy costs through education, efficiency and conservation programs.

The NRECA report found that today, 92 percent of all electric cooperatives promote energy efficiency through consumer education.

Most of the nation's 900 local electric co-ops offer energy audits that look for consumer energy waste, recommend energy-efficient building improvements and promote changes in energy use patterns.

Three out of four electric co-ops conduct residential energy audits, often at minimal or no cost; 64 percent work with commercial and industrial businesses on energy management systems and approaches to reduce energy consumption; and in agricultural areas, 54 percent offer farm energy audits.

In addition, half of all co-ops offer financial incentives to consumers who invest in efficiency measures, and 40 percent offer weatherization and conservation services.

**CO-OPS FUEL RENEWABLE FUELS AND RURAL DEVELOPMENT**
The growth in renewable electricity options and efficiency efforts is part of a broader co-op renewable commitment. As far back as the late 1970s, electric co-ops actively engaged in promoting the development of renewable fuels.

Today, co-ops are working with communities, farmers and local businesses to develop renewable fuels produced locally from local resources. For electric cooperatives' communities, renewable fuel development means economic development, stronger economies and more jobs.

According to the NRECA report, electric co-ops provide support to 122 ethanol plants and 38 bio-diesel plants now in operation, under construction or in the planning stage. The plants in operation or under construction represent production capacity of 3 billion gallons of ethanol and 121 million gallons of bio-diesel.

**LOOKING TO THE FUTURE**
Electric cooperatives, as locally owned businesses with prominent community ties, are involved in other aspects of smart, balanced energy use. On the following pages, we've highlighted representative renewable projects, efficiency programs and examples of electric co-op leadership in this area.

But the electric co-op story doesn't end here. There will be new projects and innovation as ideas and research meet the practical demands of everyday power supply. We invite you to visit www.nreca.coop regularly to find out what the electric co-op network is doing to develop communities, clean energy and responsible environment stewardship.


*Top: Hydrogen-powered truck*
*Basin Electric Power Co-op, North Dakota*

*Wave buoy part of wave power test*
*PNGC Power, Oregon*

## WIND

Wind power is becoming a significant contributor to electric co-ops' power supply. Almost 150 electric co-ops either own wind facilities or have agreements to purchase power from wind power companies.

