

# Nebraska ENERGY

Q U A R T E R L Y

Nebraska Energy Office

Fall 1993

21 Winners...

## Schools & Hospitals Get Federal Grants

Twenty-one different Nebraska schools and hospitals were recently selected to receive federal matching grants to identify or make energy saving building improvements. Over \$290,000 was awarded by the U.S. Department of Energy under the Institutional Conservation Program.

Three post secondary institutions in the greater Omaha area — Creighton University, College of St. Mary and Dana College in Blair — received both types of grants. Most of the schools first apply for a grant to locate energy savings and once they are identified, request a grant to finance the improvements.

This federal grant program originated in 1980. To date, over 200 schools and hospitals in the state have received \$9.5 million.

See GRANTS on page 7

### Getting a Grant in '94

About \$330,000 will be available for grants in 1994. Two-page pre-applications are mailed to all eligible schools and hospitals in the state in early December.

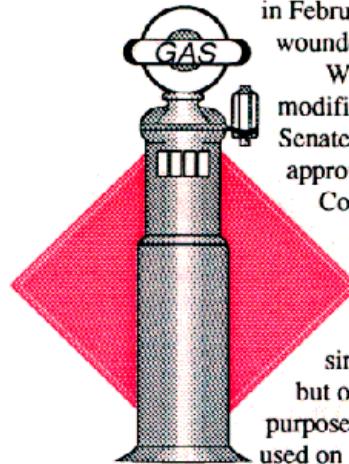
The deadline for applying for grants is January 21, 1994. After initial reviews, only those most likely to receive a federal grant must complete the full federal application.

Grant winners are selected by the U.S. Department of Energy by September 1st of each year.

The Last Word...

## The ~~Energy~~ Tax

Last month, as the smoke cleared on the federal budget battlefield, the broad-based energy tax originally proposed in February, was found mortally wounded.



While the House approved a modified version of the tax, the Senate refused. The compromise, approved by both houses of Congress, calls for a 4.3 cents per gallon increase in the federal gasoline tax beginning October 1.

Other fuels were also singled out for tax increases, but only if used for transportation purposes. Gasoline and diesel fuel used on the farm and for off-road business uses will be exempted from the tax. The fuels and the tax increases are shown in the table.

Fuel Tax Increase	
Fuel	Cents per gallon increase
Motor gasoline .....	4.3
Ethanol and methanol .....	2.7
Unleaded with ethanol .....	4.14
Diesel .....	4.3
Propane .....	4.3
Aviation gasoline .....	4.3
Kerosene jet fuel .....	4.3

### The Impacts

Typical Nebraska drivers who travel about 12,000-13,000 miles per year and get 20 miles per gallon of gasoline can expect to pay an estimated \$28 more in taxes — about 40 to 60 cents per fillup, according to Energy Office estimates.

### Minimizing the Tax

There are several ways drivers can minimize the effects of the increased tax:

- Have vehicles properly tuned — check spark plugs and

See TAX on page 6

E • N • E • R • G • Y



STATE OF NEBRASKA

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**A 400% Surge...**

# There's Ethanol Growing in the Fields

Several corn processors have recently announced nearly \$500 million in new or expanded ethanol plant construction. Over 230 million gallons of ethanol will be produced annually in the state as a result of the increased plant capacity according to the Nebraska Ethanol Board. This is nearly four times the current yearly production of 54 million gallons.

