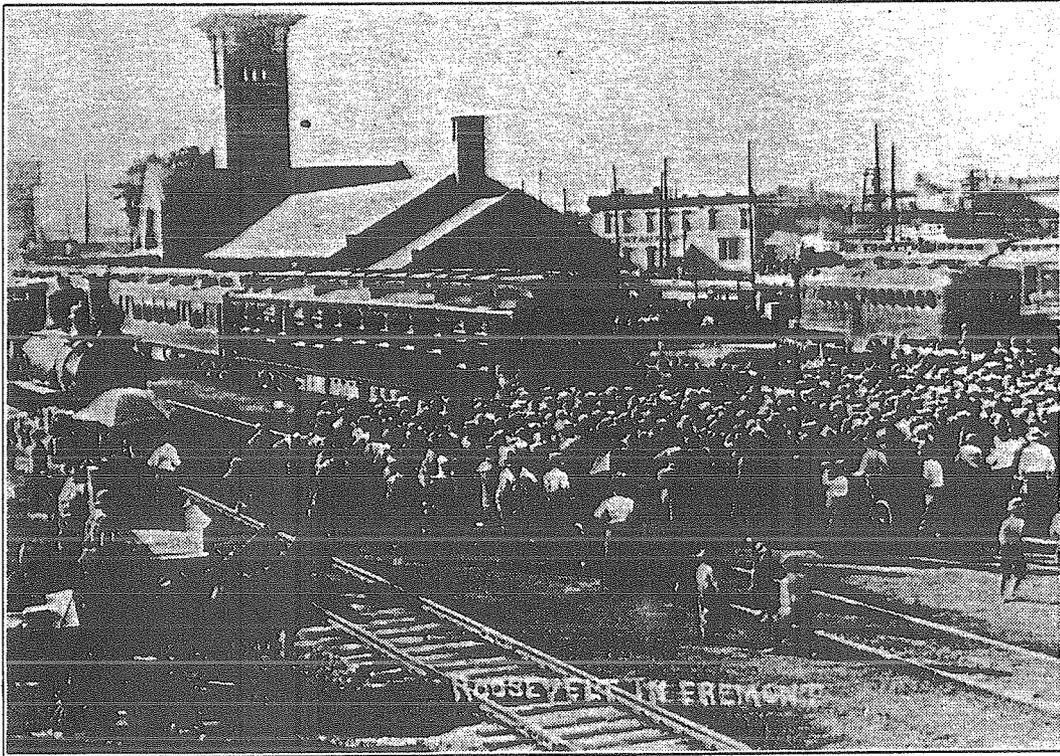


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NEBRASKA  
ENERGY  
OFFICE

ANNUAL REPORT

*Cover Photo: Teddy  
Roosevelt speaking  
from a train in  
Fremont Nebraska.*

*All photos for this  
Annual Report were  
provided courtesy of  
the Nebraska State  
Historical Society.*

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Economic impact calculations for 1985 were based on a 10-year period, while calculations for 1983 and 1984 were based on a one-year period only.

## Director's Message

Dear Nebraskans,

January 17, 1986

We began to change the way the Energy Office worked with the people of Nebraska three years ago and this year, for the first time, we can let that change speak for itself.

This annual report reveals an agency that stopped, wherever possible, telling people what was best for them and started asking them. Along the way, we worked to inform people about how they use energy, we gave them a way to make decisions efficiently and we tried to find as many ways as possible, in our agency and outside it, to see that the choices of local communities could become realities.

Not every choice came to full realization but there were no failures. We have not yet found a community in Nebraska that says it doesn't care about its future and isn't willing to work on it. Helping people work on their future, in our view, is the purpose of government and from that all our programs, policies and laws ought to flow.

My recommendations to the Governor and the Legislature are carried forward from last year, not because we didn't make progress on them, but because they are profound tasks that must be renewed in the circumstances that each year offers. They are:

Recognize and reflect in public policy and implementation that energy is a significant component of Nebraska's economy. The balance between this enormous import and the state's undervalued agricultural exports is a negative one which slowly bleeds the state's natural wealth away.

Demand comprehensive power planning that recognizes the significant and growing role of energy efficiency - - both conservation and alternate generation - - on Nebraska's electric power future. Strengthen the Power Review Board through information and authority. Power planning should be subject to complete public scrutiny as it occurs. Plans should include an explicit treatment of energy efficiency as a least cost source of power in the future. Routine methods of financing should be applied to the purchase of efficiency as a resource.

Support decentralized, locally - based energy planning and action. Local information, planning and action is Nebraska's best approach to an informed and powerful citizenry.

Support Nebraska's unique system of municipal regulation of natural gas. Adjustments may be necessary but the state appears to be well served by technical assistance on a statewide basis. The Nebraska Energy Office should be the primary agency for supplying this technical assistance and will require state funding to do so.

Ensure that Nebraskans' interests are represented when decisions are made at the Federal Energy Regulatory Commission regarding the wholesaling of natural gas. The absence of a state regulatory body with responsibilities for natural gas makes this a problem unique to Nebraska. The prospect of continued significant reliance on imported natural gas as a fuel in industrial, commercial and residential sectors demands our attention.

Continue to monitor the Nuclear Waste Policy Act of 1982, particularly as it pertains to transportation of waste across Nebraska. Now is the time to ask the questions that will frame the program in the short 15 years in which a system that must last for millenia will be designed. The Nebraska Energy Office should be the primary agency for liaison with other states and with the federal government in this effort.

Thanking all Nebraskan's for the opportunity to work for them, I am

Yours Truly,



**Kandra Hahn,  
Nebraska Energy Office  
Director 1985**

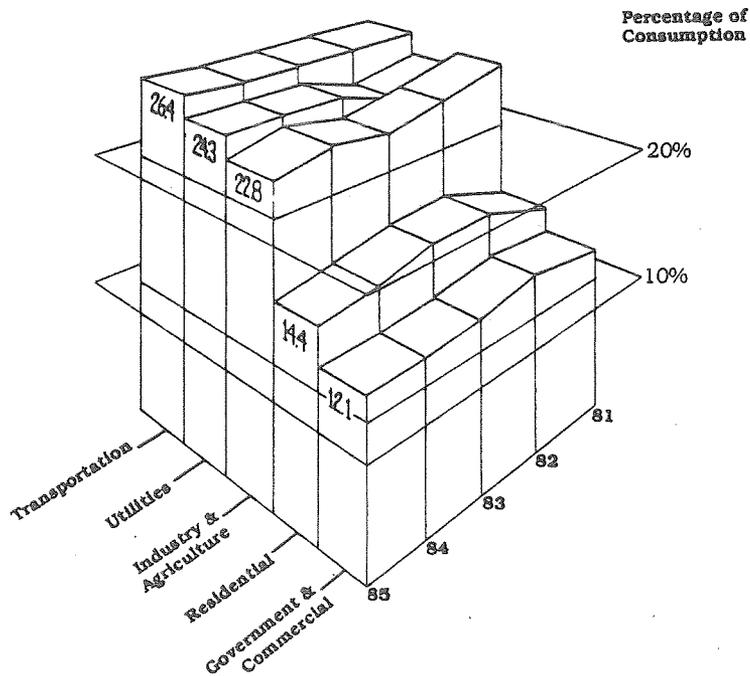
# ENERGY CONSUMPTION 1981-1985

Nebraska's energy consumers are divided into five sectors. The illustration below shows each sector and its percentage of consumption for the years 1981 to 1985.

The five main energy consumers of 1985 and their percentage of consumption are:

Transportation. . . . .	26.4
Utilities. . . . .	24.3
Industrial/Agriculture. . . . .	22.8
Residential. . . . .	14.4
Government/Commercial. . . . .	12.1

**Nebraska Energy  
Consumption by  
Sector  
1981 - 1985**



*Each Year's Sectors  
Combined  
Equal 100%*

# NEBRASKA'S ENERGY RESOURCES

## Energy Imports

Nebraskans imported 90 percent of their energy needs in 1985 in the form of coal, petroleum, and natural gas. Nebraskans spent approximately \$3 billion to meet their energy needs in 1985.

## Coal

Nebraskans imported 100 percent of their coal requirements during 1985. These coal supplies, chiefly from Wyoming, were used to generate electricity for all of Nebraska's energy consumers.

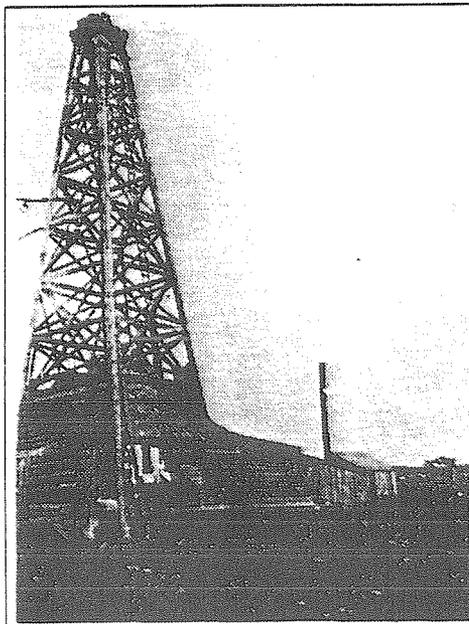
## Petroleum

Nebraskans imported 81.7 percent of their petroleum needs in 1985. However, all petroleum actually used in the state was imported since there are no state refineries and all crude production is exported to refineries outside Nebraska.

## Natural Gas

In 1985, Nebraskans imported 98.6 percent of their natural gas needs. These imports, totaling 123 billion cubic feet, were provided through two major pipelines operated by Northern Natural Gas Company and K-N Energy. Residential gas service came through five major service companies: Minnegasco; K-N Energy; Peoples Natural Gas, which was sold to Utilicorp United Inc. of Kansas City in December 1985; Northwestern Public Service Company; and the Metropolitan Utilities District.

Nebraska produced 1.74 million cubic feet of natural gas in 1985, most of which is consumed in the state.



*Richardson County  
Oil Well - 1915*

# INDIGENOUS RESOURCES

Nature has blessed Nebraska with very few conventional energy resources. Thus, most of the state's energy is imported. The volume of imports and the absence of plentiful indigenous resources of conventional types of energy underscore the value of energy efficiency as a resource. Energy saved represents energy that Nebraskans won't have to import or remove from reserve. Efficiency can therefore be considered a significant indigenous resource.

**Current supplies of native reserves stand at:**

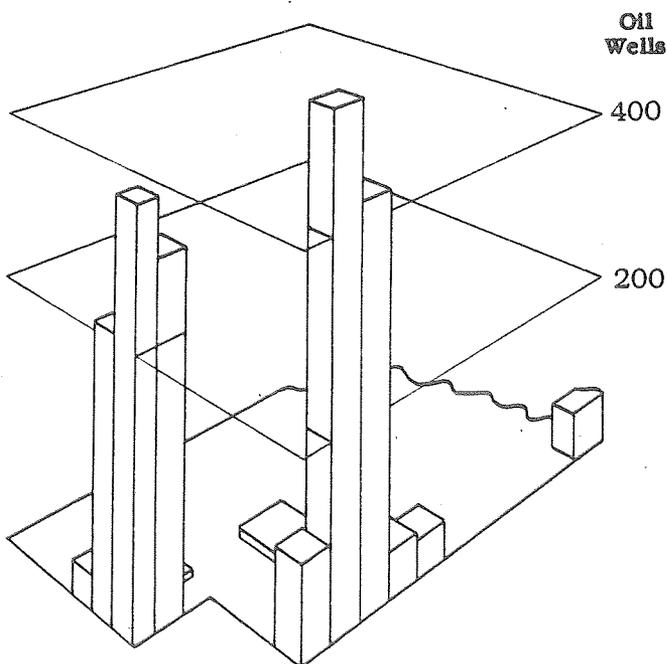
Petroleum. . . . . 44 million barrels  
 Natural Gas. . . . . Unavailable;  
                   Nebraska's reserves are calculated with those of  
                   surrounding states  
 Hydroelectricity. . . . . 184.8 megawatts

**Efficiency. . . . . 25.9 million barrels of oil.**  
**Energy efficiency actions by Nebraskans**  
**saved the state 22 percent of projected**  
**energy requirements for 1985.**

## PETROLEUM

Only a fraction of the petroleum that underlies the state is considered economically recoverable at present. There are currently 2,077 producing wells in Nebraska; they are heavily concentrated in Richardson, Cheyenne, Kimball, Banner, Morrill, Scottsbluff, Hitchcock, and Red Willow counties. From a peak of 25 million barrels in 1962, production has dropped to 6,942,502 barrels during the period January 1985 to December 1985.

