Nebraska ENERGY QUARTERLY

Nebraska Energy Office

Fall 1989

Plan Now for Energy Savings

October is Energy Awareness Month

October is Energy Awareness Month. This year marks the tenth annual observance of this effort to focus the public's attention on ways to save and efficiently use energy.

While October is an ideal month to heighten energy awareness — a first frost is a harbinger of the forthcoming winter — energy conservation should not be thought of as a one-month-a-year pursuit. There are numerous energy saving improvements that can be adopted throughout the year. These will help you use energy more efficiently and conserve our natural resources.

Free Information

The Nebraska Energy Office offers a number of free publications on consumer conservation and energy information, including:

- ***Nebraska Energy Saving Manual*, an energy saving handbook for homeowners**
- ***Low Cost-No Cost*, a guide to saving energy in the winter months and throughout the rest of the year**

Take a moment to consider the ways you can use energy more efficiently. One less trip in the car or one home heated productively might not appear to have much conservation merit. However, two billion persistent individual efforts—that's only one action per person in the world—would have an unprecedented cumulative effect on reducing waste of our limited energy reserves. One investment in economic prosperity and national security.

Inside

A Solid Waste Management Option

Recycling

Countless recycling efforts have started all across the country over the last few years. And with good reason. The United States generates 160 million tons of garbage each year with over 80% of it going into landfills.

Over the past ten years, 70% of our country's landfills have closed and the Environmental Protection Agency (EPA) estimates that 50% of the remaining landfills will close in the next five years. Siting new landfills creates enormous problems in nearly all communities. In addition, increased federal regulations to prevent groundwater pollution will substantially increase the cost of landfilling.

The EPA also estimates that in the year 2000 over 48 million tons of recyclable materials will be landfilled or incinerated. If the 48 million tons were recycled instead, the equivalent of 10.1 billion gallons of gasoline would be saved. That could fill the tanks of 15.4 million cars for one year.

Other studies show that if the United States recycled at a rate of 35% by 1992, we would accumulate a savings of $30 billion and seven quads of energy. That is equivalent to 14 times the total amount of energy used in Nebraska each year.

State Government Joins Recycling Effort

On October 6th, Governor Orr signed an Executive Order creating a six-part recycling program coordinated by the Energy Office for most of state government. Later that day, the Governor explained the state effort to the attendees at the 1989 Conference of the Nebraska State Recycling Association (NSRA). The Governor and Jo Gutgsell, NSRA Chair, are pictured above.

What Can You Do?

What can we do as individuals to reduce the amount of waste going into our landfills and capture lost energy savings? The first step is to follow the three R's of waste management.

Reduce the amount of waste generated, **reuse** whenever possible and **recycle** those items which have a market.

Source reduction and reuse share the aim of making less waste with our purchasing choices and using the products we buy for longer periods of time. If we purchase items which are

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Warm Your Feet, Too!

Invest in a Comfortable Home

Nebraska winters. North winds blow in, the Plains are blanketed in a flurry of whirling snow, the temperature lowers to single digits and your heating bills rise to triple digits. You calculate the wind chill factor, put on your third pair of socks and hope the kids don't mind wearing parkas indoors. It's a situation you expect and accept, right?

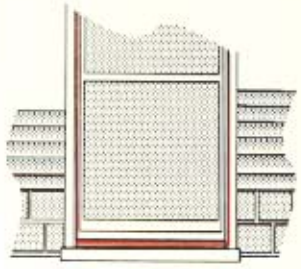
Not necessarily.

For homeowners willing to invest a little time and money, home weatherization offers an energy conscious alternative to mounting fuel bills and uncomfortably low thermostat settings.

Most heat escapes from a building in two ways: by conduction through the building materials and by infiltration or leakage through structure openings. Insulation of under- or uninsulated walls, attics, crawl spaces and floors will markedly lower conduction and infiltration and, consequently, heat loss and fuel use. Admittedly, while you might not be concerned as you shovel out your car for the fourth time in a season, a well-insulated structure will also stay cooler in the summer.