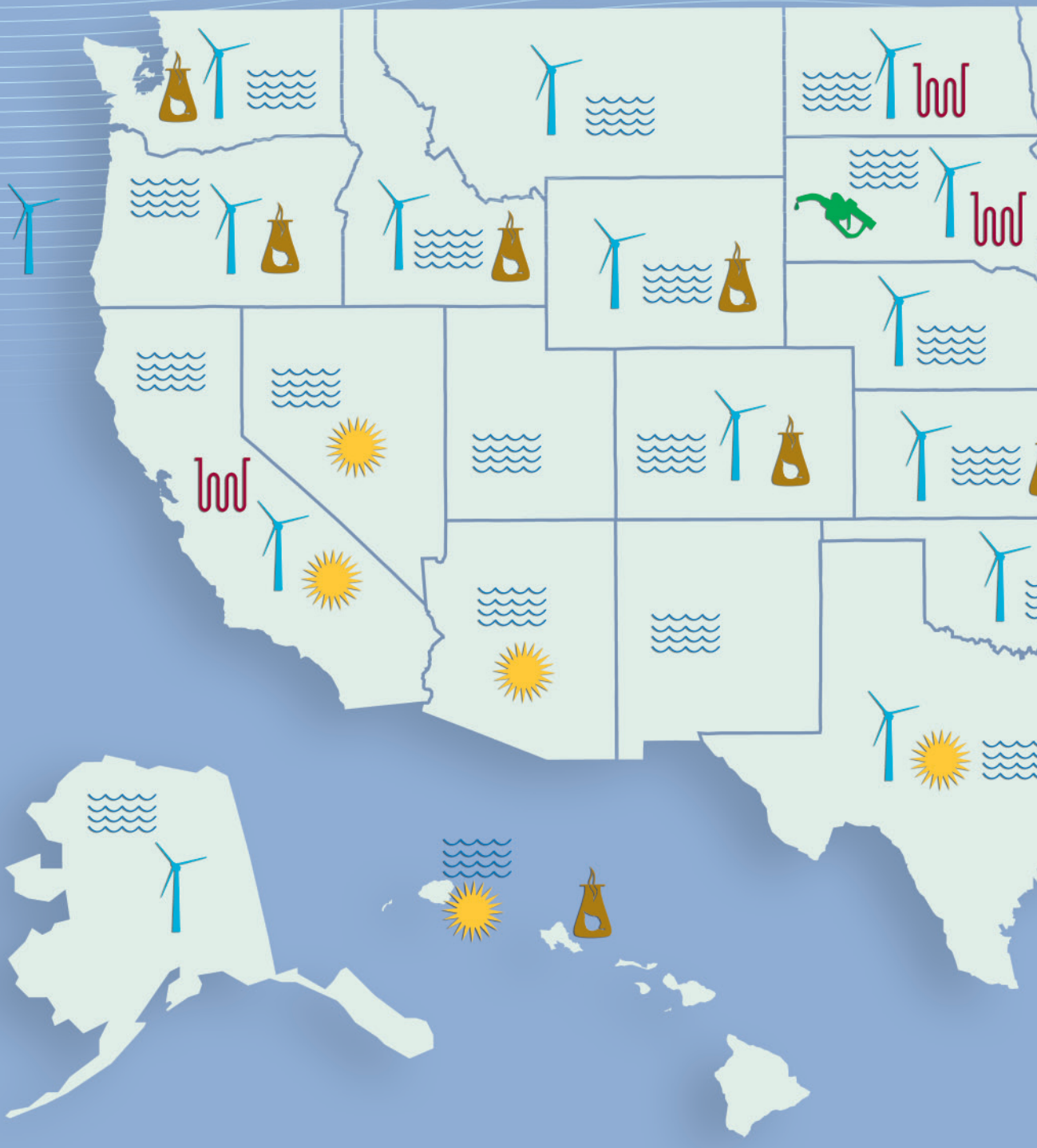
The largest concentration of wind activity is in the West and the plains states, from North Dakota to Texas. Co-ops in the Northeast, Alaska and Hawaii are also tapping into wind,

Some days the wind blows, and some days it doesn't. Because of wind's intermittent nature, co-ops are looking at innovative ways to integrate variable-energy resources such as wind (as well as solar) with traditional generation technologies to gain system efficiencies, save consumers money or, in one research study, to "store" wind power in hydrogen gas form for later use.