**Producing Oil  
 Wells in Nebraska  
 1985**



*Oil Producing  
 Counties in Nebraska  
 and Number of Oil  
 Wells in Each County.*

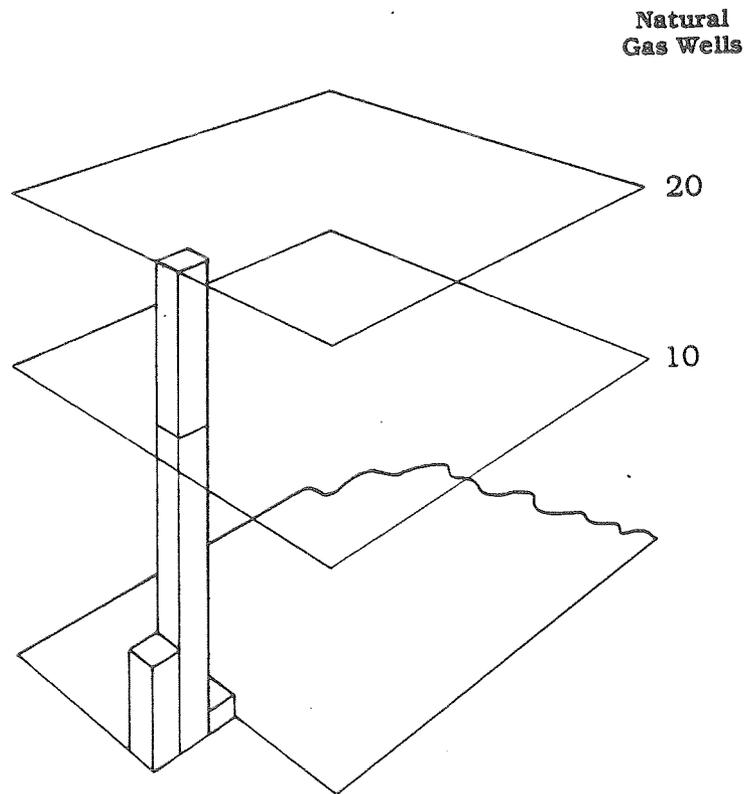
# NATURAL GAS

There are 23 active natural gas wells in the state--19 in Cheyenne, three in Kimball, and one in Deuel counties. These wells produced 1.74 million MCF (million cubic feet) of gas in 1985.

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## Producing Natural Gas Wells in Nebraska 1985

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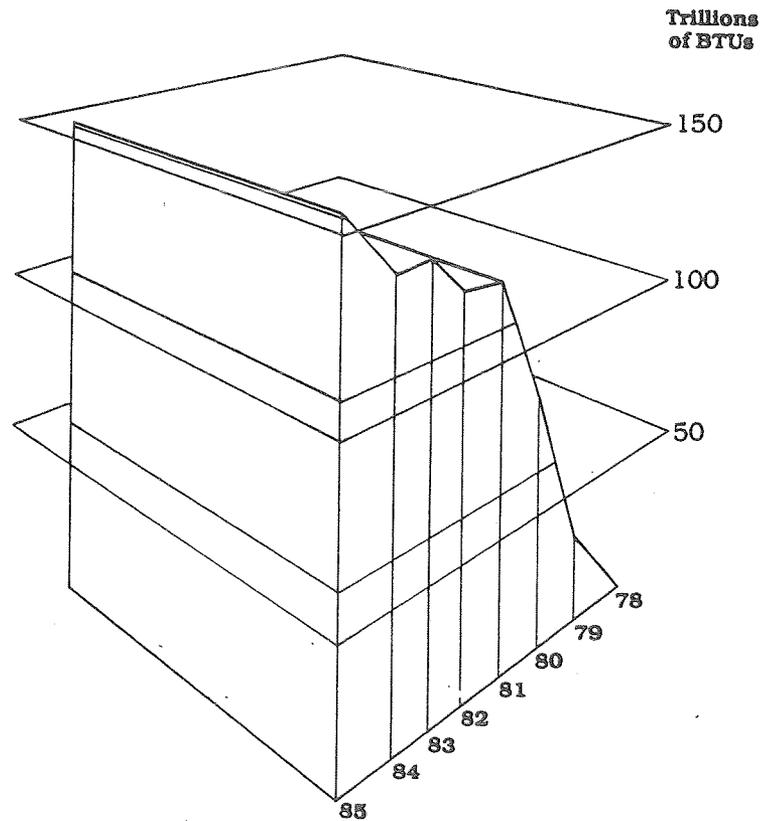


*Counties in Nebraska With Natural Gas Wells and Number of Wells in Each County*

# ENERGY EFFICIENCY

Since the early 1970's, Nebraska's homes, businesses and institutions have reduced their energy use by 22 percent from projected levels by implementing energy efficiency improvements. As a result, 1985 energy consumption was an estimated 513.5 trillion BTU's, 150.2 trillion BTU's below projected use based on 1970's consumption patterns.

**Energy Saved  
Through Efficiency  
in Trillions of  
BTU's  
1978 - 1985**



# ELECTRICAL GENERATION

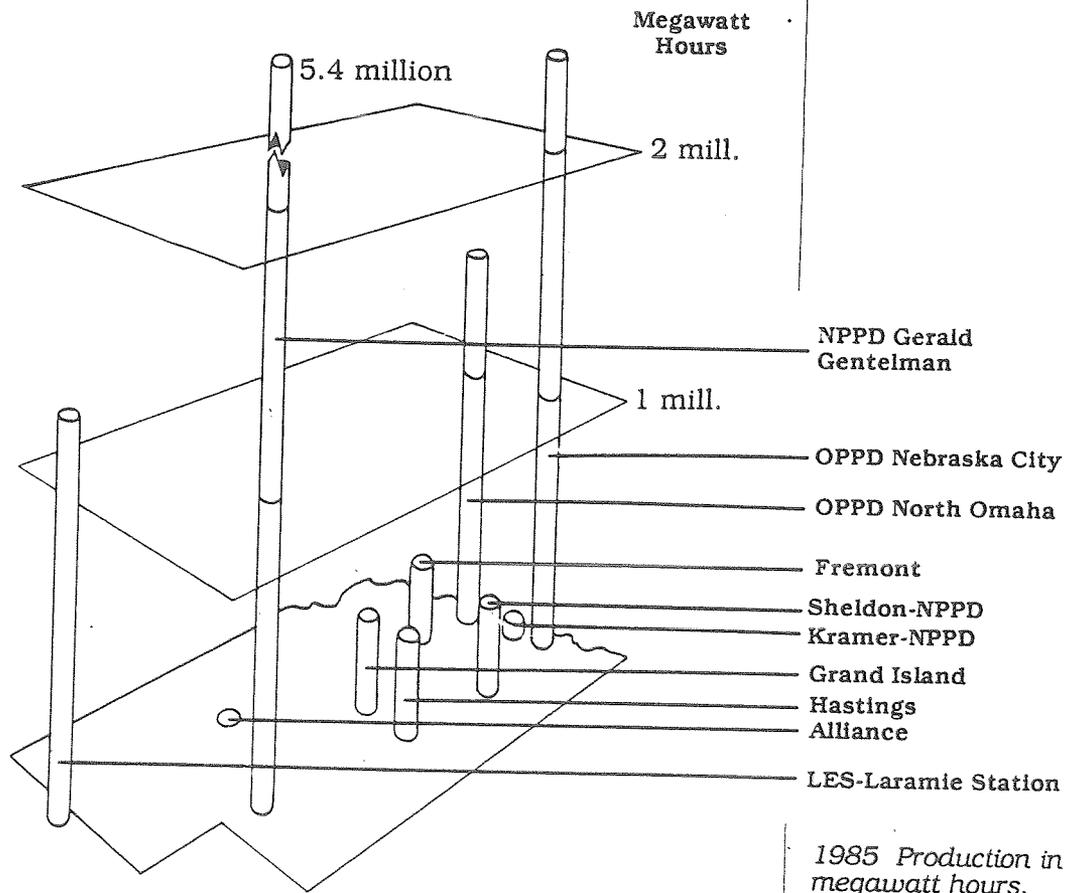
## COAL

Coal generation is the single largest source of electricity in Nebraska. There are 10 coal-fired electrical generating stations owned wholly or in part by Nebraska utilities. These plants have a production capacity of 3,403.8 megawatts.

Coal Plant	1985 Production (in megawatt hours) <sup>1</sup>
Alliance	241,296
Fremont	259,864
Grand Island	156,322
Hastings	5,474,240
NPPD - Gerald Gentelman	67,719
Kramer	263,466
Sheldon	2,343,048
OPPD - Nebraska City	1,426,427
North Omaha	1,246,062
LES - Laramie Station	1,246,062

<sup>1</sup> according to *Electric Power Quarterly*.  
<sup>2</sup> figure represents 13.13% of facility owned by LES.

Coal Fired  
 Electrical  
 Generating  
 Stations in  
 Nebraska 1985

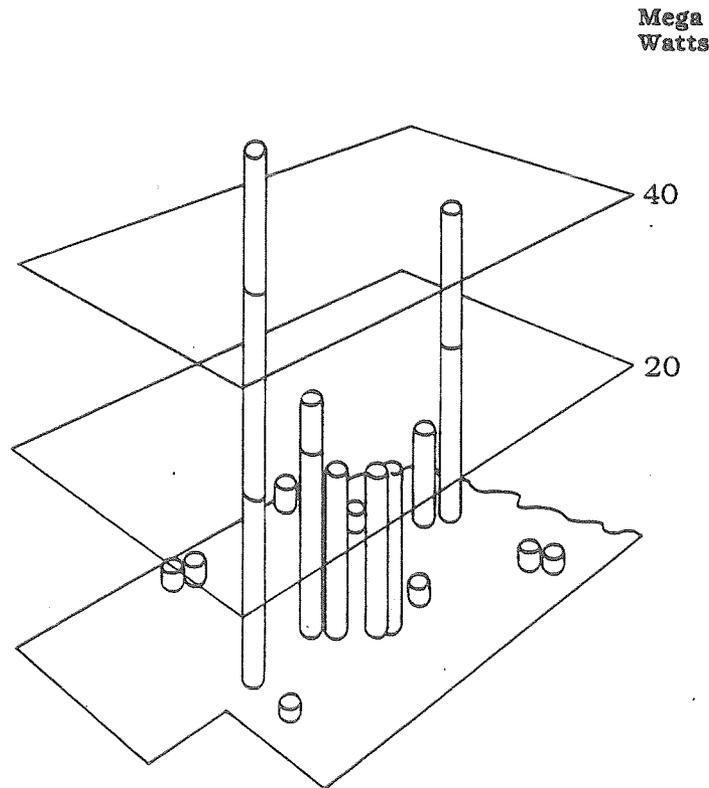


## HYDROELECTRICITY

Nebraska has 15 operating hydroelectric plants, of which seven are rated at five megawatts or higher. The state's total hydroelectric capacity is 184.80 megawatts. The table and chart below illustrate the locations of each plant, and each plants' output in megawatts:

Location/Plant	Output in Megawatts
Brady/Jeffrey Canyon.....	18.0
Lexington/Johnson #1.....	18.0
Lexington/Johnson #2.....	18.0
Imperial/Imperial.....	0.1
Blue Springs/Blue Springs.....	0.4
Columbus/Columbus.....	39.0
Valentine/Ft. Niobrara.....	1.0
Kearney/Kearney.....	1.5
Valentine/Minnechaduzza.....	0.2
Monroe/Monroe.....	7.8
NorthPlatte/NorthPlatte.....	26.0
Spencer/Spencer.....	2.6
Barneston/Barneston.....	2.0
Spalding/Spalding.....	0.2
Ogallala/Kingsley.....	50.0

**Hydro Electric  
Generating  
Stations in  
Nebraska 1985**



*Hydro Electric  
Generating Capacity  
in Megawatts*

## NUCLEAR

Nuclear generation is the second largest source of electricity in the state. Nebraska has two nuclear power stations: the Cooper Nuclear Station near Brownsville and the Fort Calhoun Station near Omaha. The Nebraska Public Power District operates the Cooper facility, with its capacity of 836 megawatts; the Omaha Public Power District operates the 502 megawatt capacity facility at Fort Calhoun.

## ELECTRICAL TRANSMISSION AND MARKETING

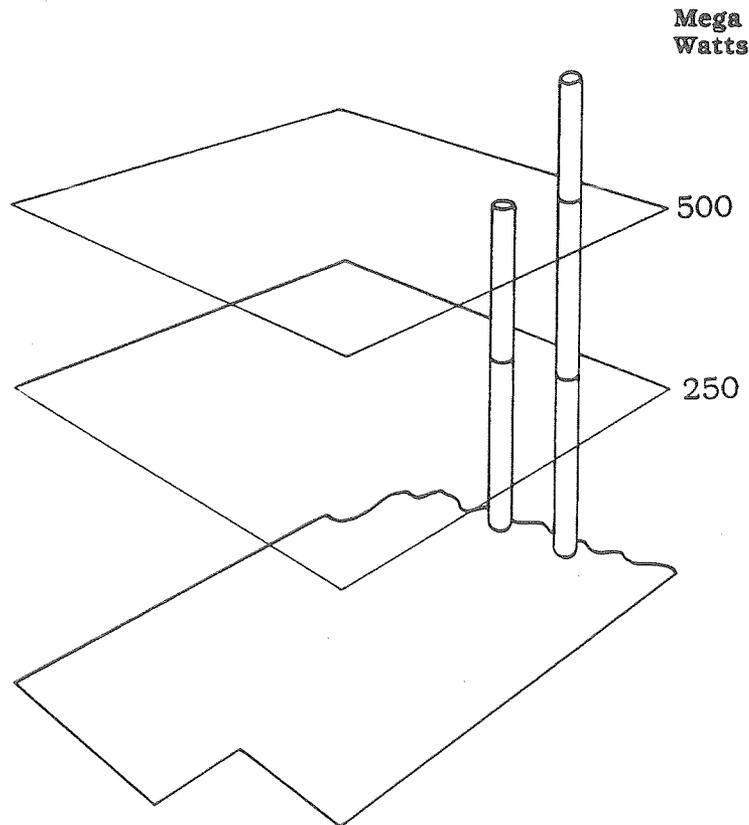
Two major electrical utilities serve the state. They are the Omaha Public Power District and the Nebraska Public Power District. In addition, two out-of-state sources market electricity to Nebraska's rural power districts. They are the Western Area Power Administration, a federal 15-state marketing authority, and Tri-State Generation and Transmission, which serves Colorado, Wyoming, and Nebraska.

