nebraska energy office

second quarter report
august 15, 1981

Help Conserve the Good Life of Nebraska

CHARLES THONE
GOVERNOR

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August 15, 1981

The Honorable Charles Thone
Governor of Nebraska
State House
Lincoln, Nebraska 68509

Patrick J. O'Donnell
Clerk of the Legislature
State Capitol, Room 2018
Lincoln, Nebraska 68509

Dear Governor Thone and Clerk O'Donnell:

This Quarterly Report from the Nebraska Energy Office, for the period of April - June, 1981, is submitted in accordance with provisions of Section 81-1606 RSN (1980).

If you have any questions, please contact this office.

Sincerely,

V. B. Balok
Director

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INTRODUCTION

Nebraska's energy future will be the result of policies we now pursue. These policies result from our present perceptions of the future. It is vitally important that our present policies not be "carved in granite" for these perceptions will change as accumulated facts and future happenings require.

We do have energy problems. However, these problems are primarily political and economic.

It is true that the U.S. does not produce as much oil as it once did and that oil is a limited resource. In the U.S. we are in a transition period between easily-found-and-relatively-inexpensive-to-produce oil and hard-to-find-and-costly-to-produce oil. Under the circumstances existing prior to 1973 this would have been a problem, but not of the magnitude we are experiencing today.

The root cause of our energy problems is political and was manifested in the Arab oil embargo of 1973. As a result of the formation of OPEC and its continuing demands for higher prices, the cost of oil has increased 1500% since 1973. This has resulted in a transfer of U.S. dollars on a massive scale. The current net annual oil bill for the U.S. is 77 billion dollars.

Seventy-seven billion dollars is enough money to buy all of Nebraska's marketable crops, all of the livestock production and all of the livestock products. After all of the cattle, hogs, corn and other crops have been purchased, the people who sold us oil would have enough U.S. petro-dollars left over to buy all of Nebraska's 18.6 million acres of agricultural land and buildings at their average market value of $658/acre and still have money left over. Remember, this is only one year's oil bill.

Total U.S. import oil cost	$77,000,000,000
Less receipts for:	
Nebraska crops & livestock	(6,441,600,000)
Nebraska agricultural land	(11,910,000,000)
Balance Remaining	$58,648,400,000

In Nebraska our annual petroleum products bill, excluding fertilizer, is $1.6 billion dollars.

Our annual sales of agricultural products is $6,441,600,000. Our annual gross state product as opposed to the gross national product is $16.5 billion.

It is obvious that our state economy presently runs on oil and oil products. We might be able to continue to pay our oil bill, but only by sacrificing needed capital investments in our state economy.

All other energy costs have also increased as a direct result of the monstrous increase in oil prices, and our economy has suffered still more.

The final straw is the ability of a sudden and severe disruption, for whatever reason, in our supply of OPEC oil, to bring our state economy to a virtual halt.

Our present perceptions of a potentially bleak future require us to change some of our present priorities in order to address more directly our petroleum problems. These changes are not discussed in this quarterly report. They will be included in future reports.

V. B. Balok, Director

1981 ENERGY LEGISLATION

The following energy bills and resolutions were passed by the Nebraska State Legislature in 1981. The Nebraska Energy Office is implementing regulations and procedures and monitoring activities related to this legislation.

LB 50 exempts ridesharing arrangements of up-to-15 people from certain state laws concerning motor carriers and commercial motor vehicles. Ridesharing arrangements are further encouraged by decreasing employer liability for promoting carpooling or vanpooling.

LB 132 permits political subdivisions to join together to form public corporations which could issue tax-exempt bonds which would provide funding to carry out beneficial projects. This bill should help provide financing and operating costs for water distribution and treatment facilities, sewage and solid waste disposal plants, and systems which generate and distribute electricity. Any corporation created for power projects would function under substantially the same laws as public power districts.

LB 151 exempts from taxation the increased value of any real property resulting from the installation of an alternative energy facility such as an active solar system. The property tax exemption will last for a period of five years.

LB 158 requires the Nebraska Energy Office to conduct energy audits of all state buildings prior to December of 1983.

LB 257 raises the severance tax on oil and natural gas from two percent to three percent except on wells producing less than ten barrels of crude oil per day. For fiscal year 1981-82 the revenue generated by the severance tax has been allocated to the University of Nebraska for solar and other renewable energy research, development and extension services; to the Institute of Agricultural and Natural Resources for the Alcohol Injection Equipment Testing and the Alcohol Still Performance Testing programs and to the Nebraska Energy Office for energy conservation purposes and to provide technical assistance in developing alternate sources of energy. The balance of the severance tax revenue will be placed in the School Weatherization Fund which will be used to weatherize public school buildings.

LB 331 requires the Nebraska Gasohol Committee to encourage the development and production of high-protein food products for human consumption which have been derived from distiller's grains. In addition, the Gasohol Committee may award up to $50,000 to the Nebraskan who produces the best high protein food product.

LR 19 calls for a study of the potential health hazards of any uranium mining which might take place in Nebraska. LR 19 has been referred to the Public Health and Welfare Committee.

LR 77 provides for an examination of the conditions and factors influencing uranium mining and the siting of large industrial projects in Nebraska. LB 77 has been assigned to the Public Health and Welfare Committee.

LR 90 calls for a study of the feasibility of creating a state agency which will be responsible for collecting and analyzing data regarding energy costs which are pertinent to the establishment of natural gas rates. LR 90 is the responsibility of the Unicameral's Executive Board.

LR 96 will attempt to broaden the involvement of all interested Nebraskans particularly the members of the Legislature in the development of solutions to Nebraska's energy problems. The LR 96 study will be conducted by the Executive Board.

ENERGY EMERGENCY PLANNING

Section 84-166(4) RSN(1980) states that if the Governor declares a vital resource crisis he or she may delegate any administrative authority vested in him or her to the State Energy Office or any other state agency or its respective director. (LB 954-1980)

The primary emergency planning activity during the second quarter was development of the 1981 Summer Energy Emergency Preparedness Plan. The plan was reviewed by the appropriate state government agencies and approved. It is now on standby status and should an energy emergency arise between now and November 1, 1981, it would serve as the framework of emergency activity by the Nebraska Energy Office.

To further assist the Nebraska Energy Office in preparing for an energy shortfall, Governor Thone activated the private sector Crisis Resource Management Committee. Representatives of various energy industries were asked to serve on the committee during the third quarter of 1980. The committee will review the summer plan and prepare recommendations for the winter 81-82 plan. The following people were appointed and have accepted the responsibility of participating on this advisory panel:

George Watters, Nebraska Petroleum Marketers, Lincoln
Vince Brown, Nebraska Petroleum Council, Lincoln
D. A. Blatchford, Nebraska Public Power District, Columbus
Larry De Roin, Northern Natural Gas Company, Omaha
William Kellstron, Peoples Natural Gas Company, Council Bluffs, Iowa
Clancy Woolman, Cengas, Lincoln
Sam Whiteman, Kansas-Nebraska Natural Gas, Hastings
K. E. Brooks, Nebraska Electric G&T Cooperatives, Columbus
Rex Carpenter, Nebraska Rural Electric Association, Lincoln
Steve Wacker, Nebraska Municipal Power Pool, Lincoln
Bernard Reznicek, Omaha Public Power District, Omaha
Bernie Poppe, Farmland Industries, Lincoln
Dalton Kehlbeck, Champlin Petroleum Company, Columbus
Wylie J. Costlow, Mobil Oil Corporation, Omaha
K. D. Henkens, Amoco Oil Company, Omaha
Rex Osborn, Northern Propane, Grand Island
Scott Brown, Pro Oil Inc., Ogallala
Bill Sapp, Sapp Brothers, Omaha
Bus Whitehead, Whitehead Oil Company, Lincoln

CONSERVATION RESPONSIBILITIES

Section 81-1623(2) RSN(1980) requires that the Nebraska Energy Office to undertake a continuing assessment of the trends in the availability, consumption, and development of all forms of energy. (LB 232-1977)

Section 81-1602(4) RSN(1980) requires that the Nebraska Energy Office recommend to the Governor and the Legislature energy policies and conservation measures for the state and to carry out such measures as are adopted. (LB 232-1977)

Section 81-1602(5) RSN(1980) requires the Nebraska Energy Office to provide for public dissemination of appropriate information on energy, energy sources, and energy conservation. (LB 954-1980)

Section 81-1602(6) RSN(1980) requires the Nebraska Energy Office to accept, expend, or dispense public funds for demonstration projects and other activities related to energy conservation or development. (LB 232-1977)

Section 81-1602(7) RSN(1980) requires the Nebraska Energy Office to study the impact and relationship of state energy policies to national and regional energy policies.
(LB 232-1977)

Section 81-1602(8) RSN(1980) requires the Nebraska Energy Office to actively seek the advice of the citizens of Nebraska regarding energy policies and programs. (LB 232-1977)

Section 81-1602(10) RSN(1980) requires the Nebraska Energy Office to design a state program for conservation of energy. (LB 232-1977)

Section 81-1602(11) RSN(1980) requires the Nebraska Energy Office to provide technical assistance to local subdivisions of government. (LB 954-1980)

Section 81-1602(12) RSN(1980) requires the Nebraska Energy Office to provide technical assistance to private persons desiring information on energy conservation techniques and the use of renewable energy technologies. (LB 954-1980)

CONSERVATION DIRECTIONS

"Generally, energy conservation programs of the past have been used to balance domestic energy supply and demand. From 1973 through 1975, the emphasis was on patient acceptance of reduced fuel supplies and a patriotic willingness to "make do" with lines at service stations and reduced thermostat

settings. From 1976 to 1980, the message had been that alternatives to wasteful energy practices are available and cost effective. Whether in the car, at home, at work, or in government, most Nebraskans have adopted self-help and subsidized energy approaches that emphasize burning fuel more efficiently, reducing heat loss or fuel waste, and making investments (such as insulation) to reduce the impact of rising fuel prices.

These techniques have historically provided a cost-effective alternative to the development of additional domestic supplies with the least adverse impact on the environment. That is, in most instances it has cost less to SAVE a barrel of oil than to DEVELOP a new barrel of domestic supply.

In the '80s Nebraskans are requesting information on (1) alternatives to traditional fuels; (2) improved technology to make more than a single use of an energy source; and (3) re-examining neglected energy systems that now appear to be effective once more. Examples of these interests are the sharp rise in the use of passive solar principles and wood burning; the rapid acceptance of new heat recovery and waste utilization technologies, and renewed study of the energy to be obtained from wind and water.

Presently there is a clear message from the energy industry to change the emphasis from talk of limits and finite supplies to aggressive pursuit of energy sources. This is evident from the increased production and distribution of electricity, secondary or tertiary recovery from declining oil and gas fields, and increased exploration activities.

Government's emphasis has shifted from the allocation of diminished supplies to the positive evaluation of available indigenous energy resources from whatever source. In late 1980 the emphasis clearly shifted from apology and explanation to solution and development! In the midst of economic hard times, energy talk now focuses on OPPORTUNITY for energy efficiency, on INDEPENDENCE from outside control, on NEBRASKA resources rather than on imported products, and on UTILIZATION of waste materials for energy, rather than on the costly dilemma of waste disposal."[1]

Conservation activities have been refined during the past quarter to place greater emphasis on petroleum products, their current $1.6 billion annual cost to the State's economy, and the real potential for supply interruptions that exists for oil and its derivatives.

Concentrating on the conservation of petroleum and petroleum products, the Energy Office will seek to identify municipalities that do not have adequate fuel services so that, in the future, we can assist them if and when shortages occur. Information from oil company distribution systems will be used to identify necessary priority areas.

CONSERVATION PRIORITIES

For the remainder of 1981 the Energy Office conservation priorities will be ranked in order of importance.

-Transportation services to reduce Nebraska's dependency on imported petroleum;

-Residential programs to provide consumer referrals, information on energy assistance for passive solar and earth-sheltered housing designs, and support to utilities providing services for homes;

-Re-evaluate education programs, shown useful in today's energy situation, to focus on vocational preparation, energy efficient construction and home economics;

-Commercial services will feature audits of representative structures to illustrate improved mechanical system operation and demand charge reduction for similar business facilities;

-Utility projects will focus on cooperative agreements and the potential that hydroelectricity, wind, and load management offer for future demand; and

-Agricultural demonstration projects such as the Energy Farm will highlight energy independence. Biomass assessment, pointing the way to Nebraska's alcohol potential, will continue.

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[1]These Energy Office perceptions were stated in the 1981 Second Quarter Report, May 15, 1981. They are still applicable and are repeated here for emphasis.

CONSERVATION PROGRAM MANAGEMENT

Conservation directions and priorities identified in the last quarterly report have been refined in the last three months.

TRANSPORTATION

Transportation continues to be the area of greatest concern because Nebraska's reliance on imported petroleum raises the possibility of future shortfalls, escalating prices and depressed economic prospects for the State. The cost of our nation's imported petroleum was $77 billion in 1980. During 1980, Nebraskans paid $1.6 billion dollars for petroleum products.

Priorities

- -Driver education programs will be strengthened with the addition of fuel information services concerning availability, pricing, supply reductions and dealer locations.
- -Municipalities with only one retail fuel outlet will be identified to assist in meeting future shortages.
- -Reports on oil company distribution networks will help identify areas of the state which may not have adequate and competitive fuel services.

RESIDENTIAL SERVICES

Residential services in 1981 will continue to concentrate on low cost/no cost solutions to energy costs.

Priorities

- -Seasonal posters, supportive literature and an introduction to energy management for homeowners will be produced and distributed to help Nebraskans achieve greater energy efficiency at home.
- -The 1982 "March is Energy Conservation Month" campaign will initiate a major promotion of alternate energy technologies including passive solar heating, active solar water heating and earth sheltering.

EDUCATIONAL PROGRAMS

All Nebraska Energy Office energy education programs are currently under review. New energy study units for home economics and vocational education are now available from the office.

Priorities

- Audio visual services will be greatly expanded to provide more film and slide-tape programs on energy topics for schools and community groups. There will be increased emphasis on providing Nebraska-specific audio-visual resources to the public.

COMMERCIAL SERVICES

Priorities

Commercial services, including walk-through audits and energy management programs, will focus on representatives of commerce and industry. Results will be published so that such firms or organizations can start and manage their own conservation programs.

Success of the pilot program in Grand Island, instituted after the 1980 tornados, led to this increased commercial program outreach. Utilities and consulting engineers will assist the Nebraska Energy Office in advising business leaders on energy management.

UTILITY PROGRAMS

With the establishment of energy audit services between the Nebraska Energy Office and the state's utilities, a major goal of the energy conservation plan has been accomplished.

Priorities

- The office will expand existing joint projects with utilities and begin new research projects focusing on the state's own resources. Joint projects with the state's electric utilities could focus on hydroelectricity, wind, the MANDAN Line and coal supplies. Natural gas contacts could focus on the distribution of new energy efficient appliances, decline in winter curtailment activity, fertilizer manufacturing and transportation use.

-Heating oil suppliers and propane distributors will be encouraged to initiate voluntary customer services.

AGRICULTURE

Priorities

-The Nebraska Energy Office will report on demonstration projects and research into the potential for energy independence through alcohol, biomass and solid waste products.

-The office will continue to study and participate in future fuels research to make recommendations to the governor and the legislature.

NEBRASKA ENERGY CONSERVATION PROGRAM EXTENSION

In July, 1981 the Nebraska Energy Office requested approval from the U.S. Department of Energy for a no-cost extension to the 1981 State Energy Conservation Plan, to permit the operation of the program through June 30, 1982. The previously established termination date had been December 31, 1981.

The Kansas City Support Office (note the change from a regional office to the status of a support office for the Albuquerque Operations Office) agreed to the extension. Revisions to the 1981 Plan will be made in August and September to reflect shifting priorities and the orderly completion of activities under the previous plan.

NEW INFORMATION RESOURCES

Many new services and materials have been developed during the last quarter -- all of them are available from the Energy Office upon request.

-A revised Gasohol Directory for Nebraska includes Nebraska Department of Roads facilities where the state fleet can obtain Gasohol, and a listing of operating alcohol plants in the state.

-A fact sheet providing a brief description of the University of Nebraska - Lincoln Energy Farm at Mead, Nebraska, includes a listing of the energy concepts to be demonstrated and the funding package.

-An interim report on the Nebraska Energy Office Russian Fireplace Demonstration Project at Southeast Community College-Beatrice is now available.

-Low Cost Cooling Fact Sheet, to accompany the summer cooling poster is now being distributed. It lists, in more detail, many things that the homeowner can do to increase summer comfort with little or no energy investment.

-Don't Get Burned with Solar Energy. This brochure is a reprint of the publication prepared by the Solar Energy Research Institute to provide additional consumer information to the solar equipment purchaser.