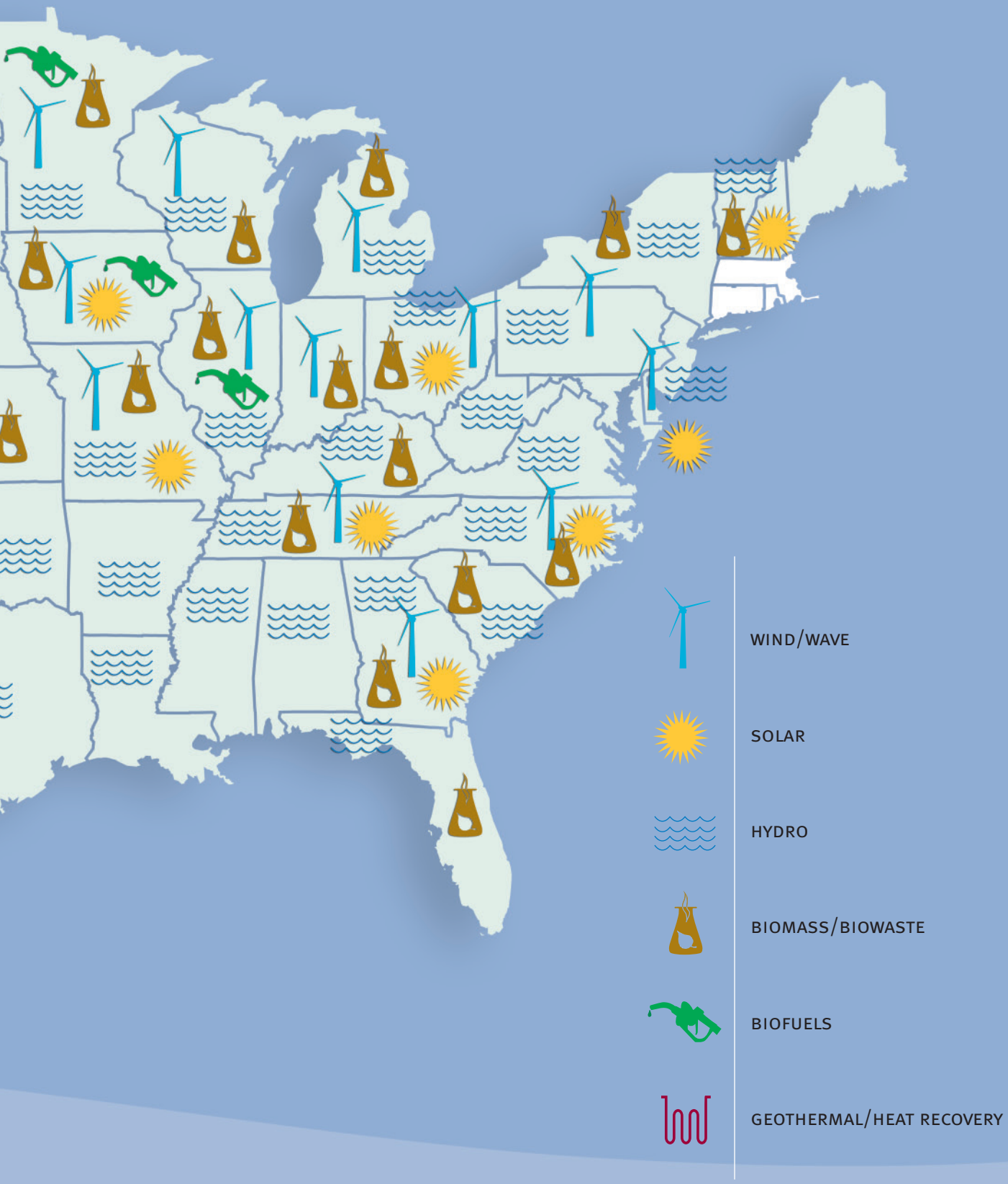
Off the coast of Oregon, electric co-ops will test another form of earth's natural energy when they tap the ocean's wave power.

*Windfarm construction, Kotzebue Electric Association, Alaska*

# ELECTRIC CO-OP RENEWABLE MAP



The map's symbols show, by state, the types of renewable energy facilities in which electric cooperatives have ownership, have invested in, or are participants as of February 2007. A small number are evaluation sites, but most projects are delivering renewable power on a commercial scale to member-owners.


WIND/WAVE
SOLAR
HYDRO
BIOMASS/BIOWASTE
BIOFUELS
GEOTHERMAL/HEAT RECOVERY

*Landfill gas project, Washington Electric Cooperative, Vermont.*

*Top: Sen. Tom Daschle, circa 1978, promoting ethanol, East River EPC, South Dakota*

*Co-op uses REDL&G program to support SoyMor biodiesel plant, Freeborn Mower Co-op Service, Minnesota*

## ETHANOL, METHANE AND BIOMASS

Currently, 80 electric co-ops are generating electricity from methane gas. The greatest activity is in landfill waste gas projects. Several biomass projects, such as anaerobic digester systems, are on line, producing electric power, test data, operational experience and a positive solution to livestock producers' growing environmental and water quality issues related to bio-waste.

