Many Households Left Without Power As Line Repair Progresses

Spring Snowstorm Snaps Power Poles

The weatherman was predicting that most of the storm would miss Custer County on Monday. It didn't. By early Tuesday morning it had dropped six to eight inches of extremely wet snow that snapped hundreds, perhaps thousands of power poles in the region cutting power to thousands of customers and leaving many in the dark for what may be several days.

Even as the snow was rapidly melting into slush by sunrise power lines were draped across almost every road in the area effectively curtailing any large scale snow removal by county and state crews who had to stop where lines were down.

Custer Public Power has been bringing in extra crews and working around the clock to restore power to its customers. Most rural residents in the area were still without power by Tuesday evening and are being cautioned against having too much

chase a generator to ensure clean water to his calves. The kind they needed would cost $4,000. Now they may try to rent one for the time being.

The Kent Wilcher family lives east of Callaway near Oconto and opted to come into Callaway to stay with relatives rather than cope with no water, heat or lights.

Callaway was fortunate to have generators to back up local power needs though some outages were felt Monday evening and early Tuesday morning. Callaway was back on the main line by 3:45 PM as work crews fixed downed lines and poles in town and out to the sub-station.

Oconto remains without power, according to Oconto board member

cause of the uncertain electrical si uation. Teachers will be asked come in at 10 AM, however, alon with an evaluation team that will coming to the school, weather pe mitting.

With the power out for many the rural areas, Right Drug Sto reports a run on books, magazin and candles to fill the time witho

Energy loans offered in disaster areas

LINCOLN — The Nebraska Energy Office and lenders are offering low-interest loans to people in 24 counties who had appliances and other systems damaged by the power outages resulting from the April 11 snowstorm.

We won't forget this one

By Barb Bierman Batie
Telegraph Area Writer

LEXINGTON – Line crews for Dawson County Public Power District can relax today for the first time in 19 days. And then it's right back to work Monday morning.

At times, it seemed there never would be light at the end of the tunnel for crews working to re-establish power to thousands of DPPD customers affected by the April 11 snowstorm. But victory came Saturday.

By noon, nearly all residents

Storm's cost may near $70 million

Custer County power official says system may not recover for two to three years.

From The Associated Press

Preliminary damage estimates from the snow and ice storm that ... miles of power lines ... have reached $53 million, a ... addition, a Custer Coun... Power District official said

from the Tennessee Valley Authority, considered the foremost power experts in the country, Hergenrader said.

"There is little doubt in our minds that this storm is of a magnitude where we should qualify" for aid, Troutman said.

U.S. Sen. Bob Kerrey, D-Neb., and Sen. Jim Exon, D-Neb., wrote letters

> *"There's a lot more we can and should be doing and no reason we shouldn't do it immediately.*
>
> —Rep. Bill Barrett

and Dawson counties, Ramsey said.

ABOUT 99 PERCENT of people Loup County don't have power, well as 42 percent of those in Cust County and 43 percent of people Sherman County, Ramsey said.

About 2,000 of the 2,500 Daws Public Power district customers Dawson County were still witho power Tuesday, said DPP Manag by. About 20 percent of t hundred DPP customers Buffalo County didn't ha y Tuesday, Darby said.

we've got another week

COVER

"Tangled Wires". Scenes like this illustrate the task which faced power crews following the April 11, 1994 snowstorm. The McCook Public Power District lost thousands of poles in the storm.

Photo by Bruce Crosby, *McCook Daily Gazette*.

STATE OF NEBRASKA

EXECUTIVE SUITE
P.O. Box 94848
Lincoln, Nebraska 68509-4848
Phone (402) 471-2244

E. Benjamin Nelson
Governor

February 15, 1995

Dear Nebraskans:

Last year, we became aware of the fragility of our power supply system and our dependence on it as well. Two storms — one wind, one ice and snow — in less than 12 months felled large portions of the state's electrical transmission system. The response to Nebraskans in need was impressive. The state's emergency disaster system operated efficiently, assisting the state's utilities in rebuilding after these natural disasters.

Ethanol had a banner year in 1994. And 1995 could be even better. As 1994 dawned, an announcement was made by the federal government that ethanol would be required in a portion of reformulated gasoline sold in the nation's smoggiest cities starting in 1995. Despite a temporary postponement in the implementation of the Environmental Protection Agency's order due to a legal challenge mounted by the nation's oil industry, ethanol's future is not only bright, but secure. The state solidified its position as a one of the top three producers of this renewable fuel, adding value to the state's prodigious corn harvest. By 1995, annual ethanol production will rise to nearly 285 million gallons. This economic development success story can also be measured in jobs and increased income for corn growers. On the jobs side — an estimated 5,300 workers to build the plants, 600 jobs to operate them and 2,100-3,600 to support them. For corn growers, each 400 acres of corn used for ethanol puts an additional $2,400-$4,000 in their hands.

One of state government's quiet success stories remains the agency's Dollar and Energy Savings Loans. As of December 1994, 8,032 loans for projects worth in excess of $47 million had been made. This loan fund was started with $16.35 million in oil overcharge funds. Added to that, $5.5 million in loan repayments have been revolved to make new loans. Together these funds have leveraged $18.8 million from more than 300 lenders in the state. While nearly all other states gave away their one-time windfall, Nebraska prudently invested a large portion of its funds in such a way as to benefit generations of Nebraskans. A new study shows that these loans create 80 jobs every year, adding economic development benefits to the state. This government program is one of the best — it's self-supporting as it uses no tax dollars and it provides benefits to an increasing number of Nebraskans. It is my hope that programs of this type become the model for government at all levels.

Details of these successes can be found in the Nebraska Energy Office's 1993 - 1994 Annual Report, and it is with great pleasure that I present this report to you now.

Sincerely,

Ben Nelson

E. Benjamin Nelson
Governor

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Table of Figures

This *Annual Report* is for the period July 1, 1993, through June 30, 1994, except where noted.

Weatherization Division

The Weatherization Division administers the Low Income Weatherization Assistance Program — a federally-funded program for weatherizing homes to save money and energy. The Energy Office is responsible for inspecting about 30 percent of the homes — nearly 600 — that are weatherized and for monitoring and auditing the subgrantees, primarily community action agencies, which actually make the home weatherization improvements.

1993-1994 Highlights

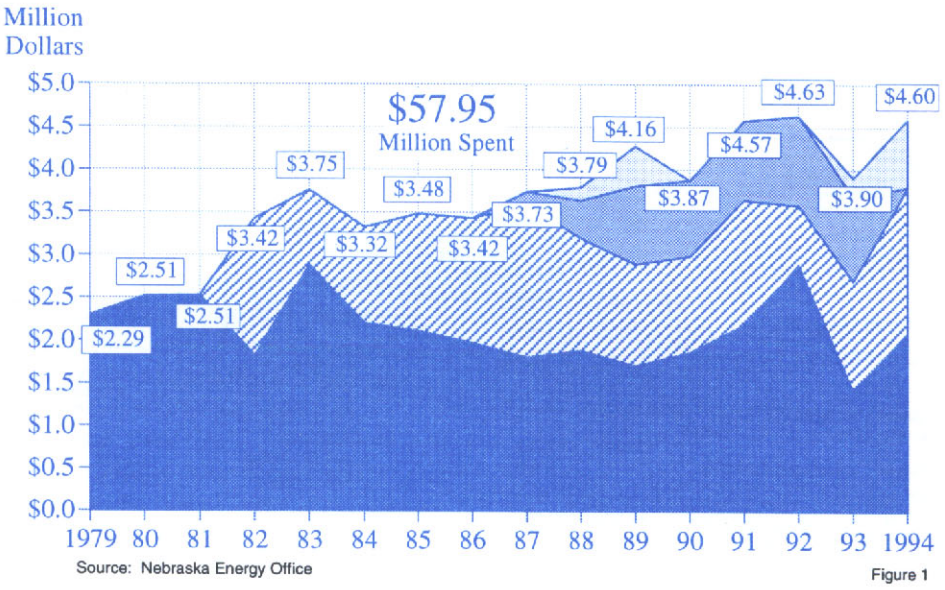
In 1993-1994, total funding for the program was $4,606,461. The Department of Energy's Low Income Weatherization Assistance Program provided a total of $2,086,527 and the Low Income Home Energy Assistance Program, administered through the Nebraska Department of Social Services, supplied a total of $1,698,826. The balance of the funding came from oil overcharge trust accounts — $11,415 from *Exxon* and $795,962 from *Stripper Well*.

Total funding for this activity increased nearly 16 percent from last year's level. Increases in funding from the federal Departments of Energy and Health and Human Services offset a 99 percent decline in *Exxon* oil overcharge funds. The only overcharge funds remaining to be used by the Weatherization Assistance Program are *Stripper Well* monies. Figure 1 shows the funding amounts and sources since the program began in 1979.

In July 1993, the agency began using a site-specific audit, called the National Energy Audit, in lieu of the non-site-specific audit the agency had been using to determine which energy saving improvements to make in the home. This change allowed local agencies to make the home improvements which save the most energy.

Nebraska was one of the first states in the country to receive permission from the federal government to use this new audit system.

Weatherization Funding Sources, 1979-1994

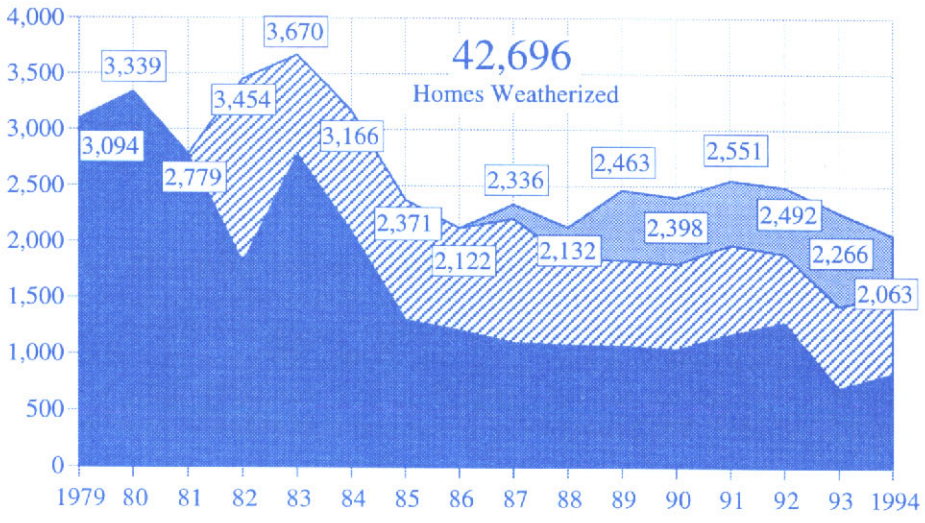


Source: Nebraska Energy Office

Figure 1

Stripper Well Oil Overcharge Funds
Exxon Oil Overcharge Funds
Low Income Energy Assistance Program
(U.S. Department of Health and Human Services)
U.S. Department of Energy

Number of Homes Weatherized By Sources of Funds, 1979-1994

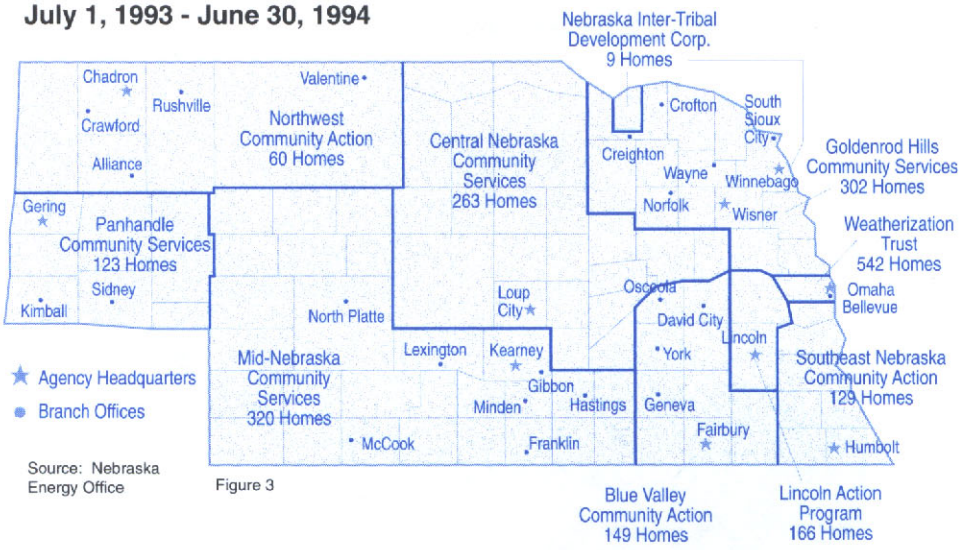


Source: Nebraska Energy Office

Figure 2

Oil Overcharge Trust Funds
Low Income Energy Assistance Program
(U.S. Department of Health and Human Services)
U.S. Department of Energy

Nebraska Weatherization Assistance Program
Service Areas and Homes Weatherized
July 1, 1993 - June 30, 1994



Source: Nebraska Energy Office

Figure 3

Since 1979

Since the Low Income Weatherization Assistance Program began operation in the state in 1979, nearly $58 million in federal and oil overcharge funds have been spent to weatherize the homes of low-income elderly, disabled and others.

In the past fifteen years, 42,696 homes have received free weatherization (see figure 2). However, an estimated 64,000 Nebraska homes remain eligible for this service.

Homes Weatherized in 1993-1994

A total of 2,063 homes, were weatherized in fiscal year 1993-1994. In keeping with the agency's priority to serve Nebraska's elderly community through the Low Income Weatherization Assistance Program, the division weatherized 601 elderly households, or 29 percent of all homes improved during this period.

The map above, figure 3, shows the ten Weatherization Assistance Program service areas and the number of homes weatherized in each area from July 1, 1993, through June 30, 1994.

Home improvements made through the program saved Nebraskans a total of $246,187 in avoided energy costs during 1993-1994. The home improvements represent a one-time investment that most likely will yield a rate of return for at least twenty years.

Omaha Housing Authority

In the sixth year of a cooperative arrangement between the Energy Office and the Omaha Housing Authority, the Energy Office continued to provide funds for purchasing weatherization materials and the housing authority contributed funds for installing them. Annually, up to $250,000 are made available to the Weatherization Trust for the replacement of windows, caulking, weatherstripping and ceiling insulation in housing authority buildings. The housing authority uses federal rehabilitation funds to pay the labor costs. Since 1989, 801 housing authority units have been weatherized, of which 15.5 percent or 124 homes were done during this reporting period.

Oil Overcharge Projects

Several years ago, the Energy Office was awarded a $50,000 federal incentive grant to establish an innovative loan program for landlords as a part of the Weatherization Assistance Program. To these funds, the agency added $40,000 in *Exxon* oil overcharge funds and $10,000 in *Exxon* Special Projects (oil overcharge) funds.

Because of modifications in the program's rules, landlords owning multifamily housing (two or more units in the same building), were required to pay half the cost of weatherization improvements.

To provide financing for landlords who may need assistance in sharing the costs, the $100,000 Landlord Loan Program was created and is operated in conjunction with the Dollar and Energy Saving Loan Program. Replacement furnaces in single-family rental homes may also be financed under the program. To date, no loans have been requested.

Regional Issues Grant

Using unexpended federal training and technical assistance funds from the previous reporting period and a 1993-1994 $10,000 grant from the regional U.S. Department of Energy Office, the Energy Office hosted a regional meeting of a technical working group in May 1994. The workshop focused on technical aspects of the new computerized energy audits being used by the agency.

Energy Financing Division

The Energy Financing Division operates federal and state programs which finance energy improvements in homes, businesses, farms and ranches, nursing homes, government buildings, schools and hospitals:

- School District Energy Efficiency Program
- Institutional Conservation Program
- Dollar and Energy Saving Loan Program
- State Building Revolving Fund

A full report on the Dollar and Energy Saving Loan Program and State Building Revolving Fund is found on pages 8-9 and 7 and 12 respectively.

Collectively, these programs are designed to reduce the cost and use of energy in buildings and systems. During the time these programs have been in existence, Nebraskans have saved millions of dollars through more efficient use of energy resources.

School District Energy Efficiency Program

In 1981, the Nebraska Legislature created the forerunner to the School District Energy Efficiency Program — the first on-going state-supported program to weatherize kindergarten through twelfth grade public schools in the nation. For the first four years, only matching grants for energy conservation building improvements were given. In 1985, grants of up to $2,500 per school for engineering studies were added. Beginning in 1986, the energy conservation improvements portion of the program was converted from grants to no-interest loans.

In 1993, the Legislature broadened the types of financing to include loans for energy studies, for the purchase or conversion of school vehicles to operate on alternate fuels and for installation of alternate fueling facilities.

For the first 11 years, state oil and natural gas severance taxes financed the program. Since 1991, the program has been self-supporting, making loans from a revolving fund capitalized from loan repayments and interest earnings.