Heat loss can also be diminished by insulating ductwork which runs through unheated areas of the home such as attics, garages, and crawl spaces. A furnace which has been cleaned and tuned by a qualified technician will run more efficiently. Clock thermostats can be installed which will automatically lower the temperature at night or when your home is unoccupied.

Many weatherization measures produce noticeable savings at little cost to the homeowner. Weatherstripping and door sweeps installed around exterior doors, gaskets installed behind exterior



If weatherstripping was applied around doors and windows:

- **Know where weatherstripping was applied.**
- **Check the weatherstripping every few months to see if it has come loose.**
- **Reattach any loose weatherstripping.**

and interior outlets, and caulking applied to seal cracks and holes in the exterior structure all reduce infiltration of cold air. Furnace filters should be changed at the beginning of the heating season and every month afterwards to guarantee efficient operation. Holes and seams in ductwork should also be sealed with duct tape.

Energy savings can even be realized from improvements which cost the homeowner absolutely nothing, but are simple, effective methods of maintaining comfortable, energy efficient surroundings.

Shades and curtains should be opened when windows are in direct sunlight to let the sun keep the house warm. Close shades and curtains at night to keep the heat in. Thermostats should be set at a lower temperature at night or when the house is unoccupied. Ductwork, vents and registers should be free of obstructions; windows, storm windows and fireplace dampers should be kept closed when not in use.

Low-income Nebraskans may qualify to receive many of the above services through the Low Income Weatherization Assis-

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tance Program operated by the Nebraska Energy Office. **Interested persons should contact their local community action agency or call (402) 471-2867 for more information.**

Recycling Continued from Page One

recyclable (glass instead of plastic, reusable instead of disposable) we create a waste stream which by-passes the landfill.

The second important step for individuals, neighborhoods and communities is to start a recycling effort. Recycling is not waste disposal. Rather, recycling is part of the manufacturing process providing raw materials to be made into new products. Since recycling depends on the demands of the market rather than the availability of the product, a recycling program must first concentrate on developing a market. To do this, you must know your waste stream.

Get To Know Your Waste

Few communities know much about the type of waste which is generated by their citizens. Although national characteristics of solid waste have been developed, each community's waste stream is unique and often changes from season to season. For example, the summer months in Nebraska often see large increases in the amount of yard waste.

Once you have identified the recyclable items and their approximate amount in the waste stream, the community must identify a market for each recyclable product. Manufacturers usually have specific requirements for the materials they will accept. For example, newsprint should not be mixed with other forms of paper and glass bottles should be free of caps and collars and separated by color.

Identifying and securing a market for your recyclable items is imperative before proceeding to the next step of collecting, sorting and delivering recyclable products. A community can choose from a wide variety of different collection programs. Collection can be voluntary or mandatory, curbside or drop-off, operated by government, private industry or local volunteers. How a program is ultimately designed depends to a great extent on the organization of the community and current methods of waste disposal.

Public education is the final step in setting up a recycling program. The success of that education can make or break your program. Citizens need to understand how and why their individual efforts make a difference.

Education efforts should be directed at how recycling can benefit the community and the individual citizen. It is far more difficult to convince people to recycle because it is good for the nation than to convince them that recycling will save them money.

How well you educate the citizens of your community will determine how involved they become in the program. Continuing education will determine how devoted they become to recycling as a way of life. Their involvement and devotion will be the cornerstone of your successful recycling program.

Talk to the Experts

For more information on recycling and establishing a recycling program in your community contact:

Monte McKillip
Nebraska State Recycling Assoc.
129 North 10th
Lincoln, NE 68508
402-475-3637

Dannie Dearing
Dept. of Envir. Control
P.O. Box 98922
Lincoln, NE 68509
402-471-2186

Dollar, Fuel and Car Savings

Auto Tips

While we barely remember the long waiting lines at gasoline pumps that symbolized the fuel shortages of the 1970s, we must still be conscious of the limitations on our natural resources and include our vehicles in conservation efforts. A recent study indicated that automobiles use 39 percent of all oil consumed in the United States. No other single class of engine burns more fuel.