**Ethanol Plant Expansion and New Construction**

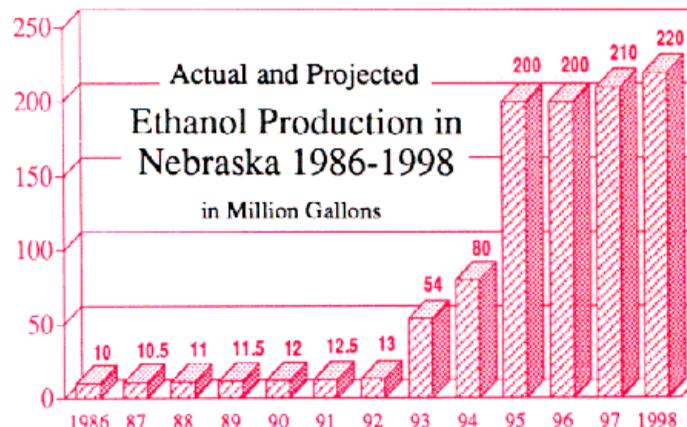
Company	City	Type	Annual Ethanol Production (in millions of gallons)
Cargill	Blair	New	100
		Expansion	16
		Current	12
Minnesota Corn Processors	Columbus	Expansion	35
		Current	35
High Plains	York	New	25
Nebraska Nutrients	Sutherland	New	15
<b>TOTAL</b>			<b>238</b>

Plant locations stretch from Blair along the banks of the Missouri to Sutherland in the west-central area of the state.

### Ethanol Exports!

Some recent highlights of the announcements:

- Chief Ethanol in Hastings, the state's first ethanol plant, was also the first to expand. The plant will produce 28 million gallons annually, more than doubling its current capacity of 12 million gallons.
- The newest plant, High Plains in York, is moving an experimental Louisiana ethanol plant to the Nebraska site.
- After it becomes operational, the Cargill plant in Blair will produce over 40 percent of the ethanol in the state.



Source: Nebraska Ethanol Board

"For years economic experts have told us in Nebraska that we must diversify our strong agricultural base by finding ways to add value to the farm products we produce. Minnesota Corn Processors and other similar plants springing up around the state do just that by taking a bushel of corn and turning it into products like cornstarch and ethanol. Keeping that processing 'at home' opens new markets for corn while keeping those value-added jobs and dollars close by.

"Everyone wins when that happens."

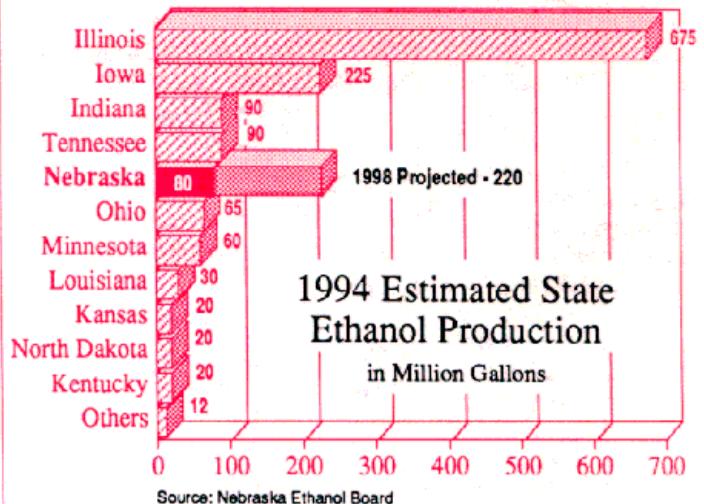
*Columbus Telegram*  
July 21, 1993

"The state has now become a net exporter of ethanol," said Bob Harris, Director of the state's Energy Office. "It has taken us over twenty years to get to this point." Harris said. If current ethanol consumption levels remain constant, next year we will be exporting over 80 percent of the ethanol produced in Nebraska.

"The more ethanol is used to displace petroleum products," said Harris, "the less dependent the nation will be on foreign fuel sources."

Energy Office information shows the only other indigenous fuels produced in Nebraska —

oil and natural gas — met only 15 and .7 percent, respectively, of the state's needs in 1990. In 1991, oil produced in



Source: Nebraska Ethanol Board

the state totaled nearly 250 million gallons. If future ethanol production estimates are accurate and oil production continues to decline, annual ethanol production could surpass oil production in the state before long.

### New Number Two?

The Energy Office Director said because most of the new or expanded ethanol capacity is occurring in Nebraska, it is possible the state could become the nation's number two ethanol producer, surpassing neighboring Iowa. "Ethanol production in 1994 is expected to place fifth in the country," Harris said. "But, if production in other states remains constant, in just two years we could be on par with Iowa, which is currently second."