-1980 Preliminary Energy Utilization Report for Nebraska. Classifying Nebraska energy consumption by fuel type and end use sector, the Nebraska Energy Office statistical section documents the decline in demand for petroleum products and the increased use of coal for electrical generation.

-Lincoln Public Schools/Lincoln Transit System Public Transit Study Unit. This classroom package was developed for upper elementary and junior high students to teach transportation independence through use of the city bus system. The unit includes books, maps, a slide-tape presentation, and plans for a demonstration bus ride. Instructional material focuses on the public impact of a mass transit system.

-What is Life-Cycle Costing? This fact sheet describes an energy efficient procurement technique and a formula for its implementation.

4-H Television Series. Four 28-minute programs introducing energy issues to students age 9 to 19 have been developed through a cooperative agreement between the 4-H programs and the energy offices in Iowa, Missouri and Nebraska. The programs were aired on the Nebraska ETV Network during the second quarter and an evaluation project is underway in the three states to polish the material for nationwide distribution. Referrals to the films, printed materials and personnel working on the project are available through the Energy Office.

TRANSPORTATION

For the sixth consecutive quarter the Nebraska Energy Office has designated transportation as the State's most critical conservation activity.

A Federal Highway Administration report on gasoline consumption indicates that Nebraska's 10.0 percent reduction in 1980 over 1979 ranks it fourth in the nation behind the District of Columbia (15.7%), South Dakota (10.3%) and Michigan (10.1%).

A more recent report by the Nebraska Department of Roads indicates that vehicle-miles of travel have increased in the state. This finding, when added to reduced fuel use, indicates a statewide commitment to conservation through increased efficiency and considerable change in the state vehicle fleet to smaller more fuel efficient equipment.

The Driver Energy Conservation Awareness Training (DECAT) program, inaugurated in March, 1981, has continued to experience growth during the second quarter. Monthly classes have introduced new drivers and their sponsoring organizations to the project and its economic benefits. The Nebraska Department of Education has joined the Nebraska Energy Office in a cooperative agreement for the training of public school personnel at a minimum of ten DECAT workshops, using four additional instrument-equipped vehicles.

Literature revision has been a prime concern during the second quarter. The supply of "Miles-Per-Gallon Kits" is now virtually exhausted, and a new composite book was needed to reflect changes in savings calculations (due to increased costs of driving) and the addition of DECAT services. The new publication, entitled "Making Tracks," will be available for distribution at the Nebraska State Fair in September.

At the end of the second quarter there are 30 DECAT instructors and 8 sets of equipment in Nebraska.

AGENCY OR ORGANIZATION	INSTRUCTORS:
Nebraska Energy Office	2
Nebraska State Patrol	1*
Nebraska Safety Center at Kearney State College	2*
Eastern Nebraska Human Services Agency	1
Educational Service Unit #3 (Millard)	1*
Lincoln Public Schools	1
Lincoln Police Department	1
Nebraska Department of Education	1*
City of Lincoln Maintenance Department	2
City of Lincoln Parks & Recreation Department	1
Metz Bakery (Omaha)	2
Bryan Hospital (Lincoln)	1
University of Nebraska Medical Center (Omaha)	2
Omaha Public Power District	1
Dobson Brothers Construction Company (Lincoln)	2
University of Nebraska-Lincoln Auto Pool	1
Omaha-Douglas County Health Deptartment	1
Albion High School	1
Chadron State College	1
Beatrice High School	2
Lincoln Northeast High School	1
Roseland High School	1
Back to the Bible Broadcast	1

* The Nebraska Energy Office has also provided equipment to these agencies. It will be used to train additional Nebraska drivers.

PUBLIC INFORMATION

Section 81-1602(5) RSN(1980) requires the Nebraska Energy Office to provide for public dissemination of appropriate information on energy, energy sources, and energy conservation. (LB 954-1980)

POSTER

The second in a series of seasonal energy conservation posters was produced during the second quarter of 1981. The bright blue and green poster emphasized energy efficient summer cooling methods such as using fans to circulate air, cooking outdoors, shading windows with awnings, drying laundry outdoors and keeping the thermostat set to 78° in air conditioned homes (see page 19).

The posters were distributed in early June to coincide with the onset of hot weather. Posters were distributed to county extension agents, county welfare offices, libraries, gas and electric utilities and community action agencies. In addition, fact sheets on cooling techniques, landscaping and tree planting were distributed to reinforce the poster's suggestions.

RESOURCE DIRECTORY

A directory of publications and audio-visual materials available from the Nebraska Energy Office was also produced and distributed during the second quarter. Entitled Energy Info, the eight-page booklet lists energy publications in 18 general categories and the titles of films, slide sets, video-cassettes and other materials which are available on request from the Nebraska Energy Office. (See page 20).

Energy Info was distributed to schools, county extension agents, county welfare offices, libraries, gas and electric utilities and community action agencies.

The booklet will be updated periodically to show new publications and audio-visual materials available through the office.

PLANNING ACTIVITIES

During the second quarter planning was begun on the 1981 State Fair booth, the Independence Day Alternate Fuel Race

Classic to be held July 4, 1982, and an audio-visual program on the activities of the Nebraska Energy Office.

ALTERNATE FUEL CLASSIC

To help focus attention on existing alternate fuel automotive technologies, planning for the state's first Independence Day Alternate Fuel Race Classic moved into its second phase.

Governor Thone challenged the nation's governors and others to join in the race which will feature vehicles not powered by any fossil fuels or derivatives.

Participating vehicles will be placed on display in Lincoln so that people will have the opportunity to observe and learn about non-petroleum based fuel technologies.

Planning is underway on the official route and Official Classic Rules and Regulations Handbook. Management and technical advisory teams are being assembled and will begin intensive work during the third quarter.

"MARCH IS ENERGY CONSERVATION MONTH" EVALUATION

Section 81-1602(5) RSN(1980) requires that the Nebraska Energy Office provide for public dissemination of appropriate information on energy, energy sources, and energy conservation. (LB 954-1980)

A review of the 1981 "March is Energy Conservation Month" campaign led to a decision to continue the efforts of the last five years, but with a change of emphasis in 1982. The 1982 campaign will focus on alternate energy technologies.

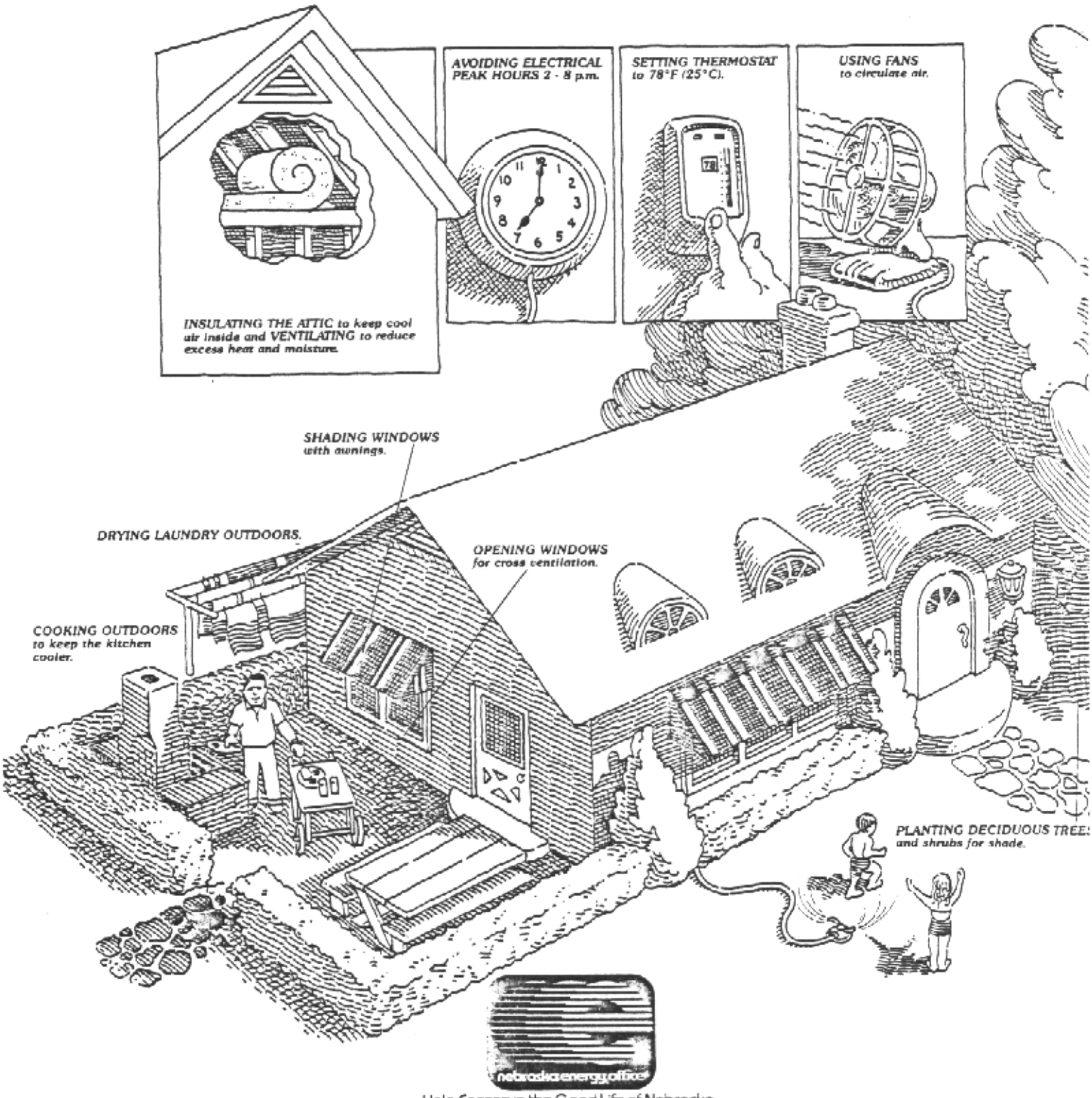
The March campaign becomes even more important in 1982 as federal energy information and literature services are reduced. In addition, associations, utilities, home shows, conventions and classroom teachers depend on the campaign materials to augment their spring energy activities.

Planning

The office has begun preliminary work on literature, films, models and presentations on passive solar, active solar hot water systems and earth sheltering. Production and printing of promotional materials for the campaign will begin in the fourth quarter of 1981.

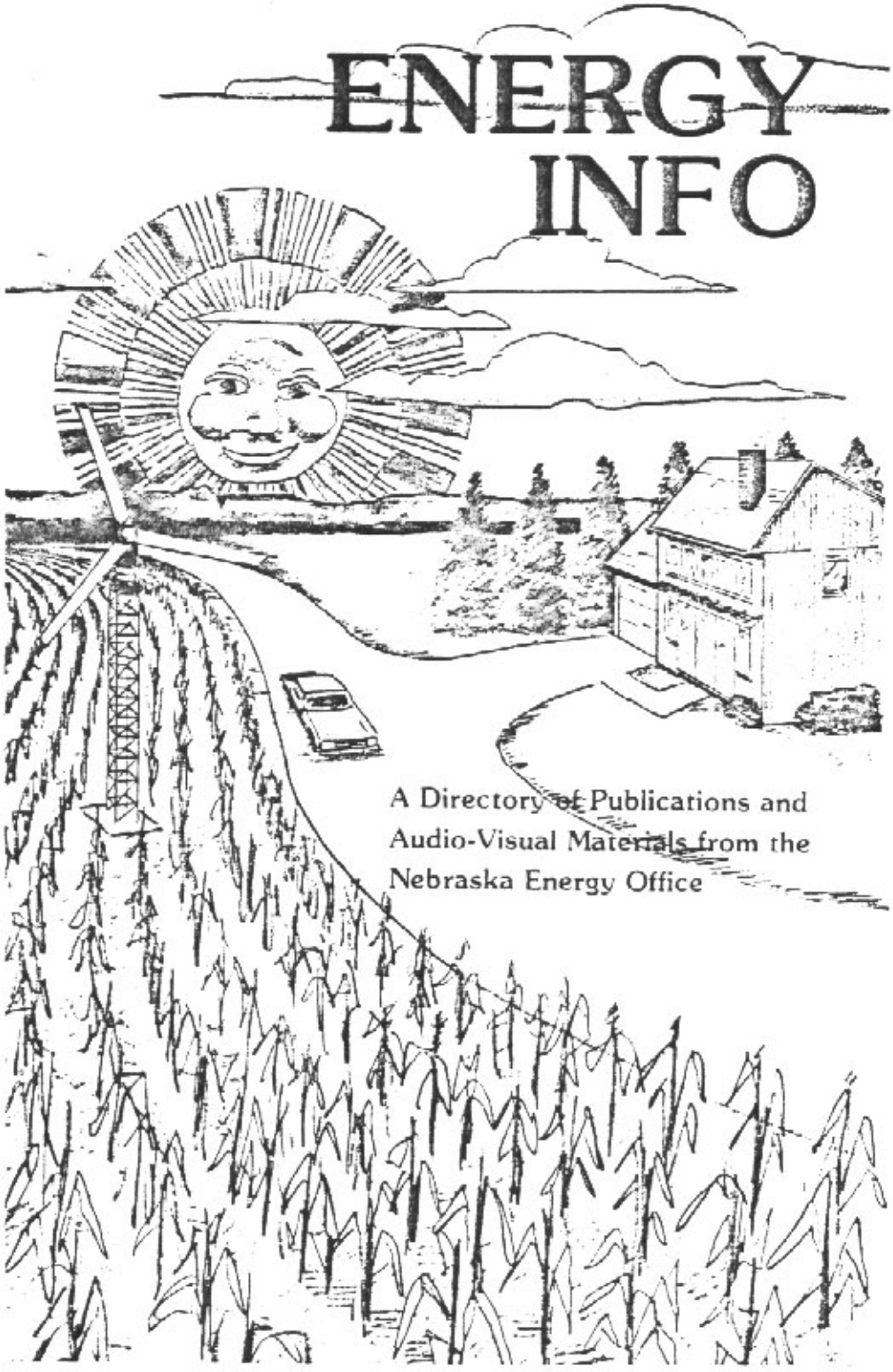
DID YOU KNOW...

...that keeping cool and saving energy in the summer is as easy as...



Help Conserve the Good Life of Nebraska

This energy information resource directory is available on request from the Nebraska Energy Office.



ENERGY EDUCATION

Section 81-1602(5) RSN(1980) requires that the Nebraska Energy Office provide for public dissemination of appropriate information on energy, energy sources, and energy conservation. (LB 954-1980)

Curriculum

During the second quarter special emphasis was placed on the development of curriculum materials for Nebraska's technical community colleges. The disciplines of study under consideration were architectural drafting, building construction, and electrical trades. Instructors from these disciplines, representing their respective community college areas, met during a one-week curriculum development workshop sponsored by the Nebraska Energy Office and Nebraska Department of Education. The workshops will result in printing and distribution of energy efficiency guides for each respective vocational discipline. These guides will complete a five-part Nebraska Energy Office curriculum series for the vocational trades. The first two, for automotive and heating-ventilating-air conditioning instructors, were completed during the fall of 1980.

Preliminary analysis of data collected on the Nebraska Energy Office K-12 curriculum project, Energy Conservation Activity Packets (K-12) and Basic Teaching Units on Energy (7-12), indicates a need for improved dissemination and revision. In response to this assessment, the Nebraska Energy Office education coordinator conducted workshops and "in-service" activities to: 1) provide teachers with energy education instructional materials and 2) reduce "old" stock prior to printing of revised materials.

Energy education materials developed by the Nebraska Energy Office and distributed throughout the state have been requested by educators in 36 states and several foreign countries. Objective analysis of future materials and programs is essential if the Energy Office is to remain a leader in the energy education field.

Projects and Services

The education section of the Nebraska Energy Office conducted, arranged, or participated in the following projects and services:

- A seminar on solar energy education was presented at the University of Nebraska-Lincoln for 86 elementary, secondary, and graduate education students.

- Wayne, Chadron, Kearney and Peru State Colleges offered a variety of elementary, secondary, and graduate education seminars focusing on the topic of energy education.

- A study is being conducted at the University of Nebraska-Lincoln to determine the best method of introducing curriculum changes and innovations in school districts. This study, funded by the Nebraska Energy Office, uses energy education as its theme.

- The Nebraska Energy Office has initiated preliminary plans to introduce a specialized course of study on energy at Nebraska's universities and state colleges.

- A high efficiency masonry fireplace was completed at Southeast Community College - Beatrice. The masonry or "Russian" fireplace is potentially three times as efficient as a conventional fireplace. Its energy efficiency potential is being demonstrated at the college by testing variables such as heat loss, exhaust gas temperature and air velocity, and wood type. The results of these tests will be compiled and presented in a written report and at several statewide seminars. Seminar sites and dates are now being planned.