Through June 1994, over $27.6 million in grants and loans have been made to the state's public school systems to finance energy saving studies and building improvements.

Energy Office staff review applications for grants and loans, conduct technical reviews of the planned improvements, monitor progress of the building modifications, collect loan repayments and analyze energy consumption reports filed by the schools.

School District Energy Efficiency Program July 1, 1993-June 30, 1994

Energy Improvement Loans

Loans Issued

School	Number of Buildings	Amount
Cedar Rapids Public School	1	$15,330
Lakeview High School	1	$51,153
Lewiston Consolidated School	1	$264,474
Nickerson Elementary School	1	$11,487
Palmer Public School	1	$7,027
Schuyler Elementary School	1	$3,465
Sutherland Public School	1	$36,768
Wood River Public School	1	$54,600
Wynot Public School	1	$13,615
Totals	**9**	**$457,919**

Loan Inquiries

School	Number of Buildings	Amount
Clearwater Public School	1	$15,512
Millard Public Schools	1	$217,091
North Bend Junior/Senior High School	1	$168,000
Omaha Public Schools	1	$15,500
Totals	**4**	**$416,103**

Loans Being Reviewed

School	Number of Buildings/Vehicles	Amount
Anselmo-Merna Public School	1	$82,239
Arapahoe-Holbrook Public School	1	$27,201
Grand Island Public Schools	8	$371,481
Omaha Public Schools	6	$107,603
Wayne Public Schools	1	$24,500
Totals	**17**	**$613,024**

School District Energy Efficiency Program Loans and Grants and Institutional Conservation Program Grants by County, 1993-1994

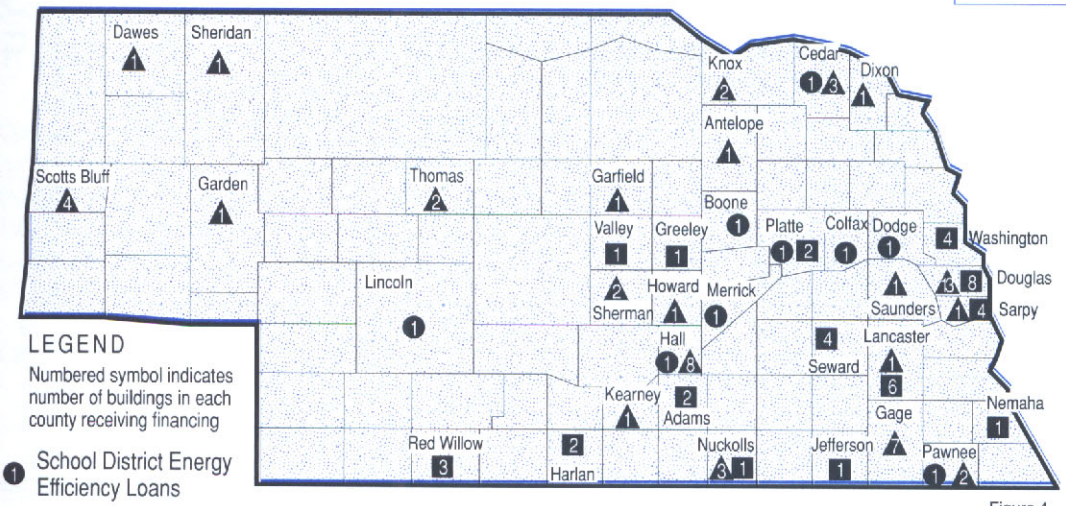


Figure 4

Source: Nebraska Energy Office

No Interest Loans

From December 1986, through June 1994, over $9.66 million in no-interest loans have been made for 292 projects across the state.

The loan portion of the program is designed so a school district repays the loan with all or a portion of the energy dollar savings it receives from completing the improvement.

At the end of the reporting period, June 30, 1994, the program's loan pool contained $13.1 million of which $4.2 million was still available for loans and $41,326 for engineering study grants. Currently, 139 school districts have 295 loans in repayment, totaling $9.1 million. In 1993-1994, the agency approved loans for energy improvements for nine buildings in nine school districts amounting to $457,919 and $416,103 has been set aside for four more projects in four school districts. Applications and inquiries are currently under review for eight loans in five school districts amounting to $613,024.

Projects funded through the loan program must have an anticipated payback period of less than their expected life. The loan period may be up to fourteen years.

The table on page 3 lists the school districts receiving loan funds in this period.

Engineering Study Grants

The School District Energy Efficiency Program also provides grants up to $2,500 per building to finance an engineering study and report on the building and its energy-using systems. A registered professional engineer or architect must conduct the study, which identifies all potentially cost-effective conservation improvements, as well as energy-saving changes in operation and maintenance procedures.

During 1993-1994, the Energy Financing Division issued engineering study grants totaling $142,500 to 24 school districts for studies in 57 buildings, the largest number of grants since 1988-1989. The table below lists grant-receiving schools and figure 4 on page 3 identifies the location of the schools receiving the grants.

Since the grant portion of the program began in 1985, 421 grants totaling $944,764 have been awarded to public school systems in the state.

Institutional Conservation Program

The Institutional Conservation Program provides 50/50 federal matching grants to nonprofit hospitals and public and private schools, either for engineering studies to identify cost-effective, energy-saving building improvements or for making energy improvements in the buildings. The Energy Office provides program information to applicants, reviews and ranks applications, submits project proposals to the U.S. Department of Energy for final review, monitors the progress of approved projects and collects energy use information after the project is completed.

Nearly $9.6 million in federal funds have been awarded to the state's schools and hospitals since the program became operational in 1980.

Latest Grants

In August 1993, the U.S. Department of Energy awarded $290,379 — $51,056 for engineering studies on 24 buildings and $239,323 for energy conservation improvements in 16 buildings. The projects being funded are expected to cost $857,055, but are expected to save $121,065 yearly in avoided energy costs. The table below lists recipients of both engineering study and energy improvement grants.

In January 1994, 11 schools and hospitals applied for $92,344 for engineering study grants in 37 buildings. Seventeen schools and hospitals applied for grants to fund energy saving building improvements estimated to cost $581,448 in 24 buildings. However, only $312,060 was available for projects and studies. Grants will be awarded by the federal government in August 1994.

School District Energy Efficiency Program
July 1, 1993-June 30, 1994

Engineering Study Grants

School	Number of Buildings	Amount
Beatrice Public Schools	7	$17,500
Burwell Junior-Senior High School	1	$2,500
Creighton Community Public Schools	2	$5,000
Elba Public Schools	1	$2,500
Elkhorn Public Schools	2	$5,000
Gordon Public Schools	1	$2,500
Grand Island Public Schools	8	$20,000
Lisco Public School	1	$2,500
Loup City Public Schools	2	$5,000
Malcolm Public Schools	1	$2,500
Minden Public School	1	$2,500
Omaha Public School	1	$2,500
Orchard Public Schools	1	$2,500
Papillion-LaVista Public Schools	1	$2,500
Ponca Public Schools	1	$2,500
Prairie Home Public School	1	$2,500
Ralston Public Schools	9	$22,500
Randolph Public Schools	3	$7,500
Scottsbluff Public Schools	4	$10,000
Superior Public Schools	3	$7,500
Table Rock-Steinauer Public Schools	2	$5,000
Thedford Elementary Schools	2	$5,000
Valley Public Schools	1	$2,500
Yutan Public Schools	1	$2,500
TOTAL — 24 School Districts	**57 Buildings**	**$142,500**

Institutional Conservation Program Grants
July 1, 1993-June 30, 1994

Institution	Number of Buildings to be Studied	Number of Buildings to be Improved	Grant Amount
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 Community College-Milford	4		$11,001
University of Nebraska-Lincoln	4		$12,925
Waverly Villa Marie School		1	$935
Wolbach Public Schools		1	$810
TOTAL	**24**	**16**	**$290,379**

State Energy Conservation Program and Energy Extension Service Division

The Energy Office is responsible for administering two federally-funded programs created under the *Energy Policy Conservation Act* of 1975 — the State Energy Conservation Program and the Energy Extension Service. Both programs let the state use its discretion in providing energy conservation services, but the Energy Office must submit annual plans to the U.S. Department of Energy for review and approval.

In general, agency staff operate the two programs directly. Occasionally, the agency may work closely with outside contractors hired to perform specific projects. The Division is also responsible for preparing annual energy saving reports, *Nebraska Energy Statistics*, the agency's *Annual Report*, the *Nebraska Energy Quarterly* and federal or court reporting requirements on oil overcharge programs.

During calendar year 1993, the two federal programs produced annual energy savings of 5.768 trillion British thermal units, which is equivalent to more than 46 million gallons of gasoline. Figure 5 shows estimated energy savings over the past nine years as a result of specific projects.

State Energy Conservation Program

Since the inception of the State Energy Conservation Program, the federal government has granted funds on an 80/20 matching basis to the states. In 1993-1994, Nebraska received $100,460 in federal funds which were matched with $20,092 in state severance tax funds.

In 1993-1994, State Energy Conservation Program projects included:

- Federally-mandated projects
- Oil overcharge project management
- Energy shortage management and emergency preparedness
- Energy policy implementation

Federally-Mandated Projects

According to the *Energy Policy Conservation Act*, the Energy Office must undertake mandatory projects in the specific areas of procurement, transportation, lighting standards, thermal standards and right-turn-on-red. The agency submits plans to the federal government for its review and approval of projected activities in these areas.

As part of the agency's efforts in compliance with federally-required activities, the Energy Office coordinates and publishes a rideshare roster for state employees seeking to carpool. More than 100 state workers are listed on the roster from communities surrounding Lincoln.

Oil Overcharge Project Management

The majority of oil overcharge projects are managed as State Energy Conservation Program or Energy Extension Service projects (see pages 6-13 for a full description of projects financed by oil overcharge funds).

Energy Shortage Management and Emergency Preparedness

Extreme weather conditions were responsible for heightened emergency preparedness during 1993-1994. Gale force winds swept through the state in July, leaving downed power lines and power outages in their wake.

The situation was exacerbated by flooding throughout the state following heavy rains in the Midwest. Fifty-two counties were declared disaster areas. Electric utilities serving people in these areas all sustained damage.

The Energy Office joined a team of state and federal agencies to provide disaster

Gasoline Equivalent Saved by State Energy Conservation and Energy Extension Service Programs, 1985-1993 (Millions of Gallons)

Project Type	1985	1986	1987	1988	1989	1990	1991	1992	1993
Agricultural Energy Management	0.496	0.744	0.992	1.240	1.240	1.400	1.400	1.400	1.400
Dollar and Energy Saving Loan Program	0	0	0	0	0	0.134	0.739	1.232	1.463
Hundred Points of Light	0	0	0	0	0	0	0	0.247	0.345
Municipal Loan Programs	0	0	0	0	0	0.011	0.018	0.039	0.072
Nebraska Community Energy Management Program	0.248	0.336	0.384	0.384	0.392	0.392	0.392	0.388	0.388
Omaha Traffic Light Program	0	0	0	0	1.803	1.803	1.803	1.803	1.803
Public Buildings	0	0	0	0	0	0.003	0.083	0.083	0.083
Ride Share	0	0	0	0	0	0	0	0.032	0.049
Thermal Lighting Standards	11.072	14.904	18.768	22.368	26.080	30.144	33.304	36.840	40.544
Total Gallons of Gasoline Saved (in millions)	**11.816**	**15.984**	**20.144**	**23.992**	**29.515**	**33.887**	**37.739**	**42.064**	**46.147**

Source: Nebraska Energy Office

Figure 5

assistance. The Energy Office's role was to obtain information on energy supply interruptions, areas without power and timetables for restoration, preliminary utility damage estimates and special assistance needs of the utilities.

In April, the Energy Office was again called on when a foot of snow blanketed western and central parts of the state. Electric power lines became coated with ice and snow, causing extensive outages — some lasting weeks — for rural central Nebraskans. Restoration of power for agricultural purposes also took longer and wasn't fully restored until late June (See the Issues and Trends section, pages 21-22 for more details on weather-related outages).

The agency routinely monitors energy supplies and potential disruptions. Minor fuel outages are expected during planting and harvesting periods.

Changes in transportation fuel production may also produce temporary supply disruptions or price instability. For example, while the introduction of low-sulfur diesel in October caused temporary price spikes, the expected fuel supply disruptions did not materialize.

Energy Policy Implementation

In January, 1992, the Energy Policy Council forwarded to the Governor the *Nebraska Energy Policy Plan: Recommendations to the Governor* for his consideration.

By the end of that year, the Governor announced the first energy policy plan for the state — *An Energy Action Plan for Nebraska*. The *Action Plan* served as the first step in an on-going process to plan and implement effective programs to advance the conservation and efficiency of traditional, nonrenewable energy sources, encourage the development of alternate and renewable energy sources and further energy-related economic development.

During the past year and a half, the Energy Office has undertaken the *Action Plan's* 20 objectives. A first year progress report was issued in March 1994, detailing specifics on each of the objectives.

Energy Extension Service

Since the inception of the Energy Extension Service, the federal government has granted funds on an 80/20 matching basis to the states. In 1993-1994, Nebraska received $59,180 in federal funds which were matched with $11,836 in state severance taxes.

In adopting the *Energy Policy Act* of 1992, Congress eliminated the Energy Extension Service effective in fiscal 1994-1995. However, the goals of the service were added to State Energy Conservation Program.

In 1993-1994, projects in the Service included education and information services and oil overcharge project management.

Education and Information Services

Education is needed by consumers to make sound energy decisions. The Energy Office identified and delivered educational opportunities and information resources through a coordinated statewide effort.

The agency published and distributed the *Nebraska Energy Quarterly* to thousands of Nebraskans. The *Quarterly* highlights a variety of energy conservation projects and topics. Two mandated agency publications, the *Annual Report* and *Nebraska Energy Statistics*, were also produced.

In 1993, the Energy Office established an Energy Education and Information Center as a means to centralize, organize and disseminate education and information resources to the general public. The Center's resources include technical and statistical information as well as state and federal program information and resources and curriculum suitable for kindergarten through twelfth grade students.

Oil Overcharge Project Management

Some oil overcharge projects are also managed under this federal program. These projects and others managed by other divisions within the agency are detailed on this and subsequent pages.

Oil Overcharge Funds

Since 1982, Nebraska has been receiving oil overcharge funds (sometimes referred to as Petroleum Violation Escrow Funds) as a result of various court actions against oil companies that overcharged their customers during the period of federal price controls from 1973 to 1981. Since direct compensation to injured consumers seemed unrealistic, the courts ordered that the money recovered from lawsuits be distributed to the states to fund programs that provide indirect restitution to injured energy consumers. States were directed to use the money, within parameters established by the courts, to fund energy assistance and conservation programs.

The agency's three programmatic divisions — Energy Financing, State Energy Conservation Program and Energy Extension Service and Weatherization — manage projects financed by oil overcharge funds.

The Nebraska Energy Settlement Fund

The Nebraska Energy Settlement Fund was established by the Legislature for money paid to Nebraska from overcharge cases since March of 1986. Total funds (including interest) received as of June 30, 1994, were $41.61 million: $23.28 million in *Exxon* funds, $17.80 million in *Stripper Well* funds and $.53 million in *Diamond Shamrock* funds.

1993 Predisbursement Plan

In November, the agency submitted, for legislative review, a predisbursement plan totaling $3.37 million in *Exxon* and *Stripper Well* oil overcharge funds. The seven-part plan was in response to the

development of the state's 1992 *Energy Action Plan*. The elements of the predisbursement include:

- **Alternate Fuel Incentive Fund** These funds — $41,972 from *Exxon* and $208,028 from *Stripper Well* oil overcharge accounts — would be used to provide low-interest loans for the conversion of public and private vehicles to operate on alternate transportation fuels and the purchase and installation of fueling stations. These monies may be matched by the states' alternate fuel providers. The Dollar and Energy Saving Loan Program would operate this fund.
- **Telecommunications Incentive Fund** Five hundred thousand dollars in *Stripper Well* funds, potentially matched by an equal amount from the telecommunications industry, would be used for loans to expand telecommunications infrastructure. The Dollar and Energy Saving Loan Program would also operate this fund.
- **Dollar and Energy Saving Loan Program** One million dollars in *Exxon* funds would be added to this existing revolving loan program. More information about the loan program is found on pages 8 and 9.
- **State Building Revolving Fund** Four hundred thousand dollars in *Stripper Well* funds would be added to other funds — $150,000 in *Stripper Well* funds from the state's GreenLights program and $250,000 in *Stripper Well* funds from the Innovative Grants Program — to create a State Building Revolving Fund to partially finance lighting improvements identified in lighting surveys performed in state buildings.

The incremental cost of more energy efficient lighting improvements would be financed from two sources: a loan for one-half of the cost would come from the State Building Revolving Fund and one-half would be provided by the agency owning the building. However, some state buildings may be eligible for grants from the state's Task Force for Building Renewal. These grants could be used for one-half of the agency's share of the cost of the improvements.

