NEBRASKA

DEPT. OF WATER, ENERGY, AND ENVIRONMENT

2025
Annual State Energy Report

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Introduction

On July 1, 2025, Nebraska Department of Environment and Energy merged with Nebraska Department of Natural Resources to form the Department of Water, Energy and Environment.

The Nebraska Department of Water, Energy, and Environment (DWEE) continued its work in 2025 to make energy more efficient, reliable, and affordable for Nebraskans. Through programs like the Weatherization Assistance Program (WAP) and the State Energy Program (SEP), DWEE helps families, schools, and communities reduce energy use, save money, and strengthen the reliability of Nebraska's energy systems.

DWEE secured federal funding made available through the Infrastructure Investment and Jobs Act (IIJA) of 2021 and the Inflation Reduction Act (IRA) of 2022. These funds allowed DWEE to continue and expand programs that improve energy efficiency in homes, communities, and schools; enhance grid reliability; and make energy more affordable across the state.

This Annual Energy Report focuses on DWEE energy program activities occurring in state fiscal year 2025 (July 1, 2024, to June 30, 2025). It highlights the continued implementation of these programs and provides an updated overview of Nebraska's energy profile, including energy supply, demand, and conservation for fiscal year 2025.

The Programs

Weatherization Assistance Program

The Nebraska Department of Water, Energy, and Environment's (DWEE) Planning and Aid Division administers the Weatherization Assistance Program. This federally funded program weatherizes homes for those with limited incomes so they can save energy and money. The agency is responsible for inspecting the homes that are weatherized and for monitoring the sub-grantees—primarily community action agencies and one non-profit agency—that are responsible for the home weatherization improvements.

Sub-grantee crews or private contractors are responsible for completing the work on the homes. DWEE staff inspect a minimum of 10-15% of all completed homes to ensure the quality of work performed.

The Weatherization Assistance Program received funding from four sources:

- $3,575,000 from the Low-Income Home Energy Assistance Program (LIHEAP)
- $3,536,206 from the U.S. Department of Energy's (DOE) Weatherization Assistance Program
- $24,527,380 from the U.S. Department of Energy's (DOE) Infrastructure Investment and Jobs Act (IIJA)
- $100,000 from Petroleum Violation Escrow Funds

Investment in the Weatherization Assistance Program July 2024 - June 2025	
Investment (federal Funds)	$ 2,604,740
Energy Impacts	
Electric Dollar Savings (present discounted value)	$ 142,276
Natural Gas Dollar Savings (present discounted value)	$ 642,460
Annual Total Dollar Savings	$ 784,736
Present Discount Value of Future Savings	$ 779,785
Economic Impacts	
Output	$ 2,027,054
Value-Added	$ 1,294,967
Labor Income	$ 1,095,096
Job-Years	29.50
Air Emission Pollutant Reductions (Pounds)	
Carbon Dioxide (CO2)	10,652,500.36
Sulfer Dioxide (SO2)	12,167.57
Nitrogen Oxide (NOX)	13,352.65
Particulate Matter <2.5 micro-meters (PM2.5)	211.67
Volatile Organic Compounds (VOC)	467.64
Particulate Matter < 10 micro meters (PM10)	339.44

Figure 1 *DWEE*

The Nebraska Department of Health and Human Services annually transfers 10% of the LIHEAP funds it receives to DWEE, which are allocated to seven Community Action Partnership agencies and one non-profit agency to weatherize homes. DWEE received $750,000 from LIHEAP to use for Heating and Cooling Repair and Replacement (HCRRA). By putting this program under the Weatherization Assistance Program, DWEE can offer an additional service where Nebraskans with low incomes can repair, or possibly replace, their heating and cooling system. More about LIHEAP and DOE funds and how they have been spent throughout the state are in Figure 2. Between July 1, 2024, and June 30, 2025, 521 homes were weatherized and 101 HCRRA units were completed with these funds.