## Oil Patch Blues...

# USA and Nebraska Trends Not Promising

A series of reports on oil production and consumption over the past several months have focused on three pervasive trends — the nation's and Nebraska's dependence on cheap, imported oil continues to increase, domestic production has declined to a 35-year low and consumption next year is projected to rise.

### Looking Ahead

Earlier this year, the U.S. Department of Energy's Energy Information Administration predicted that the nation's short-term petroleum demand will be 17.5 million barrels of oil per day by next year, the highest annual level in almost 15 years.

The federal agency attributed the potential growth to increases in transportation, heating fuels and industrial uses.

In 1994, imports are expected to rise to 7.9 million barrels per day because of falling domestic production. An estimated 45 percent of all oil consumed will come from imported sources.

### Looking Back

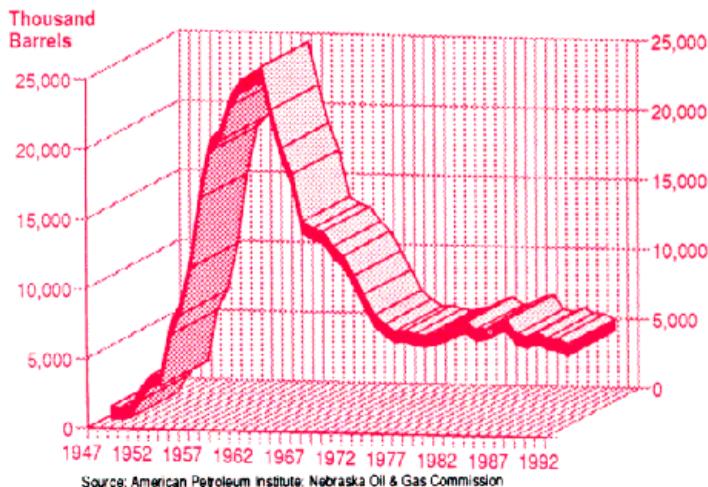
The American Petroleum Institute in July, looked at the first sixth months of the year and found 48 percent of the oil used in the country was imported, already above the federal government's estimate for next year.

Domestic production for the first six months plunged to the lowest level since the 1950s. Domestic drilling activity, a measure of future production levels, was the lowest since the 1930s. An oil institute official said, "Indeed, the trend for U.S. crude oil production is pessimistic at best."

### The Nebraska Picture

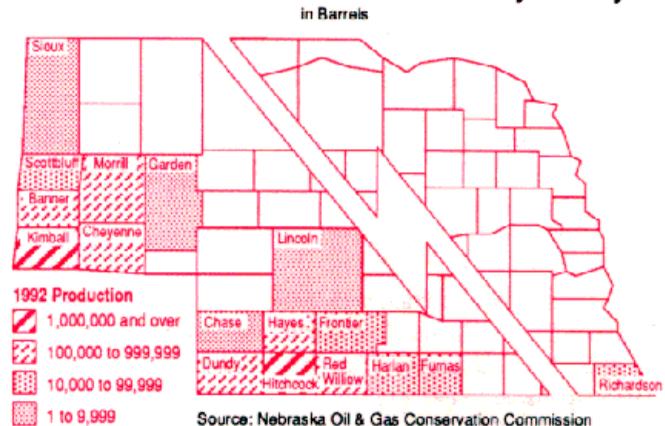
Nebraska's 1992 crude oil production paralleled that of the nation. A total of 5.47 million barrels was pumped, the lowest since 1953 and a 6.2 percent decline from 1991.

### Nebraska Crude Oil Production, 1947-1992



Over half of the state's production is concentrated in Hitchcock and Kimball counties. The state remains a net petroleum importer, however, meeting approximately 15 percent of its annual needs from in-state production. All the oil produced in Nebraska is refined elsewhere.

