Idaho Currents

Energy Division Offers New Loan Options For Residential Customers in Idaho

By Linda Cawley, Idaho Currents Editor

Attention homeowners and businesses - low interest loans are now available from the Idaho Energy Division to convert electric heating systems to 90 percent efficient natural gas or propane.

Residential loans between $1,000 and $15,000 and commercial loans up to $100,000 are available at 4 percent interest to be repaid over five years.

The division provides two different residential loan programs, each with the same terms. The original loan program covers space heating and water heating conversions, insulation, and wood, pellet or gas stoves.

Two-part audit

The updated loan program now includes an audit program, known as Home Performance with Energy Star®. Idaho homeowners can get a detailed report that identifies cost-effective measures that can save energy and make their home healthier, safer and more comfortable.

The audit includes a pre-test and a report with recommended improvements that target the greatest impact and benefit to increase the efficiency and/or re-sale value of the home.

The initial audit measures the home's envelope for moisture and air leakage, ductwork leakage, and pressurization for combustion appliance back drafting. Auditors also evaluate the insulation in the attic, walls and under the home, as well as window performance.

"The Energy Division recognizes that it's often difficult to know exactly what a home needs in order to be energy efficient," says Jeff Brooks, energy specialist with the Energy Division.

"By hiring a home performance specialist, trained and certified by the Energy Division, homeowners will find out what improvements will make the greatest impact," Brooks adds.

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> **Jeff Brooks**
> **Energy Specialist**

Financial assistance

In addition to the improvements allowed by the original loan program, homeowners can apply for energy-efficient windows and air conditioners.

To qualify for a loan for windows and air conditioners, the insulation and duct sealing must meet recommended levels or be included in the loan application according to the audit report. The cost of the home audit can also be included in the loan.

Upgraded heating systems include 90 percent efficient gas furnaces and electric furnaces and heat pumps. In-

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Ada County Courthouse Gets Top Energy Efficiency Rating

The Ada County Courthouse/Administration Building has been recognized by the U.S. Environmental Protection Agency as one of the most energy efficient office structures in the nation.

The EPA notified Dave Logan, Ada County operations director, that the building would receive the Energy Star® label. That distinction is shared by only four other buildings in Idaho and 45 in Alaska, Oregon and Washington. Nationally, fewer than 1,800 buildings carry the Energy Star label.

The Ada County Courthouse/Administrative Building is one of only 1,800 buildings nationally to be recognized by the U.S. Environmental Protection Agency. Early plans of the structure included Building Commissioning, a program through the Energy Division. ***(Photo compliments of Ada County)***

"This building was designed and constructed to be as energy efficient as possible, and this rating demonstrates that the facility is operating as intended," said County Commissioner Rick Yzaguirre.

"We've stressed the need to keep the courthouse, and all other county facilities, as efficient as they can be made. Those efforts both save the taxpayers money and help conserve our resources, so they pay off in the long run," he said.

Plans to make the 350,000-square-foot courthouse as energy efficient as possible began in the early design stages. Through a process known as *Building Commissioning* (Cx), the building systems are designed, installed, tested, and capable of being operated and maintained according to its operational needs.

Although the courthouse, completed in January 2003, has twice the square footage as the previous building, the county saw a 56 percent reduction in energy cost per square foot during the first full month of operation compared to the previous year's cost.

Building Commissioning is part of the Rebuild Idaho project managed by the Energy Division for the Northwest Energy Efficiency Alliance. The division partners with agencies like Ada County to develop a five-year action plan that promotes energy-efficient retrofits.

The program also facilitates performance contracting and building commissioning for new buildings. Rebuild Idaho is funded by the U.S. Department of Energy.

News of the award followed on the heels of the county's annual meeting with its partners in Rebuild Ada County, a coalition of interests dedicated to energy and resource conservation. The partners heard reports on the 2003-2004 successes of the county's Five Year Action Plan for Energy Conservation and Resource Use.