Nebraska is also connected with the Mid-Continent Area Power Pool, a consortium of seven states that buy and sell power among themselves as needed.

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**Nuclear Powered  
Electrical  
Generating  
Stations in  
Nebraska and  
Generating  
Capacity 1985**

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*Nuclear Generating  
Capacity in Megawatts*

# ENERGY USE

Energy use in the state in 1985 decreased by 9.5 trillion BTU's. This represents a 1.8% decrease over 1984. There are five principal types of energy consumed in the state, as demonstrated in the illustration.

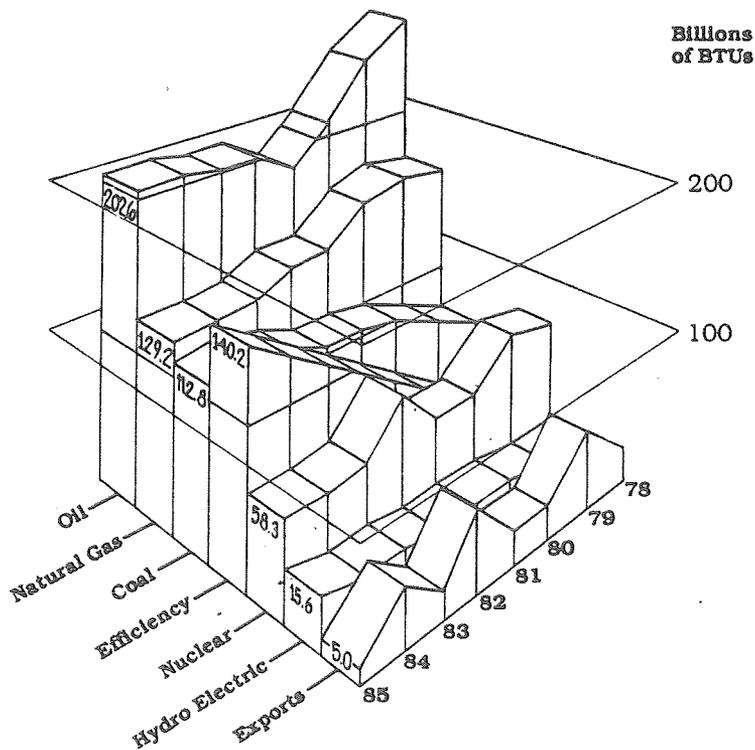
Efficiency and exports are added in order to show how they effect the system. In both the table and the chart, efficiency is a valuable resource, while energy exports, primarily net interstate sales of electricity, do little to reverse the flow of imported energy.

## Energy Use 1985, in billions of BTU's:

Oil.....	202.6
Efficiency (billions of BTU's saved).....	140.2
Natural Gas.....	129.2
Coal.....	112.8
Nuclear.....	58.3
Hydroelectricity.....	15.6
Exports*.....	5.0

\* (net interstate sales of electricity; billions of BTU's exported).

## Primary Energy Use in Nebraska 1978 - 1985



Each Year's Types of Energy Combined Equal 100%

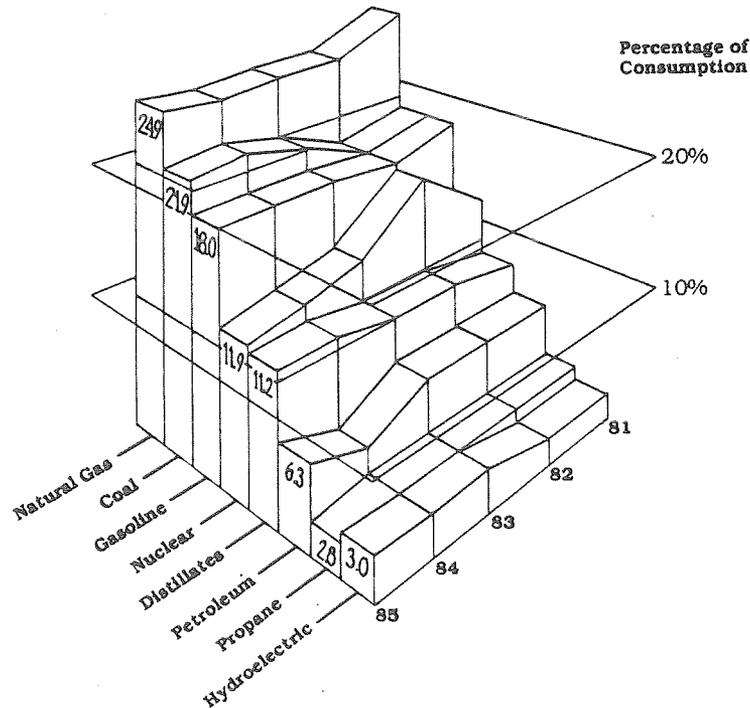
# FUEL TYPES

Nebraskans used eight major types of fuel during 1985. The graph below identifies each fuel type and the percentage of total fuel consumption it represents for the years 1981-1985.

The eight fuel types and their percentage of total energy consumption during 1985 were:

Natural Gas.....	24.9
Coal.....	21.9
Gasoline.....	18.0
Distillates.....	11.9
Nuclear.....	11.2
Petroleum (other).....	6.3
Hydroelectricity.....	3.0
Propane.....	2.8

## Nebraska Energy Use by Fuel Type 1981 - 1985



*Each Year's Types of Energy Combined Equal 100%*

# STRATEGIC CONSERVATION DIVISION

## Nebraska Community Energy Management Program

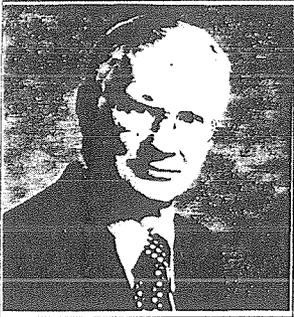
During the past three years, eleven Nebraska communities and one neighborhood have decided to tap the economic development potential of energy efficiency by becoming partners with the Energy Office in an effort called the Nebraska Community Energy Management Program.

The Community Energy Management Program gives communities a chance to make strategic choices about their future through a local planning and action process.

After setting broad goals for the community's future, participants evaluate their energy use and establish goals and action plans which maintain or improve the local economy's health. Energy efficiency and local decision-making are the focus of the program, which is funded with federal and oil overcharge funds.

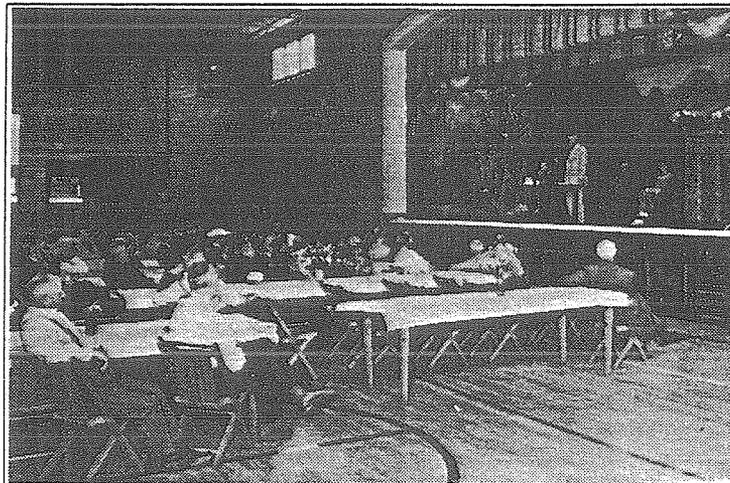
Based on a survey of eight communities, the total 1985 investment in the Community Energy Management Program, including administration and local and other funds was \$1,296,766. This investment is expected to create or preserve the equivalent of 80 full time jobs lasting one year and generate \$5.9 million in economic activity over a ten-year period.

In 1985, Verdigre and the Omaha Benson neighborhood joined Burwell, Fremont, Allen, South Sioux City, Wood River, Schuyler, West Point, Ravenna, Bayard, and Lexington on the roll of Energy Management communities. On subsequent pages are highlights from those communities.



"But this program said to the people, we care, we are trying to help."

Senator Elroy Hefner



The Townsend Club,  
Grand Island,  
Nebraska, 1934.

# Allen

The townspeople of Allen held their Town Energy Meeting in December, 1984, and chose four goals. Those and the resulting actions are:

## GOAL 1: Weatherize the Firehall Buildings

Three new insulated doors were installed on the building which houses the firetrucks. On the building which houses the rescue vehicles and the community meeting place, two insulated overhead doors were installed as well as ceiling and sidewall insulation.

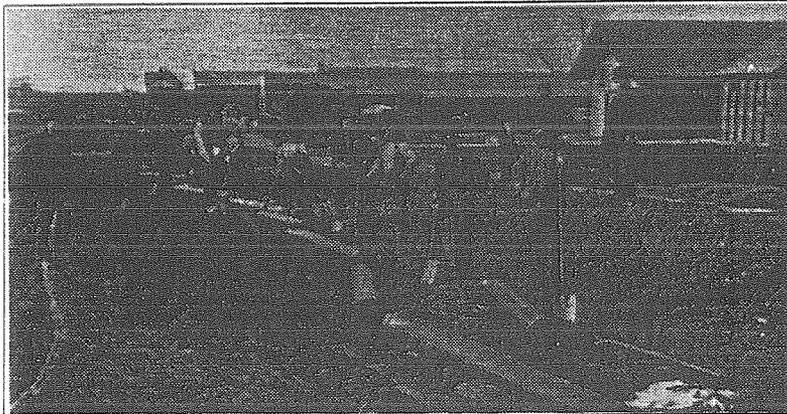
The annual energy savings expected from the increased R-value of the doors (R1.5 to R7.35) is equivalent to 800 gallons of propane. The energy savings from the ceiling and wall insulation is expected to be equivalent to 1,330 gallons of propane. Altogether, energy cost savings to the community is estimated at \$1,309 annually.

## GOAL 2: Establish a Mini-Bus Service

Funding is being sought to purchase a mini-bus for an appropriate scale mass transit system. The goal of the mini-bus service is to reduce energy consumed for transportation.

## GOAL 3: Continue Energy Improvements in the Allen School

A cooperative effort between the Allen Energy Committee and the Allen School Board resulted in Allen receiving \$14,540 from the Energy Office School Weatherization Program to finance energy efficiency improvements.

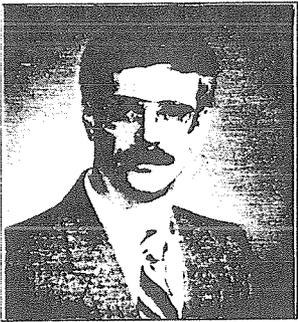


*Laying Water Pipes  
in Dixon County,  
circa 1900.*

## GOAL 4: Weatherize Homes

To date, 37 homes have had energy audits, 20 homeowners have used Energy Bank financing to weatherize their homes, and six homeowners have made energy efficiency improvements on their own. If all the Energy Bank money is expended, energy savings could reach 875 billion btus.

A total of \$60,300 was invested in Allen to realize an annual energy savings of \$5,950. This represents a 9.8% rate of return. The investment will pay for itself in about seven years.



"This state-local partnership has blossomed into localized economic development work that all involved can be proud of."

*Senator Gerald Conway*

# BAYARD

Bayard was one of the first communities to participate in the Community Energy Management Program. As such, the planning and implementation process differs from other communities. No definite goals were set, yet Bayard's residents achieved the following:

The town firehall was weatherized as a demonstration project. An open house was held to illustrate the benefits of commercial energy conservation.

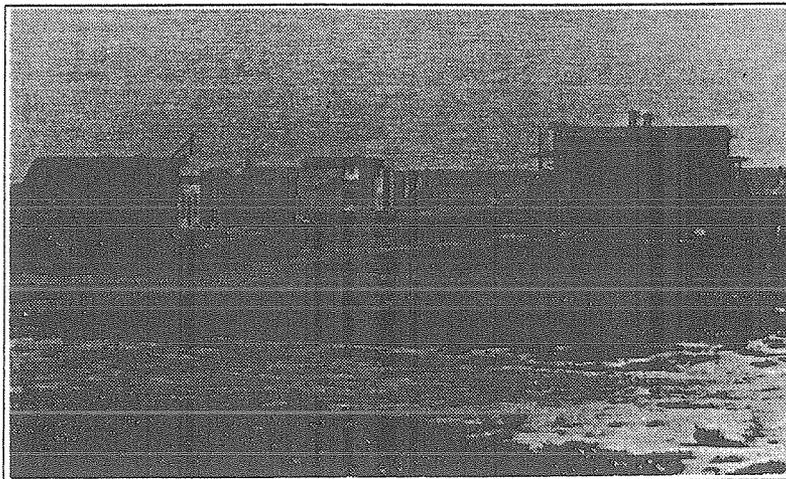
The Energy Office Gas Saver Van tested public and county fleet vehicles at the firehall open house.