### 1992 Nebraska Crude Oil Production by County



### A Glimmer for the Future

Because of a federal matching grant to a McCook oil company, the state's oil production could be increasing. Beard Oil will be testing an experimental recovery system in Hitchcock County where one-quarter of the state's oil is produced. Forty-two wells will be tested where water flooding has been used to enhance oil recovery. Fluorescent, ionic and radioactive tracers will be used to determine if large quantities of oil remain after the water flooding.

An extra 200,000 barrels of oil are expected to be recovered if the tests are successful. This recovery technique could be applied to other oil producing areas of the state, to increase production.

### Environmental Issues

The Oil and Gas Conservation Commission is now considering changes in drilling operations for the state's producers which could affect future oil production. A draft of the proposed changes was issued in June. Revisions to the changes are expected in August. When approved, changes would be effective in one year. According to a commission staffer, the changes represent an effort to strike a balance between economic and environmental concerns.

### Different from the 70s and 80s

While the country is seemingly returning to the consumption pattern of the import-dependent 1980s, there are differences. During the oil price shocks of the 1970s, the Organization of Petroleum Exporting Countries or OPEC supplied about 55 percent of the world oil supply and 85 percent of oil imported into America. Today, OPEC only supplies 58 percent of the American oil imports and 90 percent comes from four relatively stable countries — Saudi Arabia, Kuwait, Venezuela and Nigeria.

## Bond Alternative for Public Schools...

# \$27 Million in Loans and Grants Since 1981

The nation's oldest state-funded energy efficiency financing program for public schools — the Nebraska School Weatherization Program — entered its thirteenth year in 1993. By June of this year, over \$27 million dollars in grants and loans have been made to the state's public school systems to finance energy saving studies and building improvements.

"The original program which debuted in 1981 is nothing like today's," said Lynn Chamberlin, the program's manager. "Over the years, the agency has tried to make the program more responsive to the needs of school districts and administrators." Chamberlin cited some of the changes:

- Financing requests can be made at any time. Previously, applications were accepted only during a specified period of time each year.
- The assistance maximum of \$100,000 per building was eliminated.
- Under special circumstances, improvements already in progress may be considered for financial assistance.
- Starting in the fall, schools will be able to get interest-free loans to purchase alternate fuel cars, vans, buses and fueling facilities.

"...Please, please, school designers, use fluorescent lighting to the maximum extent. That would save energy (and, of course, money) with no quality loss of illumination. School district officials also should routinely stress fluorescent systems in any revamping of existing facilities."

*Lincoln Journal  
December 28, 1992*

**Note:** The Energy Office conducted lighting efficiency surveys of 270 public and private schools around the state in 1992 and found that potential yearly dollar savings total \$412,764. The study also looked at 17 public school buildings in Lincoln. The estimated yearly savings in those buildings totaled \$32,643.

## No new taxes needed for new heating system

By Michelle Flyer  
Staff Writer

"The cost of redoing the heating system and installing air conditioning at Platteview High School didn't cost the taxpayers any money thanks to an energy loan.

"Assistant Superintendent Steve Coleman said the district was approved for a \$60,000 to \$70,000 interest free-loan from the Nebraska Energy Office. The money will cover most of the cost for

the new heating and air conditioning. The other part will come from lease purchase, he said.

"For these types of projects, South Sarpy District 467 has been taking about \$100,000 each year from the building fund, Coleman said.

"Through the loan purchase and energy loan, hopefully we won't have to use the building fund for that, but instead to upgrade our buildings, he said."

*Gretna Breeze  
October 8, 1992*

## Oil Price Shock Grants

Chamberlin said the program started in the fall of 1981 by awarding less than \$1 million to 26 buildings in just 17 school districts. "School officials and taxpayers were still reeling from the second of the country's oil price shocks. Because of the grants, school buildings were made much more energy efficient. School boards had to do something because energy costs were eating more and more of the school budget," said Chamberlin.

"In the beginning, the state paid 80 percent of the cost of the energy saving improvement and the local school district paid the balance," Chamberlin said. In the five years grants were given, 1,066 were issued totaling over \$17.28 million according to Energy Office records.