The types of improvements made through the weatherization program are determined based on the energy audit analysis completed on each home and the type of home construction. Weatherization costs per house averages between $6,000 and $8,000, excluding the cost of health and safety improvements such as furnace repairs or replacements. Prior to mid-2009, the average amount spent on homes ranged from $2,500 to $3,000. The average cost per home is set by the DOE annually based on the Consumer Price Index (CPI). In homes, the most common improvements generally are:

- Adding insulation
- Replacing and repairing furnaces
- Reducing air leakage
- Installing high efficiency lighting
- Insulating water heater tanks and pipes
- Repairing cracked windows

Since the Weatherization Assistance Program began in 1977, $247 million has been spent to make energy efficiency improvements in 72,108 homes.

Total Nebraska Homes Weatherized by Area Providers, July 2024 - June 2025

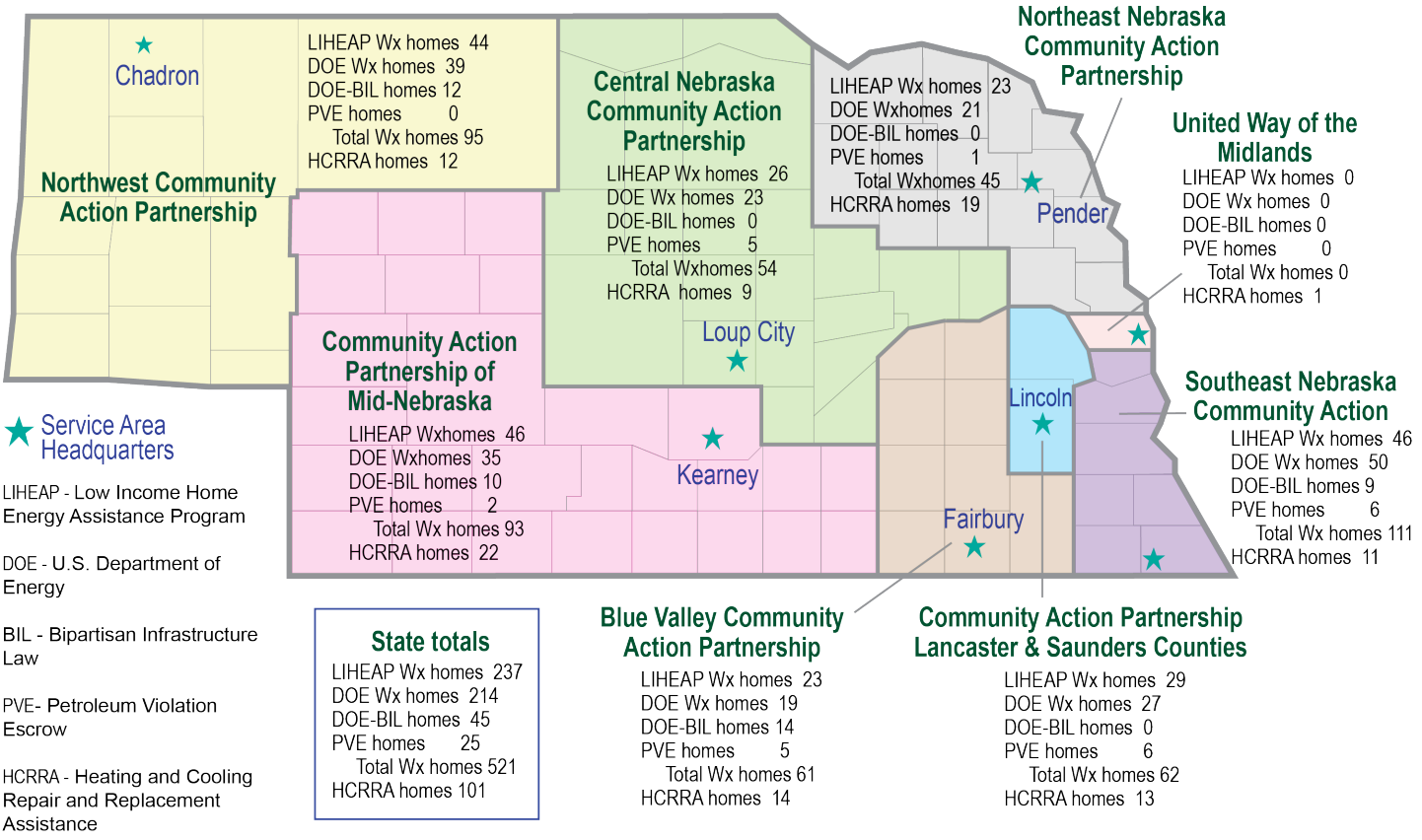


Figure 2 *DWEE*

Dollar and Energy Saving Loans Program

The Dollar and Energy Saving Loans Program (DESL) was initially capitalized with Oil Overcharge Funds, later augmented with American Recovery and Reinvestment Act Funds, and is continually re-charged with loan repayments from borrowers. An additional $5.8 million was added from the U.S. Department of Energy's Infrastructure and Investment Jobs Act, Section 40502 for the Energy Efficiency revolving loan fund capitalization grant program. This award was received in November 2024 and earmarked for Nebraska public K-12 Schools.