- **Nebraska OnLine Financing** Sixty thousand in *Stripper Well* funds would partially finance long-distance telephone charges for the information system operated by the state's Library Commission. More information on this project is on page 11.
- **Nebraska Statewide Systemic Initiative for Science and Math** $500,000 in *Exxon* funds were committed as a match to a National Science Foundation grant of $5.3 million to improve science and math education under the Nebraska Mathematics and Science Initiative. The *Exxon* funds will be used to integrate energy themes into curriculum materials, acquire materials for teacher training workshops and to support energy-related science activities in schools. For more information on this project, see page 12.
- **Low Income Weatherization Assistance Program** Under the conditions of the *Stripper Well* court order, an equitable share of the funds — 18 percent in Nebraska — must be used for benefits to low income Nebraskans. *Stripper Well* funds totaling $664,814 will be added to the Low Income Weatherization Assistance Program for free residential weatherization services. For more information on this program, see pages 1-2.

A total of $2.55 million ($.05 million from *Exxon* and $2.50 million from *Stripper Well*) remains in a reserve fund and has not been committed to any new or specific program or projects (see figure 6). Also, $57,241 or 18 percent of the *Stripper Well* reserve are, by court order, allocated to low income programs.

Nebraska Energy Settlement Fund
A Summary of *Exxon, Stripper Well* and *Diamond Shamrock* Oil Overcharge Funds as of June 30,1994

	Exxon	*Stripper Well*	*Diamond Shamrock*	Total
Total Received	$15,504,944	$13,739,760	$359,172	$29,603,876
Interest Earned	7,774,674	4,060,782	173,578	12,009,034
Total	**$23,279,618**	**$17,800,542**	**$532,750**	**$41,612,910**
Funds Budgeted				
Contracts	$4,220,919	$6,837,000	$0	$11,057,919
Program Development	103,692	0	6,434	110,126
Monitoring/Evaluation	346,308	0	0	346,308
Education	242,824	0	0	242,824
Load Management	50,039	0	0	50,039
Attorney General Legal Fees	0	299,327	0	299,327
Bank Wire Fees	0	98	0	98
Low Income Weatherization	4,014,500	3,139,216	0	7,153,716
Emergency Preparedness	45,907	0	0	45,907
Dollar & Energy Saving Loan Program	12,386,069	3,703,931	0	16,090,000
Loan Program Delivery	575,970	0	0	575,970
Special Projects	413,032	0	0	413,032
Designated Interest	731,508	929,242	0	1,660,750
Oil Overcharge Administration	0	384,199	513,816	898,015
Direct Restitution Project	0	0	12,500	12,500
Governor's Overcharge Plan '90	100,000	0	0	100,000
Uncommitted Balance	**$48,850**	**$2,507,529**	**$0**	**$2,556,379**
Allocated to Low Income Programs	$0	$57,241	$0	$57,241

Source: Nebraska Energy Office

Figure 6

Oil Overcharge Contracts

Exxon

Category	Allocated Funds	Contracts Issued	Expenditures Through June 30, 1994
Energy Education	$1,259,499	$739,489	$618,628
Financing Demonstrations	1,052,198	1,052,198	895,806
Agriculture	291,276	291,276	291,276
Feasibility Studies	188,448	188,448	152,507
Building Improvement Demonstration	729,499	729,499	729,499
Transportation	700,000	700,000	700,000
Load Management	50,039	50,039	50,039
Dollar and Energy Saving Loan Program	12,386,069	11,344,097	11,344,097
Low Income Weatherization	4,014,500	4,014,500	4,002,145
Total *Exxon* Contracts June 30, 1994	**$20,671,528**	**$19,129,556**	**$18,812,950**

Stripper Well

Category	Allocated Funds	Contracts Issued	Expenditures Through June 30, 1994
Low Income Weatherization	$2,474,402	$2,474,402	$1,504,289
State Buildings Energy Team	410,000	50,000	9,187
Local Government Energy Management Circuit Rider	400,000	400,000	352,564
Public Transportation	800,000	800,000	790,540
Energy Related Biotechnology, Solar and Conservation Outreach	2,000,000	2,000,000	1,644,427
Greenhouse Project	400,000	400,000	400,000
Innovative Energy Grants	100,000	50,000	11,570
Dollar and Energy Saving Loan Program	2,995,903	2,770,783	2,770,783
Indian Tribal Governments	77,000	51,333	42,805
University of Nebraska Building Weatherization	500,000	500,000	345,620
Nebraska State College System	1,500,000	1,500,000	1,066,427
Curtis Weatherization	250,000	250,000	220,038
Total *Stripper Well* Contracts June 30, 1994	**$11,907,305**	**$11,246,518**	**$9,158,250**

Source: Nebraska Energy Office Figure 8

Specific Oil Overcharge Projects

Activity this year for each oil overcharge project financed by the Nebraska Energy Settlement Fund, reviewed by the Legislature and approved by the U.S. Department of Energy is described on this page and those that follow in this section.

College of Technical Agriculture Building Weatherization

The University of Nebraska College of Technical Agriculture at Curtis continued a $250,000 project to weatherize campus buildings. During 1993-1994, the College completed a series of weatherization projects in the dormitories. The work included installation of storm windows, temperature controls and steam traps. Steam tunnel pipes, steam lines and attic joists were also insulated. To date, $220,038 of the project's *Stripper Well* funds have been spent. Other potential projects are currently being evaluated.

Dollar and Energy Saving Loan Program

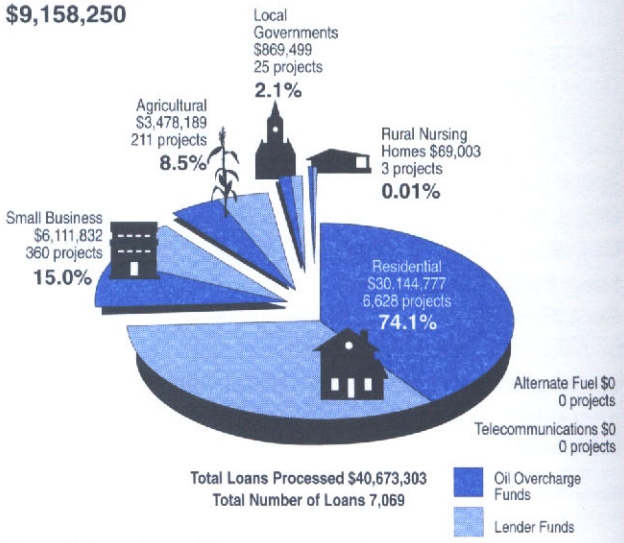
Exxon funds totaling $12.38 million plus $3.7 million in *Stripper Well*, $.13 million in *Amoco*, $.07 million in *Coline*, $.73 million in *National Helium* and $.16 million in *Vickers* funds have capitalized the Dollar and Energy Saving Loan Program, which provides low-interest loans to Nebraskans to finance home, building, transportation and system improvements. More than 340 participating lenders provide five percent interest rate financing for up to fifteen years on loans for energy saving improvements.

The most common improvements in homes, apartments and small businesses are replacing furnaces, air conditioners and windows.

Popular agricultural improvements include installing low-pressure irrigation systems, replacing irrigation pumps and motors, making well modifications and replacing grain dryers. City and county governments and schools are generally replacing boilers, furnaces and installing heat pumps.

This year, the financing of telecommunications equipment and

Oil Overcharge Funds Invested in Types of Dollar & Energy Saving Loans as of June 30, 1994



Source: Nebraska Energy Office Figure 7

alternate-fueled transportation vehicles and facilities was added.

Some energy-saving improvements require an energy audit before a borrower may be approved for a loan. These improvements may be financed for up to five, ten or fifteen years depending on the type of improvement, its cost and the amount of energy saved. Loans are also available directly from the Energy Office at no interest for energy audits.

Applicants can obtain appropriate forms from the Energy Office, participating lenders, utilities or equipment dealers. After obtaining bids, applicants then submit loan forms to participating lenders at one of 631 sites across the state. Once a lender approves the loan application, a commitment agreement is submitted to the Energy Office for review. On final approval from the agency, the lender notifies the applicant to proceed with the energy improvement.

Since the loan program began over four years ago, 7,069 project loans have been made. More than $21.85 million in oil overcharge funds (the original $16.35 million plus loan repayments) have leveraged in excess of $18.81 million from the state's private lenders. A total of more than $40.67 million in low interest loans have been used to finance energy saving projects (see figure 7).

Electrical Load Management Resource Fund

Created in 1983, the Electrical Load Management Resource Fund is capitalized with $50,000 in *Exxon* oil overcharge funds. Under contract, NMPP Energy manages the loan applications and repayments.

The fund offers interest-free gap financing to the 90-plus Nebraska utility members of NMPP Energy to help purchase, install or upgrade load management systems. These systems allow utilities to monitor and reduce peak demand, save energy and avoid being charged for expensive electricity produced during high use times.

Over the 12 years of operation, the initial capital investment of $50,000 has revolved nearly eight times, saving ratepayers in the participating towns over

Cumulative Savings of Communities Borrowing Electrical Load Management Resource Funds 1983-1994

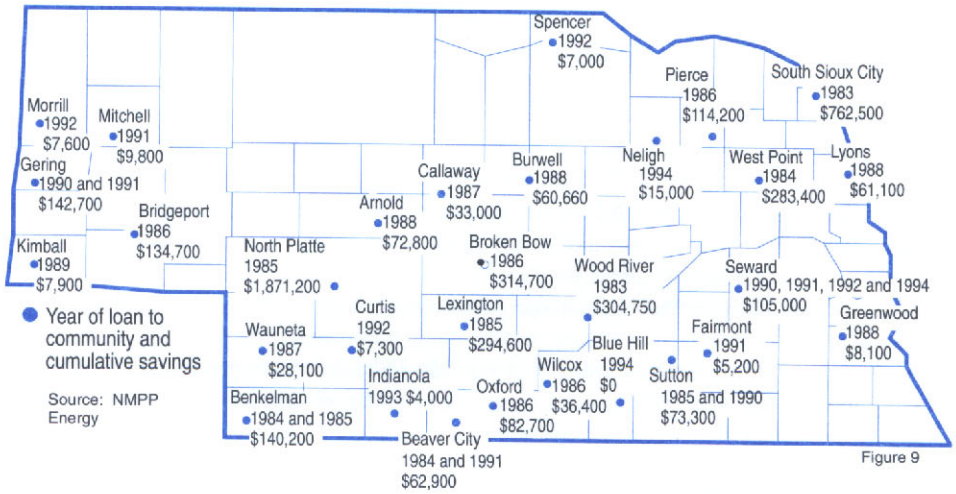


Figure 9

Total Estimated Savings to Date $5,050,820

$5 million (see figure 9). Communities that install load management systems continue to earn additional savings during the lifetime of the equipment.

In 1993-1994, two previous loans were extended through a second peak load season and three new loans were made:

- Blue Hill, $15,000
- Neligh, $12,000
- Seward, $8,000

Emergency Preparedness

Exxon funds totaling $45,900 were allocated for costs required to maintain the state's mandatory energy shortage management plan. All funds allocated to this activity have been spent.

For the highlights of this reporting period's activities, see pages 5-6.

Energy in Community Planning

The state's Department of Economic Development discontinued work on the $75,000 *Exxon*-funded Energy in Community Planning project. Efforts to promote energy as a viable economic development tool will be managed by Energy Office staff. At the project's conclusion, $39,893 had been spent.

Energy Management Circuit Rider

Stripper Well funds totaling $400,000 financed a pilot project to provide energy management assistance to cities, counties, school district, hospitals and nursing homes in two areas of the state. The Circuit Rider Program operated within the jurisdictions of two community colleges — Central in Columbus and Mid-Plains in North Platte.

Over the past four years, circuit riders have helped institutions and communities develop self-supporting energy management programs, identify necessary energy improvements and utilize energy accounting systems. Participating facility managers have reported yearly cost savings between 10-40 percent after making energy use modifications. The North Platte-based program ceased in 1993.

Under an additional $20,000 *Exxon*-funded contract, the program based in Columbus was extended as it transitioned itself to self-supporting status. An alternate fuels program has also been established as a component of this circuit rider effort.

Of the $420,000 in oil overcharge funds committed to this project, $371,350 have been spent to date.

GreenLights

Fifty thousand dollars in *Exxon* funds (unspent monies from Hundred Points of Light) and $150,000 in *Stripper Well* funds (from the State Buildings Energy Team which never became operational) were allotted to create a state-level GreenLights effort.

GreenLights is a national U.S. Environmental Protection Agency effort focused on using state-of-the-art lighting technologies in commercial and governmental buildings to reduce energy, costs and pollution.

For the past two years, architecture and engineering students have been conducting lighting surveys of the state's 2,760 buildings, identifying what lighting improvements would be most cost-effective. An estimated 80 percent of the lighting in the state's buildings is expected to be analyzed by fall 1994.

Based on earlier findings, it is estimated the state could save more than $2.1 million annually from electricity and maintenance costs after the cost-effective lighting changes are made.

The Energy Office's GreenLights effort was singled out for recognition at the White House announcement on the Climate Change Action Plan in October by the Vice President.

To increase the number of state buildings surveyed during this reporting period, the agency contracted with six state agencies to pay for the cost of the lighting surveys: Game and Parks, $4,612; Department of Corrections, $4,612; Department of Roads, $4,612; Peru State College, $1,200; Chadron State College, $1,200; and Department of Public Institutions, $6,824. The six contracts totaled $23,060 of which $13,766 was spent. At the end of the fiscal year, the Energy Office had been reimbursed $1,409.

In 1993-1994, $34,495 was expended under GreenLights excluding expenditures incurred under contracts with other state agencies. Since the effort began in 1992, a total of $44,865 has been spent. An estimated $60,000 in oil overcharge funds is expected to be spent surveying state buildings.

In the November 1993 Predisbursement Plan, $400,000 in *Stripper Well* funds were allocated to the State Building Revolving Fund which is available for making the suggested lighting improvements.

Hundred Points of Light

A quarter of a million dollars in *Exxon* funds was budgeted for subsidizing the replacement of incandescent bulbs with compact fluorescent lamps. Compact fluorescent bulbs require only one-quarter the energy to produce an equivalent amount of light. They are more expensive, but last up to ten times longer, often paying for themselves in one or two years.

In 1992 and 1993, the state's two largest electric providers — Nebraska and Omaha Public Power Districts — cooperated with the Energy Office to subsidize placement of 28,000 compact fluorescents bulbs in over 860 commercial businesses. The five dollar subsidy was equally shared by the agency and the utilities. The Energy Office spent $83,014 on this completed project.

Fifty thousand dollars was allocated to the GreenLights program. For more information on this activity, see the previously detailed report above.

In this reporting period $20,000 was awarded to Lincoln Electric System to demonstrate lighting efficiency technologies in local businesses. After a year's use, the utility will produce a report on energy and cost savings as well as owner satisfaction. The Energy Office has spent $4,211 on this project.

Of the remaining $116,985, $112,774 is uncommitted.

Innovative Energy Grants

Stripper Well funds totaling $100,000 — reduced from $500,000 — were available for grants to individuals for research and/or development of energy-related inventions. Four hundred thousand dollars was transferred to other uses because only one grant was issued in nearly five years. The State Building Revolving Fund received $260,000 and the Dollar and Energy Saving Loan Program received $140,000 for agricultural loans.

In this program's five years, 32 preapplications have been received. Of those, ten have been invited to complete the full application. Five of the ten were reviewed by the University for technical feasibility. The Energy Office, along with the University of Nebraska's Technical Assistance Center, developed evaluation criteria for project review.

A $50,000 grant was awarded to Grain Systems of Elm Creek to complete the design and fabrication of a prototype grain dryer which utilizes a heat pump to dehumidify drying air which circulates in a closed loop. Fabrication of the prototype is expected to begin in early 1995.

Landlord Loan Program

This program, a component of the Dollar and Energy Saving Loan Program, was financed with $50,000 in *Exxon* funds and $50,000 from a 1991 U.S. Department of Energy incentive grant.

Since this program is operated by the Weatherization Division in the agency, a more complete report on this program appears on page 2.

Lincoln Energy Conservation Interest Subsidy and Rebate Program

This local subsidy and rebate program ended in 1991. Since some loans were retired earlier than planned, not all subsidies were fully utilized by the borrowers. Unused subsidies are returned to the Energy Office and totaled $7,688 in 1993-1994.

Lincoln's Innovative Energy Technology

Lincoln and Lancaster Country's District Energy Corporation received $50,000 in *Exxon* funds to produce an educational campaign illustrating the city's innovative district energy system and thermal energy storage facility. The informational campaign included a videotape, brochure, packet and scale model. As of the end of June, the Energy Office spent $31,953 on this project. The Energy Corporation provided $8,455 as

in-kind match and $300 in cash to support the project.