## 283 Interest Free Loans

In 1985, the Legislature changed the grants-oriented program to one issuing no-interest loans. The first loans, made in December, 1986, were to Otoe and Burwell Public School Districts.

The Elementary School in Otoe insulated ceilings, walls, the entry way and ducts in addition to replacing the furnace. All the improvements were financed with a \$6,800 loan. During the first six years after the improvements were completed, the school saved \$7,881 in utility costs, more than paying for the cost of the improvements.

Burwell's Elementary School used a \$48,000 loan to replace windows and doors and install a temperature setback. In the four years following the completion of the improvements at the school, over \$21,000 has been saved on utility bills.

*continued on page 5*

## School Financing Options at a Glance

Virtually every school district is confronted by limits — especially limits on financial resources. The same question is oft repeated, "How can the same amount of money accomplish more?"

Generally, school boards and administrators have only a limited number of budgetary options to finance building improvements such as new heating and cooling systems, lighting replacements or roofs...

- raise taxes
- seek approval for issuing bonds
- use the building (or sinking) funds
- use alternative financing for selected items
  - Institutional Conservation Program 50/50 matching grants (See page one)
  - School Weatherization Program no-interest loans
  - Dollar and Energy Saving Loans from the Energy Office
  - Lease-purchase agreements with suppliers
  - Supplier financing programs

It should be noted that financing obtained from the Energy Office is exempt from budgetary bid requirements according to the state's Department of Education.

continued from page 4

From 1986 through June, 1993, over \$9.2 million in no-interest loans have been made for 283 projects across the state. The largest, over \$368,000, was issued for the LaVista Junior High School and the smallest, \$390, was for Oxford's Elementary School. The maximum amount of a loan is based on the estimated energy savings.

Many of the school districts have received multiple loans from the Energy Office for energy savings projects in their buildings:

### 3 Loans

Bridgeport  
Dodge  
Elkhorn Valley  
Emerson-Hubbard  
Humboldt  
Lincoln  
Neligh-Oakdale  
Valley  
Wakefield  
Wheatland

### 4 Loans

Alliance  
Falls City  
Uehling  
Wisner-Pilger

### 5 Loans

Auburn  
Chadron  
Hemingford  
Loup County/Taylor

### 7 Loans

South Sioux City

Greater Omaha school districts — Millard, Omaha and Westside — have taken out 57 loans to finance projects in their buildings (13, 35 and 9 loans, respectively).

### Recommended Improvement Grants

Energy study grants, which recommend energy efficient building improvements, were added to the School Weatherization Program in 1985. Since then, 364 grants totaling

\$802,264 have been awarded. The study grants are limited to a maximum of \$2,500 per building. However, recently passed legislation allows study costs exceeding \$2,500 to be financed with a no-interest loan.

### Self-Financing — No State Funds Needed

The School Weatherization program is an unusual state program because it has never received state general funds. For eleven years, oil and natural gas severance tax funds financed the grants and loans.

Starting in 1991, the program became self-supporting, making loans from a revolving fund capitalized from loan repayments and interest earnings. The capital pool remains at about \$13.1 million, of which about 70 percent has been loaned to school districts and is being repaid.

Unless reauthorized by the Unicameral, the school Weatherization Program will cease in 1996. If the program sunsets, loan repayments will transfer to the Permanent School Fund.

continued on page 6

## And Now Vehicle Loans...

Starting this fall, the Energy Office will begin making no-interest loans to schools for alternate-fueled vehicles and fueling stations.

"More and more," said Director Bob Harris, "I see the Energy Office becoming a financial catalyst for change. We offer low or no-interest financing in very specific areas where energy efficiency gains need to be made such as transportation and buildings. Today, alternate transportation fuels need financial incentives to create the necessary infrastructure." Local governments and schools which maintain and operate fleets of vehicles have been targeted by the federal government as the most likely to convert to alternate fuels because of cost efficiencies.