Going back to 1978, electric co-ops have been catalysts in the development of new markets and economic security for farmer-members, starting with ethanol production and now bio-diesel. Co-op involvement has ranged from providing capital and economic development support, to lobbying efforts, to supporting construction of local bio-fuels plants.

In addition, one-third of the nation's electric co-ops report that they use ethanol and bio-diesel in their fleet vehicles.

## SOLAR AND HYDRO

Just as windmills are located where the wind blows, solar and low-impact hydro systems thrive where sun and water are plentiful.

Significant co-op solar programs are in place, both commercially and as tests, in Arizona, California, Georgia, Hawaii, Ohio, Nebraska and Texas. Electric co-ops have been particularly innovative in geographically isolated applications like irrigation and pumping water for livestock, where using solar generators is far cheaper than stringing electric wires.

*Solar panel, Georgia Green Power Electric Membership Corp.*

*Fish ladder at low-head hydropower facility*
*Fall River River Rural Electric Cooperative, Idaho*

*Solar project, Arizona Electric Power Cooperative, Arizona*

## CREBS AND A GREEN LAND

Today's average electric co-op consumer uses almost 1,200 kW of power a month, an eightfold increase over average residential power consumption in 1950.

Electric co-ops have met this demand by emphasizing reliability, safety, affordable rates and member-owner involvement. But times are changing, and co-op members have a growing interest in renewable energy, while expressing concerns about the rising cost of energy.

Unfortunately, the cost of renewable energy is often higher than conventional generation. Urban investor-owned utilities have production tax credits (PTCs) to reduce the cost of their renewable energy projects. The PTC offers no incentive to not-for-profit co-ops.

In 2004, electric co-ops worked with Congress to develop an incentive they could use — Clean Renewable Energy Bonds (CREBs). Authorization for CREBs was included in the 2005 Energy Policy Act.

CREBs give electric co-ops the authority to issue zero-interest bonds to support renewable energy projects. In the program's first year, the U.S. Treasury authorized electric co-ops to issue $300 million in CREBs. Co-ops applied for more than $500 million in renewable project bonds.

CREBs are an example of how incentive-based programs translate into almost immediate local action. Other federal programs have also fostered local renewable projects.

Rural Development at the United States Department of Agriculture (USDA) has supported renewable energy through the electric co-op Cushion of Credit Program and the Rural Electric Development Loan & Grant program. In addition, electric co-ops have actively supported the USDA's Section 9006 grant program, which provides support for the purchase of renewable energy systems and energy-efficiency improvement.

Electric co-ops have also shown their commitment to clean energy through the sale of green tags — renewable energy credits — purchased by co-op power users to offset their contributions to carbon emissions. Over a two-year period, one Midwest electric co-op sold more than 1 million MWh in green tags it earned from co-op wind resources.

*McNeilus Wind Farm, Dairyland Power Cooperative, Wisconsin*


*Energy efficient co-op office and wind turbine, Consumers Energy, Iowa*

## EFFICIENCY

For electric co-ops, a commitment to renewable energy also means efficiency and conservation. More than 90 percent of all co-ops are actively engaged in the promotion of energy efficiency. Others provide free or low-cost energy audits to consumers and businesses in their service areas. And one-half of all co-ops provide funds for energy efficiency and weatherization.

Electric co-ops not only preach efficiency, they live it. From coast to coast, new and renovated co-op office buildings are using "green" construction techniques and materials in a way that showcases to their communities how energy efficiency saves money and looks good without compromising comfort and lifestyle.

*Top: Installing GeoExchange heating /cooling system. DMEA, Colorado*

*Efficient compact florescent lights marketed by electric co-ops nationwide*

NRECA

A Touchstone Energy® Cooperative

4301 Wilson Boulevard
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*For updates on electric cooperative renewable energy go to: www.nreca.coop.*

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