Nineteen hundred dollars in *Stripper Well* funds were awarded to the Corporation during the reporting period for the production of a second, shorter videotape which is to be completed in early 1995.

Low-Income Weatherization Assistance Program

A total of $7.16 million in oil overcharge funds ($4.02 million from *Exxon* and $3.14 million from *Stripper Well*) have been allocated to the Low-Income Weatherization Assistance Program to assist low-income Nebraskans with residential weatherization to reduce energy use and costs. In 1993-1994, $16,965 in *Exxon* and $809,693 in *Stripper Well* funds were spent through the program.

The terms of the *Stripper Well* court order mandate that an equitable share of the funds be set aside for the state's low-income population. To date, $1,647,464 in *Stripper Well* funds have been spent.

For more detailed information about the Low-Income Weatherization Assistance Program, see pages 1 and 2.

Native American Tribal Governments

The *Stripper Well* court order requires the state to provide an equitable share of oil overcharge funds to Native American tribal governments. Based on the number of Native Americans in the state, $77,000 have been set aside for eligible projects suggested by the tribal governments.

In 1993-1994, ceilings in three public buildings on tribal lands were insulated. A total of $34,195 remains for Native American projects.

Nebraska Annual Sociological Indicators Survey

The Energy Office contracted with the University of Nebraska-Lincoln's Bureau of Sociological Research to conduct a survey in the fall of 1993 of 1,800 Nebraskans' attitudes and knowledge of alternate transportation fuels. The agency spent $3,828 in *Exxon* funds for the survey. The state's Ethanol and Soybean Boards each contributed $1,200 to the cost of the survey.

Nebraska OnLine Support

The state's information and communication system, Nebraska OnLine, received $60,000 in *Exxon* funds to partially defray long-distance telephone charges. The information system is operated by the Nebraska Library Commission.

During this reporting period, a total of $6,419 was spent on long-distance charges.

Nebraska Recreational Trails Plan

Seventy-five thousand dollars in *Exxon* funds, under contract to the state's Department of Economic Development, was used to survey existing trails and potential trail corridors, prepare a state trails plan and determine the feasibility of implementing the plan. Nebraska must have a plan to be eligible to apply for available federal recreational trails funds. Approximately 1,000 copies of the plan and 835 copies of an executive summary of the plan were distributed throughout the state.

To date, $68,013 have been spent. The state economic development agency provided $8,631 as in-kind match. Other state agencies and natural resource districts provided $10,650 to print the recreational trails plan.

Nebraska State College System

A total of $1.5 million in *Stripper Well* funds was allocated for energy conservation projects at the state colleges. To date, the college systems' Board of Trustees has designated funding for three projects: $986,777 for construction of a wood-fired boiler at Chadron State College which was completed in 1992, $45,000 for development of a comprehensive utilities plan for Peru State College and $468,223 for building weatherization at any of the three campuses.

In 1993-1994, energy audits on buildings were completed and ten building improvement projects were selected. By the end of the reporting period, two building projects were completed.

Of the $1.5 million, $1,211,970 have been spent. The balance of the remaining funds will be used for building weatherization. The State College System is also providing $18,000 in matching funds.

Planning, Monitoring and Evaluating Oil Overcharge Programs

To comply with federal and court reporting regulations, $384,199 in *Stripper Well* and $450,000 in *Exxon* funds ($50,000 in *Exxon* designated interest was added during this reporting period) have been committed for planning, monitoring and evaluating programs funded with oil overcharge dollars. In 1993-1994, a total of $72,092 ($21,327 in *Stripper Well* and $50,765 in *Exxon* funds) were spent.

Rural Revitalization: Public Transportation

A total of $1 million — $200,000 from *Exxon* and $800,000 from *Stripper Well* — were used for two rural transportation projects: bus subsidies which ended in 1992 and the purchase of alternate fuel vehicles.

During 1993-1994, energy saving analysis of the 39 mini-buses and alternate fueled passenger vans purchased earlier continued. The study is being conducted by the University of Nebraska and the state's Department of Roads and will conclude in 1995.

To date, $990,540 in oil overcharge funds have been spent.

Rural Transportation Feasibility Study

The state's Rural Development Commission completed a review of Nebraska's existing transportation system and recommended future options including road, rail, air and telecommunications systems. The study also examined ways of decreasing dependence on low-occupancy, high-energy using personal vehicles.

The study was financed with $5,000 in *Exxon* funds and $7,930 in matching funds from the Commission. To date, all oil overcharge funds have been spent and the project is completed.

Schuyler Energy Conservation Loan Program

Schuyler city government and its Energy Commission continued to operate a 3.6 percent interest energy conservation loan program for homes, businesses, nonprofits and governmental buildings.

The loan pool was capitalized with $178,007 in *Exxon* funds and $199,500 from local lenders.

To date, ten commercial loans totaling $148,272 and 100 residential loans totaling $268,077 have been made. The program is scheduled to operate through 1997.

Funds expended to date for program operations total $57,663. The city has provided $47,468 as in-kind match.

In 1994, Schuyler teamed $25,000 in local keno revenues with $50,000 from two local lenders to match $75,000 in *Exxon* oil overcharge challenge loan funds from the Energy Office. This $150,000 in no-interest funds leverages an equal amount from local lenders who, in turn, make four percent energy conservation loans to local residents and businesses.

South Sioux City Energy Conservation Loan Program

The South Sioux City Area Chamber of Commerce completed its low-interest energy conservation loan program for commercial buildings during 1992-1993.

The loan pool was capitalized with $132,000 in *Exxon* funds and $66,000 from local lenders. An additional $6,664 in *Exxon* funds was allocated for program operations. Nine projects were completed, using loan funds totaling $77,332. Operating expenses totaled $1,203. The local Chamber of Commerce provided $2,200 as in-kind match. Loan repayments will continue through the year 2000. The portion of the loans being repaid to the Energy Office continues to accrue in the project's account until all loans are repaid.

State Building Revolving Fund

This financing tool for making energy efficient lighting improvements in state buildings was created in early 1994 after review by the Legislature and approval from the U.S. Department of Energy. A detailed listing of the monies used to create the revolving fund can be found on page 7.

At the end of June, no loans had been made from this fund.

Statewide Energy Education

Two hundred thousand dollars in *Exxon* funds have been dedicated to coordinate statewide energy conservation instruction in grades kindergarten through twelve. Entities involved in the effort include educational service units, educator professional organizations, the state's Department of Education and energy suppliers. The goal is to increase energy awareness and promote energy efficiency to future consumers.

In 1993, the Energy Office joined with the Nebraska Statewide Systemic Initiative for Science and Mathematics in the development of a $5.3 million proposal to the National Science Foundation. The initiative will reform elementary and secondary math and science education. The Energy Office committed an additional $500,000 of *Exxon* oil overcharge funds as a match to the proposal. One-tenth of the $500,000 was earmarked to integrate energy themes in kindergarten through sixth grade curriculum and activities. Under the Initiative, a model energy curriculum will be developed, workshops will be held for teachers and a competitive grant program will be developed for individual schools. During the reporting period, development of the curriculum began and the first in a series of workshops were held. To date, no funds have been spent under the contract.

On an Energy Office recommendation, the state Department of Education's *Frameworks* project agreed to use energy as one of four approved themes in its effort to develop curriculum-setting guidelines for kindergarten through twelfth grade mathematics and science education. The *Frameworks* project was approved by the Nebraska Board of Education early in 1994.

In 1993-1994, a contractor assisted agency staff coordinate work on these energy education activities. To date, $6,077 has been spent on this contract.

Stuart Energy Conservation Loan Program

While this local commercial loan program ceased making new loans in 1991, repayments from the borrowers will continue beyond the beginning of the next century. The portion of the loan funds being repaid to the Energy Office will continue to accrue in the project's account until all loans have been repaid.

Telecommunications Works for Nebraskans

The University of Nebraska-Lincoln Television Department was selected to produce a videotape of the state's varied telecommunications systems and their advantages including the energy savings potential. The tape, *Telecommunications Works for Nebraskans*, was used by the state's Department of Economic Development and Nebraska Library Commission to increase use and infrastructure development of the telecommunications systems.

The nine thousand dollars in *Exxon* funds spent by the agency was matched by an in-kind contribution of $16,440 by the contractor.

University of Nebraska Building Weatherization

The University of Nebraska was selected to receive $500,000 in *Stripper Well* funds to finance nine energy saving projects in buildings at three campuses — Lincoln, Omaha and the Medical Center. All projects were completed during this period.

To date, $497,136 was spent on these building improvement projects.

University of Nebraska Energy-Related Research

The University of Nebraska received $2 million in *Stripper Well* funds to further energy-related research. Projects selected must secure matching funds before qualifying for oil overcharge dollars.

Of twelve research projects, six are completed. The six still continuing include:

- Dr. George E. Meyer, University of Nebraska-Lincoln Department of

Agricultural Engineering, received $56,765 to study more efficient methods of heating and cooling commercial greenhouses. Matching funds of $57,106 were provided by a National Science Foundation research grant and materials donations from several local and out-of-state businesses.

- Dr. L. Davis Clements, University of Nebraska-Lincoln Chemical Engineering Department, received $64,960 to prototype and optimize a system for removing plastics from institutional solid waste. If successful, this would allow pelletizing of waste into refuse-derived fuel which burns very cleanly. Matching funds for this research project were provided by the Western Regional Biomass Energy Program.
- Dr. Peter Jenkins, University of Nebraska-Lincoln Department of Mechanical Engineering, received $856,740 for multi-faceted research to develop an engine fueled by a combination of diesel and ethanol or compressed natural gas. Nine hundred thousand dollars in matching funds consisting of materials and cash were provided by four out-of-state companies.
- Dr. Frazier Williams, University of Nebraska-Lincoln Electrical Engineering Department, received $142,007 to study improved methods for insulating electrical switching systems. Better insulation allows transmission at higher voltages, which decreases line loss. Matching funds totaling $142,007 were provided primarily by the Electric Power Research Institute.
- Dr. Bing Chen, University of Nebraska-Omaha Department of Electronics Engineering Technology, received $91,172 to study the use of roof ponds for cooling commercial buildings. A portion of the needed matching funds have been provided by Omaha Public Power District and several equipment and building material manufacturers.
- Dr. David Jones, University of Nebraska-Lincoln Department of Biological Systems Engineering, received $170,000 to develop a binder using waste fluids from ethanol production. The binder is mixed with waste paper to produce fuel pellets. The match requirement of $170,000 was met by a Nebraska research pioneer who donated both money and equipment.

Since the research projects began, $1,644,427 in oil overcharge funds have been spent.

Other Energy Settlement Funds

Not all oil overcharge funds are part of the Nebraska Energy Settlement Fund. Some of these funds have been held in escrow by the U.S. Department of Energy and are distributed only when a plan is submitted by a state energy agency and approved by the federal energy agency's Office of Hearings and Appeals.

Oil overcharge settlement funds resulting from fines levied against *Amoco*, *Palo Pinto*, *Vickers* and other oil companies fall into this category. According to the Department of Energy, all future settlement funds received by the state will be classified as *Stripper Well* funds and not subject to review by the Office of Hearings and Appeals.

Specific Oil Overcharge Projects

The status of each oil overcharge project financed with these miscellaneous funds is described on this page.

BERT Loan Program in Omaha

Omaha's Benson neighborhood was one of the last participants in the agency's community energy management program which ended in 1987. As a result of that program, the Benson Energy Resource Team — BERT — was formed and launched a revolving loan program to help homeowners and businesses finance energy saving improvements. The loan program was capitalized with $90,000 in *Amoco* oil overcharge funds.

The loan program ended in June, 1993, after issuing three loans totaling $36,860. The remaining funds, $104,213, were returned to the agency. Repayment of the loans will also continue and be returned to the Energy Office. The returned funds were added to the Dollar and Energy Saving Loan Program.

Statewide Energy Information Service

In 1992-1993, the Energy Office began to develop energy information services to assist consumers to make decisions resulting in the efficient and economic use of energy.

Funded with $150,000 in *Amoco* funds, the agency began the process to develop and maintain a library collection. Displays on a variety of topics were developed or borrowed from other organizations. Informational materials were developed and distributed on energy topics at a variety of events. Energy information was also placed on *Nebraska OnLine,* a state-wide computer network. By the end of the fiscal year, $50,116 were expended.

In early 1994, the agency issued a $20,000 *Amoco*-funded contract to Schlesinger Associates for analysis of the present motor gasoline industry and its future options. At the end of the fiscal year, $6,324 were spent on this project. The report is expected to be completed in fall of 1994.

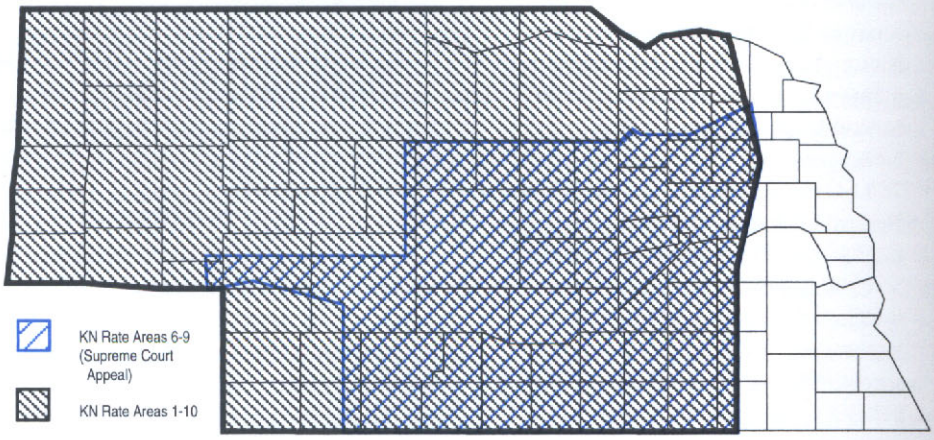
Nebraska State Fair Earthbound exhibits and promotional items cost the agency $50,000 in 1994.

Natural Gas Technical Assistance

About 30 percent of the state's natural gas consumers receive their service from one of 14 municipally-owned natural gas utilities. The remaining 70 percent receive natural gas from one of four different investor-owned natural gas utilities — KN Energy, Midwest Gas, Northwestern Public Service and Peoples Natural Gas Company.

Natural gas is imported into the state to the investor-owned and municipally-owned utilities primarily through major pipelines operated by Northern Natural Gas Company and KN Energy.

Areas Receiving or Appealing Natural Gas Rate Requests in 1993-1994



Source: Nebraska Energy Office

Figure 10

Municipal Natural Gas Regulation Act

Nebraska is one of only two states in the nation to regulate investor-owned natural gas suppliers at the local level. Village boards and city councils review rate requests under the state's *Municipal Natural Gas Regulation Act*. The Energy Office administers the Municipal Natural Gas Regulation Revolving Loan Fund, created by the *Act* to provide interim financing of rate regulation. The agency also provides technical assistance to communities as they perform their regulatory duties.

Revolving Loan Fund

The Municipal Natural Gas Regulation Revolving Loan Fund was initially capitalized with $350,000 in oil and natural gas severance tax revenues. The fund finances local review of utility-initiated general rate requests and judicial review, if necessary. Groups of communities borrow from the fund to finance the rate studies and the fund is replenished in the same amount by the utilities, which in turn recover the cost of regulation from the ratepayers.

Regulations governing the loan fund were adopted and took effect in 1987. The regulations were modified during 1993-1994.

1993-1994 Loan Fund Activities

In 1993-1994, a general rate filing for a natural gas rate increase and an appeal of a lower court's decision to the Nebraska Supreme Court of a 1990 general rate increase filing were the only activities financed with loans.

In February 1993, KN Energy notified all its Nebraska service territory — 189 towns — that an increase in general rates was being requested. The rate request was, geographically, the largest since passage of the *Act*.

The communities are divided into rate areas for regulatory purposes. The ten rate areas served by the utility requested loans totaling $230,522. The state's rate regulation process in a general rate filing lasts 180 days from the date of filing. The utility and the communities reached a negotiated settlement during the reporting period.

Also during the year, a 1990 general rate request continued through the judicial portion of the regulatory process. Nearly 90 central Nebraska towns served by KN Energy prevailed in an Appeals Court decision which sent the rate case back to the Lancaster County District court for re-trial. However, in January 1993, the Supreme Court, acting on a request from the utility, agreed to hear the case. In late August, the Supreme Court decided the three-year court battle over the 1990 rates in favor of the utility. The towns comprised four of the utility's ten rate areas and requested loans totaling $45,001.

A total of $55,754 was disbursed from the Municipal Natural Gas Regulation Revolving Loan Fund to pay for expenses related to the 1990 and 1993 rate requests.

Technical Assistance

Throughout the reporting period, the Energy Office provided assistance to municipal officials during all phases of the regulatory process as mandated by statute.