School vehicle loans can be obtained for purchased, leased or converted vehicles including cars, vans and buses as long as they are used for transporting students or staff. Among the alternate fuels eligible are ethanol, methanol, electricity, compressed or liquefied natural gas, and propane.

Vehicles being converted from gasoline or diesel cannot be modified to operate on more than one fuel. A vehicle operating on a blend of gasoline and ethanol, for example, could not be financed with a no-interest loan.

The maximum length of any loan is ten years. For more information about vehicle and fueling station loans contact **Lynn Chamberlin** in the Energy Office.

### How to Get a Loan or a Study Grant

Schools may apply for energy efficiency loans or energy study grants at any time of the year. Generally, most schools first apply for energy study grants to find out what improvements need to be made. Then they apply for a loan to make the improvements since an energy analysis of the building is required before a loan can be issued.

Once the application forms are received and reviewed by the Energy Office, a school district will know within 45 days if their application has been approved or denied. If a loan or grant application has been denied, most schools make the necessary corrections (or supply the information) and the loan or grant is usually approved.

Energy Office staff can also provide suggestions on how financing could be structured to minimize costs. For example, a school may want to utilize several funding sources to make the improvements. A possible combination could be an Institutional Conservation Program grant, matched by a no-interest loan from the School Weatherization Program plus both monetary and in-kind resources from the school district, if needed.

For more information or to request loan or grant forms, please contact **Lynn Chamberlin** or **Leonard Pethers** in the Energy Office.

#### Tax From page 2

- points, change the air filter, adjust timing and fuel mixture and use the right gasoline and motor oil
- Check tire pressure monthly and keep tires inflated to proper level
- Drive at 55 miles per hour on highways
- Change your driving habits — avoid jack-rabbit starts, limit warm-ups to 30 seconds, anticipate stops and slowdowns, minimize idling and avoid waiting in drive-ins
- Carpool to work
- Plan your trips — organize your errands so that fewer trips are needed
- Avoid using the air conditioner unless traveling at over 25 miles per hour
- Do not tow trailers or use roof-top carriers unless absolutely necessary
- Do not store items in your car — each 100 extra pounds reduces mileage by one percent

### September 4, 1882

The first electric central station to supply light and power was the Edison Electric Illuminating Company of New York City. It had one generator capable of producing power for 800 light bulbs. Within 14 months, the service had 508 subscribers and generated power for 12,732 bulbs.

## Electric Water Pumping... Powered by the Sun

Reprinted and excerpted from the *Wyoming Rancher Stockman Oilman*, Summer 1993. Authored by Berva Arensdorf

For the thousands that cannot depend on traditional methods of water pumping, there are 'Daylight Pumps' that capture the sunny side of Mother Nature.

"Solar water pumping does," according to Dale Pettit of Independent Sun Power in Tryon, Nebraska. The positive attributes of this method for pumping water for livestock are more apparent almost daily.

Long-time rancher and businessman, Pettit bases his opinions on his personal experiences with solar water pumping. About six years ago, he became fed-up with the high cost of installing and repairing windmills on his Sandhills ranch. His search for a reliable alternative source of power led him to photovoltaics, the science of electricity produced by sunlight.

Further searching, he found that no one in the photovoltaics business had a clear understanding of his needs or the needs of other ranchers. Through considerable research he has become an 'expert' in the field of water pumping with solar power. Through personal use on his ranch, he knows what works and what does not.

Solar water pumping is a very simple method of providing water. The technology, according to Pettit, is simply "electric water pumping and there's nothing new about that. Photovoltaics is the source of electric power which is new to many people, but is a very easy technology to learn and use."

In his search for what works, he tried and discarded many different pumps. "I look for quality products that last, perform and provide adequate water without constant worry for remote, hard to reach well sites."