A part-time energy coordinator was hired to promote energy conservation and the Weatherize America campaign.



**"This state and locally shared project will provide benefits for many years to come."**

*Senator Dennis Baack*



*Main Street Bayard, Nebraska, Morrill County, 1900.*

# BENSON

The Omaha Benson neighborhood held its Energy Meeting on April 27, 1985. Benson became the first urban-oriented Community Energy Management Program participant. Citizens selected four goals:

## **Goal 1: Promote Home Energy Efficiency Improvements**

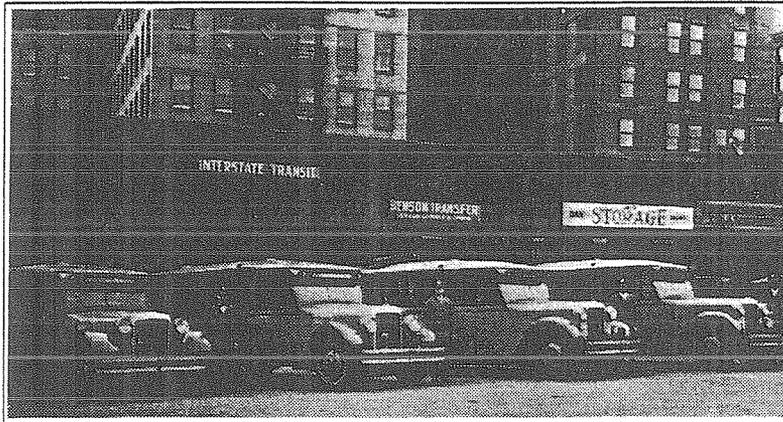
The local energy committee, BERT (Benson Energy Resource Team), held an energy chautauqua on September 8, 1985. The event featured booths, lectures, financing information and hands-on demonstrations of energy efficiency home improvements.

BERT is expected to incorporate in 1986, in preparation for establishment of a revolving loan program to assist householders in financing energy efficiency home improvements.



"By using energy as a development tool, we are building ourselves a better (economic) future."

*Senator Vard Johnson*



*Bus Depot, Benson Transfer Company about 1925.*

## **Goal 2: Work with Utilities**

BERT plans to open channels of communication with local utilities to increase conservation efforts by the utilities. The project awaits BERT's incorporation.

## **Goal 3: Resolve Transportation Concerns**

BERT contacted Omaha's Transportation Department with a list of energy wasting traffic problems in the Benson neighborhood. City officials eventually adjusted traffic signals for more efficient pedestrian and motor traffic through Greater Benson's business district.

## **Goal 4: Promote Education about Trees**

The Benson Energy Chautauqua featured a presentation on the "Plant Two Trees for Energy" project which explained the energy efficiency potential available from appropriately planted trees; future presentations are planned.

# BURWELL

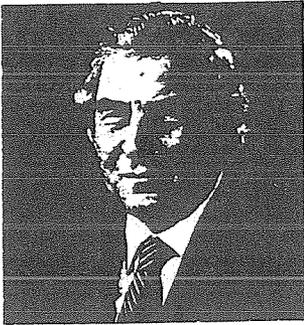
The townspeople of Burwell held their Town Meeting on March 19, 1985, and chose four goals for the community. The results:

## Goal 1: Explore Alternative Sources of Energy

The Burwell Public Housing Authority building was chosen for a Solar Demonstration Project. Three solar panels have been installed on the building and the next step is an open house to demonstrate the benefits of solar energy. The project is expected to save \$55 annually.

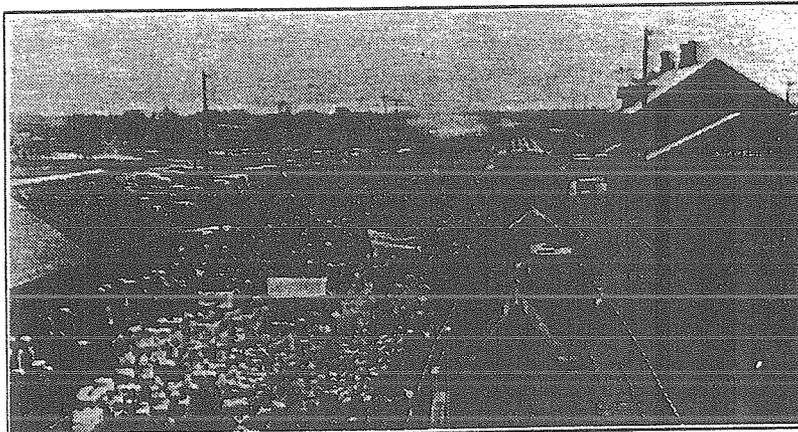
## Goal 2: Weatherize 75% of Local Households

- Burwell townspeople set a goal to audit 75% of the homes in the county. Home energy auditors were hired and trained. Audits are in progress and the Burwell Energy Bank was granted \$21,250 to finance home energy efficiency improvements. Local citizens can now schedule an audit and make use of Energy Bank financing to complete audit recommendations. Energy Bank investments are projected to save Burwell over \$2,500 annually.



"This cooperative effort and partnership between levels of government allows the local people to make long range plans that will benefit future generations".

Senator Carson  
Rogers



## Goal 3: Energy Education

An energy column in the local newspaper covers energy issues. Interested individuals are invited to submit their articles and opinions for publication.

The Burwell Energy Committee sponsored an energy booth at the Garfield County Fair in 1985. They distributed information concerning energy audits and other activities, and followed up on requests for more information about efficiency improvements.

## Goal 4: Reduce Energy Costs in Public Buildings

Insulated draperies were hung in the Burwell Senior Home, ceiling fans were installed, and the showerheads were retrofitted with new water-saving models. These improvements are expected to save \$400 annually.

A total of \$119,196 was invested in Burwell to receive an annual savings of \$10,967, for a 9% return on the investment.

*The Profitable Pork  
Special Railroad  
Train at Burwell,  
Nebraska, Garfield  
County,  
October 8, 1929.*

# FREMONT

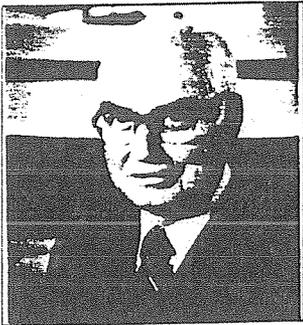
Using information gathered at a Town Meeting in September, 1983, the Fremont Energy Commission was formed and selected the following goals:

**Goal 1: Introduce energy education materials in the community by June 30, 1984**

A public information campaign, including an Energy Fair and distribution of information on energy management, was implemented. Local radio and press coverage was used to increase public awareness and support for energy efficiency activities in Fremont.

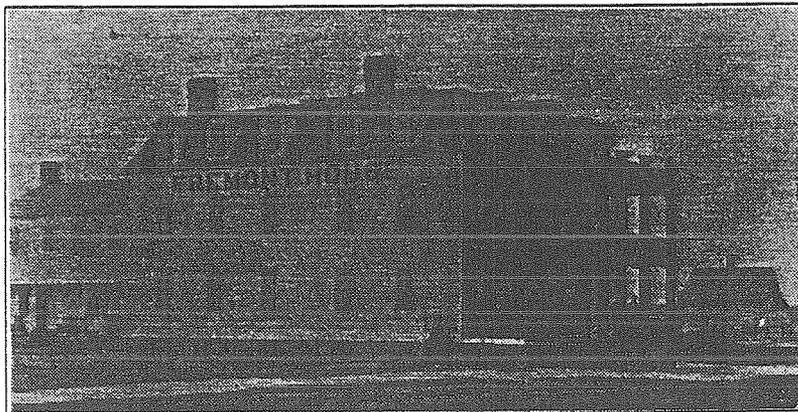
**Goal 2: Conduct Audits on 25% of Local Homes by January 1, 1989**

50% of all homes audited are targeted for energy efficiency improvements. An Energy Bank was established and capitalized with \$83,000 from the Solar Energy and Energy Conservation Bank. Later, \$220,000 in Community Development Block Grant monies was added. Audits are underway, and the investment in the Energy Bank is projected to save \$49,000 annually. This represents a 15.9% return on investment for Fremont.



**"The Community Energy Management Program successfully achieves America's goal to accent conservation and the efficient use of energy."**

*Senator Lowell C. Johnson*



*Fremont House,  
Fremont, Nebraska,  
late 1880s.*

**Other Efficiency Achievements:**

- Improvements in the city street lighting system will save \$6,166 annually.
- Improvements to the city's operational facilities will save \$15,670 annually.
- The purchase of a more efficient city bus and work on the city transit system will save \$4,100 annually.
- Additional efficiency improvements on city schools will save \$22,001 annually.
- The installation of a computerized energy management system at the Dodge County Memorial Hospital will save \$45,000 annually.

A total of \$619,241 was invested in Fremont. Annual dollar savings stand at \$120,000 and represent a 19.3% rate of return for the community.

Seventy-five people attended the Lexington Town Energy Meeting on October 7, 1983. At that time, citizens chose to work towards the following goals:

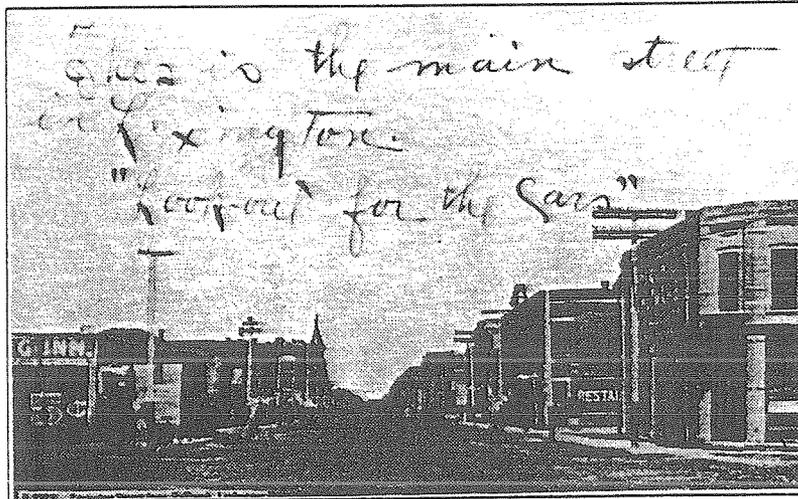
**Goal 1: Conduct audits on 50% of Homes and Businesses**

Lexington planned to achieve this goal by January 1, 1989, and targeted improvements on 50% of those buildings audited as a secondary goal. An Energy Bank was capitalized with \$103,600 in support funds from the Solar Energy and Energy Conservation Bank, and in November, an additional \$200,000 in Community Development Block Grants was added. Audits are underway, and over 60 homeowners have used Energy Bank financing to make energy efficient home improvements.



"I believe the people in Lexington would tell you that this program helped us sustain jobs."

*Senator William E. Barrett*



*Post Card, Lexington Street from the Railroad, Lexington, Nebraska, Dawson County, circa 1910.*

**Goal 2: Reduce Summer 1984 Electric Peak by 5%**

A load management system aided by the rental of an infrared camera to target problem areas led to a decrease in electrical peak of 8.5%. The project saved the Lexington community \$52,000 and provided excellent educational and promotional benefits to make citizens aware of their energy consumption.

**Goal 3: Introduce Energy Education Materials into the Community by May 31, 1984:**

An energy education program was presented to junior and senior high students and teachers were provided with energy education materials. In November, over 1200 4th, 5th, and 6th graders from Dawson County attended an Energy Expo.

Energy related literature was distributed at booths at the July 4th celebration and at the Dawson County Fair.

An Energy Resource Shelf was added to the Lexington Public Library, and media coverage of the event was provided by local radio stations and the newspaper.

# RAVENNA

The Ravenna community held a Town Meeting on January 5, 1985 and selected three goals:

## Goal 1: Support the Trees for Energy Program

The Ravenna Trees for Energy Program program received trees to plant during the spring. Resources for this project included assistance from the Omaha World-Herald and the Game and Parks commission. Contact was also made with the State Forester and the Natural Resource District to provide additional help for the ongoing effort.

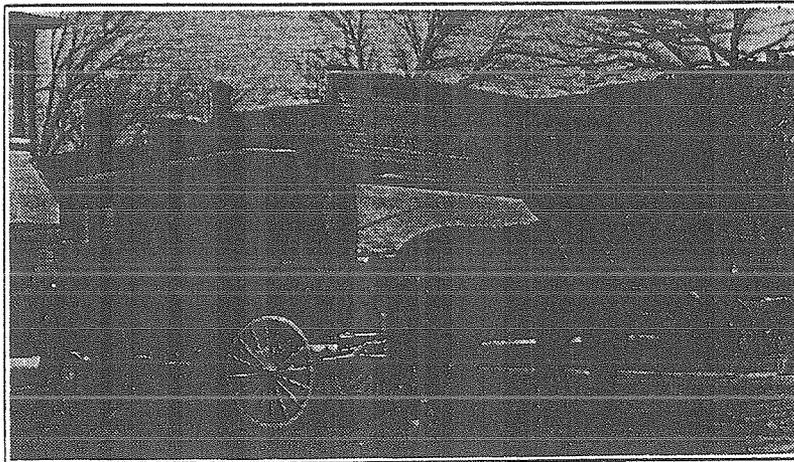
## Goal 2: Weatherize Homes

Two hundred of Ravenna's homes were scheduled for walk-through energy efficiency audits. Auditors were trained, and the possibility of creating a local energy bank was explored.