Typical kinds of assistance include organizing and providing support services for rate area committees, publishing periodic issues of *Natural Gas Rate Regulation Update* in each utility's service area, issuing requests for proposals for professional services, providing informational broadcasts and responding to specific inquiries regarding the regulatory process and statutes.

Grants and Legislation

Grants

During the current reporting period, the Energy Office received several new one-time or project-specific grants. Collectively, the new grants totaled $60,000 in 1993-1994. They are detailed here and in specific sections as indicated.

U.S. Department of Energy Grants

The Energy Office continued to administer a $100,000 grant received in 1992-1993 from the federal energy agency on behalf of the Governors' Ethanol Coalition to demonstrate the use of ethanol as an aviation fuel. For more information about this grant, see page 18.

A second grant totaling $25,000 was received from the federal energy agency to revise and reprint an alternate fuel book which detailed the status of the development and use of various alternate fuels. The agency contracted with the Clean Fuels Development Coalition to revise the book which the organization had printed earlier. The revised publication will be printed in early 1995.

U.S. Departments of Energy and Agriculture Grant

The agency continued to administer a $44,535 grant from these two federal agencies to the Governors' Ethanol Coalition. This grant was originally received in 1991-1992. For more information about this grant, see page 19.

U.S. Department of Energy Regional Grant

The Energy Office continued to administer a grant, awarded competitively within the four-state federal region, from the Kansas City office of the federal energy agency.

In 1992-1993, the U.S. Department of Energy gave the state's Energy Office $10,000 to conduct training sessions for the Low-Income Weatherization Assistance Programs in the four-state region. An additional $10,000 grant was awarded during this reporting period. The Energy Office used all the grant funds to conduct a training session in 1993-1994 for regional weatherization staff. For more information on this grant, see page 2.

Western Regional Biomass Energy Program Grants

The Western Regional Biomass Energy Program is one of five regional projects across the country designed to develop short-term, cost-effective uses for biomass resources — renewable organic matter, including forest residues, agricultural crops and wastes, wood and wood wastes, animal wastes, livestock operations residues, aquatic plants and municipal wastes. Nebraska's region is administered by the Western Area Power Administration.

Two agency representatives serve on program advisory boards, which direct the regional program as well as specific projects.

During 1993-1994, the agency received two grants from the Biomass Energy Program totaling $25,000. A $15,000 grant provided funds to support the activities of the Governors' Ethanol Coalition. More information about this grant and the Coalition's activities is on pages 18-19.

A $10,000 grant continued the work of a 1993 study which examined the potential of ethanol production from mixed waste paper. The 1994 study reviewed the applicability of the recommended closed-loop model with existing situations in the state. The study projected the amount of ethanol which could be produced from mixed waste paper collected in Lincoln and determined that nearly twice as much ethanol could be produced as needed by local and state government ethanol-fueled fleets.

Legislation

Energy legislation affecting Americans and Nebraskans was considered or adopted by federal and state policymakers during the reporting period.

Federal

In the fall of 1993, both Houses of Congress adopted the Senate's version of the Btu tax first proposed earlier in the year — 4.3 cents per gallon increase in the gasoline tax. The tax increase became effective in October.

No other major energy issues were considered by Congress. However, a single administrative action by the Environmental Protection Agency generated two Senatorial hearings, a lengthy floor debate on the Senate floor and a squeaker of a vote.

The issue generating the controversy: whether ethanol should have a guaranteed role in the reformulated gasoline program starting in January 1995. In December, the EPA issued a proposed rule requiring that 30 percent of the oxygenates used in reformulated gasoline come from renewable sources, most likely ethanol. Reformulated gasoline is being required for use in the nation's nine smoggiest cities.

In May, Senators both opposed and in favor of the proposed rule held hearings. In August, 1994, the Senate debated and voted on whether to withhold funding needed to implement the renewable portion of the reformulated gasoline program. The Vice President cast the deciding vote in favor of proceeding with the renewable oxygenate rule.

State

Three pieces of energy legislation were passed by the Unicameral in 1994:

- The maximum amount of energy conservation loans offered through publicly-owned

utilities was increased from $10,000 to $15,000 and the types of improvements which could be financed was also broadened to include lights, motors and renewable resources. Loans for more than $10,000 require the participation of a financial institution.

- The *Special Fuel Tax Act* was repealed and replaced by two laws — the *Diesel Fuel Tax Act* and the *Alternative Fuel Tax Act*. The diesel tax laws were revised to reflect changes in federal law regarding the dyeing of diesel fuel for specific uses. The alternative fuel tax replaced the special fuel tax, also because of the changes in diesel fuel.
- The Ethanol Production Incentive Fund, which pays up to $5 million annually to each in-state ethanol plant, will receive a $7.2 million annual boost in 1995 and 1996 from a $4 per ton tax on fertilizer. However, because of the dramatic increase in ethanol produced in the state, the Legislature is expected to consider

Ethanol and Other Alternate Fuels

Historically, the role of the Energy Office in the development of alternate transportation fuels has been that of advocate and demonstrator. The Governor requested the agency, in its role of energy policy advisor, to take a more active role in coordinating the development and use of ethanol-based fuels, not only in the state, but around the country as well. In the past several years, the agency has been very successful in securing favorable policy treatment for ethanol and in locating funding for state, municipal and county transportation systems using alternate fuels.

1993-1994 Highlights

A number of issues and activities involved the agency as it fulfilled its role in fostering the growth of alternate transportation fuels, including ethanol.

America's Quest for Cleaner Transportation Fuels

With the passage of the amendments to the *Clean Air Act* in 1990 and the subsequent passage of the *Energy Policy Act* in 1992, cleaner burning fuels of all types became a national priority. Generally, the transportation fuel types considered "alternate" are biofuels, electricity, ethanol, methanol, natural gas and propane.

For almost three years, various fuel producers, including the petroleum industry, have focused on the fuels and additives to be used in the carbon monoxide and ozone nonattainment areas of the country which are required to use cleaner-burning transportation fuels.

After a thorough review of the rules and regulations associated with the introduction of reformulated gasoline for use in the nation's smoggiest cities, the Environmental Protection Agency in December 1993, reaffirmed the earlier proposed rules with one exception — use of a renewable oxygenate would be required in 30 percent of the new gasoline. The oil industry preferred using an oxygenate made from petroleum called methanol.

This new rule meant that ethanol would be a required oxygenate in a portion of reformulated gasoline. It was estimated that reformulated gasoline would account for one-third to one-half of all gasoline sold in the nation. Oxygenates are estimated to account for 650 million gallons annually in the 116 billion gallon gasoline market.

For the next six months, the EPA conducted several hearings and appeared several times before Congressional panels. The federal agency also received more than 12,000 comments on the proposed "ethanol rule." In June, 1994, the agency announced its decision — the rule would remain in place, but be phased-in over two years. Starting in 1995, only 15 percent of the oxygenates would come from renewable sources and in 1996, 30 percent.

Shortly thereafter, the American Petroleum Institute filed suit in federal court asking that the rule be set aside. While the court declined to decide the issue immediately, it did bar the rule's implementation until the court challenge could be heard. The court expects to decide the matter by mid-1995.

A second challenge to the renewable rule was mounted in the Senate during budget considerations in August 1994. Senators opposed to the rule wanted to keep EPA from spending money to implement the rule. The budget amendment was defeated on a 51-50 vote with the Vice President casting the deciding vote.

Nebraska's Quest for Cleaner Transportation Fuels

At the state level, the Governor's 1992 *Energy Action Plan* and the 26-member Alternate Fuels Committee serve as the guiding forces in increasing the use of cleaner-burning transportation fuels and reducing the state's overall dependence on petroleum-based fuels.

In 1993-1994, the following occurred:

- In October 1994, the Governor announced the acquisition of 24 additional 85 percent fueled ethanol cars to the state's fleet. By 1995, nearly 75 state government cars will be operating on up to 85 percent ethanol or E85.
- The Department of Roads and the Transportation Services Bureau completed installation of three fueling stations — two in Lincoln and one in Grand Island — for E85 cars.
- In September 1994, the Department of Roads added two E95 heavy duty trucks to its fleet. The $522,000 three-year project is designed to test specially-modified engines which operate on a high percentage of ethanol. Nearly one-half the cost of the project, $244,000, is being provided by the American Trucking Association and the U.S. Department of Energy. The Department of Roads expects to spend $130,000 on the project. The balance of the costs were raised by the Energy Office from Chief Ethanol Fuels in Hastings, the state's Corn, Ethanol, Sorghum and Wheat Boards, the National Renewable Energy Laboratory and the Western Regional Biomass Energy Program.
- The rideshare roster for Lincoln-based state employees was fully completed when communities west and south of Lincoln were added. More than 100 state employees are listed in the roster which is updated quarterly.
- During the reporting period, the rules governing the School District Energy Efficiency program were revised to include the financing of alternate fuel vehicles and fueling stations.
- The Alternate Fuels Committee proceeded with three projects: an attitude and knowledge of alternate fuels survey of 1,800 Nebraskans (more information on this

project is on page 11) and the publication of an alternate fuels handbook and a directory of fueling stations.

The Energy Office will contribute $1,670 from a U.S. Department of Energy regional grant and the state's Blue Flame, Power and Propane Associations and Ethanol and Soybean Boards will each contribute $1,670 to the development of these publications.

In June 1994, the agency applied for a $15,000 U.S. Department of Energy regional grant for use on alternate fuel projects. The grant is expected to be awarded to the agency later in 1994.

The federal regional grant will also be used to pay for the publication of the handbook and directory in 1995.

Governors' Ethanol Coalition Member States

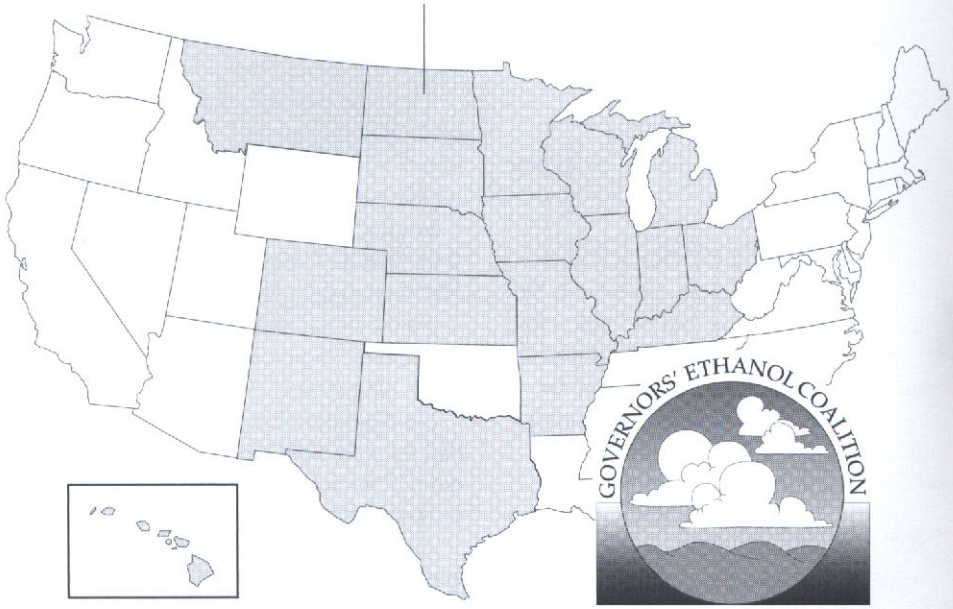


Figure 11

Nebraska Ethanol Production Developments

The state continued to lead the country in new ethanol plant construction during this reporting period. An estimated $650 million has or will be invested in new plant construction by the time all six plants are operational. New announcements during the reporting period included:

Plant	Location	Annual Volume (in million gallons)
Minnesota Corn Processors (Expanded from 35 to 70 million gallons)	Columbus	70
High Plains Corporation (Expanded from 25 to 50 million gallons)	York	50
Nebraska Energy Cooperative	Aurora	25
Ag Processing (Operational by December 1995)	Hastings	30

By the end of 1995, Nebraska will be the third leading ethanol producer in the nation and pushing number two Iowa hard. Annual production capacity will be between 265-300 million gallons. In just four years, the state will have increased ethanol production more than 20-fold.

This economic development success story can be measured in two ways — jobs and increased income for corn growers. Ethanol plants mean jobs — an estimated 5,300 jobs to build the plants, 600 jobs to operate them and 2,100-3,600 to support them. For corn growers, each 400 acres of corn used for ethanol puts an additional $2,400-$4,000 in their hands.

A $10,000 grant from the Western Regional Biomass Energy Program (see page 15 for more information about this program) expanded on a 1993 study of ethanol production from municipal solid waste in the state. The 1994 study examined Lincoln's waste stream composition to ascertain if enough ethanol could be produced to meet the state and local needs of ethanol-powered vehicles. The study concluded that twice as much ethanol as was needed could be produced from the cellulosic portion of the city's garbage. Environmental issues associated with landfill and ethanol production were also analyzed. The study further recommended that a pre-engineering study be performed next.

Governors' Ethanol Coalition

In December 1993, Governor Nelson was selected again to head the Governors' Ethanol Coalition. The Governor founded the organization in September 1991 and served the first year as chairman of the nine-state group. He was succeeded in 1993 by Illinois Governor Edgar. By 1994, 19 states were members of the ethanol promotional group.

The goals of the organization are to increase the use of ethanol, to decrease the nation's dependence on imported energy resources, improve the environment and stimulate the national economy.

The Energy Office director is the Governor's representative on the Coalition and the agency has served as the administrative headquarters of the group since 1991.

The Energy Office continued to administer a $100,000 U.S. Department of Energy grant to demonstrate the viability of ethanol as an aviation fuel. The Coalition selected a Baylor University professor and aviation expert to demonstrate ethanol's aviation potential. By June 1994, many aerial demonstrations had been conducted and a videotape, brochure and mobile display had been produced. The project concluded at the end of 1994.

The Energy Office also continued to administer a $44,535 grant from the U.S. Departments of Agriculture and Energy for the Governors' Ethanol Coalition. These funds are used by the group to develop educational and informational materials and programs on ethanol transportation fuels. The projects financed with this grant include:

- $12,000 to Iowa's Department of Natural Resources for sponsorship of an ethanol-powered Harley Davidson motorcycle in a national alternate fuel rally, ENER-RUN. The race was conducted in the summer of 1994 and the Coalition's entry won the race.
- $10,000 to Information Resources in Virginia to publish two periodicals, the *Ethanol FAX Alert* and the *Ethanol Alert*. The former is a biweekly and the latter is a quarterly. This project concludes in 1995.

A $15,000 grant to the Coalition from the Western Regional Biomass Energy Program received in 1992-1993 defrays the administrative costs of the organization. These funds will be exhausted in 1995.

The Energy Office, on behalf of the Coalition, received a $25,000 grant from the federal energy department to revise and publish copies of an alternate fuels book first printed in 1991. The book will detail the evolution of alternate fuel use over the past three years. The revised edition of the alternate fuel book is expected to be published in early 1995.

In early 1994, the agency commissioned research by Schlesinger and Associates using $20,000 in state *Amoco* oil overcharge funds. The focus of the research was to explore options for increasing ethanol use primarily in Coalition-member states. The research targeted the petroleum refining and distribution system within Petroleum Administration for Defense District II which is comprised of 15 primarily Middle West and Great Plains states. The research is expected to be concluded in the fall of 1994.

On behalf of the Coalition, the Western and Great Lakes Biomass Energy Programs directly financed the research and publication of six reports:

* *The Economic Benefits of the Renewable Oxygenate Standard*
* *Petroleum and Ethanol — A Trade Deficit Analysis*
* *Fuel Ethanol — A Review of Recent Economic Impact Analyses*
* *Economic Impact of Ethanol Production Facilities — Four Case Studies*
* *The National Security Costs of Petroleum*
* *The Environmental Externality Costs of Petroleum*

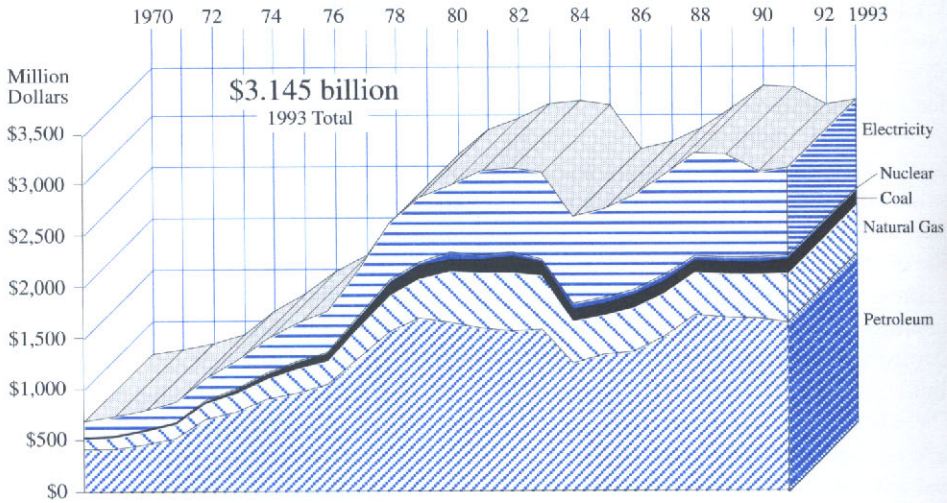
Research continues on a seventh report, *An Economic Impact Analysis of Ethanol and Impact in Selected States.*

Issues and Trends

Introduction

At least annually, the Energy Office is required by law to, "identify emerging trends related to energy supply, demand and conservation and to specify the level of statewide energy need within the following sectors: agricultural, commercial, residential, industrial, transportation, utilities, [and] government..." This section addresses those requirements as well as chronicles international, national and state trends and issues.