Individual handling techniques can have a great cumulative effect on energy consumption. By planning ahead, organizing travel routes and combining short trips, significant time and energy can be saved. When operating a vehicle, it is important to remember that:

- The first mile driven is the most costly.
- The best mpg performance occurs after the automobile has traveled 15-20 miles and has warmed to 180 degrees Fahrenheit.
- Approximately 95% of the automotive wear occurs at engine start during the first 10 seconds of the run.
- When starting a car, a warm-up period of 30 seconds is sufficient; any longer and fuel is wasted.
- Any weight added to the car reduces the mpg performance.
- Cutting down on cold starts, getting to cruise speed quickly and avoiding quick stops will reduce consumption.
- By reducing traveling speed from 65 mph to 55 mph, fuel economy is improved by 15%.

Service Can Mean Savings

Follow the service schedule recommended for your automobile to keep it in top running condition. Check the oil level frequently and change it regularly according to the manufacturers guidelines. Friction-reducing motor oil lets an engine turn easier and use less fuel. Engine tune-ups ensure that carburetor and ignition timing are properly adjusted and that spark plugs are in good condition, all of which result in considerable fuel savings. Proper wheel alignment increases fuel efficiency by reducing rolling resistance.

Substantial energy savings and environmental benefits can result from using retreaded tires. According to the Environmental Protection Agency, approximately 7-10 gallons of crude oil are used to produce one new tire, while retreading consumes only 30-35% of that amount. Production of a new tire requires approximately 14.7 thousand Btu (British thermal units) per pound; retreading requires about 2.2 thousand Btu.

From Omaha to Chadron to Kimball

Subsidies for Bus Routes

Continued rural public transportation is assured between several western and northern Nebraska cities as a result of a subsidy agreement between the Nebraska Energy Office and the Nebraska Department of Roads.

Oil Overcharge funds will be used to subsidize intercity bus routes operated by The Star Bus Lines, Inc. between Chadron and

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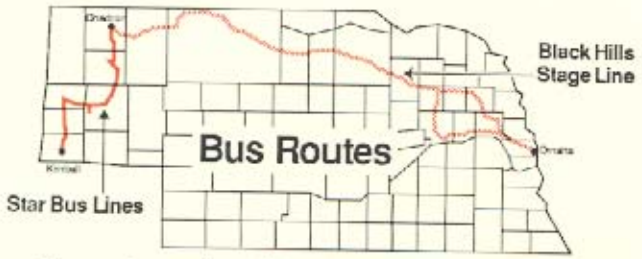
Kimball via Alliance and Scottsbluff. Similar assistance will assure continued operation of a Black Hills Stage Line route between Omaha and Chadron.



Bus services to these cities were on the threshold of being discontinued. Public transit is particularly important for low income and elderly citizens who often lack alternate transportation. The subsidy program will provide continued operation for up to two years.

St. Isadore Garners Honors
Auburn Students Busy Weatherizing

Students Excel

Sixth-graders from Columbus earned second place honors at the National Energy Education Development (NEED) competition in Washington, D.C. this June. The St. Isidore School students had been chosen to represent Nebraska at the national competition after their project, "Exciting Energy Events in Education" was selected for top honors in the state NEED competition.

The St. Isidore program included designing a placemat used by a local restaurant which described conservation tips, making posters on energy sources and conservation efforts, giving oral quizzes to younger students, making energy project displays, gathering energy materials for an energy library, creating an energy computer disk, holding an "energy fair" featuring energy games and displays and arranging for two energy experts to visit the school.

In addition to the convention, workshops and awards ceremonies, the four St. Isidore representatives visited many of the capitol's monuments and museums and met Nebraska's congressional representatives.