"It's not something done today and you see the benefits tomorrow."

*Senator Ray E. Lundy*



## Goal 3: Create Small Service Business Development Project

This project is designed to create new jobs and industry in Ravenna. An initial marketing survey was completed and contacts were made with local service agencies. Plans for additional marketing research have been developed.

A total of \$34,476 was invested in Ravenna to receive an annual energy savings of \$1,300. This represents a 4% rate of return on the investment.

*Hinman's Livery and Hack Line, Ravenna, Nebraska, circa 1910.*

# SCHUYLER

On January 19, 1985, Schuyler held its Town Meeting. The citizens chose seven goals, four of which involve the Nebraska Energy Office:

## **Goal 1: Demonstrate the Potential of Solar Energy**

A series of six workshops were scheduled to demonstrate the benefits and potential of solar energy.

## **Goal 2: Weatherize 25% of local homes**

159 free home energy audits have been requested or completed, and \$88,000 in available Energy Bank financing and local funds have been disbursed for home energy efficiency improvements.

## **Goal 3: Commercial/Industrial Weatherization**

12 Schuyler businesses requested energy audits; the Schuyler Energy Commission is exploring financing for energy efficiency improvements in local businesses.

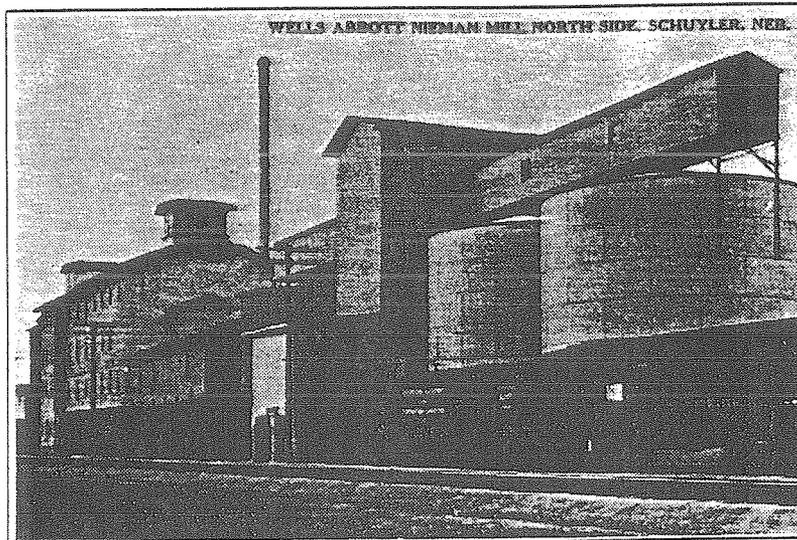
## **Goal 4: Recycling to Save Energy**

Schuyler received an \$11,000 grant from the Department of Environmental Control for compaction and recycling equipment at the city landfill.



"It's been very beneficial to the community."

*Senator Harry B. Chronister*



Schuyler's investments in energy efficiency will generate \$299,485 in income for the area over the next 10 years, and result in the creation or retention of the equivalent of five full-time jobs lasting one year during 1985. \$34,080 was invested from the Energy Bank and \$10,436 invested in school weatherization.

A total of \$179,356 was invested in Schuyler to receive an annual energy savings of \$19,600. This represents a 10.9% rate of return for the city of Schuyler.

*Wells Abbott Nieman Mill north side, Schuyler, Nebraska, Colfax County, circa 1920.*

# SOUTH SIOUX CITY

The Town Meeting was held during October 1984; citizens of South Sioux City selected four goals to work towards:

## **Goal 1: Weatherize 20% of the 83 Rental Units Receiving Energy Audits**

30% of the units audited installed some type of energy efficiency improvement. Dollar savings are projected at \$4,604 annually, for a 24.36% rate of return.

An Energy Bank was established to finance energy improvements. Seventeen rental units were weatherized using Energy Bank financing; five units were financed by the owners.

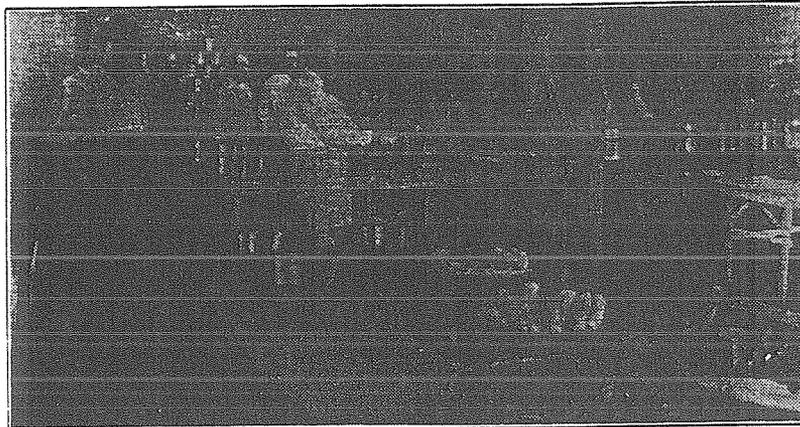
## **Goal 2: Establish Financing for Residential Energy Improvements**

The Energy Bank was created and \$58,000 in funding obtained from the Department of Housing and Urban Development. Preliminary results show an annual dollar savings of \$16,720 for this investment, which translates into an 11.87% return on investment.



"The jobs, dollars and positive attitudes which the Nebraska Energy Office has created and preserved in South Sioux City...are precious commodities."

*Senator Gerald Conway*



## **Goal 3: Audit Local Business and Commercial Establishments**

Fifty commercial energy audits were completed by the Nebraska Public Power District and Iowa Public Service.

Some businesses have installed recommended improvements on their own; efforts will continue to secure financing for other improvements.

## **Goal 4: Energy Education**

An Energy Fair was held in April, 1985. Twenty-one vendors displayed energy products and provided information.

Energy-related books were purchased for the resource sections of the public and high school libraries.

A total of \$192,175 was invested in South Sioux City to receive an 11.1% rate of return. The projects completed will save the townspeople \$21,000 annually and should pay for themselves in 7.39 years.

*South Sioux City  
Canning Center,  
Depression Era Work  
Project, 1934.*

# VERDIGRE

The Jobs Saving Energy Program was born in Verdigre out of the Nebraska Department of Labor's Farmers in Transition Program. On April 2, 1985, the community held a Strategic Choices town meeting. The townspeople decided on the following goals:

## Goal 1: Promote Existing Business

The town firehall was weatherized to demonstrate mainstreet commercial conservation potential. The total cost of the project was \$16,991; energy cost savings are projected to pay for the efficiency improvements in 2.7 years.

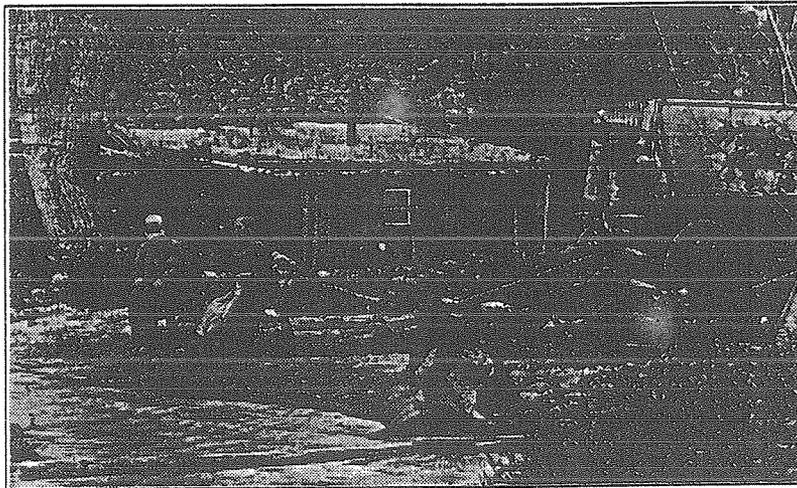
An application for funding of a commercial energy conservation project was prepared for submission to the Department of Economic Development. Verdigre subsequently received a \$258,000 Community Development Block Grant targeted for commercial energy conservation projects.

A promotional brochure to encourage business investment and tourism is in the final stages of production.



"It showed Verdigre that someone did care, and then you went to work..."

Senator Elroy M. Hefner



Pioneer Home and Family, Knox County, Nebraska, late 1800s.

## Goal 2: Provide Flood Control/Hydroelectric Power via a Dam

After careful consideration of the area and the opportunities available, the Energy Office and the townspeople concluded that this goal held little promise for the community.

## Goal 3: Promote Food Processing and the Farm Economy

Transportation costs can contribute up to half the cost of produce. So to capture the energy savings and keep income in the community, a Farmers' Market was held. A contractor was hired to further assist the village in developing direct producer-to-consumer marketing systems.

# WEST POINT

West Point's Town Meeting was held on March 19, 1985. Citizens have been working on three goals chosen during the Town Meeting:

## Goal 1: Energy Awareness through Education

Energy education and an energy expo have been provided to 597 Cuming County 4th, 5th, and 6th graders. Their teachers have been given tips on integrating energy economics into the school curriculum.

An Energy Fair was held October 24, 1985, at the city auditorium. Two hundred and fifty individuals attended 24 different seminars on energy efficiency.

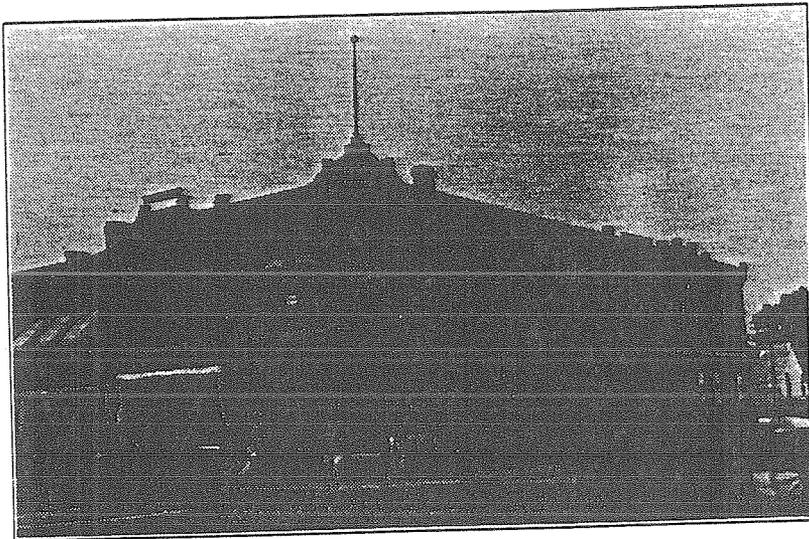
The Cuming County Fair featured a booth with energy related literature provided by the West Point Energy Committee. An estimated 200-300 people picked up literature and discussed energy concerns.

The Cuming County Cooperative Extension Service now offers an energy workshop for homemakers as well as 4-H awards for energy related speeches and projects.



"It's not a one-shot deal where interest wanes. It's well received and it's still doing good."

Senator Harry B. Chronister



First National Bank on Main Street in West Point, Nebraska, 1880 or earlier.

## Goal 2: Recycling to Save Energy

Collection of paper materials and oil for recycling continues at the city landfill, with sales of the material collected expected to save 500 million Btus for West Point. The material sold earned \$357 thus far and saved the \$200-300 cost of burial.

## Goal 3: Utility Rate Input

The "Beat the Peak" public information campaign and installation of additional load control switches on home air conditioners reduced the summer peak in 1985 by 777 kilowatts per hour, a reduction which should save the city about \$35,000 in wholesale power costs.

A total of \$60,702 was invested in West Point to receive an annual savings of \$12,700. West Point has realized a 21% rate of return on its investment.

# WOOD RIVER

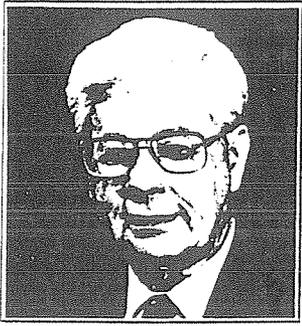
The wood River Town Meeting was held on January 26, 1985. At this meeting, the townspeople chose five goals to work toward:

## **Goal 1: Promote Water Conservation Through Water Use Education**

Research was conducted on water rates and consumption for the area. Information on saving water was made available and further publicity planned for the spring.

## **Goal 2: Promote Home Weatherization**

The Wood River Energy Bank received \$21,500 to finance home energy efficiency improvements. Citizens were trained to perform simple energy audits, and an open house held in October encouraged homeowner participation in the program.



"Of course, the benefits will be in the future."

*Senator Ray E. Lundy*



## **Goal 3: Develop a Wood Co-op**

The Town Energy Committee conducted preliminary research and interested parties are planning a market analysis for promoting the use of wood energy.

## **Goal 4: Develop a Community Windbreak**

Trees were planted at the Good Samaritan Center for a demonstration project. Information is available on the energy efficiency potential of wind breaks and plans for additional planting are underway.