Total Energy Expenditures, Nebraska, 1970-1993



Source: Nebraska Energy Office

Figure 12

Energy Costs and Consumption

For the fourth consecutive year, Nebraska's total energy bill in 1993 surpassed $3 billion — $3.145 billion to be exact — a new all-time high, surpassing the record set in 1990 (see figure 12). In addition to a growth in overall energy consumption, small increases were recorded in both natural gas and electricity.

The state's petroleum dependence and its ensuing costs remained evident — just over half of all energy expenditures in 1993 were for petroleum and its refined products used in the state. However, because of the relative low cost of petroleum, only 40.7 percent of all energy expenditures in 1993 went to petroleum.

Energy consumption, which had been somewhat stable for the previous four years, spurted in 1993 to 542.1 trillion British thermal units, but remained below the peak energy use period from 1976-1979.

While use in the transportation sector remained relatively unchanged from the prior year, increases were recorded in residential (134.0 trillion Btus, up 15.3 percent), commercial (110.6 Btus, up 4.1 percent) and industrial (144.8 Btus, up 10.2 percent). The residential consumption increase was due to weather fluctuations. Summer was 12 percent warmer than 1992 and winter was 16 percent colder. Both industrial (which includes agriculture) and commercial (which includes government) are, to a large degree, affected by general economic factors. Since the state's — and the nation's — economies were fairly robust in 1993, that could account for growth in these two sectors.

However, separate energy use and production information is provided for electric producers in the Electricity section.

The Top Story: Electricity — Outages, Shutdowns and Controversy

In 1993 and 1994, the energy issue affecting the greatest number of Nebraskans was electricity, or in some cases, lack of what has become an essential component of everyday life.

From a wind storm in July 1993, to an ice and snowstorm in April 1994, the electricity producers suffered not only supply disruptions, but expensive repairs to the system as well.

Added to those woes was a prolonged shutdown of Cooper, the state's largest nuclear power plant and controversy over the planned construction of a 345 kilovolt auxiliary transmission line in the southern part of the state.

Wind Damage in July

Straight-line winds did more than $25 million damage to Nebraska Public Power District's transmission system on July 8, 1993, surpassing the utility's previous top for natural disasters — a 1976 ice storm which did $15 million in damage.

The cost of damage to public property throughout the 29 county area was estimated at $40 million. Rural and municipally-owned systems also sustained damage to their transmission systems.

The winds were clocked throughout central Nebraska at up to 100 miles an

> "Our mindsets, as well as the tools we use, prove our dependence on electric power. Electrification of rural America — a miracle to our parents and grandparents — is a simple fact of life for us..."
>
> *North Platte Telegram*
> April 13, 1994

"Repairing the electrical distribution system is a gargantuan task."

Omaha World Herald
April 21, 1994

hour. An estimated 90 to 100 communities throughout the state were affected by power outages of varying duration from several hours to several days. More than 100,000 Nebraskans were affected by the outage.

Of significance was the damage to a 64 mile 345 kilovolt line between Grand Island and Dorchester. This line is important because it is used to shift massive amounts of electricity from one part of the state to the other. The line was also toppled in the 1976 ice storm. For more about this transmission line, see the Pauline-Moore section on pages 22-23.

The Governor applied for federal disaster assistance in the areas which sustained damage. The President granted the disaster request and indicated that the federal government would pay 90 percent of the cost of restoration, not the normal 75 percent. It was estimated this action would save the state's cities, counties and utilities $5.3 million.

first step in qualifying for federal aid. In some areas such as Dawson County as many as 80-90 percent of the power poles were destroyed. The local rural electric, based in Lexington, estimated that it might take two to three years to restore the electric system to optimum condition.

The state estimated the cost of the storm to only the state's utilities to exceed $56 million.

After nearly three weeks of dawn-to-dusk repairs to the power system, electricity was flowing to the last remaining customer who was without service. However, there was concern that

April 1994 Snowstorm

The afternoon and evening of April 11, 1994, brought power providers and users in much of the central and western parts of the state a new perspective on early spring snowstorms. Snow in the spring is generally moisture-laden, which can burden lines quickly.

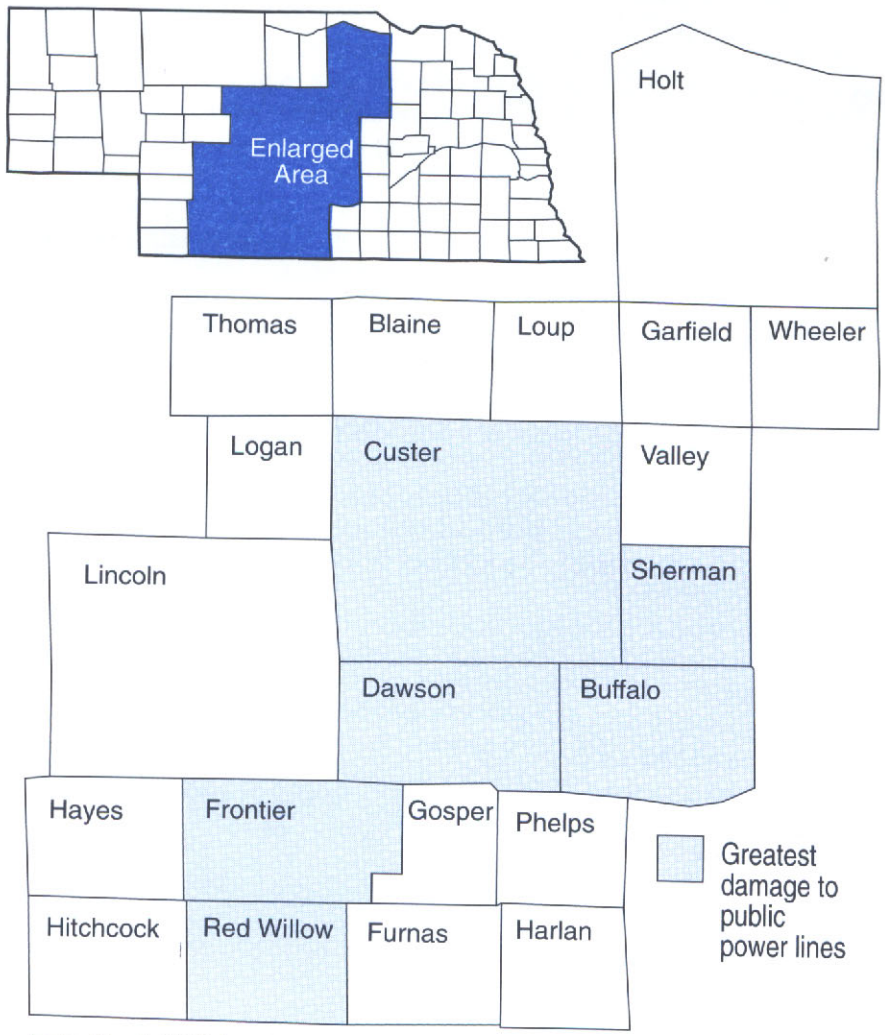
By the morning of April 12, Nebraska Public Power District was reporting that most of the state west of Kearney was without power as a result of the snowstorm. The storm proved to be the costliest in Nebraska utility history.

Two key transmission lines were felled. As a result, two of the state's main coal-burning plants, Gerald Gentleman in Sutherland and Laramie River in Wyoming, were shutdown since there was no place to send the electricity. Rural electric and smaller municipal systems were similarly affected. Nebraska Public Power District estimated that up to 300,000 Nebraskans experienced power outages of varying degrees.

NPPD was able to restore power within 12 hours or less to about half the area — usually larger population centers — by using smaller transmission lines. Isolated farms and ranches and smaller towns, however, were not as fortunate. Dawson County and surrounding areas experienced the most severely damaged systems from the 10-12 inch snowfall.

The Governor declared 24 of the most-severely affected counties disaster areas, the

Area Most Severly Damaged by April 1994 Snowstorm



Source: Nebraska Civil Defense Agency

Figure 13

other repairs necessary for the operation of irrigation wells may not be completed before they would be needed.

The Energy Office provided staff support for the Civil Defense's Disaster Center in Grand Island and broadened its Dollar and Energy Saving Loans to include appliances and other systems damaged by the power outage.

In early May, the President approved the request for disaster relief funds. It was estimated that the federal government would supply up to $42 million to restore the state's battered electrical transmission system. The remaining 25 percent of the cost would come from utility cash reserves and ratepayers.

"Nebraska Public Power District should be bending backward to please the U.S. Nuclear Regulatory Commission.

No excuses.

No defiance.

No mere promises.

Just prompt action.

Once again the NRC inspectors are complaining about lax attitude toward safety at the Cooper Nuclear Station in Brownville."

Lincoln Star
June 1, 1994

Cooper Nuclear Station Outage

A routine maintenance and refueling outage in March 1993 developed into a prolonged outage and management shakeup at Nebraska Public Power District's Cooper Nuclear Station. When operating, Cooper produces about one-third of NPPD's electrical generation and up to one-third of Lincoln's electrical supply.

In 1993, the Nuclear Regulatory Commission (NRC) fined NPPD a total of $400,000 for safety and regulatory violations. Throughout the year, NRC staff continued to express concern about the utility's operation of the station during an increased number of inspections.

After a 138-day outage, a rising Missouri River in July, caused the utility to again shutdown because roads used for evacuation were not passable.

In January 1994, the power station was one of the nuclear reactors in the country to be identified as "trending downward" in safety performance according to the NRC. However, the Commission did not list the plant on its watch list of most troubled plants.

Nearly one-half million dollars was spent to analyze staffing levels at the plant in early 1994. The report indicated plants of similar size have 900-1,000 workers while Cooper has 684.

Almost a year after the 138-day 1993 outage occurred, the plant shutdown again in 1994. This time a malfunctioning valve caused the outage. After a brief restart of the facility, a second shutdown came on May 24. As of June 30, the plant had not resumed power production.

While cool, wet weather reduced the state's summertime power needs, the utilities which relied on the nuclear station for power were forced to buy more expensive power from other sources.

For a more thorough examination of nuclear issues, see the Nuclear Power and Nuclear Waste section on pages 24-26.

"Nebraskans ought to be able to expect as much from Cooper because they're the owners in this public power state and they're also the customers. Yet performance has lagged behind expectations for some time."

Lincoln Journal
June 24, 1994

Pauline Moore

In October 1993, Nebraska Public Power District's Board approved spending an estimated $57 million to build a second 345 kilovolt transmission line between the Pauline substation south of Hastings and the Moore substation near Crete. The power district planned to have the line operational in 1996.

The utility said the earlier loss of a similar line in the July 1993 wind storm pointed to a weakness in the transmission system. The utility said other factors included increased transmission sales and the elimination of transmission bottlenecks.

In June, September and December, the utility held meetings throughout the 85 mile wide, 16 mile deep corridor where the line was planned. In February 1994, the utility selected its preferred routing of the line. Nebraskans in the affected area questioned both the need for and safety of the line.

Opponents raised questions regarding a correlation between cancer and electromagnetic fields created by the power lines. Fifteen years of health studies in this area have been inconclusive.

In February, 1994, opponents asked the state's Power Review Board, which originally granted permission to the utility to build the transmission line, to reconsider its decision. The Board declined to reconsider the original decision which was made in August 1993.

Also in February, landowners in the path of the power line asked the District Court in Geneva to block the utility from acquiring the land it needed to build the transmission line. While one legal attempt was unsuccessful, a second suit was unresolved by the end of June 1994.

Several landowners opposed to the line's construction created sanitation improvement districts in the line's path in an effort to alter the location of the power line. However, the utility was proceeding to secure right-of-way agreements from landowners.

Kingsley Dam Relicensing

The ten-year struggle to obtain a new 30-year renewal of the hydropower dam at Lake McConaughy, north of Ogallala, continued toward resolution.

The Federal Energy Regulatory Commission license to operate the hydropower facility was originally granted in 1941 and expired in 1987. Since that time, only annual operating licenses have been issued pending the resolution of seemingly conflicting issues — irrigation, power generation, recreation, fish and wildlife welfare, municipal interests and flood control.

In 1992, the Governor proposed the establishment of a flexible "water account" system for the benefit of wildlife habitat. The proposal was in response to the federal agency's initial environmental impact statement.

In March, 1994, the Federal Energy Regulatory Commission issued its revised environmental statement including, for the most part, the concept of the flexible "water account."

However, in one key area, wildlife restoration habitat, the costs increased by 50 percent to $45 million. The utilities seeking the relicensing, Nebraska Public Power District and Central Nebraska Public Power and Irrigation District, expressed concern regarding costs which would be passed along to ratepayers and others such as irrigators.

The federal agency will likely reach a final decision on relicensing in 1996.

State Electricity Production and Consumption

In 1993, energy use of 244.3 trillion British thermal units by the state's utilities was higher than 1992, but still below the 1991 peak of 246.5 British thermal units.

The outage at one of the state's two nuclear plants caused a 22.2 percent decline in nuclear production. Offsetting the decline in nuclear generation was electricity produced from coal which increased by 18.1 percent over 1992. Hydropower declined marginally — 6.9 percent — from 1992.

Coal increased its dominance in electrical production in the state in 1993, increasing to more than 65 percent. Nuclear generation continued to hold second place, but declined to a level not seen since 1988. In 1993, less than 30 percent of the state's electricity came from nuclear power, down eight percent from 1992.

National Trends

Across the nation, the trend of utility deregulation is beginning to focus on electric utilities since natural gas deregulation is nearly complete. While regulators in California and New York are suggesting the electric industry could benefit from deregulation, it is uncertain how quickly the regulators may act on this issue or how far the industry may be changed.

What is being considered is similar to what has happened to the natural gas industry — where larger customers obtain fuel from any source, using the pipeline system as a common carrier.

Electric utilities in the state are watching these developments closely. However, the relative low cost of electricity in Nebraska may forestall changes such as these from occurring in the state in the near future.

Other Issues

- The three-year billing dispute between Nebraska Public Power District and Central Nebraska Public Power and Irrigation District over the cost of power from a hydropower facility came to an end. NPPD agreed to buy the Canaday Plant, south of Lexington, from Central.
- Nebraska Public Power District's Sheldon plant in southern Lancaster County continued a two-year test of mixing shredded tires with coal. The local health department gave approval of a plan to use up to 200,000 shredded tires in the utility's fuel mixture. Nebraskans discard an estimated 1.5 million tires annually. The cost of the shredded tires equals that of coal used in the plant. As a result of a nearly one-half million dollar state grant, the company which produces the shredded tires agreed to move its facilities to Lincoln.
- For the second consecutive year, a coal-burning plant owned, in part, by Lincoln Electric System had the lowest average cost for producing electricity in the nation. The power plant, Laramie River, is located in Wyoming.

Other state power plants fared equally well. Omaha Public Power District's Nebraska City plant ranked ninth, while the Grand Island power plant ranked tenth.

Other electricity issues occurring during the reporting period:

- Weather in 1993 — cool and wet — caused revenue shortfalls for the major utilities in the state. Generally, irrigation and air conditioning use caused revenues and power generation to peak in the summer. In August, 1993, NPPD expected power sales to dip by $37 million, Omaha Public Power expected a $13 million decline, while Lincoln Electric System predicted a shortfall of $2.2 million.
- The federal government and the nation's Big Three automakers announced in October a ten-year effort to develop a reliable, affordable car three times as energy efficient as today's models. The goal is to reduce air pollution, imported oil and regain the lost market share of auto manufacturing from importers. The research and development project was estimated to cost $1 billion.
- Rates charged for sending electricity over transmission lines pitted two public entities against each other. Nebraska Public Power District raised its transmission rates by 23 percent in February 1994. A user of those lines, the Municipal Energy Agency of Nebraska, filed a lawsuit challenging the fairness of those rates.

Nuclear Power and Nuclear Waste

State Production and Consumption

Nuclear generated electricity in the state plunged by more than 22 percent in 1993 to 72.7 trillion British thermal units due to planned and unplanned outages at the state's two nuclear facilities. Only 13 percent of all energy used in the state in 1993 came from nuclear power, the lowest percentage since 1985 when only nine percent came from nuclear power.