Gary Lay, Extension Division Chief of the Nebraska Energy Office, is a member of the National Energy Education Task Force of the Education Commission of the States. This advisory board provides assistance to states in developing energy education programs for schools across the nation. During the second quarter of 1981, the board reviewed drafts of two publications being produced by the Education Commission of the States. The two publications which are now being finalized are A Policy Development Handbook for Energy Education and Energy Education: What, Why & How. Both publications will be available to schools across the country this fall.

During the 1981-82 school year, the advisory board will be working in the area of energy emergency planning for schools. The Education Commission of the States is a non-profit organization formed by interstate compact to further working relationships among governors, state legislators and educators for the improvement of education at all levels.

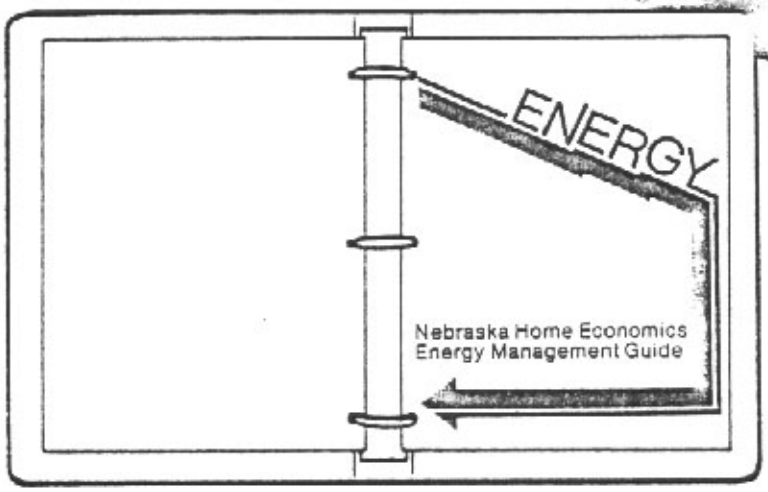
HOME ECONOMICS ENERGY MANAGEMENT GUIDE

The new Home Economics Energy Management Guide will give instructors and high school or junior college home economics students an organized energy curriculum. Personal management of energy resources in the home is the central theme of the five unit guide. An Introduction to Energy and Resource Management is followed by units on Housing, Foods, Clothing, and Family Living.

The guide can be incorporated easily into existing home economics curriculum plans and it contains visual materials and study aids which can be duplicated for classroom use. The units are contained in a red and yellow binder with index tabs. The guide is available for purchase from the Energy Office for $12.50, the cost of its development.

The guide was introduced at the Nebraska Vocational Education Conference in Kearney, August 3-5, 1981. A descriptive flyer (illustrated on Page 25 of this report) also is available. Questions should be directed to Mardel Meinke of the State Energy Office.

ENERGY



The Nebraska Home Economics Energy Management Guide is designed as a supplement to your Home Economics Curriculum. The Guide includes 25 lessons with background information, activities, ready-to-duplicate visuals and resources on Energy Management. This is all included with an attractive binder and index tabs in a versatile loose-leaf format.

Produced by
The Nebraska Energy Office
P.O. Box 95085
Lincoln, NE 68509

Cost: $12.50 payable to the
Nebraska Energy Office.
Contact: Mardel Meinke
Project Coordinator
(402) 471-2867

NEBRASKA HOME ECONOMICS ENERGY MANAGEMENT GUIDE

NEBRASKA ENERGY EXTENSION SERVICE

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Energy Extension Service Act, Title V of 1980, P.L. 95-39.

The Nebraska Energy Extension Service (EES) provides direct, personalized information and assistance to small-scale energy consumers such as homeowners, small businesses, agriculture, commercial establishments, local government units and automobile owners.

The first Energy Extension Service grant cycle was completed at the end of April, 1981, and the second cycle of funding began at that time. Evaluation of the first year's programs by the Energy Extension Service Advisory Committee and cooperating agencies proved that the programs were effective in delivering energy conservation and alternate energy information to the citizens of Nebraska.

GA$ $AVER VAN

During the second quarter of 1981 the Ga$ $aver Van returned to public vehicle testing. The van, staffed by specially trained mechanics, visits communities across the state to perform free energy efficiency tests on private citizens' automobiles. The test includes checking the efficiency of the electrical and carburation systems and checking and inflating tires to manufacturers' recommended levels.

During the second quarter the Ga$ $aver Van visited 39 locations in 36 cities and tested approximately 1,000 vehicles. Since July, 1980, over 4,000 vehicles have been tested and about half of the owners have had the recommended repairs made on their vehicles.

PUMP

The Pumping Unit Management Program (PUMP) is aimed at helping farmers increase the energy efficiency of their irrigation equipment. The program is operated under the direction of the University of Nebraska-Lincoln Cooperative Extension Service.

During the second quarter of 1981, 87 extension agents were trained to use diagnostic equipment to perform an estimation test that farmers can use to assess the efficiency of their irrigation pumps.

In April a training session was held for well drillers, private consultants and others on methods of definitively testing irrigation pumping plants. There are now more than 22 firms in the state with trained personnel capable of testing and adjusting irrigation pumping plants for optimum energy efficiency. In 1979, prior to the start of the PUMP Program, there were only four firms involved.

Public PUMP demonstrations were scheduled in counties across the state beginning June 26. Average energy savings of ten percent per well have made this a very successful program and it will be continued through 1981.

Because of its leadership role in irrigation energy efficiency testing through the PUMP project, the Nebraska Energy Office has been asked to export the program to three other midwestern states. The Department of Energy Region VII Office has requested that the Nebraska Energy Office prepare program guidelines, a training program and manual for energy agency personnel in Kansas, Iowa and Missouri. It is anticipated that this project will be completed during the fourth quarter of 1981.

EVALUATION PROGRAM

The Ga$ $aver Van and PUMP programs were evaluated by the Bureau of Sociological Research of the University of Nebraska-Lincoln. Final reports on both programs were completed during the second quarter.

The final report on the Ga$ $aver Van confirmed preliminary results indicating participants' approval and continued public support for the vehicle energy efficiency testing program.

The final report on the PUMP program indicates user support for continuation of the program. Of those attending a PUMP demonstration, 98 percent recommended that other irrigators attend.

Copies of both reports are available from the Nebraska Energy Office.

BOILER EFFICIENCY PROJECT

The contract for the ten boiler energy efficiency workshops to be held during 1981-82 was negotiated with the Blue Flame Gas Association. It is anticipated that the workshops will begin in October 1981.

The goal for the 1981-82 project year is to train 200-400 boiler operators in energy efficient boiler operation techniques. The training sessions are being offered to both public and private sector boiler operators.

The Nebraska Energy Office estimates that a trained boiler operator can achieve energy savings of 10-20 percent in boiler operation.

CONSERVATION RECOGNITION PROGRAMS

The Residential Conservation Award Program continued to reward homeowners for their energy conservation efforts during the second quarter. If their house meets specific insulation and weatherization requirements, a homeowner receives a certificate and a seal which may be displayed on a window or door.

Over 1500 applications for this self-certifying program were distributed during April, May and June. A total of 132 homeowners received certificates and seals as of June 30.

E-FLAG PROGRAM

The "E"-Flag Program recognizes businesses and industries for their energy conservation efforts in the areas of transportation, building management or alternative energy use.

During the second quarter the following Nebraska businesses and industries were awarded "E" Flags: Hinky Dinky Super Markets, Omaha; J. C. Penney Company - Westroads, Omaha; Union Pacific Railroad, Omaha; Allied Chemical Corporation-Chemicals Division, Omaha; Sperry Vickers, Omaha; Pacesetter Corporation, Omaha; Lou's Thriftway Supermarket, Norfolk; and Lynn & Al's Westside Grocery Store, Norfolk.

EASY ON ENERGY

"Easy on Energy", a monthly series on the Nebraska ETV Network, featured alternate energy sources during its final program in April. Due to funding cuts for the 1981 grant cycle, the series will not be continued.

SOLAR SUBDIVISION PROGRAM

In 1980 four builder-developers were awarded grants of up to $6,000 each to design and build four solar housing subdivisions. At the end of the second quarter of 1981 all developers had completed solar access plans, easements and covenants and two had completed building plans and begun construction. Two builders are working on building plans and plan to begin construction on approval of the financing package and administrative requirements. Completion of the first house in each subdivision is anticipated in September, 1981.

NEBRASKA ENERGY NEWS

The bi-monthly NEBRASKA ENERGY NEWS seeks to provide reliable energy information to Nebraska citizens, state and local agencies. Over 11,000 copies of the May edition were distributed.

NEBRASKA ENERGY NEWS is published under contract to the University of Nebraska-Lincoln College of Engineering. The newsletter staff is working to upgrade the newsletter through editorial and format changes.

WEATHERIZATION PROGRAM

Section 81-1602(6) RSN(1980) requires the Nebraska Energy Office to accept, expend, or dispense funds, public or private, made available to it for research studies, demonstration projects or other activities which are related to energy conservation or development. (LB 232 - 1977)

The U. S. Department of Energy makes grants to the states for weatherizing the homes of persons whose incomes do not exceed 125 percent of the federal poverty level. The Nebraska Energy Office subgrants such funds to ten community action programs and the Nebraska Inter-Tribal Development Corporation for delivery of weatherization services.

Weatherization assistance includes caulking and weatherstripping around doors and windows, insulating attics and side walls, covering windows, and other measures which reduce heat loss through infiltration and transmission.

During the second quarter of 1981 a total of 1,017 houses were weatherized compared with 1,139 houses weatherized during the second quarter of 1980. This represents a decrease in production of 11 percent.

Many factors contributed to the lower production during this quarter. Loss of CETA labor has resulted in fewer weatherization crews. Limited federal funds have caused agencies to revise their work loads. Budgets were reviewed to extend weatherization activities to the end of the calendar year. These changes have resulted in higher support costs.

Material costs for weatherization assistance may not exceed $700 per home and the total cost for both labor and materials may not exceed $1,200 per home.

Quality control is provided by the contracting agencies and the Nebraska Energy Office. Each agency inspects its weatherized homes to ensure that they meet material and labor standards and the Nebraska Energy Office then inspects some homes on a random basis. In addition, the Nebraska Energy Office makes a minimum of two monitoring visits per year to each sub-grantee.

TABLE 1

NEBRASKA WEATHERIZATION PROGRAM ACTIVITIES

Subgrantee	Second Quarter Completions	Second Quarter Partial Completions	Funds Expended Second Q. $749,081	Funds Received 4/1/81 - 6/30/81	
Blue Valley CAA				0	1980
	67	31	62,294	36,371	1981
Central Nebraska CAA					0
	88	68	91,871	0	1981
Goldenrod Hills CAA				0	1980
	106	364	107,537	0	1981
Greater Omaha CA				5,410	1979
				56,182	1980
	200	11	0	0	1981
Inter-Tribal Dev. Corp.				0	1980
	63	0	0	0	1981
Lincoln Action				0	1980
	139	10	120,950	48,603	1981
Mid-Nebraska East				0	1980
	40	15	37,379	1,307	1981
Mid-Nebraska West				0	1980
	75	11	65,101	42,371	1981
Nebraska Panhandle CAA				0	1980
	72	72	26,146	40,372	1981
Northwest Nebraska CAA				0	1980
	73	32	89,186	55,984	1981
Southeast Nebraska CAA				0	1980
	94	110	59,413	0	1981
TOTALS				5,410	1979
				56,182	1980
	1,017	724	749,081	225,009	1981

INSTITUTIONAL CONSERVATION PROGRAM

Section 81-1602(3) RSN(1980) requires that the Nebraska Energy Office collect and analyze data relating to present and future demands and resources for all sources of energy and specify energy needs for the state. (LB 232-1977)

Section 81-1602(11) RSN(1980) requires the Nebraska Energy Office to provide technical assistance to local subdivisions of government. (LB 954-1980)

The Institutional Conservation Program is designed to reduce energy consumption and costs by providing energy audits and grants for energy conservation. Schools, hospitals, local government buildings and public care facilities are eligible to participate under this federal program.

During the second quarter, over 403 facilities received energy audits. Energy auditors, employed by the Nebraska Energy Office, perform on-site inspections at no charge to a facility. Building construction, lighting, mechanical systems and insulation are evaluated to identify energy saving opportunities. Recommendations are made on both low and/or no cost energy saving measures as well as measures which require capital outlay to implement.

If the facilities audited during the second quarter implemented the low and/or no cost suggestions alone, over one million gallons of fuel oil would be saved. Converted to dollars, and based upon fuel oil at $1.10 per gallon, this savings would be over $1,120,000.

Nebraska was allocated $793,411 of federal funds to award to schools and hospitals during grant cycle III. Grants are awarded in two forms: (1) Energy Conservation Measure (ECM) and (2) Technical Assistance (TA). Energy Conservation Measure grants provide funding for the modification or construction of energy saving systems whereas Technical Assistance grants enable an institution to have an in-depth energy study performed by a licensed engineer.

The Nebraska Energy Office received 122 Energy Conservation Measure and 45 Technical Assistance applications this grant cycle. After thorough review and ranking, 11 Energy Conservation Measure and 37 Technical Assistance applications were forwarded to the Department of Energy, Region VII, for final approval. Institutions should receive their notice of grant award during the third quarter.

The Department of Energy anticipates that Congress will allocate additional money to the Institutional Conservation Program before the conclusion of Cycle III on September 30, 1981. This could result in more Nebraska institutions receiving financial assistance to initiate energy efficiency projects.

Even though Technical Assistance funds for the local government sector were not available during the second quarter, the Nebraska Energy Office provided energy audit services to over 170 buildings.

NEBRASKA SOLAR OFFICE

The Nebraska Solar Office conducted five wind energy workshops during April. Over 350 people attended the presentations held in Lincoln, Grand Island, Valentine, North Platte and Scottsbluff. A Wind Energy Guidebook was compiled from materials distributed at the workshops and over 150 copies have been distributed at $7.50 each (to cover the cost of production).

Preliminary results of the Solar Consumer Survey indicate that Nebraskans would give overwhelming support to policies providing incentives to solar development. Policies reducing the initial cost of solar--tax credits and low cost loans--received considerable support. In addition, over 70 percent of the respondents indicated that, if they move, it would be important to select a home that used solar or could be modified to use solar. A full analysis of the survey will be available in the third quarter.

The Solar Office has been working with the Small Farms Energy Project in Hartington to determine an appropriate testing and certification procedure for the Gary Young Solar Collector. This collector is a grain drying and home heating system that can be owner-built with easily available materials.

Nebraska Solar Office staff members made presentations to the Beatrice Home Builders Association, Kearney State College Passive Solar Home Design Workshop, Optimist Clubs and the Sierra Club during the second quarter.

NEBRASKA BUILDING ENERGY CONSERVATION STANDARD

Sections 81-1608 through 81-1626 RSN(1980) require that the Nebraska Energy Office implement and enforce an energy efficiency standard for new building construction and certain retrofits and additions. (LB 954-1980)

L.B. 954, passed in April, 1980, by the Nebraska State Legislature, designates the American Society of Heating, Refrigeration and Air Conditioning Engineers, Inc. Standard (ASHRAE 90-75) as the Nebraska Building Energy Conservation Standard. The Nebraska Building Energy Conservation Standards Board approved the rules and regulations after a public hearing. The residential standard went into effect on April 1, 1981.

All new residential buildings begun after March 31, 1981, and all non-residential buildings, renovations and additions begun after December 31, 1981, must conform to the standard except where an approved local building code is in effect.

Communities are encouraged to adopt and enforce building energy codes which meet or exceed the Nebraska Building Energy Conservation Standard. If a community does not adopt such a building energy code, the Nebraska Energy Office will enforce the state standard in that community.

As of May 11, 1981, the following communities have adopted an approved local building energy code:

Albion	Fremont	Ralston
Ashland	Friend	Randolph
Belden	Fullerton	St. Edward
Blair	Gibbon	Seward
Cedar Rapids	Grant	South Sioux City
Columbus	Laurel	Tekamah
Dakota City	Lexington	Wahoo
Decatur	Lincoln	Wayne
Dodge	Milford	York
Elkhorn	Nebraska City	Dodge County
Falls City	Oakland	Thurston County
Farwell	Ord	

The Energy Office has periodically notified electric utilities of local jurisdictions which have adopted an Energy Office approved building energy code.

PROPERTY TAX EXEMPTION

L.B. 151-(1981) requires that the Nebraska Energy Office process requests for approval of alternative energy source facilities and approve such improvements to real property if the improvement is suitable and reasonably adequate and will reduce the consumption of energy from other than alternative energy sources.

The Nebraska Energy Office monitored LB 151 as it moved through the legislative process and has begun drafting rules and regulations to implement the bill. LB 151 will not become law until September 1, 1981.

The actual value of any improvement designed primarily for energy conservation installed after November 11, 1980, but on or before December 31, 1985, shall be exempt from taxation for a period of five years, according to state law.