## **Goal 5: Promote Public Building Energy Management**

The Nebraska Public Power District has completed audits of the Fire Hall, City Hall, Sewer Plant, Library, City Garages, and Police Station. The results were presented to the City Council and a Public Building Weatherization Plan will be developed.

A total of \$31,320 was invested in Wood River to receive an annual energy savings of \$2,100. This represents a 7% rate of return for Wood River.

*Wood River, Nebraska. Photo by Solomon Butcher, circa 1910.*

# ELECTRICAL LOAD MANAGEMENT

In 1983, the Nebraska Energy Office granted \$50,000 of petroleum violation escrow funds to the Nebraska Municipal Power Pool to establish a Load Management Resource Fund. The Resource fund provides interest-free financing to eligible communities to help defray the upfront costs of utility load management systems. Load management systems assist communities in reducing peak power demand and thus save energy dollars.

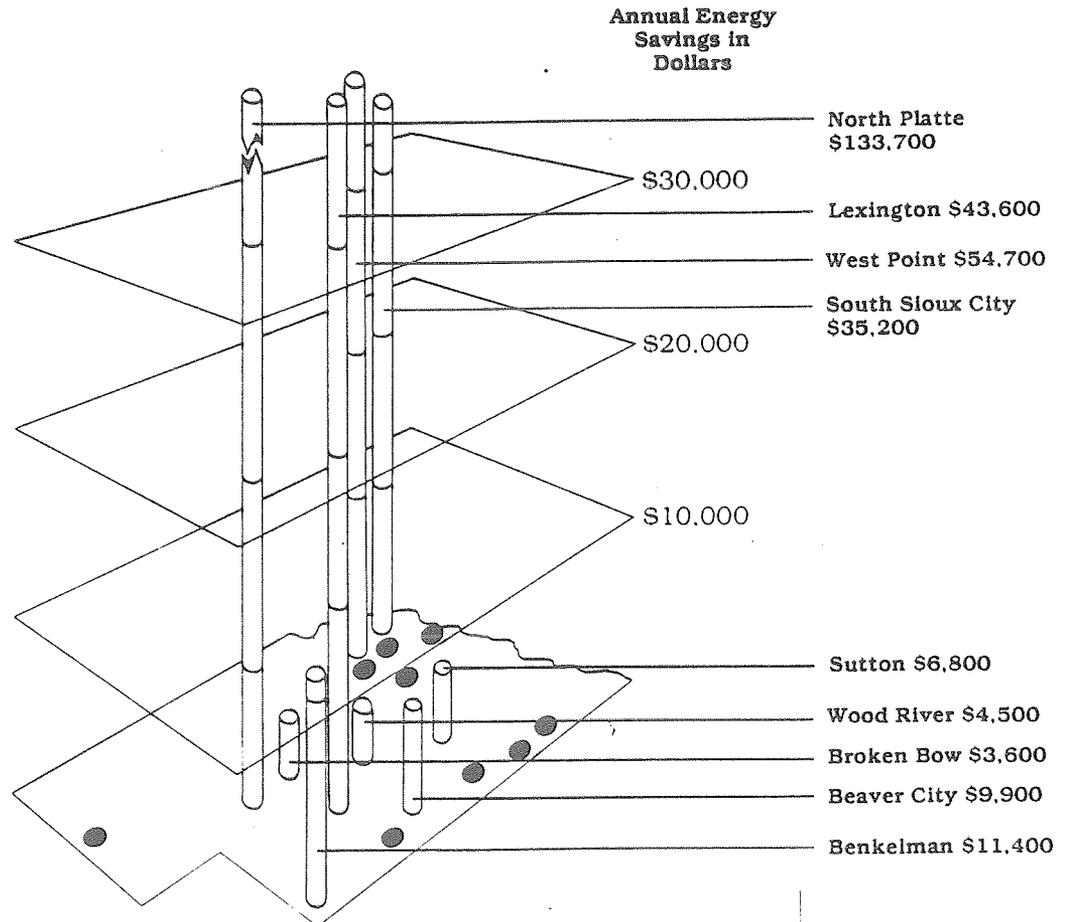
Beaver City, South Sioux City, West Point, and Wood River were the original program participants. Participants in 1985 were Benkelman, Broken Bow, Lexington, North Platte, and Sutton. In 1985, an additional \$17,500 was authorized to administer funds, conduct feasibility studies, and evaluate the program. Feasibility studies were conducted in Pierce, Nelson, Madison, Wakefield, Gering, Fairbury, Decatur, Campbell, and Arapahoe.

From 1983-85, wholesale power costs for the nine participating communities resulted in an estimated savings of \$538,000. The communities invested a total of \$344,500 for their load management systems. The Load Management Resource Fund provided financing totalling \$103,500 to help defray initial system costs. Five of the load management systems that have been installed have generated enough savings to completely repay the cost of the systems; every dollar saved by load management in these communities now goes to hold down rates and finance other energy efficiency projects.

## Communities Participating in the Load Management Program and Savings in 1985

● Communities Which Conducted Feasibility Studies

○ Communities which have purchased Load Management equipment



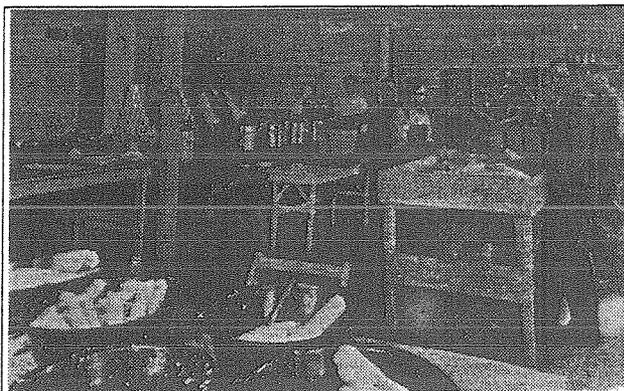
## FEDERALLY MANDATED PROJECTS

In accordance with the requirements of the Energy Policy and Conservation Act of 1975, the Energy Office must undertake specific efforts to incorporate activities in the areas of procurement, vanpooling/carpooling, lighting and thermal standards, and right turn on red.

### Lighting and Thermal Standards

A brochure on improving the energy efficiency of community street and park lighting has been finalized and awaits distribution.

A brochure on building energy codes is in draft stages, and will be ready for distribution in mid-1986.



### Car and Vanpooling

A brochure on transportation is in the writing stages; it will outline the benefits of using energy management tools related to transportation in the community.

### Procurement

This brochure, currently in the writing phase, will present procurement guidelines for energy efficient purchasing by government and private citizens.

### Right Turn on Red

Nebraska has been in compliance with this mandate since 1980.

## ENERGY STUDIES

In 1984, the Research Division of the Energy Office, under contract with the U.S. Department of Energy, completed the *Regional Economic Indicators Analysis*. This document identifies the economic impact of conventional energy consumption patterns as compared with investments in energy efficiency. In 1985, this report, along with information from the previously published *Energy and Economic Development: Nebraska's Balance of Trade* study was used to create the "Report to Nebraska Business Leaders." This report details fundamental changes occurring within the economy, outlines the role energy consumption has played and will play in these changes, and describes the opportunities for and benefits of increased efficiencies.

South Sioux City  
Federal Work Project  
Canning Center 1934

# ENERGY EDUCATION

In 1985, the Nebraska Energy Office awarded a \$30,000 grant to the Nebraska Council on Economic Education to develop and implement an energy education program. The Council used the grant to finance its Office of Energy and Economic Education. The office provides energy education instructional materials, workshops, and other support services to teachers in Nebraska. The office focused primarily on community energy and economic activities that help students create an "Energy Classroom" within the school and/or the community. Students from kindergarten through senior high school learn how to apply basic economic concepts to community energy issues. Students also become involved in energy work for their community. 1985 highlights included:

Schuyler, Burwell, Wood River, Ravenna, and West Point, all Nebraska Community Energy Management Program communities, used the Energy and Education Program.

Schools in West Point, Wood River, Ravenna, and Sargent decided to participate in the "Energy and Economic Education" program in 1986.



The Office of Energy and Economic Education promoted its services to teachers in several ways. Six hundred and fifty teachers were contacted through 34 presentations; 1360 teachers were contacted through exhibits and brochures. Five hundred and ten teachers requested over 1600 pieces of cost-free material; 32 requested 143 pieces of audiovisual materials.

The Office printed and distributed a brochure describing its services.

The Office distributed 1086 copies of curriculum materials; the Energy and Economics Curriculum Guide for Senior High was reprinted.

Work continued on creating new brochures and developing the energy and education network

## PLANT TWO TREES FOR ENERGY

Governor Bob Kerrey created the "Plant Two Trees for Energy" Program in 1983, and directed that \$50,000 in

*Classroom Setting-  
Hall County,  
Nebraska, 1910.*

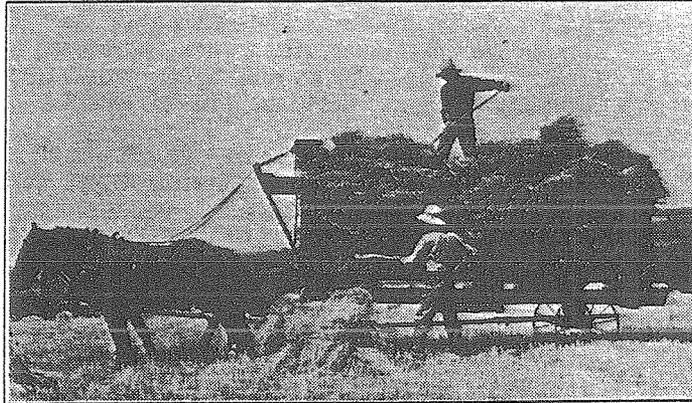
oil overcharge funds be used by the Energy Office to support the program.

"Plant Two Trees" encourages Nebraskans to realize greater energy efficiency by strategically planting trees. In 1985, \$34,483 invested in the program yielded:

An educational exhibit on tree planting for energy was viewed by over 25,000 attendees at the Nebraska State Fair. The display demonstrated the energy saving potential of strategic tree planting for shade and windbreak purposes.

"Conserve Energy Naturally," a multi-media presentation, was produced and viewed across the state.

The "Plant Two Trees" program was the catalyst for the Nebraska Statewide Arboretum to develop a grant process to support community conservation plantings. The Arboretum received a \$1,000,000 grant from the Kiewit foundation for this project. Funds are matched on a dollar for dollar basis by communities involved in the project.



#### **AGRICULTURE ENERGY CONSERVATION PROJECT**

On July 18, 1983, Governor Bob Kerrey announced an expanded energy efficiency education program which gave rise to the five-year Agricultural Energy Conservation Project. The State of Nebraska entered into a partnership with the University of Nebraska-Lincoln Cooperative Extension Service designed to encourage resource efficiency in energy, water, and soil through education. Implemented in December 1983, the project has been financed by a variety of sources, including:

- Nebraska oil overcharge funds \$500,000
- University of Nebraska Foundation \$500,000
- Interest appreciation \$100,000
- University of Nebraska-Lincoln \$367,815

In 1985, \$244,154 was invested in the Conservation Project's three areas of emphasis:

#### **Conservation Tillage**

Conservation tillage is one of the most cost-effective

*Farming in Douglas  
County Nebraska  
July 25, 1927.*

means of controlling erosion. Wayne, Thurston, Burt, Washington, Johnson, Saline, and Gage are the seven counties involved in the conservation tillage component of the Conservation Project. During 1985, 64 cooperators in three target areas within these counties were involved in demonstration plots. A tillage practices attitude survey was developed and mailed to 500 producers in the target areas. Survey results will be used to evaluate tillage practices and problems experienced by producers as they adopt the method.

### **Ecofallow**

The ecofallow component of the Conservation Project is being carried out on winter wheat crop rotations in Cheyenne, Garden, Deuel, Keith, Perkins, Chase, and Lincoln counties. Farmers are urged to use corn, sorghum, or millet in rotation with their wheat; ten cooperators are contributing to the ecofallow portion of the project.

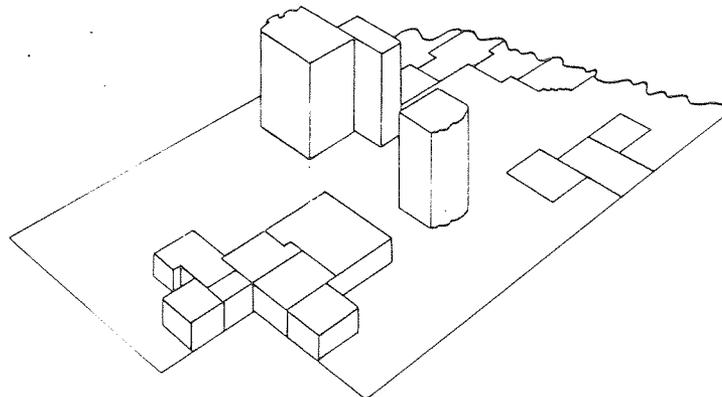
### **Irrigation Water Management**

The Irrigation Water Management component is designed to improve irrigation management practices through on-farm demonstrations, field tours, workshops, newsletters, individual consultations, and literature.