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IDWR Moves State Office to New Water Center

By Linda Cawley, Idaho Currents Editor

After nearly 18 years at one of Orchard Street's oldest buildings, the state office of the Idaho Department of Water Resources has moved to one of Boise's newest, the Idaho Water Center.

Located on the corner of Broadway Avenue and Front Street, the Water Center is a 215,000-square-foot, six-story, pre-cast concrete and glass building containing offices, classrooms, conference rooms and all the amenities. Construction began in March 2003 and finished in August 2004. IDWR occupies three-quarters of the fifth floor and all of the sixth floor.

The building is environmentally friendly, or green, and uses geothermal wells for heating and cooling. This energy-saving system relies on a geothermal utility loop, also used by the nearby Ada County Courthouse, to obtain hot water from underground wells on Front Street. Other wells are used to condense and cool the water.

Additional green features include 18-inch raised floors to provide below-floor air distribution on each level, low-water use mechanisms, and energy-efficient windows and lights.

Glass walls along the exterior offices on both floors provide natural light over most of the interior offices. Motion sensors throughout the building turn the lights off when rooms are unoccupied.

The purpose of the Water Center is to serve the region as a unique facility for collaborative research and programs focusing water and energy issues.

Other occupants (or future occupants) of the building are the University of Idaho, Idaho Water Resources Research Institute, U.S. Forest Service Rocky Mountain Research Institute, and the Idaho National Engineering and Environmental Laboratory (INEEL). The building also plans to accommodate a mix of retail and private business tenants.

The Idaho Department of Water Resources moved to the Idaho Water Center in October. ***(Photo by Diane Holt)***

Education center

The U of I manages graduate-level engineering programs (both civil and mechanical) and state-of-the-art laboratories. The university plans to relocate other Boise-based programs and courses in education, law, architecture, agriculture, and professional development in the Water Center.

The Rocky Mountain Research Institute conducts aquatic and biological research. Specialized labs (sediment, aquatic, biological, and upland shrubs) along with instrument rooms and a herbarium are located at the Water Center.

INEEL's education staff will teach pre-college science, mathematics, engineering, and technology, and will develop K-12 teachers to help those students succeed.

Contact information

IDWR's main telephone number, fax number and website address changed when the physical address changed. The department is located at 322 East Front St., and the mailing address is still P.O. Box 83720, Boise, ID 83720-0098. The main phone number is 208-287-4800, fax number is 208-287-6700, and the website is www.idwr.idaho.gov. The toll-free Idaho Energy Hotline is still 1-800-334-SAVE.

Is There a Thief in Your Ductwork?

A home's ductwork will be one of the areas that auditors with Idaho's new Home Performance with Energy Star® program will focus.

Air distribution system ducts are designed to supply conditioned air from space heating and cooling equipment to the living spaces in a home. They also return an equal volume of air from the living spaces back to the heating and cooling equipment to be conditioned. Unfortunately, residential ducts typically leak 15 percent to 20 percent of the air they convey.

Ducts are usually located in unconditioned spaces, such as attics, crawlspaces, garages, or unfinished basements. The conditioned air that leaks out of the supply ducts is lost in the spaces where the ducts are located.

Typically, heating and cooling equipment is designed to condition return air that is at or near room temperature. Leaky return ducts can draw air out of unconditioned spaces that is hotter or colder than the return air, thus increasing loads on heating and cooling systems.

This problem is most pronounced in attics where, during the summer months, air temperatures can be 150 degrees or higher. Even when furnaces or air conditioners are not operating, leaky ducts waste energy by contributing to the overall air leakage of a house.

Editor's note: Duct leakage can also cause pressure imbalances in the home that increase air leakage through any air pathway. Pressure imbalances can also cause a safety hazard by back drafting fireplaces and other combustion appliances.

In new, tightly constructed houses, ducts can account for 20 percent to 25 percent of the total air leakage. Leaky ducts located in unconditioned spaces can introduce airborne pollutants, moisture, and unpleasant odors into homes, thus reducing indoor air quality.