Auburn Students Have Busy Summer

Where did you spend your summer vacation? Through the humid "dog days" of June, July and August, six Auburn High School students spent their summer break preparing area homes for the familiar chill of our frosty winters.

The weatherization program, which is taught year-round by the Auburn High School Industrial Arts Department, provides students with training in residential conservation and retrofitting. The classroom instruction includes curriculum on energy auditing, energy management and conservation, residential construction and weatherization materials, safety and quality control. An integrated computer package is utilized to visually duplicate home dimensions and to calculate retrofit costs and energy savings.

Actual hands-on retrofitting activity, coordinated by instructor Larry Peterson, provided summer employment for the six high school juniors and seniors. Students implemented use of the "blower door", a device which creates a vacuum in the building so air leaks can be easily located and repaired. It also measures air in-

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filtration to calculate energy use and potential savings. Home improvements included adding side wall and attic insulation, attic venting, caulking, weatherstripping and window glazing. Energy consumption data collected for two years prior to and three years after completing the improvements will be compared to determine the energy savings.

Response to the program from homeowners and students has been overwhelmingly positive. Requests for audits and weatherization far exceeded the summer labor force. The program, which is funded by a three-year Energy Office Exxon Oil Overcharge grant, returns to the classroom this fall.

Auburn High School students demonstrate the "blower door".

Test Your Energy Knowledge Quiz

The United States has made considerable progress in using energy more efficiently. Test your knowledge on the questions below to see how we're doing and how we can continue to improve.

1. Air infiltration and leakage are responsible for much of the energy wasted in the home. The most cost-effective way to control this problem is:

a) adding attic insulation. b) adding storm windows.
c) caulking and weatherstripping windows, doors and baseboards.

2. How much of the energy for heating hot water can be saved by reducing the water temperature on the hot water heater from 140° F to 120° F?

a) 3-5 percent. b) 5-10 percent. c) 18 percent or more.

3. By driving in an energy-conserving manner (for example, making smooth starts and stops), the average auto driver can save_____ percent of the normal amount of gasoline used?

a) 2 percent. b) 5 percent. c) 10 percent.

4. The average dishwasher uses 14 gallons of hot water per load. How much hot water does the optional "rinse hold" feature use?

a) 2 gallons. b) 3-7 gallons. c) 10 gallons.

Answers 1. c 2. c 3. c 4. b

What's a Kilowatt? Terms to Know

Alternate energy sources - Energy sources other than coal, gas, oil or nuclear power, which are used conventionally to produce electricity and/or heat. Includes such energy sources as the sun, wind, tides, nuclear fusion, oil shale and photosynthesis.

Btu (British Thermal Unit) - The amount of heat required to raise the temperature of one pound of water one degree Fahrenheit under standard pressure and temperature. One cubic foot of natural gas is equivalent to about 1,000 Btu.

Fossil Fuels - A solid, liquid or gaseous fuel material that forms in the earth's crust by chemical and physical changes in plant and animal residues under high temperature and pressure. Includes coal, oil and natural gas.

Geothermal - The natural heat of the earth. Geothermal plants harness the energy from the interior of the earth, either as steam or superheated water (as in aquifer) or from heated rocks in the earth's crust.

Kilowatt - A unit that measures the rate at which energy is produced or used. Ten 100-watt lightbulbs use energy at the rate of one kilowatt (equal to 1000 watts). A rate of one kilowatt maintained for one hour produces or uses one kilowatt-hour of energy (equal to 1000 watt-hours).

Methane (CH_4) - The colorless, odorless primary component of natural gas, which can be manufactured from crude oil, coal, wood and other organic material.

Non-renewable energy sources - Stores of such materials as coal, natural gas, petroleum and oil shale which cannot be replenished and are in finite quantities.

Renewable energy sources - Energy sources that are constantly or cyclically replenished, including direct solar energy, and indirect sources, such as biomass and wind power.

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