Applicants must receive Nebraska Energy Office approval for the energy conserving improvement before applying to the County Assessor for tax exemption.

SALES TAX REFUND

Section 66-1016 RSN(1980) requires that the Nebraska Energy Office process requests for approval of alternative energy facilities, and approve such facilities if such facility is designed primarily for the utilization of energy from alternative energy sources, and is suitable, reasonably adequate, and will reduce the consumption of energy from other than alternative energy sources. (LB 954-1980)

Nebraskans who purchase and install alternative energy systems between, on or after January 1, 1980 and January 1, 1984 are eligible to receive a sales tax refund. Applicants must receive facility approval from the Nebraska Energy Office before applying for a sales tax refund from the Nebraska Department of Revenue.

During the second quarter, the Nebraska Energy Office received 13 applications for facility approval.

Applications for approval are available at Nebraska marketers of alternative energy systems and from the Nebraska Energy Office. The Nebraska Energy Office sends the completed application to the State Solar Office for a determination of eligibility. The applicant is notified in writing of the decision, and may then apply to the Department of Revenue for the sales tax refund.

RESEARCH ACTIVITIES

Section 81-1602(1) RSN(1980) requires that the Nebraska Energy Office serve as or assist in developing and coordinating a central repository within state government for the collection of data on energy. (LB 232-1977)

Section 81-1623(2) RSN(1980) requires that the Nebraska Energy Office undertake a continuing assessment of the trends in the availability, consumption, and development of all forms of energy. (LB 232-1977)

Section 81-1602(3) RSN(1980) requires that the Nebraska Energy Office collect and analyze data relating to present and future demands and resources for all sources of energy and specify energy needs for the state. (LB 232-1977)

RESEARCH PROGRESS REPORT

As required by state statute, the Nebraska Energy Office is to identify emerging trends relating to energy demand, supply and conservation. Since the passage of the bill the office has, within the staffing constraints, been 1) creating a data management system for energy need, 2) preparing detailed quarterly reports, and 3) creating an energy demand model. The energy demand model has an expected completion date of September 15, 1981.

The requirement of creating a central repository for the collection of data on energy is being met. The repository is in two forms. The first is a shelf library for energy and economic information. The second is a computer based library containing nearly 3,000 data tables for statistical use.

Creation of an energy demand model has been a major task in the second quarter. An expected completion date is set for September 15, 1981. Following that date continual refinements will be made based on the latest available energy and economic information.

The model will be used in identifying emerging trends relating to energy supply, demand and conservation in the agricultural, commercial, residential, industrial, transportation, utility and government sectors. The model will permit the evaluations of policies on the Nebraska economy and energy situation.

There is also the possibility of evaluating the effects of energy supply on Nebraska. The model is designed for both short and long term predictions. The short term is affected strongly by a fuel pricing mechanism, whereas, the long term is strongly affected by a stock and equipment adjustment mechanism.

Table 2 shows the major areas of emphasis.

TABLE 2

NEBRASKA ENERGY USE BY FUEL TYPE AND CONSUMING SECTOR

	Natural Gas	LPG	Gasoline	Ethanol	Diesel	Aviation Fuel	Other Oil	Coal	Electricity
INDUSTRIAL									
Construction			X		X				
Food Processing	X								X
Chemicals	X								X
Stone & Clay	X							X	
Other	X	X	X		X		X	X	X
COMMERCIAL									
Government	X								
Heating	X	X					X		X
Cooling	X								X
Lighting									X
AGRICULTURE									
Irrigation	X	X	X		X				X
Field Operation			X		X				
Crop Drying	X								X
Other									X
RESIDENTIAL(All)									
Heating	X	X					X		X
Cooling	X								X
Water Heating	X								X
TRANSPORTATION									
Cars			X	X					
Light Trucks			X	X					
Trucks & Buses			X		X				
Aviation					X				
UTILITIES	X				X		X	X	

WEATHER CONDITIONS

Precipitation during spring 1981 was short over most of the state and the amount of moisture stored in the soil was lower than a year ago. Heavier than normal irrigation was expected during the 1981 summer months.

From April 4 - July 24, 1981 the average precipitation over the state was two inches, or about 15 percent below normal. As of July 19 the number of cooling degree days was 20 percent higher than normal. This placed additional stress on agricultural crops.

The May 10 and 11 frosts inflicted substantial damage in many areas.

The thunderstorms and below normal temperatures during the last third of July slightly improved all agricultural crops, except wheat which was 80 percent harvested. These weather conditions moderated energy use for irrigation and air conditioning.

WIND ASSESSMENT

Section 81-1623(2) RSN(1980) requires that the Nebraska Energy Office undertake a continuing assessment of the trends in the availability, consumption, and development of all forms of energy. (LB 232-1977)

The Nebraska Energy Office, Western Area Power Administration and the Nebraska Rural Electric Association are cooperating on an alternative energy project to assess Nebraska's wind energy potential.

The Western Area Power Administration is supplying 20 anemometers to measure and record wind velocity. During the second quarter, four Nebraska Rural Public Power Districts agreed to cooperate on the project.

They are the Seward Rural Public Power District, Twin Valleys Rural Public Power District, Dawson County Rural Public Power District, and Niobrara Valley Public Power District. It is anticipated that all 20 anemometers will be sited and collecting data across Nebraska by the end of the third quarter. This information will be published at regular intervals.

The project will help Nebraskans make decisions concerning the potential of using wind as an energy source.

PASSIVE SOLAR ACTIVITIES

Section 81-1602(5) RSN(1980) requires that the Nebraska Energy Office provide for public dissemination of appropriate information on energy, energy sources, and energy conservation. (LB 954-1980)

The "Nebraska Passive Solar Primer" entered the final writing and editing stages during the second quarter of 1981. Printing and distribution should occur during the third quarter of 1981. This Nebraska Energy Office-sponsored publication will provide builders and other interested Nebraskans with Nebraska-specific solar design criteria. The book will be a step forward in providing builders with the technical information they need to build passive solar homes in this state.

In addition, the Nebraska Energy Office, in cooperation with the U.S. Department of Energy Region VII and the Solar Energy Research Institute, has acquired four solar pyromometers to do an assessment of the state's solar potential. This equipment will allow the Nebraska Energy Office to determine the actual solar insolation available for active solar space and water systems, and passive solar applications in a specific location. The data can then be extrapolated to other locations in the state using data from the National Weather Service and the National Oceanic and Atmospheric Administration.

The Seward County Rural Public Power District is collecting the data in the field. All of the equipment will be in operation by the third quarter of 1981. The Solar Energy Research Institute will analyze the data and the final report on this project will be completed during the third quarter of this year.

TEMPERATURE RESTRICTIONS SURVEY

Late in 1980, the U.S. Department of Energy (DOE) requested that the Nebraska Energy Office provide data on voluntary compliance under the existing federal temperature restrictions program then in effect. From November, 1980 to mid January, 1981 three Nebraska Energy Office staff members visited affected buildings in Lincoln and Omaha. These visits were to gather relevant data and to provide assistance in understanding the program. They did not relate to any potential enforcement activity that Department of Energy could implement, and no proprietory information about Nebraska buildings was released to federal personnel. A report on the compliance findings was prepared and is available through the office upon request.

SMALL-SCALE HYDROELECTRIC DATA SURVEY

In the fall of 1980 a small U.S. Department of Energy grant was provided to the Nebraska Energy Office to survey the potential for hydroelectric generation at existing dam sites in the state.

The resulting analysis began with listings of facilities prepared by the U.S. Corps of Engineers under the National Hydroelectric Study, and sites identified by Nebraska state agencies and utility personnel were subsequently added.

Lists of dam locations with preliminary geographic data were then circulated to state and federal contacts for review and comment on restoration potential.

Two draft reports were prepared as data was provided to the Nebraska Energy Office and as further information about dam conditions and previous revitalization plans was reviewed. A final report was then prepared, listing the information for all 115 sites considered, even though several have no serious prospect for reuse. The final report is available from the Nebraska Energy Office.

RUSSIAN FIREPLACE PROJECT

See discussion on page 23 in the report on Energy Education.

U. S. ENERGY SUPPLIES

In 1981 it is anticipated that energy supplies will be more than sufficient to meet the nation's and Nebraska's energy demands. This is due to the present large surplus inventory of crude oil and its derivatives at the national level, adequate natural gas deliveries to Nebraska and excellent coal inventories and deliveries from out-of-state sources. The United Mine Workers strike did not affect the coal supply of Nebraska to any significant degree.

National petroleum stocks, at the moment, are above normal. However, the surplus is declining. Any major interruption in foreign oil imports would have a severe impact on available supply for the U.S. and Nebraska consumers.

The U.S. is still dependent on foreign petroleum by 2.3 billion barrels of oil yearly and must continue to improve efficiency and conservation. The economic impact of our dependence on imported oil is a major cause of inflation. The cost of net imported petroleum for the United States was approximately $77 billion in 1980. Nebraskans paid $1.6 billion in 1981 for petroleum products (not including fertilizer).

The current petroleum status at the national level is shown in the following graphs obtained from U. S. Department of Energy publications. These graphs indicate national levels of petroleum, motor gasoline and distillate fuel oil stocks (Tables 3, 4, 5). Nebraska imports most of its refined petroleum products from out of state. Therefore, national stocks have a direct influence on Nebraska's petroleum supply.

As of July 10, 1981, the U.S. crude oil stocks were 6.0 percent above a year ago and 29.0 percent higher than two years ago (Table 3). Continued large stocks on the world level have forced the price of imported crude oil to decrease (Table 6). The large petroleum stocks on the national level have caused stable prices and the lowering of gasoline prices (Table 7).

U. S. foreign oil imports have been steadily decreasing. Currently, the U.S. is importing 29.0 percent less foreign oil than one year ago and 57.0 percent below two years ago. Nationwide, refineries are operating at an average of 70.5 percent of their total capacity.

Midwest stocks of motor gasoline stand at 9.0 percent below one year ago and 1.0 percent below two years ago. This lower stock level is quite sufficient in view of the close to 10.0 percent drop in gasoline consumption in Nebraska. However, the decline in stocks of gasoline signals the potential for gasoline prices to begin edging upward.

Midwest stocks of distillate fuel oil are 23.0 percent below last year and 2.0 percent below two years ago. The distillate fuel oil stocks are well within the normal range.

Inflation: Oil Outruns The Pack

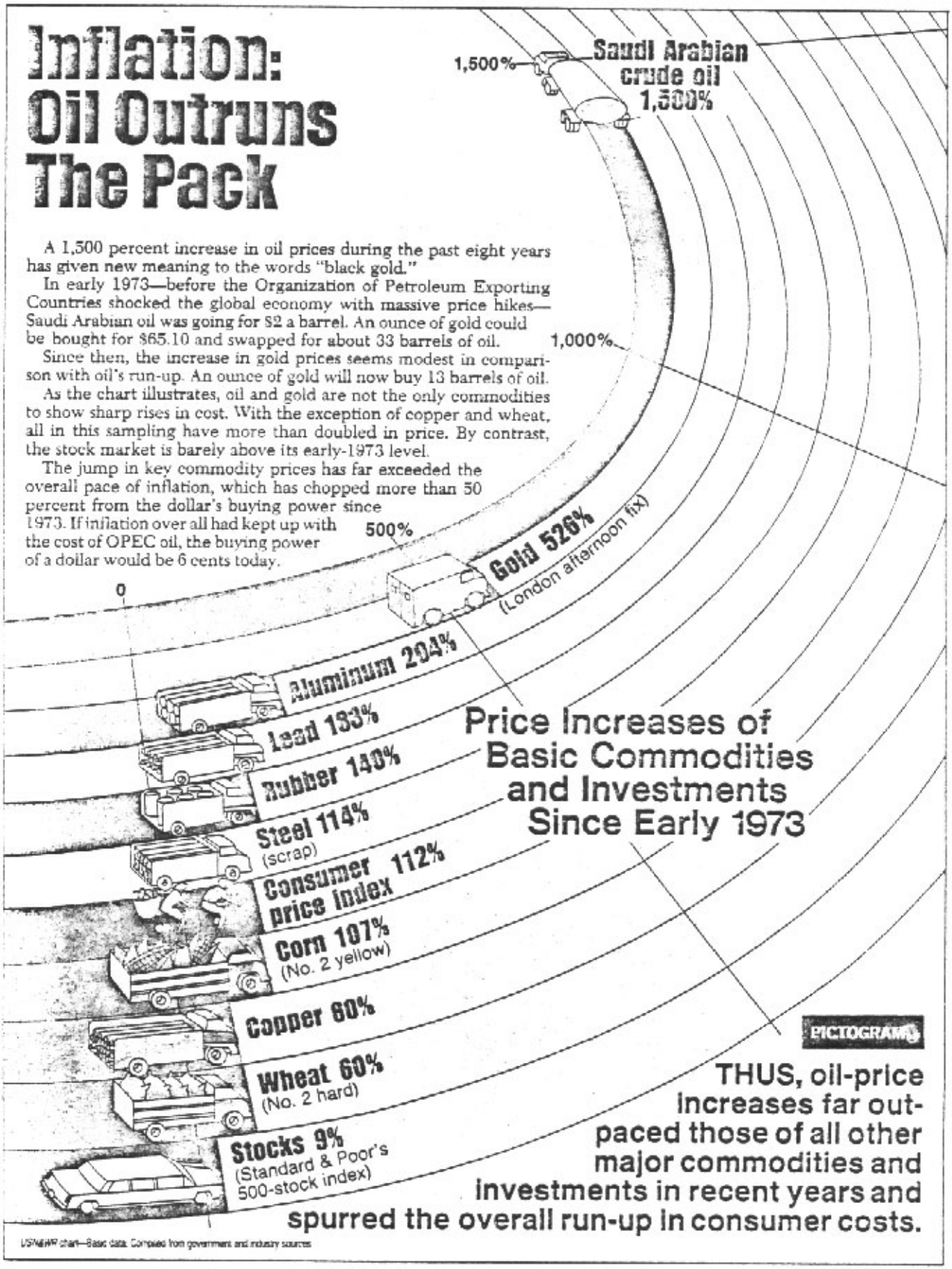
A 1,500 percent increase in oil prices during the past eight years has given new meaning to the words "black gold."

In early 1973—before the Organization of Petroleum Exporting Countries shocked the global economy with massive price hikes—Saudi Arabian oil was going for $2 a barrel. An ounce of gold could be bought for $65.10 and swapped for about 33 barrels of oil.

Since then, the increase in gold prices seems modest in comparison with oil's run-up. An ounce of gold will now buy 13 barrels of oil.

As the chart illustrates, oil and gold are not the only commodities to show sharp rises in cost. With the exception of copper and wheat, all in this sampling have more than doubled in price. By contrast, the stock market is barely above its early-1973 level.

The jump in key commodity prices has far exceeded the overall pace of inflation, which has chopped more than 50 percent from the dollar's buying power since 1973. If inflation over all had kept up with the cost of OPEC oil, the buying power of a dollar would be 6 cents today.