The state has two nuclear power generating facilities — Fort Calhoun Nuclear Station operated by Omaha Public Power District and Cooper Nuclear Station near Brownville operated by Nebraska Public Power District. Fort Calhoun is one of the older commercial nuclear facilities still operating in the nation.

Since the Cooper Station remained mostly inoperative since the May 1993 shutdown, the amount of electricity generated from nuclear power in the state will also be reduced when 1994 statistics become available.

In comparison, 26 percent of all electricity used in the world in 1993 came from nuclear power, up four percent from the previous year.

National Trends

While the United States has the greatest nuclear capacity in the world, future capacity is expected to increase only three percent in the next decade. By 2010, America's nuclear capacity will decline from 99 gigawatts to about 93 gigawatts as older units are deactivated. A gigawatt is one million kilowatts.

The nuclear power industry has stalled because of three issues — high operating and construction costs relative to other fuel sources and unsolved nuclear waste disposal.

Other developments impacting near and long term nuclear power issues:

- Ron Watkins, president of Nebraska Public Power District was selected to serve on the executive committee of the Nuclear Energy Institute. The Institute was created in 1994 when four nuclear groups merged their activities.
- After 14 years, the cleanup of the nation's worst nuclear power plant disaster at Three Mile Island, Pennsylvania was completed at a cost of $1 billion.
- In late 1993, the Princeton Plasma Physics Laboratory achieved a stunning success with a nuclear fusion reactor, generating 5.3 million watts — vastly more than ever produced from this technology. Nuclear fusion, while experimental at this time, has advantages over nuclear fission power currently being used. The advantages are no pollution, reduced chance of deadly accidents, limitless supply of fuel, few radioactive by-products and no danger that nuclear weapons could be produced from the fuel. However, the Princeton reactor consumed twice the energy it produced. At best, fusion power remains a distant technology requiring many research dollars and decades to perfect.

State Trends

No new nuclear facilities are planned for construction by utilities in the state due to cost inefficiencies and unsolved storage issues of low and high level waste.

Nebraska Nuke Facilities

The state has two nuclear power generating facilities — Fort Calhoun Nuclear Station operated by Omaha Public Power District and Cooper Nuclear Station near Brownville operated by Nebraska Public Power District. Fort Calhoun is one of the older commercial nuclear facilities still operating in the nation.

During a routine shutdown from September to mid-November, two incidents occurred at the station, but were corrected, allowing the plant to restart. Other incidents occurred in January. However, all were considered minor.

In December 1993, OPPD received a five-year extension on its operating license through 2013. The utility said that the five-year extension would save the utility's ratepayers an estimated $100 million over the period. The utility also considered expanding the plant's power output by 12 percent at a cost of $25 million, but found this would not be cost effective until the final six years of the plant's operation. The utility decided not to pursue the upgrade.

The plant was fined $25,000 — reduced from the NRC's $50,000 minimum fine — in May 1994, for the earlier incidents.

The cost of decommissioning both plants was recalculated by the two utilities which operate the state's nuclear facilities. Both expect to have $1 billion or more available to decommission each of the power plants when their operating licenses expire. Construction costs for each plant, which began operating in the early 1970s, was between $300-$400 million.

Throughout the reporting period, problems at Cooper dominated the news. A detailed look at the station is profiled in the Cooper Nuclear Station Outage on page 22.

> "...Fort Calhoun has made a strong comeback from the difficulties of 1988. A federal agency with rigid, exacting standards has granted a significant extension of its license just a few years after expressing concern about the plant."
>
> *Omaha World Herald*
> December 7, 1993

Nuclear Waste

The majority of nuclear waste in the state is produced by the two nuclear power plants. For storage purposes, radioactive material is classified as high or low-level waste depending on the length of time the waste remains active.

High level waste is spent nuclear fuel and has primarily been stored on site at the nuclear power plants, awaiting construction of a temporary or permanent repository. Fort Calhoun has revised its storage capacity to 2007. The Cooper station expects to exhaust on-site storage by 2002.

Permanent High-Level Waste Storage

To the three established storage options — the Waste Isolation Pilot Plant in New Mexico, a permanent storage facility at Yucca Mountain in Nevada and a temporary storage facility at a site to be selected — a fourth was added. More than 30 utilities with nuclear power plants began exploration of developing a privately-owned storage area. Transporting spent fuel and other nuclear wastes to these areas is also a concern.

Waste Isolation Pilot Plant

The furthest developed storage facility, the Waste Isolation Pilot Plant, was begun in 1983 near Carlsbad, New Mexico. Designed to store radioactive wastes resulting from the production of nuclear weapons, it is also a test of the use of prehistoric salt beds to entomb the wastes. These wastes will remain deadly for 240,000 years.

The $1 billion plant has been plagued by technical, legal and political problems and may never become fully operational. This storage option remains a question despite its $14 million a month costs.

Yucca Mountain

Under the 1982 *Nuclear Waste Policy Act*, utilities have been paying one-tenth of a cent per kilowatt-hour produced by the reactors to finance a repository to store the radioactive wastes. By 1998, the U.S. Department of Energy was supposed to start picking up the waste, moving it to the permanent storage site.

In 1987, Congress selected Yucca Mountain, Nevada, as the most likely site, if found suitable, for permanent storage of high-level waste from the nation's 100-plus nuclear reactors. Since the selection of Yucca Mountain, the federal energy agency has faced both technical problems and local opposition. While site suitability testing continues, the revised operational date of 2010 may again be postponed.

In June 1994, the federal energy agency was challenged in two separate lawsuits to provide a storage site by 1998, the original operational date for permanent storage. Fourteen private utilities filed one lawsuit, while 27 public agencies filed the second legal action. Nebraska joined the public agency lawsuit on behalf of the state's ratepayers who had already contributed in excess of $100 million for construction of a permanent storage site. The lawsuits are currently pending in District Court for the District of Columbia.

Monitored Retrievable Storage

The 1982 law also called for the establishment of a temporary storage site if the permanent facility had not opened before on-site storage capacity was reached by nuclear power plants.

According to the Edison Electric Institute, an estimated 35 nuclear plants will exhaust their on-site storage of radioactive wastes by 2007 including the two plants in Nebraska.

Two Indian tribes, the Mescalero Apaches in New Mexico and the Skull Valley Band of Goshutes in Utah, have approached the federal government asking to be considered for siting of a temporary storage area for spent nuclear fuel.

In April 1994, Omaha and Nebraska Public Power Districts joined with 31 other utilities exploring the possibility of constructing a privately-operated temporary storage facility on Mescalero Apache tribal land in New Mexico. Costs and possible schedule for such a facility were expected in June.

Transporting Nuclear Waste

Whether high level waste is civilian or military, it must be moved from where it was produced to temporary or permanent storage sites. Because many nuclear facilities are east of Nebraska and likely storage areas are west of the state, rail lines and highways in Nebraska are probable corridors for shipments of radioactive waste.

Through participation on the High Level Waste Transportation Committee of the Western Interstate Energy Board, the Energy Office monitors current developments relating to future transportation issues which may affect the state.

At present, the Nebraska State Patrol indicates there are periodic shipments of high level nuclear waste crossing the state. Patrol escorts are provided only from the Iowa border to 50 miles outside Lincoln.

Permanent Low-Level Waste Storage

Nebraska belongs to one of nine regional compacts in the nation formed to develop storage facilities for low-level radioactive waste. Low-level waste is generally composed of clothing, filters, resins, tools and other items from nuclear power plants and hospitals. According to the U.S. Department of Energy, utilities generate more than 50 percent of the low-level waste. The waste remains radioactive for 90 days to 200 years.

Boyd County Radioactive Waste Storage Facility and Related Issues

Since Boyd County, Nebraska, was selected by its regional compact, the Central Interstate Low-Level Radioactive Waste Commission, and the developer, U.S. Ecology, the building of a low-level radioactive waste facility has progressed along a predetermined number of stages.

In January 1993, the state's Department of Environmental Quality which is the agency responsible for reviewing and licensing the storage facility said that the agency intended to deny the construction because wetlands existed on the site. In response, the developer indicated a plan which deleted the wetlands would be submitted in August.

Revisions were also made in two key areas — cost and date of operation. The facility is now estimated to cost $146.5 million, more than four times the original estimate of $35 million. The facility, if built, is expected to be operational in 1999. As of June 1994, $56 million had been spent on siting and licensing issues.

In July 1993, Nebraska Public Power District said it would build a temporary

> "Congress needs to revisit the low-level issue, paring down the number of new sites."
>
> *Lincoln Journal-Star*
> July 3, 1993

"...it is clear that Nebraska is still a long way from watching the first truck full of low-level radioactive waste being unloaded in Boyd County."

Lincoln Journal
September 10, 1993

storage site for low-level waste it generates at its Cooper station. Omaha Public Power District built similar temporary storage in 1990.

In April 1992, the Southeast Compact Commission voted to bar further access to its storage facility starting July 1, 1993. Nebraska and other states in its Compact asked the Commission to reconsider its decision. In October, the Commission again allowed generators in the five states in the Interstate Compact to send low-level nuclear waste to South Carolina through June 1994.

In April 1994, the Legislature passed a bill removing the state from liability if a storage facility is built in Nebraska.

Natural Gas

State Production and Consumption

After peaking in 1973 at more than 230 trillion British thermal units, Nebraska's natural gas consumption has plummeted by nearly half to 123 trillion units in 1993. The 17.5 percent rise in natural gas use over 1992 was due primarily to weather.

Natural gas expenditures in the state totaled more than $512 million in 1993, still below the peak of $567 million in 1984.

While a small amount of natural gas is mined in the state — less than two percent of that used in a year — a dramatic uptick in production occurred in 1993. The new gas well field in Cheyenne County accounted for a 79.6 percent increase in natural gas production to 2,144 million cubic feet — the highest since 1984.

National Trends

At the national level, Federal Energy Regulatory Commission Order 636, which had been under consideration for several years, became effective in November 1993. This order fundamentally changed the natural gas utility industry. Securing supplies of natural gas became the responsibility of local utilities, with pipelines reverting to a common carrier status. The effect of this "unbundling" of services forced utilities to deal with every leg of the fuel's travel, from well-head to the customer's door.

In the past, utilities relied on a regulated system to guarantee an adequate supply for their customers. With the regulatory safety nets stripped away, utilities must purchase the right amount of gas for the right customers.

The new system will also cause a shift in costs. According to the *Wall Street Journal*, individual homeowners and small businesses will pay more, while big industrial customers will be able to negotiate for lower costs.

Another set of costs, may also come into play. Pipeline companies, forced out of their regulated operations, must cancel long-term purchase contracts and these "transition costs" will be passed on to customers. These costs have been estimated at $4.4 billion to $5.7 billion over three years.

State Trends

State trends were generally confined to two areas: the impact of FERC Order 636 and a continuation of utility mergers which have resulted from deregulation of the industry.

The impact of FERC Order 636 had varied impacts across the state depending on several factors: whether the utility was publicly-owned and the source of the natural gas. Publicly-owned utilities provide service to approximately 431,000 Nebraskans.

According to the Nebraska Public Gas Agency, which provides natural gas to 10 of the 14 publicly-owned systems in the state, "unbundling" will produce substantial savings for customers since the agency owns gas wells in Oklahoma and Texas. However, some publicly-owned systems may initially incur higher costs as long-term contracts are severed. One such case is Central City. It's former natural gas supplier initially asked the town to pay about $1.5 million in transition costs. The utility ultimately settled for $720,000 over four years. Larger publicly-owned systems appear to be better positioned to take advantage of deregulation.

For Nebraskans served by investor-owned systems, the impact is less clear and may vary from utility to utility and be based on the amount of natural gas used. The American Gas Association predicted that residential customers wouldn't benefit from deregulation, but larger, industrial customers would.

The other state trend, mergers or acquisitions, was somewhat quieter than last year, but one utility, KN Energy, did merge with a Texas-based natural gas company, American Oil & Gas.

Other Highlights

At the urging of several cities in the central and western parts of the state, the Public Service Commission considered but did not pursue asking the Legislature to give the commission jurisdiction over retail rates — abandoning the system of municipal control which has been in effect since natural gas service began in Nebraska.

Petroleum

State Production and Consumption

Oil production in the state plummeted by 11.1 percent in 1993 to a new modern-day low of 4.86 million barrels. The last time oil production was this low, 1952, the state's first oil well was just 13 years old. Even use of advanced oil recovery technology appears unable to reverse the state's oil production decline. None of the oil mined in the state is refined in Nebraska.

"Oil industry insiders don't see much chance of any large scale or even small scale increase in the search for new oil pools in Nebraska in the foreseeable future."

Sidney Telegraph
December 6, 1993

An estimated 35.31 million barrels of oil were consumed in the state in 1993, less than 14 percent of that was produced in the state. As a result, more and more of the state's petroleum needs are being met by other states and countries.

National Trends

The state's dependence is increasingly paralleled by the nation. According to the Independent Petroleum Association of America, 1994 petroleum imports are expected to exceed 50 percent on an annual basis for the first time ever. Increased consumption and declines in domestic production are the primary causes. The group also projected that by 2010, imported oil would account for 62 percent of domestic demand. However, the Organization of Petroleum Exporting Countries or OPEC, is providing just 58 percent of the imports, a marked change from the early 1980s when the group provided 85 percent of America's imported oil.

Since the 1973 Arab Oil Embargo, America's dependence on imported oil has only worsened. According to the U.S. Department of Energy, oil's portion of all energy use increased from 40 to nearly 47 percent in the last 20 years.

The Environmental Protection Agency said that average miles per gallon increased from 15.8 to 27 from 1975 to 1985 and then basically stalled for the last eight years. The Federal Highway Administration said that miles traveled per year has nearly doubled in the past 20 years, from 1.31 in 1973 trillion per year to 2.24 trillion in 1993. Lastly, Americans' passion for trucks and mini-vans — replacing sedans and station wagons — has caused the average miles per gallon figures to worsen since these vehicles use more gasoline.

The only "good news" was at best mixed. September 1993 brought the lowest price for oil in three years because of falling world-wide demand and increased production. In October, prices plunged to under $14 for a barrel of oil. By November, crude oil prices were still hovering around $15 a barrel. Yet, just seven months later, oil prices rebounded to their highest price all year long, nearly $20 a barrel.

Gasoline taxes, on the other hand, went up. The broad-based energy tax proposed in 1993, in the end became a 4.3 cent increase in the gasoline and diesel tax, which became effective in October 1994.

At the same time, low-sulfur diesel was being introduced into the market for use by heavy-duty trucks and buses. The cleaner-burning fuel was required under the *Clean Air Act*.

State Trends

The rise in the federal gasoline tax and the introduction of low-sulfur diesel fuel led to price spikes in Nebraska and throughout the Midwest. Over a three week period in October, prices of diesel and unleaded gasoline leaped 25-40 cents and 9-13 cents respectively.

While the tax and fuel changes were factors in the price rise, other aspects also played a role. Late Midwestern crop harvests and a major pipeline disruption caused supply shortages which ultimately led to rapid prices increases. That's what the Energy Office discovered when asked by the Governor to investigate the rapid price run-ups.

"Motorists in much of the rest of the world pay two or three times more for their gasoline than do Americans. The Administration and Congress would do well to keep the gas tax on the table as further deficit-cutting discussions take place."

Omaha World Herald
October 2, 1993

Other Highlights

- The nation's domestic oil industry continued its protracted contraction of the last decade when 500,000 jobs were lost. More jobs were lost in 1993-1994. According to a firm which specializes in keeping tabs on the oil industry, employment levels are returning to the levels of the early 1900s.

Alternate Energy

Efforts to develop clean, abundant and affordable alternates to the use of fossil fuels have been aided by five factors — technological improvements, increasingly stringent environmental laws, federal research funding, utility regulators and broad-based public support. Because Nebraska is a public power state, utility regulators are not considered a factor.

The five main alternate energy sources — biomass, geothermal, hydropower, solar and wind — are detailed in this section.

State Production and Consumption

In 1993, hydropower supplied an estimated two percent of the total energy consumed in the state. Biomass, in the form of ethanol, supplied four-tenths of one percent in 1993. The Energy Office estimates that in 1993, all five forms of alternate energy

supplied approximately 2.5 percent of the energy used. While energy production from alternate sources is increasing (primarily ethanol from biomass), the increases are microscopically small.

National Trends

One national electrical utility trend has nearly gone unnoticed. According to the U.S. Department of Energy, utilities, independent power producers and self-sufficient manufacturers have invested $10 billion since 1980 on wood-burning power plants — 40 percent more than the combined total for solar and wind generation. The 1,000-plus wood-burners are using one of the oldest fuel sources to cut greenhouse gas emissions. Besides using wood mill manufacturing waste, the new breed of "super trees" are being burned. The fast-growing poplars, willows and maples have grown as much a foot a month. The National Arbor Day Foundation is using similar fast-growing poplars to warm its Conference Center in Nebraska City.