This portion of the project is being carried out in Buffalo, Holt, and Antelope counties. During 1985, two irrigation tours were conducted in Buffalo county and eight demonstrations were held on pumping plant evaluation in Holt and Antelope counties. A newsletter was also mailed to 280 irrigation operators.

### **Ag Energy Conservation Project 1983-1985**

This project overall saved 457,250 gallons of diesel fuel equivalent annually and saved \$365,800 (assuming 80¢ diesel) annually.



*Conservation Tillage*



*Ecofallow*

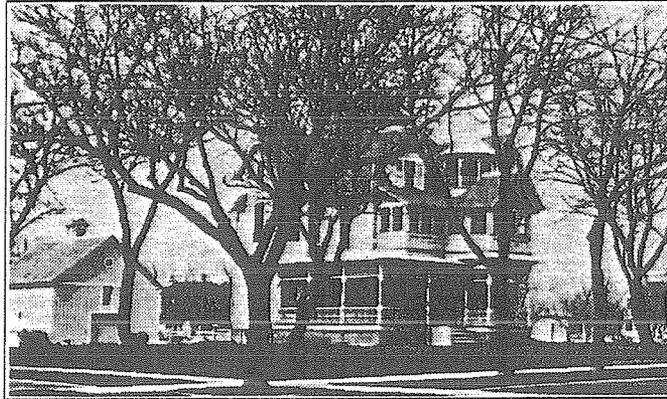


*Irrigation Water Management*



# WEATHERIZATION DIVISION

In 1985, the Weatherization Division continued to administer federal programs to weatherize schools, hospitals, and homes. The Weatherization Division is composed of the Institutional Conservation Program and the Weatherization Assistance Program, which includes discretionary funding from the Low Income Home Energy Assistance Program.



## Weatherization Assistance Program

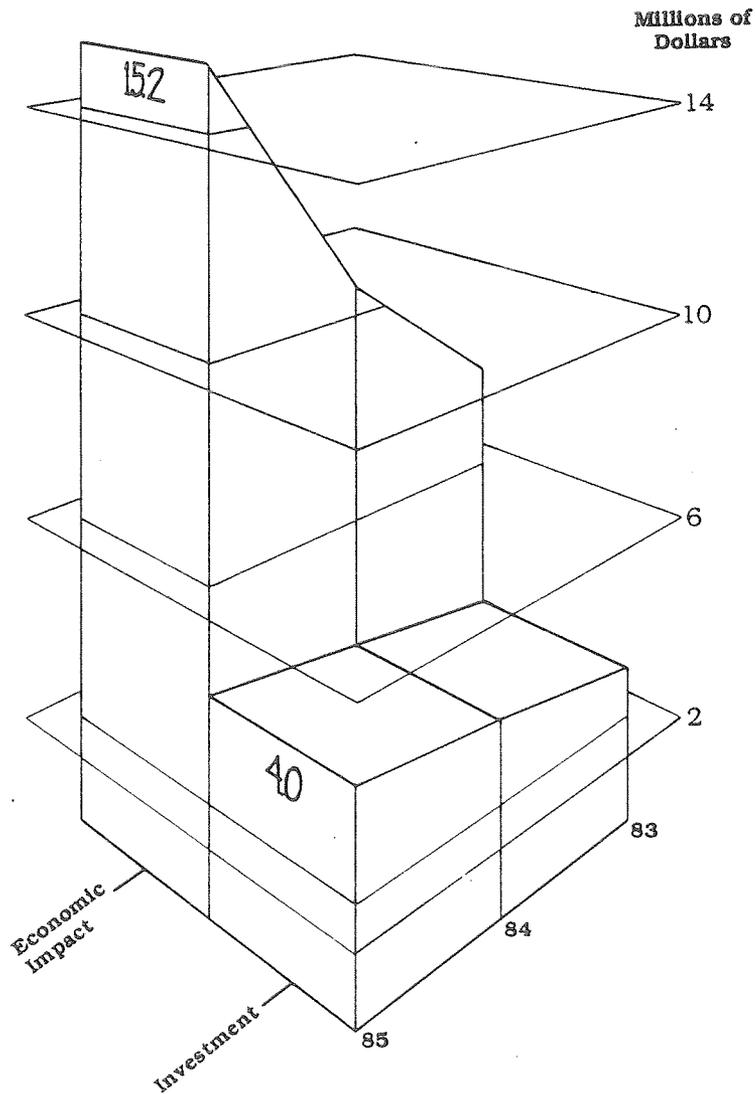
In 1985, a total of 2,638 homes in the state were weatherized at a cost of \$3,761,397 under the Weatherization Assistance Program. Federal funding for the program is supplied by the Department of Energy and the Low Income Home Energy Assistance Program, funded through the Nebraska Department of Social Services. During 1985, \$2,317,221 came through the Department of Energy while \$1,423,430 came through the Low Income Home Energy Assistance Program. Energy efficiency improvements made through the program saved Nebraskans \$324,000 in avoided energy costs. Nebraska's total 1985 investment in weatherization, including administration, was \$4,079,595. This investment yields an 8% rate of return. It is expected to create or preserve the equivalent of 210 full-time jobs lasting one year and stimulate \$15.2 million in economic activity over the next 10 years.

*Older homes benefit most from energy efficiency improvements.*

### Weatherization Assistance for the Elderly

In 1985, the Weatherization Division continued to establish as a priority serving the senior community of Nebraska with home weatherization financing. A total of 974 senior households, or 37% of the total homes weatherized, were weatherized during 1985 through the Weatherization Assistance Program.

**Weatherization  
Program  
Investments &  
Economic Impact  
1983 - 1985**



### Institutional Conservation Program

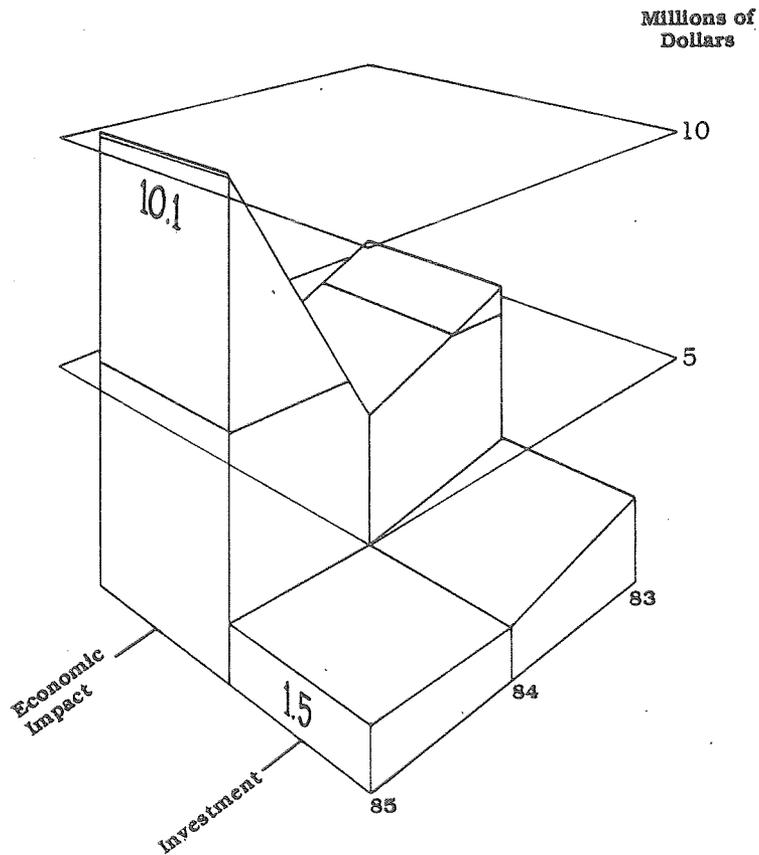
During 1985, the federally-funded Institutional Conservation Program financed energy efficiency projects in private and public schools and hospitals. The program provides grants of up to 50% for either engineering studies or energy conservation projects. In 1985, \$529,714 was awarded for energy conservation projects on 17 buildings; \$42,081 was awarded for technical assistance studies on 21 buildings.

Energy efficiency improvements completed during 1985 have saved Nebraska institutions \$420,734 in avoided energy costs. Nebraska's total investment in the Institutional Conservation Program during 1985 was \$1,575,519, including program administration and local match funds. This investment yields a 27% return. Further, it will create or preserve the equivalent of 150 full-time jobs lasting one year and generate over \$10 million in economic activity over the next 10 years.

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**Institutional  
Conservation  
Program  
Investments  
1983 - 1985**

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Total 1985 Economic Impact \$10.1 million

Total 1985 Investments - \$1.5 million

## FINANCE DIVISION

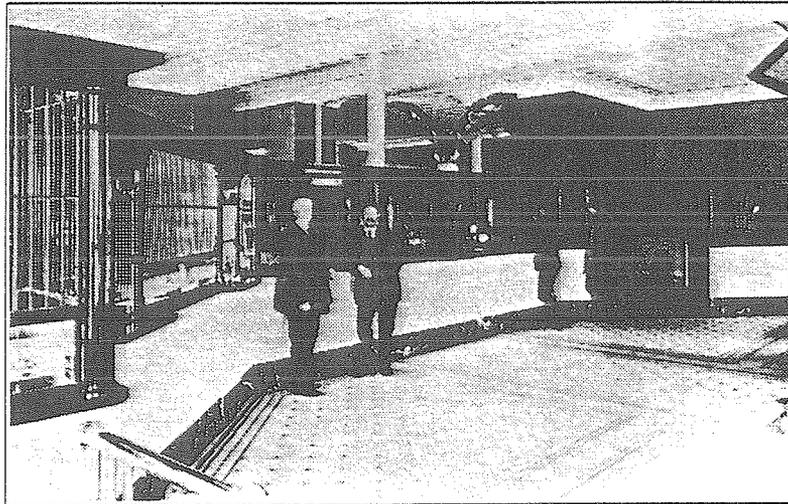
The Finance Division of the Nebraska Energy Office administers both state and federal programs which provide funds for home and school weatherization: The School Weatherization Program and the Energy Bank.

### ENERGY BANK

The Energy Bank provides grants and loan subsidies to low and moderate income owners of one to four unit and multi-family residential buildings in order that they can install cost effective energy efficiency improvements. Investments range from 20 to 50 percent depending on income levels and family size. Loans are conventional home loans at market rates with subsidies reducing the amounts that need to be borrowed. In most cases, the energy savings will cover much of the loan repayment.

In 1985, the Energy Bank received \$419,900 in additional funding from the U.S. Department of Housing and Urban Development. Loan funds for the program may come from Community Development Block Grants distributed by the Department of Economic Development, or from local banks and financial institutions.

During 1985, allocations were made to Allen, Burwell, Fremont, Lincoln, Omaha, Schuyler, South Sioux City, and Wood River out of the funds received in late 1984 and in 1985.



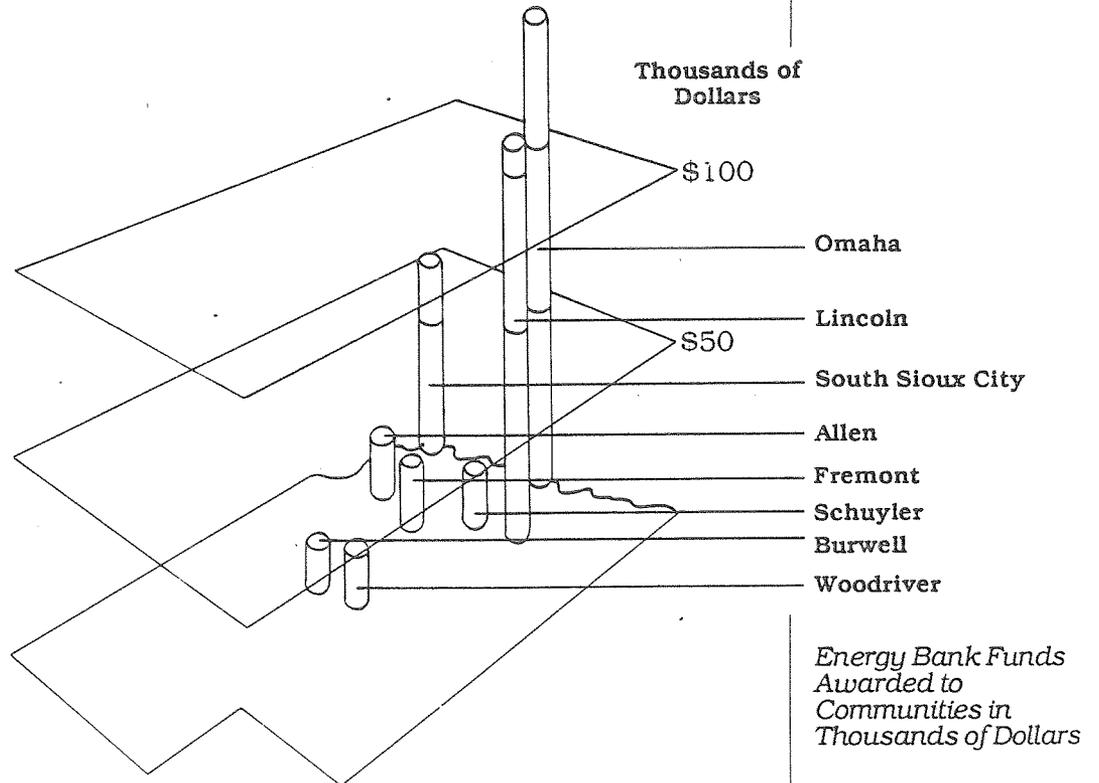
*City National Bank,  
Kearney, Nebraska  
Circa 1900*

A total of \$690,789 in Energy Bank funds was allocated in 1985. Annual energy savings since the program's inception stand at 68,000 MBTUs, or the equivalent of 12,000 barrels of oil saved per day. A total of \$1,309,764 was invested in the Energy Bank program in 1985, including administrative costs and local loan funds. That investment will create or preserve the equivalent of 100 full-time jobs lasting one year and generate approximately \$7 million in economic activity over the next decade.