USNEWR chart—Basic data: Compiled from government and industry sources

TABLE 3

Stocks of Crude Oil and Petroleum Products[1]
(Millions of Barrels)

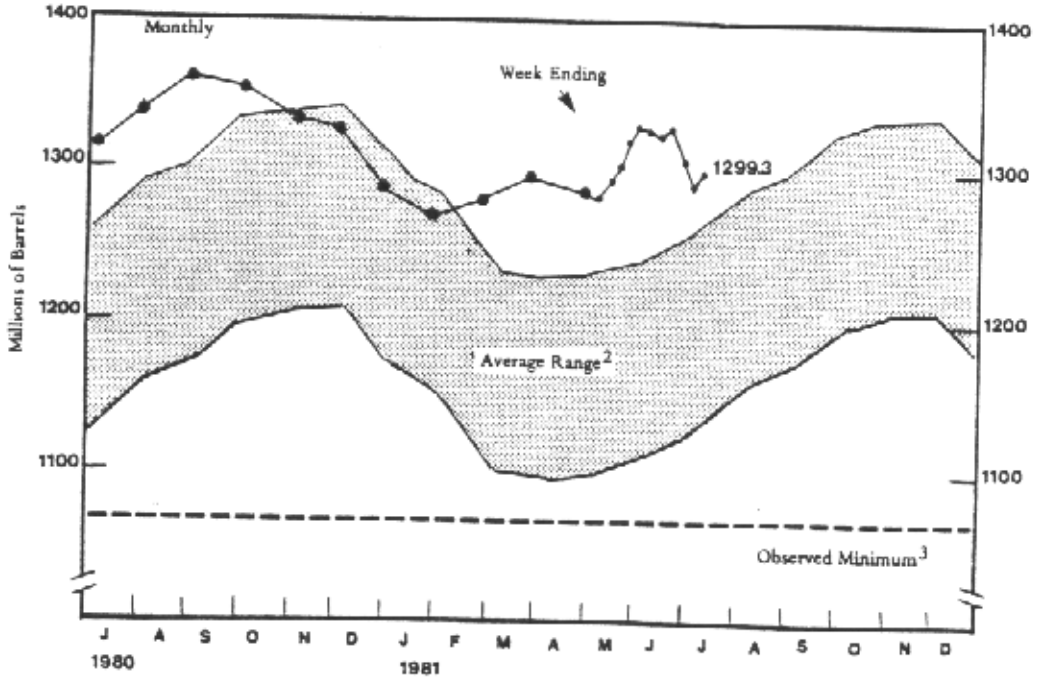
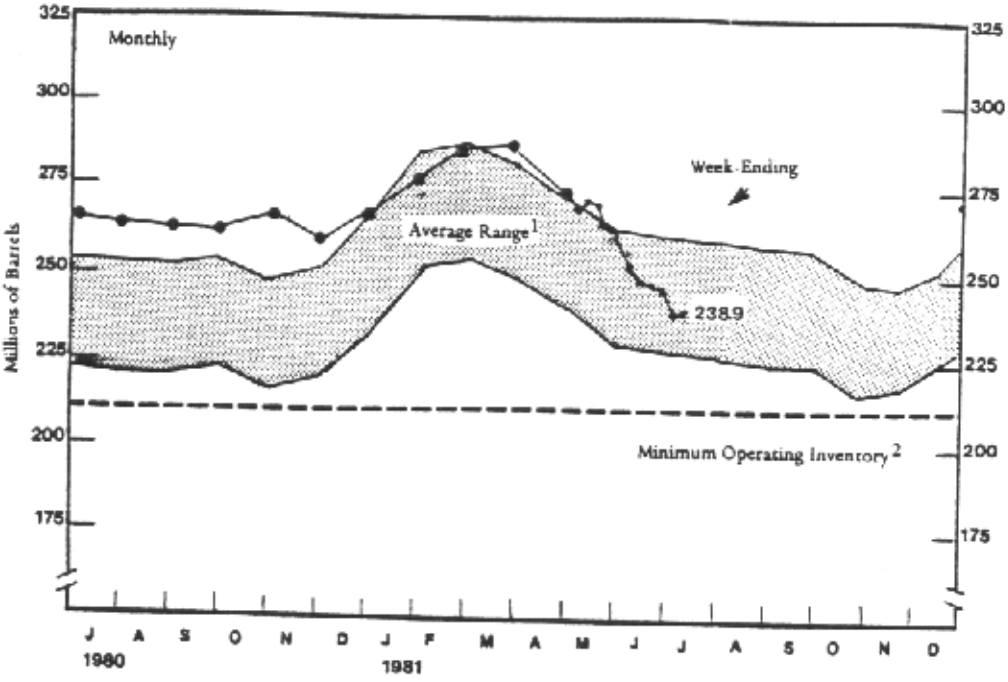


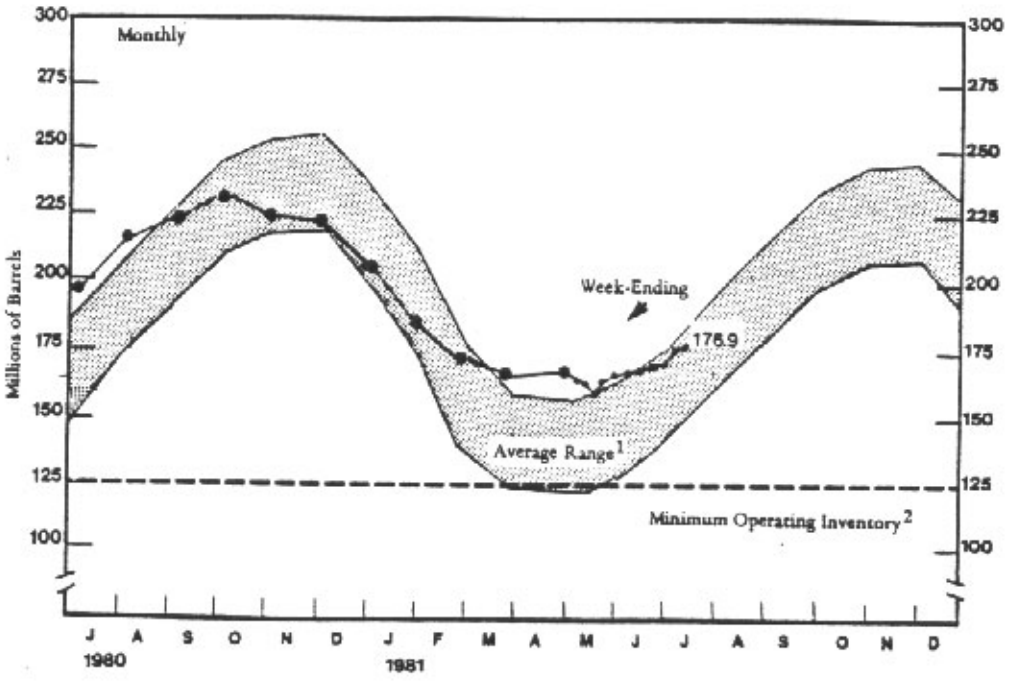
TABLE 4

Stocks of Motor Gasoline, U.S. Total
(Millions of Barrels)



1 Excludes stocks held in Strategic Petroleum Reserve and includes crude oil in transit to refineries.
2 Average level, width of average range, and observed minimum are based on three years of monthly data July 1977–June 1980. The seasonal pattern is based on seven years of monthly data January 1973–December 1979.
3 The observed minimum for total stocks (1069.9) occurred in March 1979.
4 The National Petroleum Council defines the Minimum Operating Inventory as the minimum level required for routine operation. By their definition, runouts and shortages will occur if inventory levels fall below that level.
Source: • Ranges and Seasonal Patterns: 1973–1978, EIA, "Petroleum Statement, Annual (Final Summary)."
• Monthly Data: January 1980–December 1980, EIA, "Petroleum Statement, Monthly;" January 1981–April 1981, EIA "Monthly Petroleum Statistics Report."
• May 1, 1981–Current week: Estimates based on EIA data.

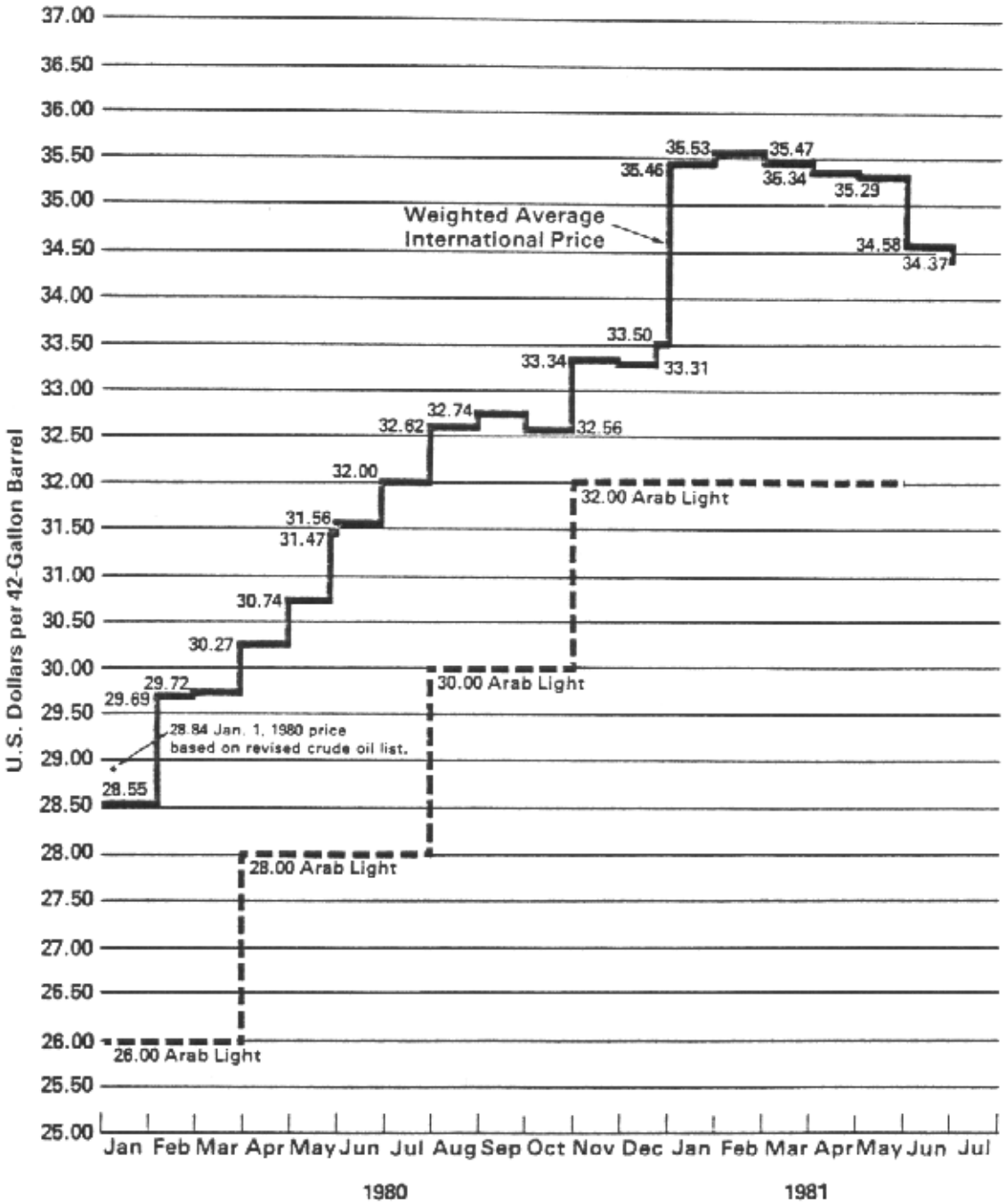
Stocks of Distillate Fuel Oil, U.S. Total
(Millions of Barrels)



1 Average level and width of average range are based on three years of monthly data: July 1977–June 1980. The seasonal pattern is based on seven years of monthly data: January 1973–December 1979.
2 The National Petroleum Council defines the Minimum Operating Inventory as the minimum level required for routine operation. By their definition, runouts and shortages would occur if inventory levels fall below that level.
Sources: • Ranges and Seasonal Patterns: 1973–1978, EIA, "Petroleum Statement, Annual (Final Summary)."
• 1979 Totals: EIA, "Petroleum Statement, Annual (Final Summary)."
• 1979 Regional Data: EIA, "Petroleum Statement, Monthly."
• Monthly Data: January 1980–December 1980, EIA, "Petroleum Statement, Monthly;" January 1981–April 1981: EIA, "Monthly Petroleum Statistics Report."
• May 1, 1981 –Current week: Estimates based on EIA data.

TABLE 6

World Crude Oil Prices[1]
(Dollars per Barrel)

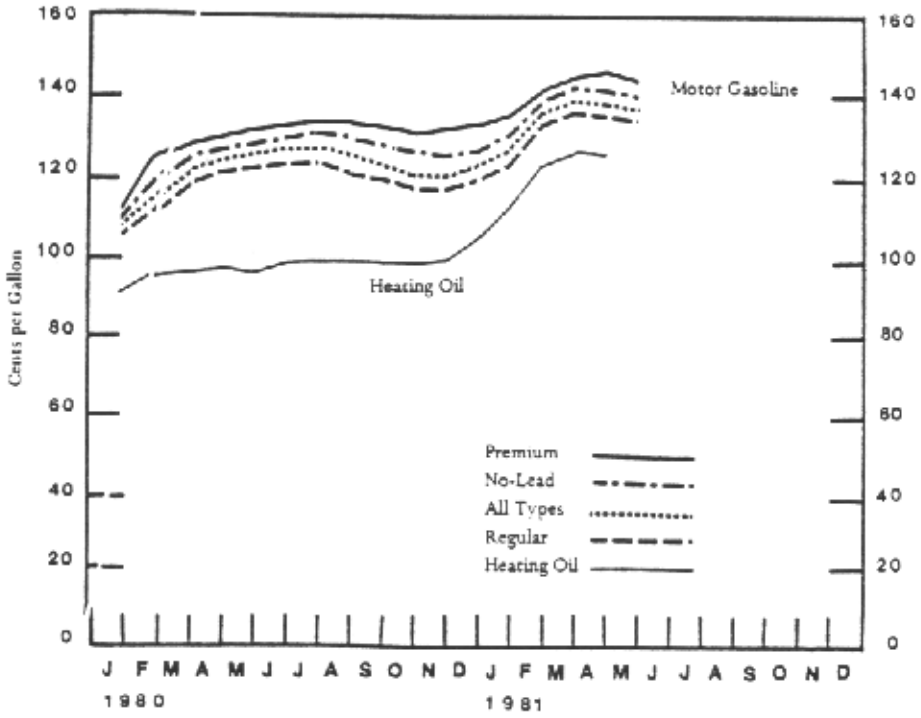


[1] Internationally traded oil only. Average price (FOB) weighted by estimated export volume.

Note: Beginning with the May 1, 1981 issue of the Weekly Petroleum Status Report, the world crude oil price is based on a revised crude list.
Additions: Saudi Arabia's Arabian Heavy, Dubai's Fateh, Egypt's Suez Blend, and Mexico's Maya.
Omissions: Canadian Heavy.
Replacements: Iraq's Kirkuk Blend for Iraq's Basrah Light.
The above graph shows an estimated world crude oil price based on this revised list beginning January 1, 1981. An asterisk shows the January 1, 1980 price based on the revised list. All other 1980 prices represent the old crude list before revisions.

TABLE 7

Average Retail Selling Price
Motor Gasoline and Residential Heating Oil
(Cents per Gallon)



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1979												
Motor Gasoline												
Premium	73.7	75.0	77.4	82.4	86.7	92.0	96.5	100.4	103.6	104.6	105.6	108.0
Regular	66.8	68.1	70.6	75.3	79.7	85.6	90.8	94.3	97.3	98.2	99.4	101.8
No-Lead	71.6	73.0	75.5	80.2	84.4	90.1	94.9	98.8	102.0	102.8	104.1	106.5
All types	69.5	70.7	73.3	78.0	82.3	88.0	93.0	96.7	99.8	100.6	101.9	104.2
Residential Heating Oil	53.7	56.3	58.7	61.1	64.2	69.1	73.9	78.4	81.0	82.3	83.7	85.8
1980												
Motor Gasoline												
Premium	114.9	123.2	127.7	129.2	129.5	130.0	130.7	131.0	130.4	129.9	130.1	131.0
Regular	108.6	115.9	120.2	121.2	121.5	121.7	121.6	121.0	119.7	118.8	118.8	119.7
No-Lead	113.1	120.7	125.2	126.4	126.6	126.9	127.1	126.7	125.7	125.0	125.0	125.8
All types	111.0	118.6	123.0	124.2	124.4	124.6	124.7	124.3	123.1	122.3	122.2	123.1
Residential Heating Oil	90.8	95.3	97.1	97.4	97.2	97.9	97.9	97.9	98.1	98.7	101.0	106.5
1981												
Motor Gasoline												
Premium	133.8	141.0	144.9	145.1	144.7							
Regular	123.8	132.1	135.2	134.4	133.3							
No-Lead	129.8	138.2	141.7	141.2	140.0							
All types	126.9	135.3	138.8	138.1	137.0							
Residential Heating Oil	114.4	123.4	125.5	P124.1								

P=Preliminary.
NOTE: Motor Gasoline data include prices from self-serve stations.
Source: Motor Gasoline--Bureau of Labor Statistics. See Definitions for description of survey.
Residential Heating Oil--FEA Form P112-M-1/EIA-9, "No. 2 Heating Oil Supply/Price Monitoring Report."

NEBRASKA OIL PRODUCTION AND EXPLORATION

Table 8 presents data on oil production and exploration in Nebraska from reports of the Oil and Gas Conservation Commission. The oil production for the first five months of 1981 was 108 percent compared with the corresponding period of 1980. Table 8 shows that the number of drilling permits issued during the first six months of this year increased for both exploratory wells and development wells.