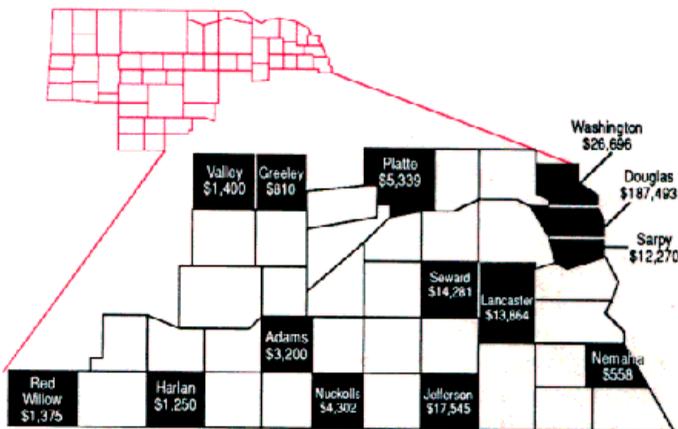
The Nebraska company takes pride in the adaptability of their units to be custom-sized to fit the needs of each rancher and well site. Various configurations of photovoltaic panels are set up to supply the necessary electric power to pump adequate water and provide the most economical system.

In ranch operations, where rotational grazing requires frequent pasture changes, the pumping system may be moved from one well site to another. In places where the windmill simply won't keep up, a solar pumping system is ideal. Solar systems are also being used in areas where piping the water to various locations is required. One recently installed system is pumping water over five miles up a pipeline.

Livestock producers have for decades depended on Mother Nature to provide windpower as long, hot, windless days prevailed. The sensitivity of the photovoltaic panels allows them to collect the radiant energy of the sun even on overcast days and transforms that energy into electrical power. Instances of water being pumped even in the midst of a snowstorm are routinely reported.

For more information contact **Independent Sun Power, HC 85, Box 21, Tryon, NE 69167** or phone **800-545-4286**.

### Regional Distribution of 1993 Grants



### The Winners

Institution	Type of Building Improvement		Grant Amount
	Identify	Install	
Columbus St. Anthony School	1		\$ 1,250
Creighton University-Omaha	2	1	\$68,076
Dana College	2	2	\$26,696
Fr. Flanagan's Boys Town		1	\$56,852
Harlan County Hospital	2		\$ 1,250
Hastings Catholic Schools	2		\$ 3,200
Jefferson County Hospital		1	\$17,545
Lawrence Public Schools	1		\$ 4,302
Lindsay Holy Family School		1	\$ 4,089
McCook Community College	3		\$ 1,375
Omaha Cardinal Spellman School		4	\$12,270
Omaha College of St. Mary	1	2	\$60,191
Omaha Roncalli High School		1	\$ 2,374
Ord St. Mary's School	1		\$ 1,400
Peru State College	1		\$ 558
Seward Memorial Hospital	1		\$ 3,280
Southeast Comm. College-Milford	4		\$11,001
University of Nebraska-Lincoln	4		\$12,929
Waverly Villa Marie School		1	\$ 935
Wolbach Public Schools		1	\$ 810

### Nebraska Student Wins National Earth Day Poster Contest



Katie Pfeiffer, a student at Garland Elementary near Seward, was one of 15 elementary students to win the U.S. Department of Energy's Earth Day poster contest. Over 340,000 students from more than 1,400 schools participated.

### Frequently Asked Questions...

# 5% Dollar and Energy Saving Loans

The *Nebraska Energy Quarterly* features questions asked about 5% Dollar and Energy Saving Loans. Loan forms may be obtained from participating lenders or the Energy Office.

### Is property damaged by floods or wind eligible for loans?

Yes. Loans to homeowners, renters, farmers, ranchers and business owners — regardless of income — can be used to repair or replace damaged energy-using systems and energy conservation improvements. As of August 17th, Nebraskans in the 52 counties declared disaster areas can benefit from modifications made to the program:

- Loan approval will be expedited and can be done over the phone or by fax
- Maximum loan amounts have been increased to \$25,000 for homes and \$75,000 for apartment buildings.
- Businesses of any size are eligible for up to \$100,000.

Contact your local lenders or **Joel Phipps** or **Jody Johns** in the Energy Office for more information.