Community	Energy Bank Grant (1985)	Local Loan Funds Provided (1985)
Allen	\$17,500	\$25,000
Burwell	\$21,250	\$30,000
Fremont	\$35,310	\$189,512
Lincoln	\$164,705	*****
Omaha	\$341,274	\$252,495
Schuyler	\$31,500	\$45,000
South Sioux City	\$58,000	\$15,000
Wood River	\$21,250	\$30,000

\*\*\*\*\* Applicants can secure loans on their own from participating institutions.

**Energy Bank Awards to Nebraska Communities 1985**



# SCHOOL WEATHERIZATION

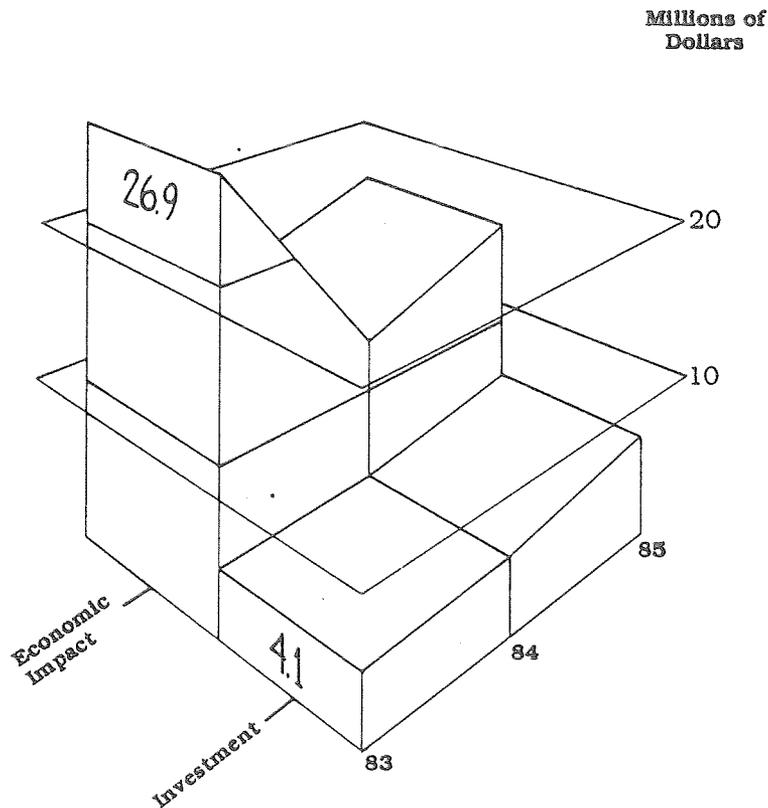
The Nebraska School Weatherization Program promotes energy efficiency in the state's public schools by awarding matching grants for up to 80% of the cost of energy efficiency improvements. The program is financed with receipts from the state's oil and natural gas severance tax. During 1985, the Nebraska Energy Office invested a total of \$4,125,426 for Technical Assistance Studies and Energy Conservation Measure Projects in 31 Nebraska school districts. Prior investments made under the program earned a 19.5% rate of return. This \$6.1 million state and local investment will generate approximately \$26.9 million in economic activity and create or preserve the equivalent of 390 full-time jobs lasting one year over the 10 year period. Nebraska schools saved \$1,045,000 in avoided energy costs.

In 1985, the Legislature reauthorized the School Weatherization Program, but changed it from a grant to a no-interest loan program. Under the grant program, 1,066 matching grants totaling \$17,287,825 were awarded since 1981. The loan program will become operational in 1986.

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**Nebraska School  
Weatherization  
Investments  
1983 - 1985**

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Total Economic  
Impact - \$26.9  
million.

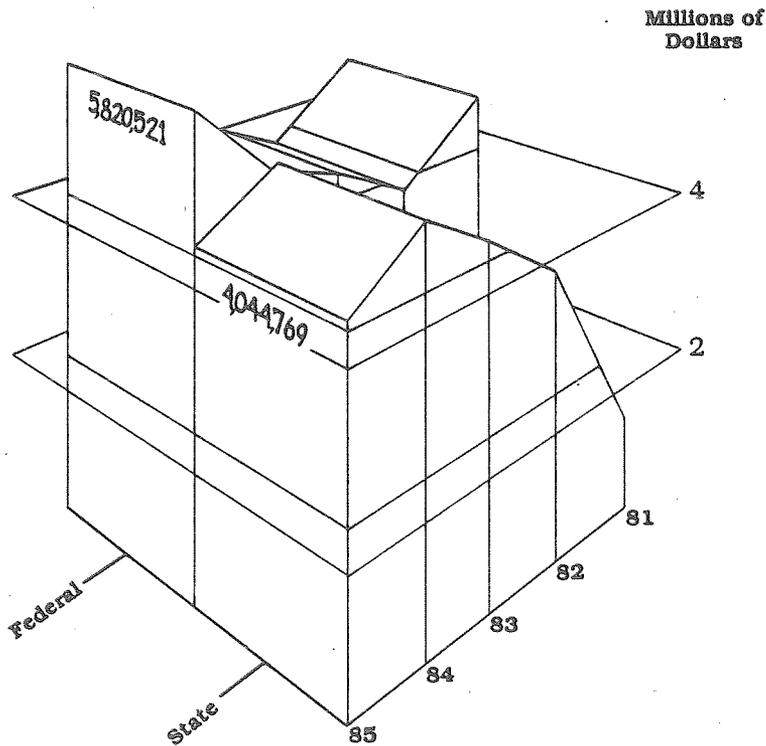
Total 1985  
Investments -  
\$4,125,426

# FINANCIAL REVIEW

## Where the Money Came From:

In 1985, 58% or \$5,820,521 of Energy Office funding came from federal sources. Of this, 80% or \$4,614,178 was used for home weatherization. State funds, approximately 98% of which came from severance tax receipts, accounted for the remaining 42% of the total funding in 1985. No general funds are appropriated for the Nebraska Energy Office. Of state funds, 88% or \$3,613,643 was used to finance public school weatherization.

### Where the Money Came From 1985



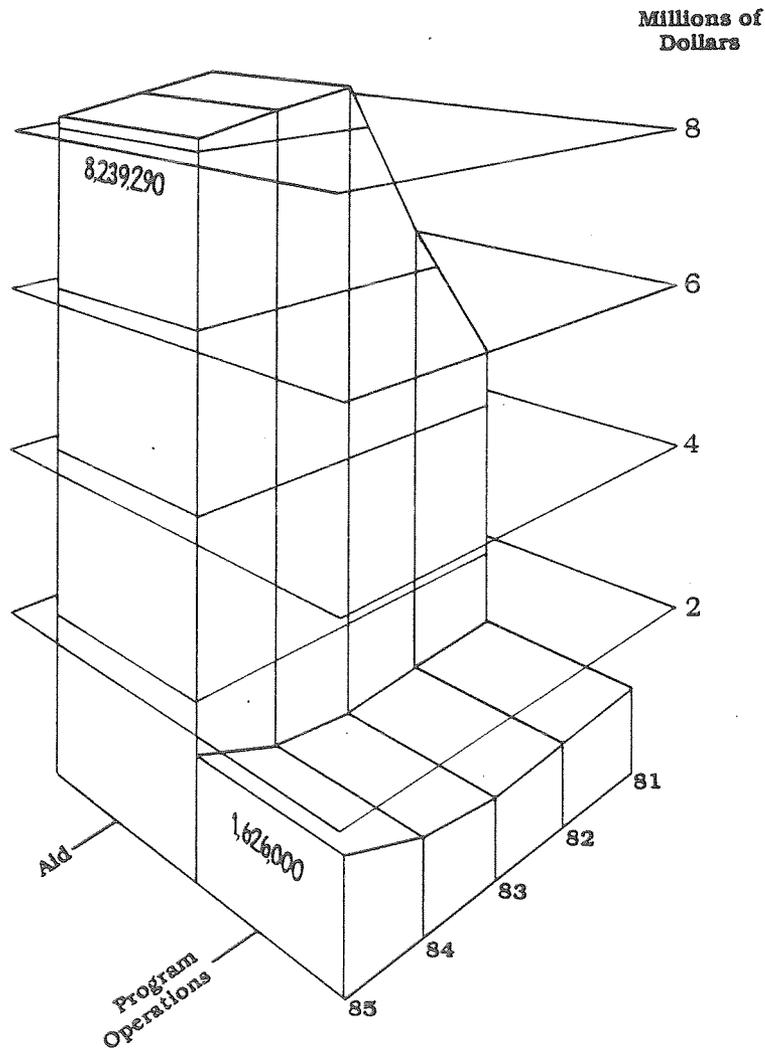
Nebraska Energy Office Funds in Millions of Dollars

**Where the Money Went:**

Money invested by the Energy Office can be divided into two categories: investments in program administration and investments made through the programs. Money invested in program administration can best be described as funds for salaries and administrative expenses. Money invested through the programs is distributed as direct aid and support to targeted areas.

During 1985, 83.52% or \$8,239,290 was invested through the Energy Office as aid. The remaining \$1,626,000 was invested in program support and administrative expenses.

**Where the Money Went 1985**



*Nebraska Energy Office Expenditures in Millions of Dollars*

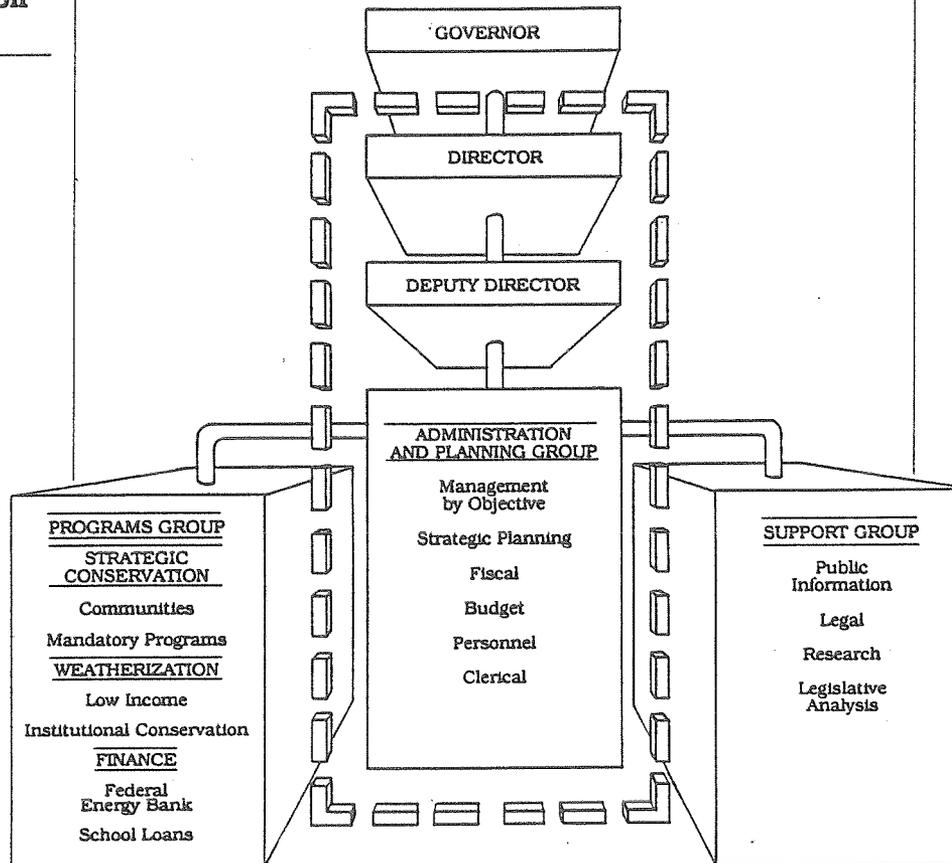
# ORGANIZATION AND OPERATIONS

The Energy Office's functional pattern of organization permits greater flexibility and encourages dynamic, innovative approaches to working in partnership with Nebraskans.

The Energy Office continued to modify its organizational blueprint in 1985. The blueprint features three basic groups: Programs, Administration and Planning, and Support. In 1985, the Direct Grants Division of Programs became the Finance Division. Today, the Finance Division administers the Energy Bank and School Weatherization Programs, which are loan-oriented. The Institutional Conservation Program became a part of the Weatherization Division; both are grants-oriented.

## NEBRASKA ENERGY OFFICE ORGANIZATION

Nebraska Energy  
Office Organization  
1985



**S T A T E   O F   N E B R A S K A**

**NEBRASKA ENERGY OFFICE, BOX 95085, LINCOLN, NEBRASKA 68509 PHONE (402) 471-2867**