TABLE 8

Month	Oil Production in Barrels				Drilling Permits							
					Exploratory				Development			
	1979	1980	1981	**	1979	1980	1981	**	1979	1980	1981	**
January	483,206	502,703	554,180	110	35	45	27	60	22	21	27	129
February	451,691	480,512	503,868	105	10	21	22	105	18	27	29	107
March	515,334	516,836	565,799	109	20	20	16	80	22	25	22	88
April	501,530	486,000	559,925	115	25	19	23	121	27	30	56	187
May	525,112	540,000	553,556	103	20	27	15	56	14	28	40	143
June	507,398	509,397			18	17	50	294	20	32	30	94
July	518,302	504,840			36	14			17	33		
August	543,823	547,833			20	13			20	16		
September	508,758	534,617			24	34			16	22		
October	536,185	539,889			38	41			18	32		
November	458,615	502,264			37	34			26	30		
December	501,008	529,079			30	24			33	27		
TOTALS	6,050,962	6,193,970	2,737,328	108	313	309	153	103	253	323	204	125
*Annual Summary	6,068,019	6,239,652			320	309			255	311		

Notes: *Annual summary data is compiled after corrections and is considered more reliable.

**Percent of previous year.

NEBRASKA PETROLEUM STATUS REPORT

Gasoline available for sale in Nebraska is defined as total gasoline and Gasohol imported to Nebraska minus the total exported. It continued to drop in the first six months of 1981 to 92.5 percent of the first six months of 1980.

Gasohol available for sale in Nebraska has shown a definite growth over the last two years. But, in the first six months, consumption of Gasohol was only 98 percent of the first six months of 1980.

Gasohol now comprises 4 percent of gasoline sales in Nebraska. Currently, month by month comparisons of Gasohol consumption must be viewed with caution due to a reporting form revision in January, 1981. However, this revision will result in more accurate reporting.

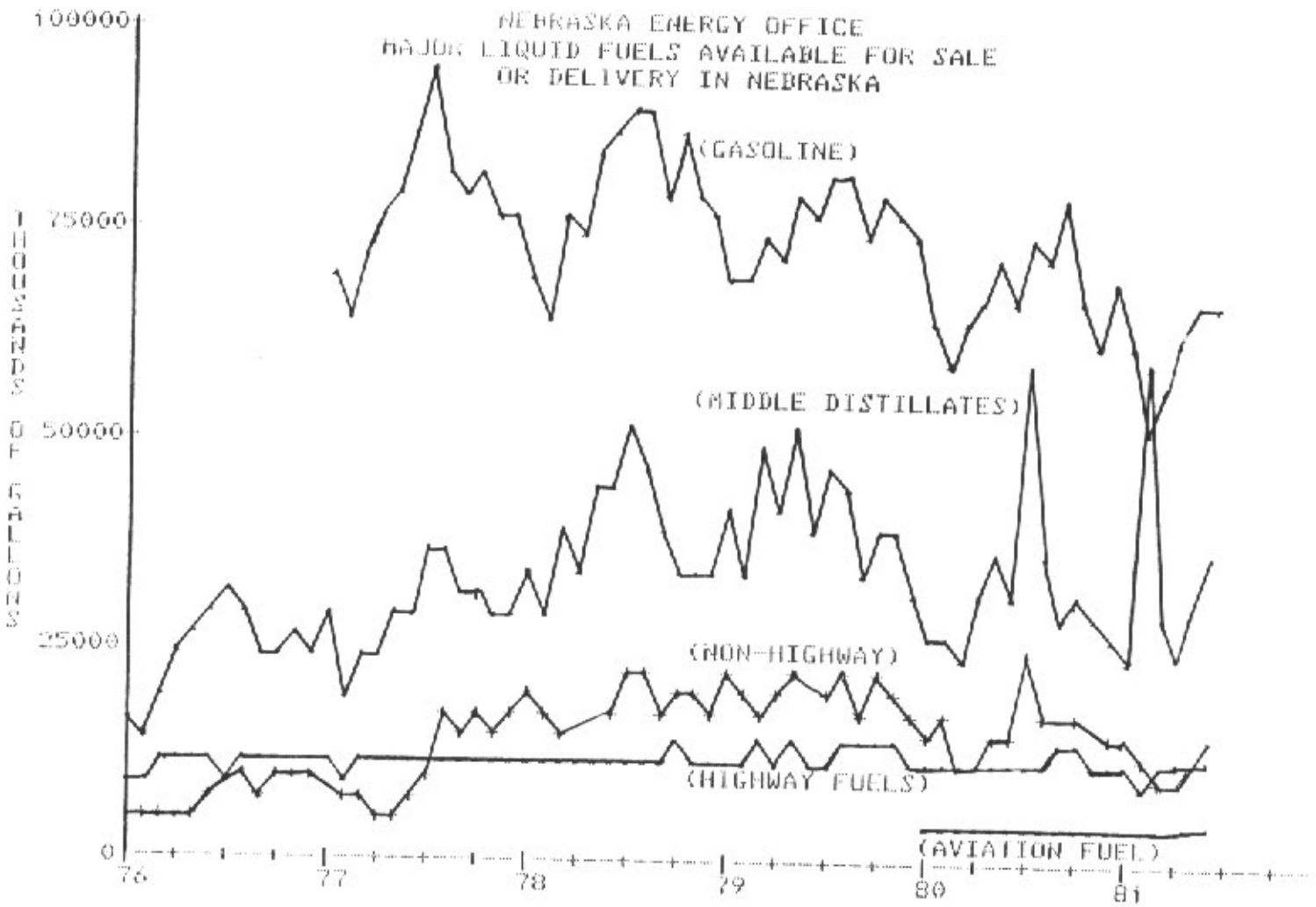
Middle distillates show the greatest variation in imports. The large February jump is considered abnormal and may be readjusted substantially. Other comparable sources do not show a similar increase in February. In the first six months of 1981, excluding February, imports were 96.8 percent of the same period in 1980.

Special fuels are any fuels other than gasoline that are put in a motor vehicle fuel tank. These include diesel, propane, and natural gas.

Special fuels for highway use are fairly constant reflecting the stability of the commercial transportation system.

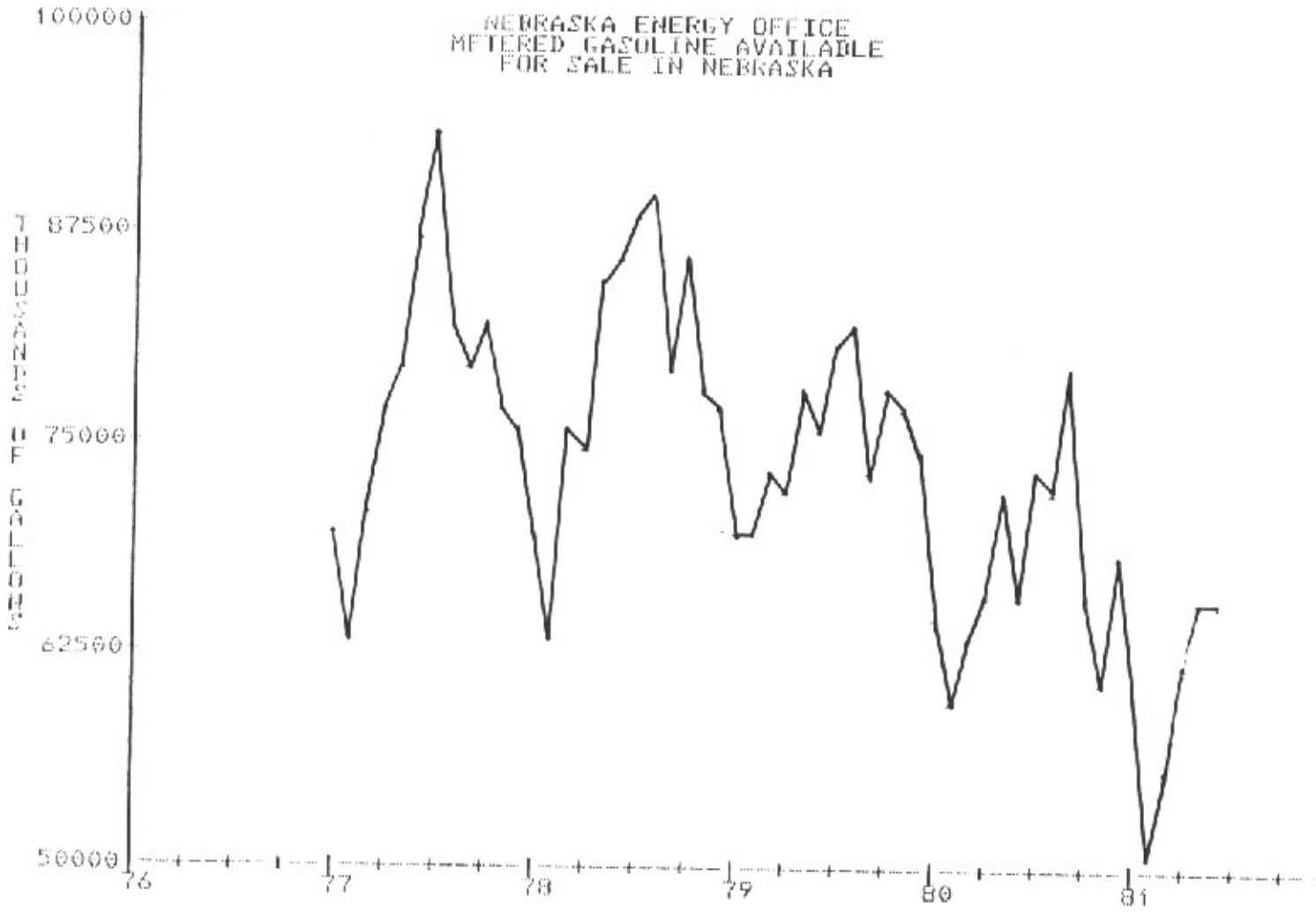
Special fuels for non-highway use include agricultural, industrial, railroad and any other motor vehicle use not on Nebraska roads. The non-highway use is quite dependent upon the Nebraska economy and is more volatile than highway use.

TABLE 9



SOURCE: NEBRASKA DEPARTMENT OF REVENUE

TABLE 10



SOURCE: NEBRASKA DEPARTMENT OF REVENUE

TABLE 11

Gasoline Available for Sale in Nebraska* (Metered Thousands of Gallons)

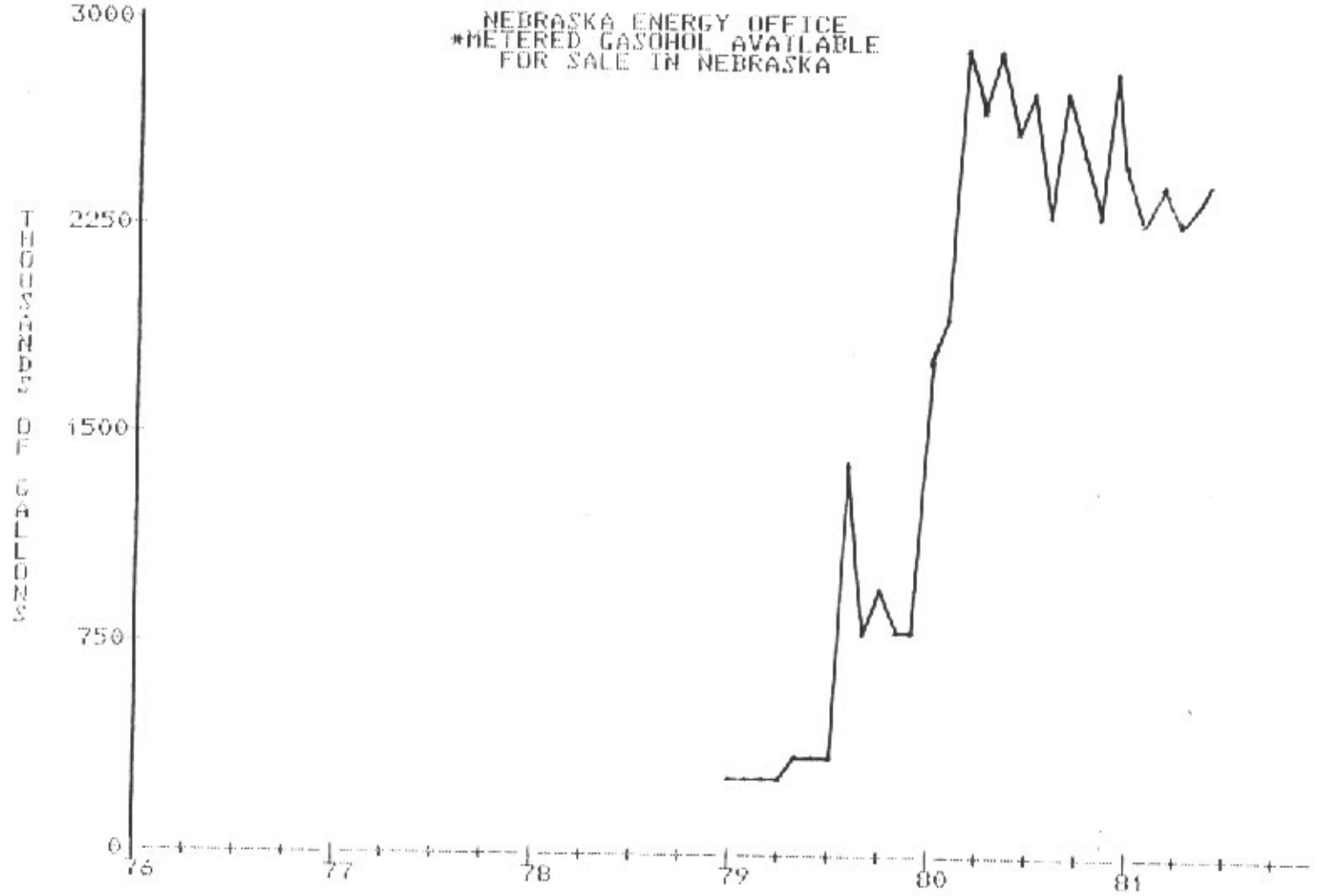
	1977	1978	1979	1980	1981	Percent of Previous Year
January	69,334	69,166	69,602	63,763	60,917	95.5%
February	62,501	63,227	69,367	59,381	51,125	86.1
March	70,780	75,162	73,397	63,151	56,133	88.9
April	77,085	74,597	72,399	65,318	61,363	93.9
May	79,039	84,422	77,631	72,440	65,092	89.9
June	86,543	86,165	75,955	65,801	66,126	100.5
July	92,844	88,253	80,054	73,498		
August	82,343	89,733	82,473	72,201		
September	79,853	79,202	72,609	79,754		
October	82,107	86,061	78,565	65,140		
November	76,506	78,351	76,555	60,261		
December	75,453	76,887	74,824	68,149		
TOTAL	934,388	951,226	903,431	808,857	360,756	92.5%

The last three months are preliminary.
*Gross import into the state minus exports out of the State.
Source: Department of Revenue Tax Form 81

July 31, 1981
NEBRASKA ENERGY OFFICE

07F(2)

TABLE 12



SOURCE NEBRASKA DEPARTMENT OF REVENUE

* A NEW REPORTING FORM WAS USED STARTING IN JANUARY 1981. MONTHLY INFORMATION BEFORE THAT DATE MAY BE QUESTIONABLE.