Duct leakage is the result of improper installation and poor materials. Duct tape, which is commonly used, does not adequately seal joints between ducts and has a short life. More stable and permanent materials are needed, such as foil tape, fiberglass tape, and mastic, or new advanced duct tape.

Locating the ducts within the conditioned space can also improve system efficiency. Even when ducts are located within conditioned spaces, sealing is still required to assure proper air distribution.

The Energy Star® program promotes the proper sealing of air distribution ducts as a means of reducing energy consumption and improving indoor air quality. If properly sealed, the duct system in a house can significantly improve heating and cooling equipment efficiency and performance.

Benefits

- **Improved comfort –** Duct sealing increases the amount of conditioned air that is distributed to the living spaces within a residence. The heating and cooling systems can operate more efficiently, resulting in quicker recovery from nighttime setbacks and a more consistent level of comfort throughout a house.

- **Improved indoor air quality –** Leaky return ducts located in attics, unfinished basements, crawlspaces, and garages can draw pollutants, such as dirt, dust, mold, fumes from solvents, radon gas, and carbon monoxide exhaust from cars into homes. Proper sealing of the return ducts can reduce the amount of airborne pollutants that enter homes and therefore improve indoor air quality.

- **Better humidity control –** Conditioning systems cool and dehumidify indoor air by recirculating it over an evaporator coil. Leaky return ducts can draw hot and humid air out of attics and crawlspaces and overwhelm the capacity of the air conditioner coil to cool and dehumidify the indoor air. Air that is not properly dehumidified can be uncomfortable and promote the growth of mold and mildew indoors.

- **Lower utility bills –** The average homeowner spends more than $600 per year on space heating and cooling. Duct sealing can reduce this

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cost by between $60 and $120 per year, making a home less expensive to operate.

- **Lower equipment cost –** Duct sealing, in conjunction with a compact air distribution system layout and good insulation techniques, can reduce space-conditioning loads, which can allow the installation of smaller, less costly heating and cooling equipment.

The U.S. Environmental Protection Agency's Energy Star Program promotes the use of high-efficiency technologies and equipment. Energy Star labeled homes use at least 30 percent less energy than homes built to meet the national International Energy Conservation Code while maintaining or improving indoor air quality.

Information for this article was obtained from the fact sheet "Duct Sealing: Air Distribution System Improvements," produced by the U.S. Environmental Protection Agency.

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sulation levels should meet R38 in the ceiling, R19 in the walls, and R30 in floors over unconditioned space.

Ductwork requirements include R8 insulation in unconditioned space and mastic sealing in conditioned space. Double-pane vinyl windows must replace single pane or aluminum frame windows.

Commercial building can also qualify for loans for energy upgrades, including windows, lights, heating conversions and insulation.

Both the Home Performance with Energy Star and the original loan programs require a 15-year (or less) payback from the energy savings for each project, according to the Energy Division's calculations.

The residential and commercial loan applications are available online at www.idwr.idaho.gov/energy. All loan applications, a list of home performance specialists and additional information on the audit program are also available by calling the Idaho Energy Hotline, **1-800-334-SAVE**.

Revised Ag Loan Covers Broader Spectrum

After serving the agricultural community with a low-interest loan for 17 years, the Idaho Energy Division has revised its loan program to include a more diverse cross section of the state.

Recently added components include retrofitting existing farm buildings and dairy parlors, no-till drills, and variable speed drives. Ag producers can borrow a maximum of $100,000 at 4 percent interest for five years.

"This loan program is designed to help fund projects that can reduce energy consumption," says Stuart Van Greuningen, senior energy specialist with the Energy Division.

Loans are still available for new irrigation systems where land is being converted from flood irrigated to sprinkler and for retrofitting existing irrigation systems.

The program also covers energy-efficient lighting and sensors for existing buildings and new construction.

To receive additional information about the loan program, call the Idaho Energy Hotline at **1-800-334-SAVE**.