### What causes delays in loan approvals?

Incomplete or incorrect information on the application forms from the borrowers (or their contractors or suppliers) and the supplementary information from the lenders are the largest cause for delays.

Obtaining missing or incorrect information from the appropriate source adds to the processing delay. Borrowers and lenders are encouraged to take a little extra time before submitting the forms to make certain the information is complete and accurate.

During this time of year, loan applications are processed within two days of receipt if the application is complete. Just remember, if the information is requested, it will be needed before loan approval is issued.

**Project Loans to date: 6,067 for \$35.1 million**

**October is Energy Awareness Month**



## Information Services

The toll-free **Alternative Fuels Hotline** provides general and specific information on alternate vehicular fuels including fuel performance and availability. Call between 9am-5pm CT, Monday-Friday. (800) 423-1363

**CAREIRS** The Conservation and Renewable Energy Inquiry and Referral Service answers questions at no charge. Call between 7am-4pm CT, Monday-Friday. (800) 523-2929 Renewable Energy Information  
P.O. Box 3048  
Merrifield, VA 22116

CAREIRS is now offering two free fact sheets, *Home Energy Audits* (FS224) and *Caulking and Weatherstripping* (FS203). Please refer to the numbers in parentheses when ordering a publication.

**NATAS** The National Appropriate Technology Assistance Service offers free technical and commercialization assistance. Call between 9am-6pm CT, Monday-Friday. (800) 428-2525 NATAS  
U.S. Department of Energy  
P.O. Box 2525  
Butte, MT 59702-2525

The **National Materials Exchange Network** provides free advice via computer modem on recycling and reducing disposal costs. Call 24 hours per day. Modem access (800) 858-6625 General assistance (509) 325-0507

**NREL/TIS** The National Renewable Energy Laboratory/Technical Inquiry Service offers free technical solar information for scientific and industrial professionals. Call between 9am-6pm CT, Monday-Friday. (703) 487-4650 Technical Information Service  
National Renewable Energy Laboratory  
1617 Cole Boulevard  
Golden, CO 80401

**NEIC** The National Energy Information Center provides data and projections on energy production, consumption, prices and supplies. Call between 7am-4pm CT, Monday-Friday. (202) 586-8800

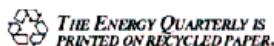
National Energy Information Center  
U.S. Department of Energy  
Forrestal Bldg., EI-22, Room 1F048  
1000 Independence Avenue, S.W.  
Washington, D.C. 20585

The Energy Office has several new publications available:

- *1992 Annual Report*
- *Nebraska Energy Statistics, 1960-1991*
- *Consumer Tire Guide*

Contact **Jerry Loos** in the Energy Office for copies.

In accordance with the *American Disabilities Act*, the state will provide reasonable accommodation to persons with disabilities. If you need reasonable accommodation to participate in any program or activity listed in this publication, please contact the Energy Office to coordinate arrangements. Upon request, this publication may be available in alternative formats.



## Getting There Efficiently

The following are interesting energy tidbits gathered from near and far:

### Faxes and Fones

Major savings in fossil fuel use can be made by refusing to drive, fly, or send things by truck or plane, unless we have to. Don't FedEx it, Fax it! A two to seven-fold energy savings can be realized if information is faxed instead of using overnight delivery services. Similar savings can result by sending messages from one computer to another.

A phone call is one of the most energy efficient ways of exchanging information getting 442 million miles per gallon.

— *Rocky Mountain Institute Newsletter*

### Face to Face

The state continues to be one of the nation's leaders in adoption of state-of-the-art telecommunications systems — the information highway of tomorrow. It is now estimated that 96 percent of Nebraskans live within a one hour's drive of an interactive video facility. Most of the sites in the state are located in city libraries or on college campuses.

— *Nebraska Rural Development Commission*

### October 21, 1879

Thomas Alva Edison invented the first electric incandescent lamp of practical value. After 13 months of experimenting, he discovered carbonized cotton filaments and produced a light bulb that would burn 40 hours.

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