TABLE 13

Gasohol Available for Consumption in Nebraska* (Thousands of Gallons)

	1979	1980	1981	Percent of Previous Year
January	280	1,729	2,517	145.6%
February	280	1,926	2,308	119.8
March	296	2,878	2,413	83.8
April	291	2,687	2,311	86.0
May	313	2,915	2,392	82.1
June	306	2,579	2,475	96.0
July	320	2,749		
August	1,413	2,320		
September	823	2,761		
October	922	2,485		
November	802	2,284		
December	805	2,830		
TOTAL	6,851	30,143	14,416	98.0%

The last three months are preliminary
*Gross imports into the state minus exports out of the state
Source: Department of Revenue Tax Form 81-1

July 31, 1981
NEBRASKA ENERGY OFFICE

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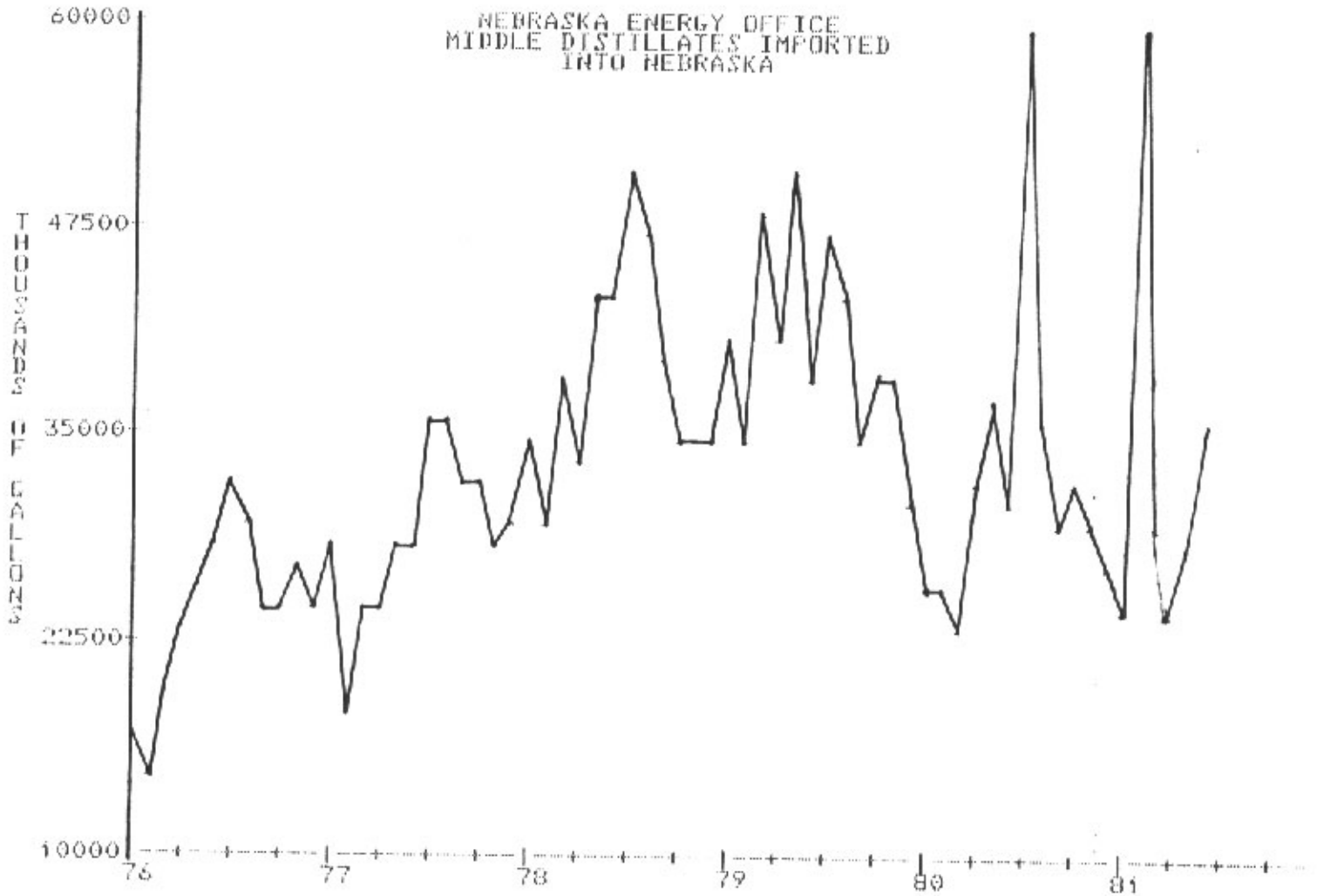
TABLE 14



SOURCE: NEBRASKA DEPARTMENT OF REVENUE

TABLE 15

*Middle Distillates Imported Into Nebraska (Thousands of Gallons)

	1976	1977	1978	1979	1980	1981	Percent of Previous Year
January	16,408	28,165	34,298	40,244	25,381	24,891	96.1%
February	14,081	18,169	29,735	34,600	26,157	59,280	226.6
March	19,222	24,028	37,886	48,150	23,102	29,432	127.4
April	23,495	24,833	32,942	40,745	32,255	24,863	77.1
May	26,239	27,521	43,673	50,992	36,486	28,443	76.7
June	28,744	28,267	42,739	38,258	31,247	36,063	115.4
July	32,022	36,250	50,051	46,443	59,339		
August	29,857	36,183	46,934	43,635	35,548		
September	24,475	32,160	39,245	34,495	29,905		
October	24,160	32,295	34,802	38,383	31,691		
November	26,464	28,073	34,156	38,326	28,840		
December	24,461	29,294	34,524	31,200	27,043		
TOTALS	289,628	345,238	460,985	485,471	386,994	202,972	116.2%

*Diesel, home heating oil, kerosene and other middle distillates
The last three months are preliminary
Source: Unaudited Figures from Department of Revenue Tax Forms 81

July 31, 1981
NEBRASKA ENERGY OFFICE

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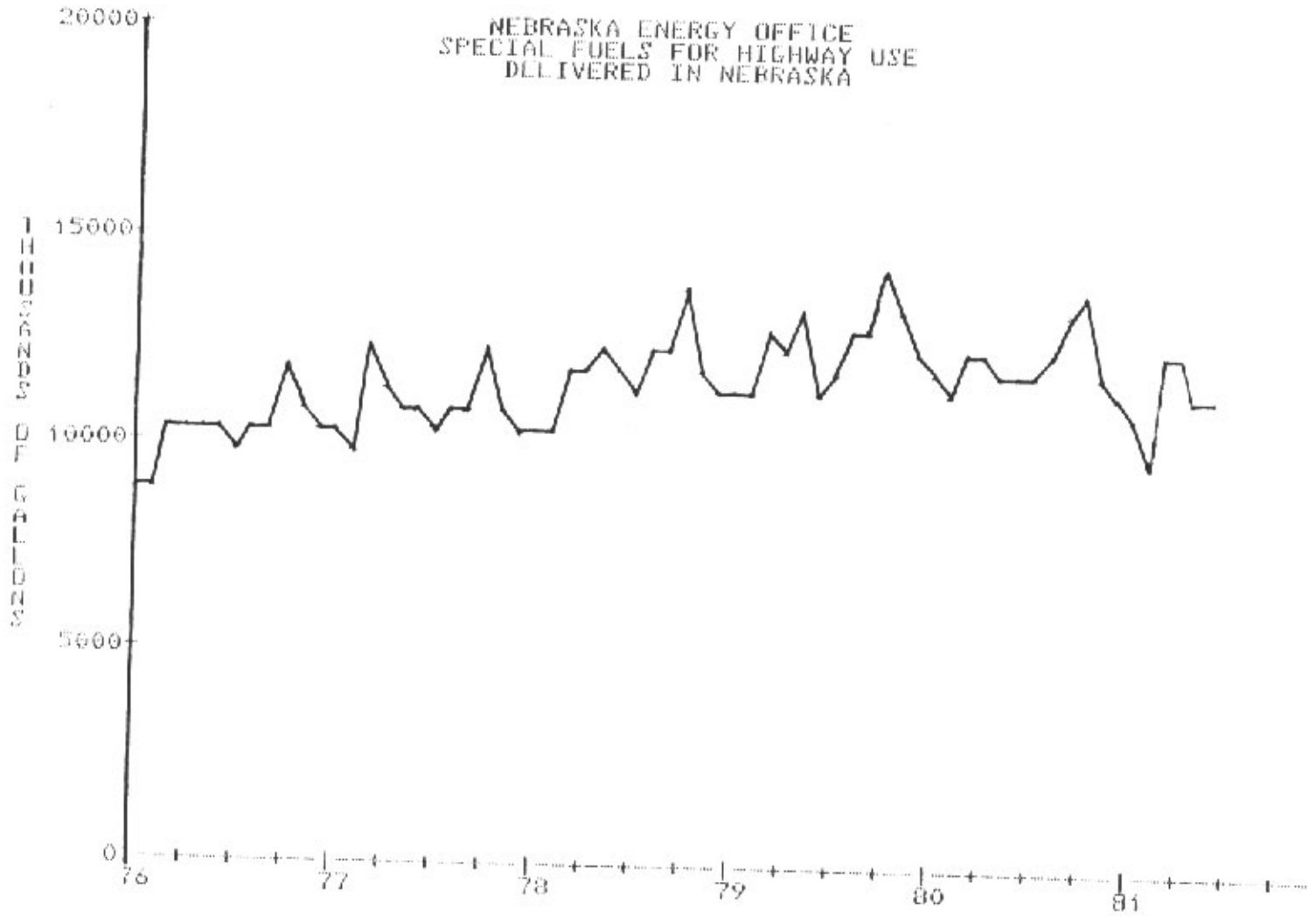
TABLE 16



SOURCE: NEBRASKA DEPARTMENT OF REVENUE

TABLE 17

Special Fuels for Highway Use Delivered in Nebraska (Thousands of gallons)

	1976	1977	1978	1979	1980	1981	Percent of Previous Year
January	8,828	10,123	10,200	11,482	11,840	10,606	89.6%
February	8,889	9,654	10,104	11,256	11,067	9,980	90.2
March	10,363	12,092	11,615	12,944	12,068	12,001	99.4
April	10,306	11,180	11,906	12,415	12,324	12,027	97.6
May	10,059	10,901	12,114	13,035	11,895	11,451	96.3
June	10,372	10,938	11,971	11,019	11,884	11,302	95.1
July	9,698	10,336	11,121	11,637	11,714		
August	10,243	10,915	12,456	12,570	12,349		
September	10,491	10,937	12,476	12,686	13,435		
October	10,849	12,198	13,996	14,310	13,589		
November	10,660	10,774	11,894	12,412	11,817		
December	10,027	10,116	11,114	12,047	11,216		
TOTAL	121,785	130,161	140,967	147,813	145,197	67,367	94.8%

*Any fuels other than gasoline that are put in a motor vehicle fuel tank. These include diesel, propane and natural gas.

The last three months are preliminary.

Source: Department of Revenue Form 91

July 31, 1981
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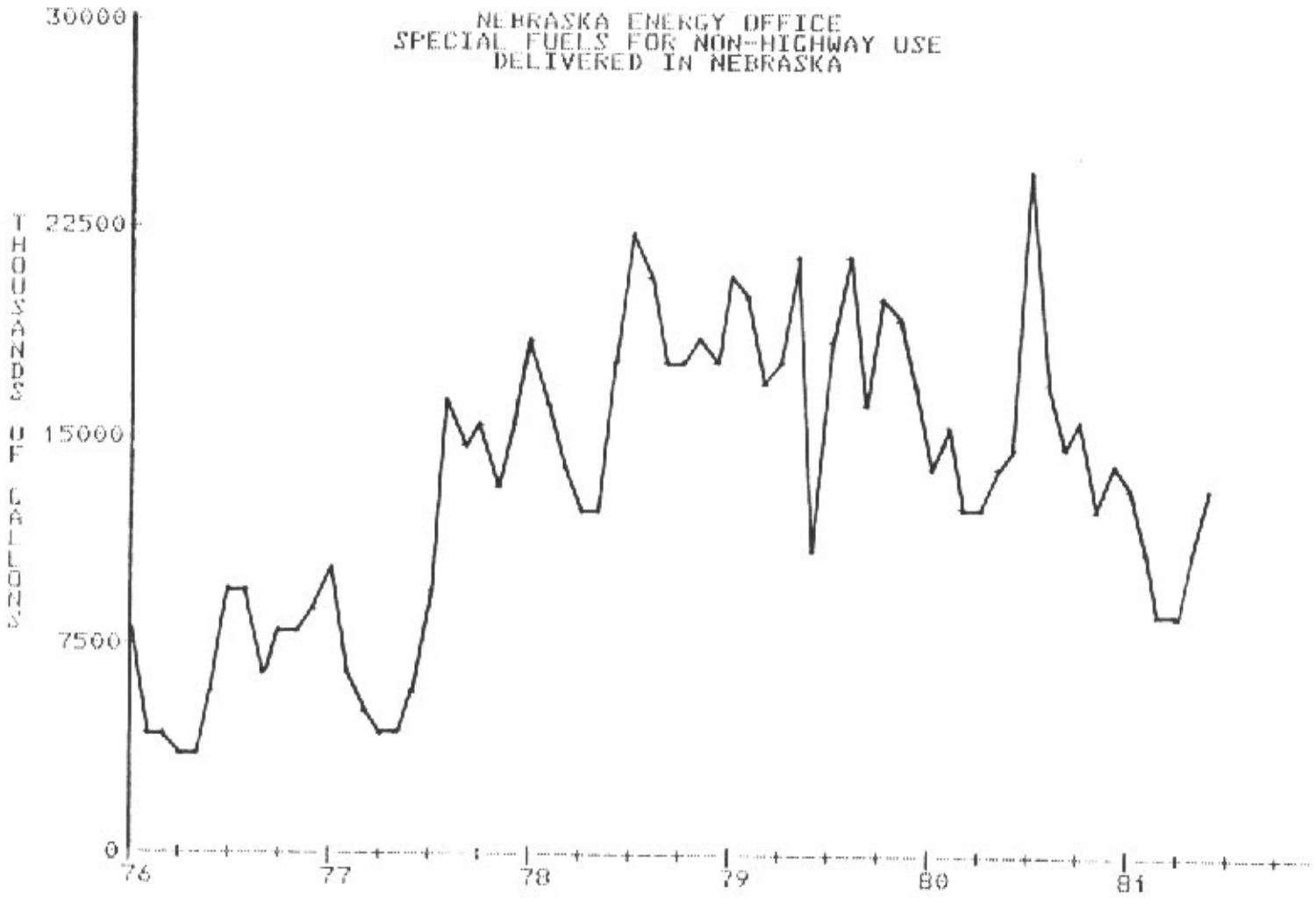
TABLE 18



SOURCE: NEBRASKA DEPARTMENT OF REVENUE

TABLE 19

*Special Fuel (Non-Highway Use) Delivered in Nebraska (Thousands of Gallons)

	1980	1981	Percent of Previous Year
January	13,800	12,878	93.3%
February	15,164	10,668	70.3
March	12,336	8,381	67.9
April	12,201	8,552	70.1
May	13,619	10,685	78.5
June	14,319	13,370	93.4
July	24,485		
August	16,920		
September	14,990		
October	15,457		
November	12,488		
December	13,913		
TOTAL	179,692	64,534	79.2%

*Any fuels other than gasoline that are put in a motor vehicle fuel tank. These include diesel, propane and natural gas.
*Includes agricultural, industrial, railroad and any other motor vehicle use not on Nebraska roads.
The last three months are preliminary
Source: Department of Revenue Form 91

July 31, 1981
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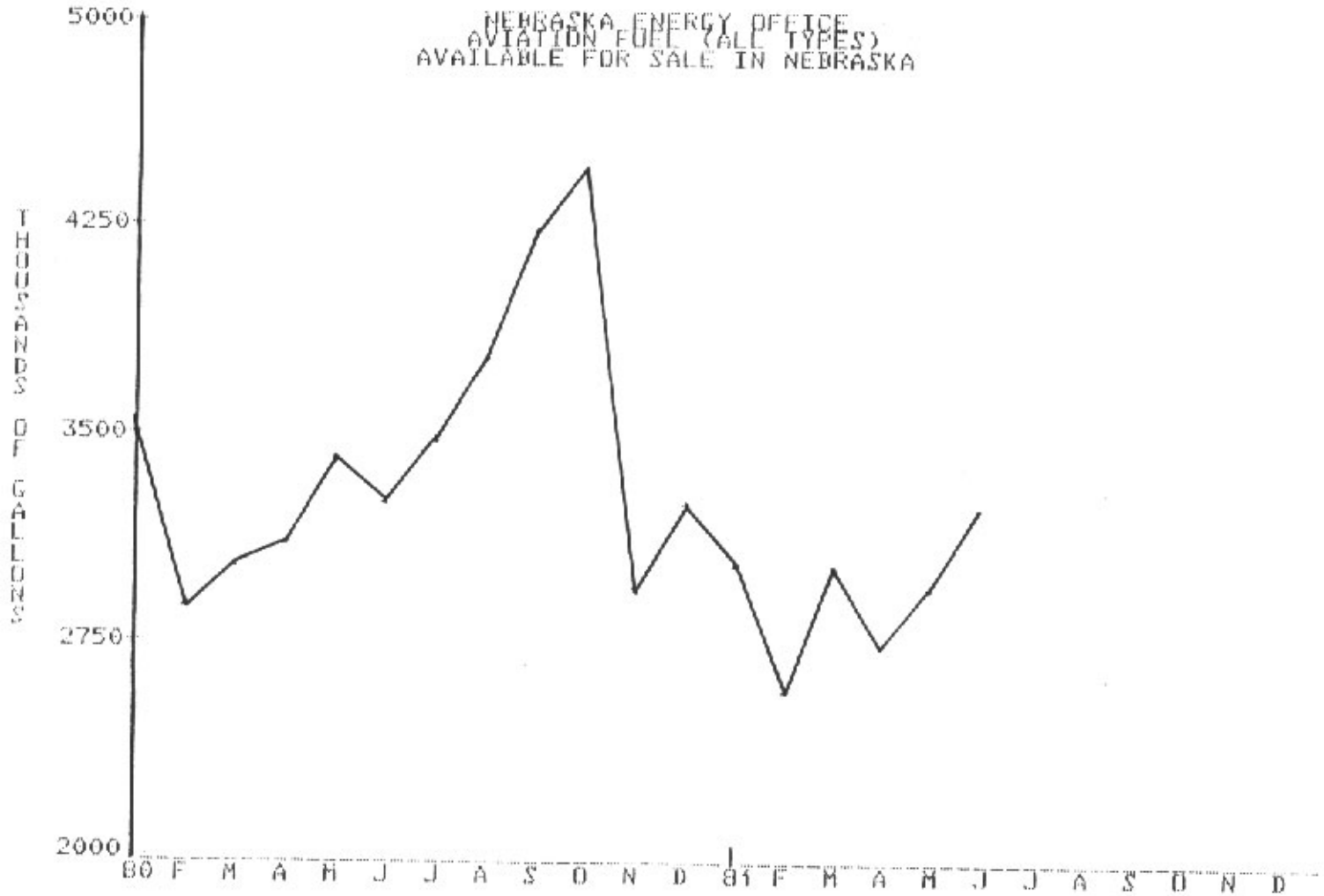
TABLE 20



SOURCE: NEBRASKA DEPARTMENT OF REVENUE

TABLE 21

Aviation Fuel (all types) Available for Sale* In Nebraska (Thousands of Gallons)

	1980	1981	Percent of Previous Year
January	3,523	2,997	85.1%
February	2,883	2,591	89.9
March	3,011	2,997	99.5
April	3,099	2,710	87.4
May	3,371	2,974	88.2
June	3,220	3,228	100.2
July	3,431		
August	3,746		
September	4,190		
October	4,444		
November	2,972		
December	3,209		
TOTAL	41,099	17,497	91.6%

The last three months are preliminary
*Gross Gallons imported into Nebraska minus gallons exported out of state.
Source: Department of Revenue Form 85

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ELECTRICITY GENERATION AND SALES

Electricity generated by the five major Nebraska electric utilities and the fuels used for electricity generation by these utilities are presented in Table 22 . The Nebraska Public Power District, Omaha Public Power District, Lincoln Electric System, Grand Island and Fremont produced 88.7 percent of all the electricity produced in the state during 1980.