The drive to cut greenhouse gas emissions has served as a strong motivator, not to mention millions in federal incentive dollars. For example, the U.S. Department of Energy and the Electric Power Research Institute made $40 million available to the nation's utilities to test the latest in wind technology. Their goal was to reach five cents per kilowatthour by 1998 in areas having average wind speeds of only 13 miles per hour.

State Trends

The national trends, in large part, have bypassed Nebraska because of three factors: the state's utilities have surplus generating capacity (for today and into the foreseeable future), their coal-burning plants generate little pollution and their electrical rates are some of the lowest in the country.

However, in April 1994, a coalition of environmental, consumer and farm groups announced a multi-year effort to shift a quarter of electrical power generation from nuclear and coal to wind and biomass over the next 16 years. In the near term, the plan called for a 25-megawatt wind energy farm by 1995 and a switchgrass-powered plant by 1998. Longer-range plans called for two 100-megawatt biomass plants by 2002, eliminating the need for similar-sized natural gas peaking facilities the utilities plan to build.

Fuel Sources

Biomass

While most of the emphasis on biomass energy sources has focused on future fuels — switchgrasses, genetically-engineered trees, garbage and crop wastes — the reality is that, in Nebraska, wood remains the primary alternate biomass fuel in use today.

In 1994, agricultural groups suggested using some or all of the 1.4 million acres of highly erodible crop land in the state committed to the federal Conservation Reserve Program. Some have speculated that this land could be used to grow switchgrass for electrical production. Others have pointed out that some of the land in reserve may be unsuitable terrain for farming of any type.

A Florida-based ethanol producer announced that the firm was considering building three 25 million gallon plants in the state which would use not only corn, but crop stubble as well. The firm has a patented process which is capable of converting part of the cellulose in the stubble. As of June 1994, the company had not made a decision regarding the ethanol plants.

Geothermal

Geothermal energy use in Nebraska remains limited to small-scale systems used in schools, businesses and homes. In 1994, Lincoln Public Schools decided to install ground-source heat pumps in four new elementary schools, making the district one of the largest demonstrations of this type of technology in the state.

Hydropower

Hydropower in the state comes from two sources — 11 hydroelectric dams in or on the border of the state and power supplied to Nebraska by Western Area Power Administration. The Power Administration transfers hydroelectric power produced in western states to state agencies, municipalities and public power districts. Taken together, all hydroelectric sources met more than 15 percent of the state's electricity needs in 1993. Nationally, about eight to ten percent of the country's electricity needs are met through hydropower annually.

At this time, it is not anticipated that other sources having hydroelectric potential will be developed in the state. It is more likely that hydro resources will decline with time. For example, the resolution of the relicensing of Kingsley Dam may result in a reduction in the production of electricity.

Solar

Solar or photovoltaic energy continued to make significant technological gains in this reporting period, reducing the cost of producing electricity from this source.

The U.S Department of Energy, working with two companies, produced solar panels capable of meeting the daytime needs of the average household at about half the present cost of solar energy. Not only was a record efficiency set with the new technology — 10.6 percent — but the cost of the solar power was only 16 cents per kilowatthour. Previous solar energy production cost from 25 to 50 cents per kilowatthour.

A second announcement, from an Australian laboratory, revealed that a new design using cheap, low-quality materials will cut the cost of solar power by 80 percent in five to ten years. If the technology succeeds, solar energy would then be cheaper than electricity from coal or natural gas — an estimated three to four cents per kilowatthour. The key to

the success of this technology is the ability to mass produce the new solar cells.

At present in the state, solar energy use is limited to isolated and remote areas where the cost of installing power lines is not justified such as livestock water pumps and water heaters in state parks.

Wind

Electricity from wind took several giant steps forward in Nebraska in 1993 and 1994.

Late in 1993, the Legislature's Natural Resources Committee held an all-day hearing examining the potential of wind and other alternate energy forms to supplant coal, nuclear and natural gas as sources of electricity. The state's power providers indicate that, when appropriate, wind power would be considered if it were cost-competitive with other sources of power. Environmental and other groups suggested the state needed to begin examining wind's potential now.

In February 1994, the Nebraska Power Association and the Energy Office announced a plan to spend $300,000 to study eight of the most promising wind energy farm sites in the state. The state's larger utilities will provide $200,000 and the Energy Office will seek $100,000 in federal funds for the study.

Small towers or existing towers with monitoring equipment would be located at the sites. Data would be collected for three years to establish wind patterns. The study would last through 1998.

A separate wind study near Ainsworth was begun by Nebraska Public Power and KBR Rural Public Power Districts. The U.S. Department of Energy funded-study is one of only five in the nation. Ainsworth was selected because earlier studies found the area to have good potential for wind generation in the summer, when the state's electricity need is greatest and the site is also located close to an existing transmission system — both important factors. The study should conclude in 1995 or early 1996. The findings of the study will be available to all the utilities in the state.

> "If wind power holds any potential for Nebraska, it would be nice to know that before the next generation of power plant construction begins."
>
> *Lincoln Journal-Star*
> November 14, 1993

> "Wind is a frequent companion to Midlanders as they go about their daily tasks. It's not far-fetched to consider using it to help produce electric power."
>
> *Omaha World Herald*
> February 19, 1994

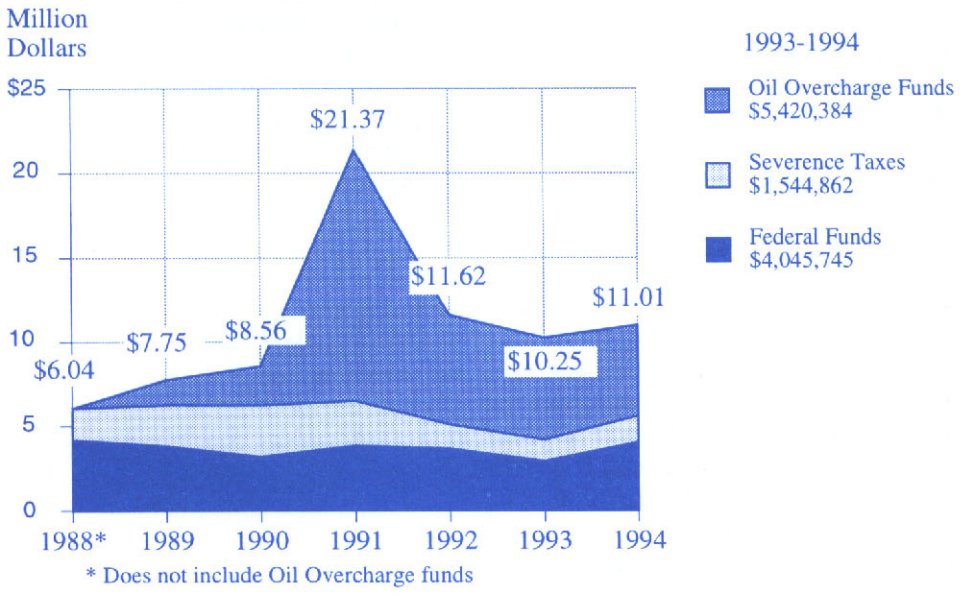
Fiscal and Organizational Notes

Financial Review

The accompanying figures illustrate the Energy Office's income and expenses from July 1, 1993, through June 30, 1994, which amounted to $11,010,991 and includes federal funds, state funds and oil overcharge funds.

Approximately 49 percent of the agency's funding came from oil overcharge funds, a ten percent decrease from the previous year. Additionally, federal grants and state severance tax funds increased by nearly 38 and more than 23 percent respectively. The increase in federal funds came from two sources: the Low Income Weatherization Assistance Program and the Low Income Home Energy Assistance Program. The appearance of an increase in severance taxes was in fact activity — loans being repaid — in the Municipal Natural Gas Regulation Revolving Loan fund.

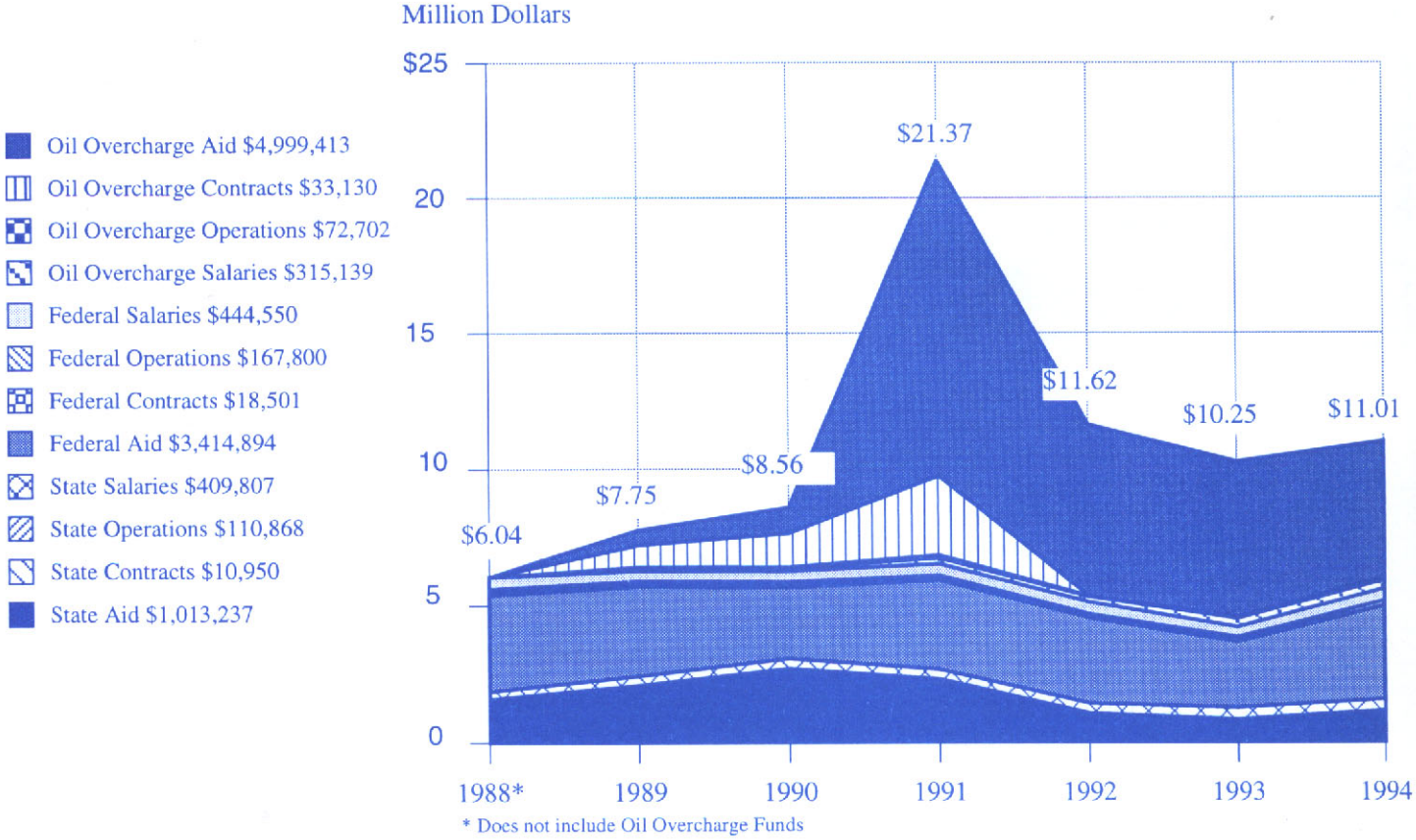
Where The Money Came From, 1988-1994



Source: Nebraska Energy Office

Figure 14

Where The Money Went, 1988-1994



Source: Nebraska Energy Office

Figure 15

State funds came exclusively from severance taxes. No state general funds have been appropriated to the Energy Office since 1983.

More than 45 percent of all expenditures were used for oil overcharge aid and contracted projects such as the Energy Management Circuit Rider and others listed in the Oil Overcharge Funds section starting on page 6. More than 84 percent of all federal funds were expended as aid in the Low-Income Weatherization Assistance Program. In excess of 64 percent of all state severance taxes were spent as aid under the School District Energy Efficiency Program.

A full accounting of the Energy Office funds appears in figures 14 and 15.

Overall, the agency spent state, federal and oil overcharge funds in eight different ways. Aid, which makes up the largest portion of the agency's expenditures, consists of money from the three sources which is received and passed on to delegate agencies or directly to beneficiaries such as schools, hospitals, small businesses, local governments and individuals. Money spent for operations pays travel, telephone, computers, salaries and other office expenses.

A more detailed accounting of the oil overcharge funds appears on pages 7 and 8.

Organization

The Energy Office was created in November 1973 as the Fuel Allocations Office, a division of the Nebraska Department of Revenue. The agency had independent status from 1977 to January 1987, when it became by Executive Order of the Governor, a division of the Governor's Policy Research Office.

The organizational chart below shows the functional structure of the Energy Office during the reporting period.

Nebraska Energy Office Organization

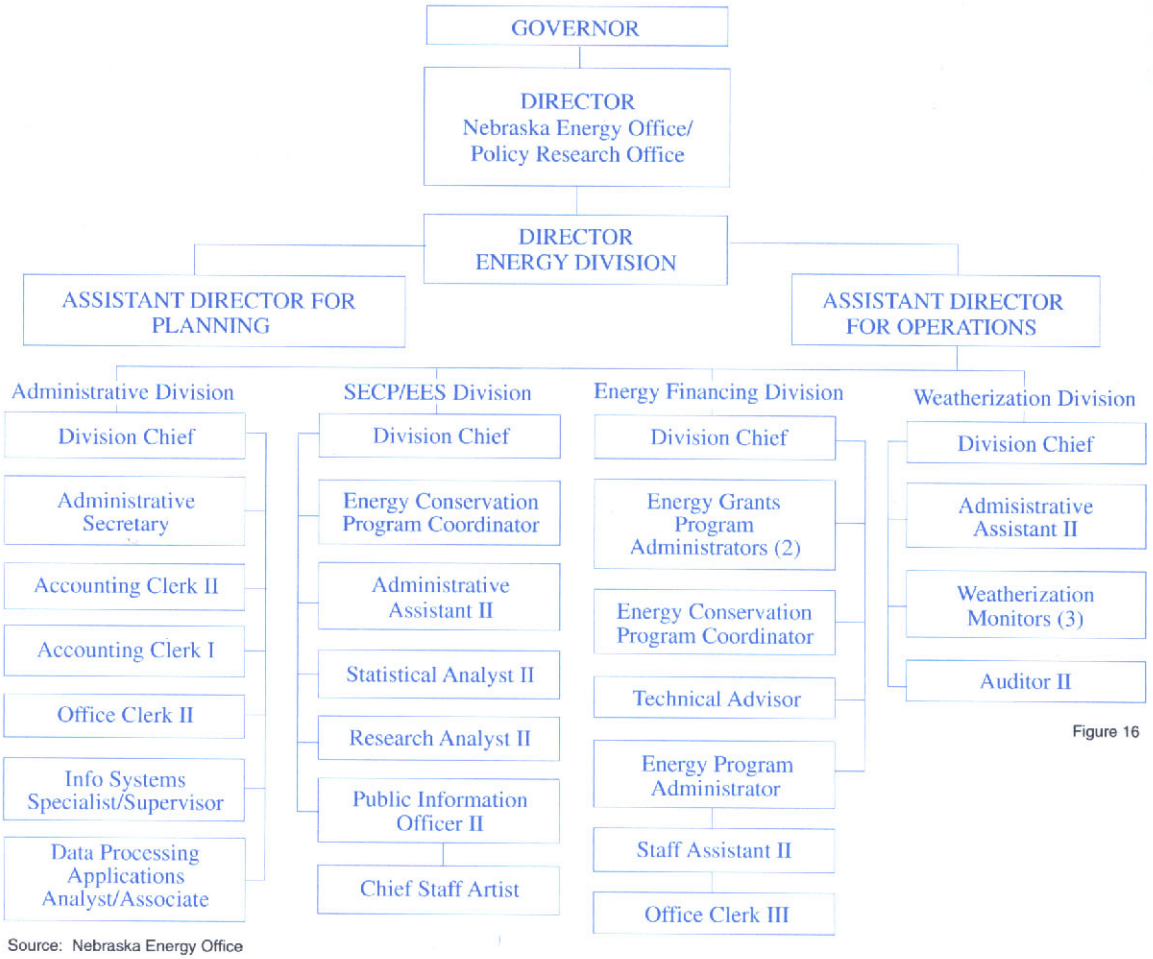


Figure 16

Source: Nebraska Energy Office

The Energy Office logo found on the back cover is from the " Genius of Creative Energy" floor mosaic by Hildreth Meiere located between the vestibule and foyer inside the north door of the State Capitol in Lincoln.

This *Annual Report* is for the period July 1, 1992, through June 30, 1993, except where noted.
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E • N • E • R • G • Y

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