Table 22 shows that electricity generation by five major electric utilities increased 15.6 percent for the first six months of 1981 compared with the corresponding period in 1980. A large portion of this increase was due to the shutdown of nuclear power stations for modifications and repairs in March, April and May of 1980.

During the first half of 1981 the nuclear stations generated 1.94 times more electricity than during the first half of 1980. It was still one quarter lower than in 1979. There was a significant decrease in the use of natural gas for electricity generation as a result of fuel shifts. In the first six months of this year the utilities used only 73 percent of natural gas compared with the same period of 1980.

Electricity sales to ultimate consumers by three major Nebraska electric utilities are presented in Table 23 . The Omaha Public Power District, Nebraska Public Power District, and Lincoln Electric System produce 85.7 percent of the electricity used in the state. This table also shows the effects of seasonal and weather changes on electricity consumption. The monthly maximum sale exceeded the minimum sale by 48 percent.

Electricity sales to ultimate consumers in 1981 are following the normal seasonal patterns. A new summer peak is expected in July and August.

TABLE 22

ELECTRICITY GENERATION AND PRIMARY FUELS USED
BY FIVE MAJOR NEBRASKA ELECTRIC UTILITIES
(OPPD, NPPD, LES, GRAND ISLAND, FREMONT)

YEAR	MONTH	NET GENERATION *MWh	BITUM. COAL SH. TONS	HEAVY OIL BARRELS	LIGHT OIL BARRELS	NATURAL GAS MCF	PROPANE GALLONS
1980	January	1,426,944	404,910	30,602	5,146	244,773	300
	February	1,351,826	469,262	15,784	3,902	292,572	2
	March	1,042,353	573,557	1,506	4,767	365,423	1,445
	April	853,689	469,414		11,874	217,393	
	May	761,962	416,726		3,464	256,990	
	June	1,084,663	354,570		6,072	298,373	
	July	1,843,024	973,912	15,189	3,902	605,043	
	August	1,485,299	426,001	1,171	2,136	520,763	
	September	1,112,936	208,452	496	2,388	392,707	
	October	1,018,548	148,892	474	471	252,266	400
	November	1,048,071	233,251	8	3,475	191,190	
	December	1,433,941	376,146	1,059	3,151	207,157	
	TOTAL	14,463,256	5,055,093	66,289	50,748	3,844,650	2,147
1981	January	1,490,959	441,560	202	3,439	186,265	
	February	1,340,074	351,921	4,221	6,836	136,135	
	March	1,359,255	398,026		1,574	156,470	
	April	1,209,536	462,018	1	7,093	164,137	
	May	943,363	438,793	381	4,866	242,996	
	June	1,193,395	386,766		5,996	338,067	
	TOTAL	7,536,582	2,479,084	4,805	29,760	1,224,070	

SOURCE: Form 4 Monthly Power Plant Reports

*1,000 kilowatthours = 1 Megawatthour = 1 MWh

NEBRASKA ENERGY OFFICE July, 1981

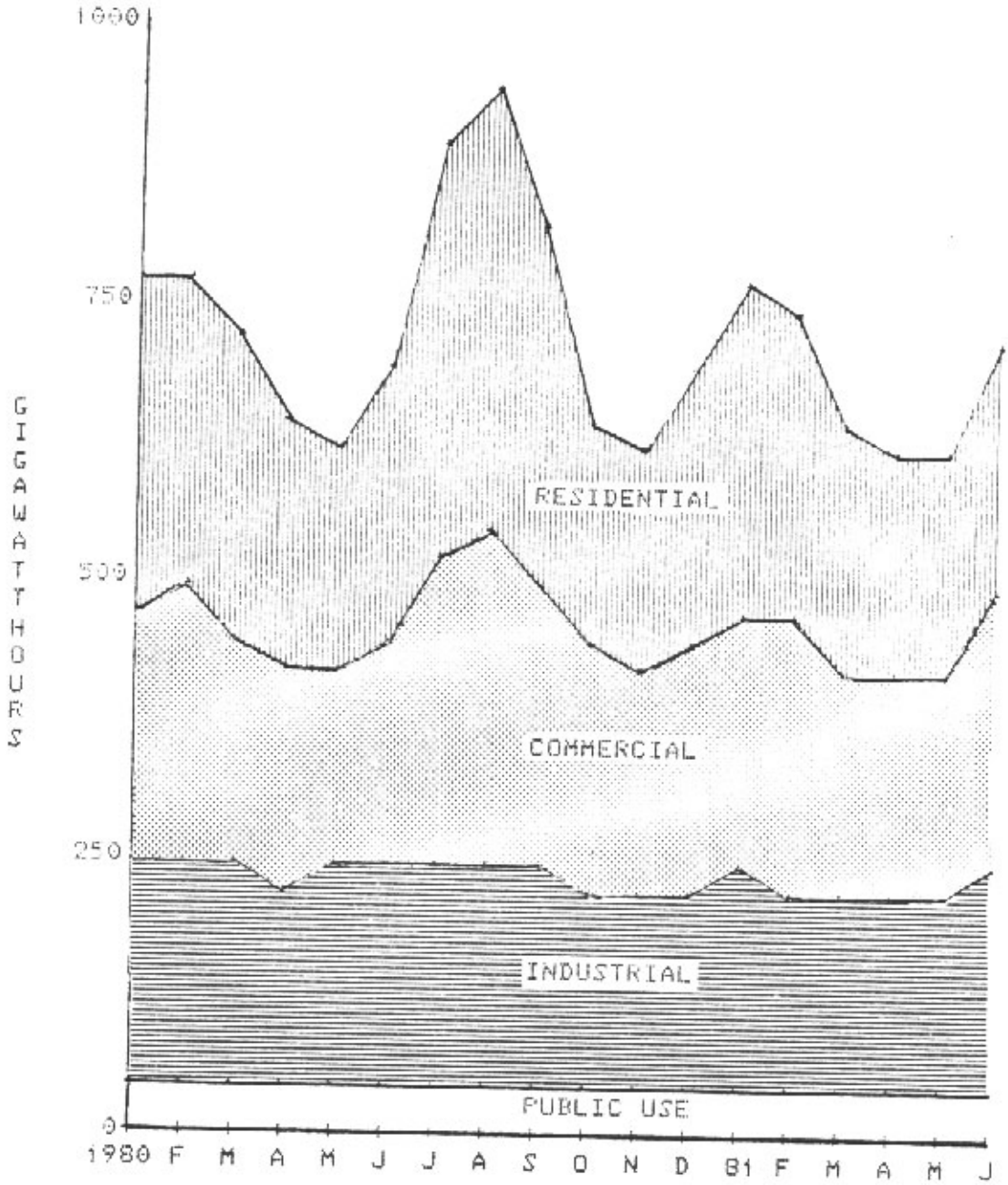
TABLE 23

ELECTRIC SALES TO ULTIMATE CONSUMERS
MEGAWATTHOURS SOLD
(NPPD, OPPD & LES)

DATE	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		PUBLIC USE	
	1980	1981	1980	1981	1980	1981	1980	1981
January	284	297	237	238	206	196	30	30
February	283	274	248	234	202	188	30	29
March	271	234	212	200	198	188	28	27
April	223	199	195	197	190	197	26	27
May	188	190	193	202	199	197	27	26
June	229	239	218	229	204	220	28	27
July	379		263		211		30	
August	398		281		214		34	
September	327		255		210		32	
October	205		214		194		30	
November	205		201		190		28	
December	255		221		189		29	
TOTAL	3,247	1,432	2,737	1,301	2,406	1,186	353	167

TABLE 24

ELECTRIC SALES TO ULTIMATE CUSTOMERS
(NPPD, OPPD & LES)



1,000,000 KILOWATTHOURS = 1 GIGAWATTHOUR

SOURCE : EDISON ELECTRIC INSTITUTE
MONTHLY SOURCE AND DISPOSITION

1980 IRRIGATION USE IN NEBRASKA (1981 SURVEY)

An "Energy For Irrigation" survey was conducted in early 1981 to compare the relatively "wet" 1979 irrigation year with "hot and dry" 1980.

Questionnaires were mailed to 550 Nebraska farmers who had responded to a previous questionnaire. A total of 228 returned forms contained information on energy use. The information represents 703 pumps and 65,530 acres. This is very close to the intended one percent sample.

The questionnaire requested information on methods used to calculate the required amount of water for irrigation. In the previous survey more than two-thirds of the irrigators showed their "own judgement" as their primary method. This year the category was more specific. Exactly half of the 298 respondents indicated that they use "their own judgement without any tools" while 28 percent use "their own judgement plus a probe".

These two methods were almost ten percent higher than in the 1980 survey. A ten percent decrease was found in the soil moisture measurements and block reading table methods. This indicates that last summer was so hot and dry that some farmers may have irrigated without taking time to measure soil moisture.

ENERGY FOR IRRIGATION BY FUEL TYPE

Table 25 shows that in 1980 energy used for the irrigation of one acre averaged 3.96 million Btu, compared with 3.32 million Btu in 1979, 19.3 percent higher. The energy increase per acre took place in all six categories. The state's total energy use for irrigation in 1980 for all irrigated land (7.2 million acres as estimated by Natural Resources Data Bank) is estimated at 28.5 trillion Btu. Some 770,000 acres are irrigated by syphon type systems which don't require energy. After this correction a more realistic estimate is 25.5 trillion Btu.

Table 25

	Number of Responses		Acres Per Pump		Million Btu/Acre		Million Btu/Pump	
	1979	1980	1979	1980	1979	1980	1979	1980
Diesel	661	104	121.5	121.9	4.20	4.46	510	544
Propane	248	38	81.9	82.2	2.89	3.10	237	255
Gasoline	16	3	64.2	44.0	1.81	2.30	116	101
Natural Gas	93	2	104.1	72.4	4.61	4.98	481	361
Electricity	272	6	78.1	70.8	0.90	1.90	70	140
Mixture of Fuels	1,088	74	84.6	90.	3.22	3.90	273	355
TOTAL	2,378	228	91.2	93.2	3.32	3.96	303	370

METHODS OF CALCULATING ENERGY USED PER IRRIGATED ACRE

Table 26 shows that farmers who irrigated all season used up to 40 percent more water and energy compared to the average level of irrigation. Use of programmable calculators and block reading tables shows a higher than average energy use. When private consultants or the irrigator's own judgement were used to determine the needed amount of water, energy use was lower than average. It is not known at this time how this lower use of energy and water affected the yield.

In comparing total energy used for irrigation, the share of liquid fuel (propane and diesel fuel) in 1980 compared to 1979 increased from 74 to 82 percent, with a corresponding decrease of natural gas and electricity.

Table 26

METHOD	NUMBER OF RESPONSES	ACRES	MILLION BTU/ACRE
Irrigation all season except when raining	8	1,535	5.63
Own judgement, without tools	115	28,730	3.60
Own judgement using probe	62	18,202	3.88
Using AGNET, program calculations	11	4,206	4.86
Using Block Reading Tables	20	9,514	4.49
Other (mostly private consultants)	7	2,001	3.29

IRRIGATION CONNECTION AND ELECTRIC LOAD MANAGEMENT

To determine the number of new irrigation connections in 1980 and 1981, rate structures and load management techniques, the Nebraska Energy Office conducted a telephone survey in March, 1981, of 38 rural public power districts.

In the 37 districts which volunteered information, 1,267 new irrigation customers were connected to electric power in 1980. Approximately 30 percent of these were conversions from diesel fuel to electricity. An estimated 1.3 million gallons of diesel fuel were saved in 1980 due to irrigation pump conversions to electricity.

A recent survey indicates that 42,800 Hp will be converted during 1981. This projects to an estimated savings of 2 million gallons of diesel fuel for 1981 (assuming top engine efficiency and 1,000 working hours per season).

In the first three months of 1981, over 2,700 applications were received for connection. Nearly 50 percent are scheduled to be connected this year, and the remaining 50 percent were denied or postponed until 1982-1984. Nineteen percent of the districts account for nearly three-fourths of the requests, with individual district backlogs ranging from 140 to 425.

The major reason for most connection delays is the high peak in electricity demand created by irrigation pumps which coincides with the peak load created by air conditioning.

Most districts depend primarily on the voluntary energy conservation efforts of their customers. Two districts are testing the benefits of controlling air conditioners and water heaters.

One district reported that 90 percent of its irrigation customers are on load control. One requires all pumps over 10 horsepower to be on load control; another has required all irrigation customers connected since January 1, 1976, to be on load control.

Seventy percent of the districts take the following special measures to control peak loads:

a) Mandatory full control of irrigation pumps (5 percent)
b) Partial control/1 - 2 days off per week or other intermittent periods (59 percent)
c) Time-of-day rates (11 percent)

The remaining 25 percent take no special load control measures.

Rate structures are used broadly and in various combinations with load control measures to increase total electric system efficiency.

Of the 37 districts, 24 percent (9) have no incentive irrigation rates for demand reduction. Among the districts offering load control rates, there are approximately 15 different formulas for rates, ranging from "no control" to "anytime" interruption.

One district has a definite time of day rate, offering savings of 22 to 51 percent.

Sixty-two percent of the districts already have load control or load management rates, and three others plan such controls this summer. This indicates that nearly 70 percent of all districts contacted will be using some combination of load management techniques for shaving the summer peak load.

Savings per kilowatt hour range from 12 percent to 47 percent with an average of 28 percent cost savings possible. The savings per horsepower average 36 percent with a minimum cost savings of 12.8 percent and a maximum of 60 percent.

This survey indicates that cost savings are possible for Nebraska irrigators due to the diversified rate structures and load controls offered by public power districts. The questionnaires show that only 50 percent of the requests for connections are scheduled to be filled in 1981. This underscores the need for the power sources currently under construction and the building of projects like the Mandan line to alleviate summer peak loads.

ENERGY HOTLINES

To help Nebraskans obtain access to information on energy conservation and renewable sources, the Energy Office has assembled from U.S. Department of Energy (DOE) sources a new list of national, toll-free hotlines and referral services.

As of June 30, 1981 the following 11 hotlines are offering assistance to states, local governments and the general public. Their areas of expertise, sponsors and telephone numbers are:

Alcohol Fuels (Operated by Solar Energy Research Institute)	800-525-5000
Conservation and Renewable Energy Inquiry and Referral Service (Operated by Franklin Institute for DOE)	800-523-2929
Clearinghouse for Training in Alternative Energy (Operated by Solar America, Inc. for Department of Labor)	800-545-6928
Energy Conservation Product Safety (Operated by Consumer Product Safety Commission)	800-638-8326
Energy Data Survey Forms (Operated by DOE)	800-424-9041
Gasoline and Heating Oil Complaints (Operated by DOE)	800-424-9246
Low-Cost No-Cost Community Mobilization Campaign (Operated by ACTION Community Energy Office)	800-424-8867
Minority Energy Technical Assistance Program (Operated by Center for Urban Environmental Studies)	800-424-9591
National Consumer Cooperative Bank (Operated by Coop Bank for incorporated cooperative organizations only)	800-424-2481
Neighborhood Information Sharing Exchange (Operated by Community Methods, Inc. for U.S. Department of Urban Development)	800-424-2852
Ridesharing (Operated by U.S. Department of Transportation)	800-424-9184