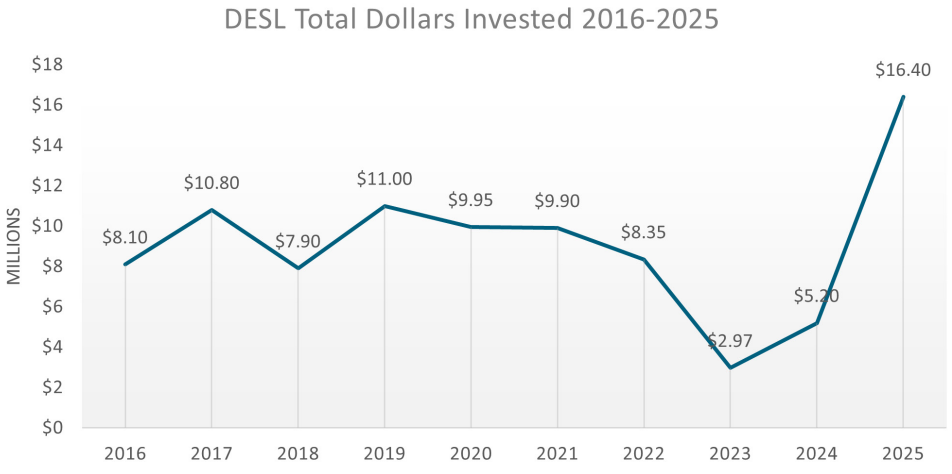


Figure 3 *DWEE*

DWEE, in conjunction with over 200 eligible Nebraska lending institutions at more than 900 locations, continues to transform the energy market through access to statewide reduced interest rate loans. Energy efficiency, renewable energy, and waste minimization projects in all sectors can be financed. Focus has been on homes, businesses, and operating systems; alternative fuel vehicles; fueling facilities and equipment; wind and solar installations; telecommunications equipment; ENERGY STAR® certified home appliances; and ENERGY STAR® five star plus homes. Interest rates ranged from 1% to 5% during 2024-2025, depending on the project eligible for financing.

In both March 2009 and January 2010, the Nebraska Public Power District provided $500,000 to the agency's DESL Program. These funds were provided to finance 1.5% loans for air source, groundwater, or ground coupled heat pumps; qualifying thermostats; and back-up natural gas or propane furnaces with a 95 Annualized Fuel Utilization Efficiency (AFUE) rating or higher for the utility's retail and wholesale customers. More information about these loans may be found at https://dee.nebraska.gov/state-energy-information/dollar-energy-saving-loans/15-nppd-dollar-energy-saving-loans.

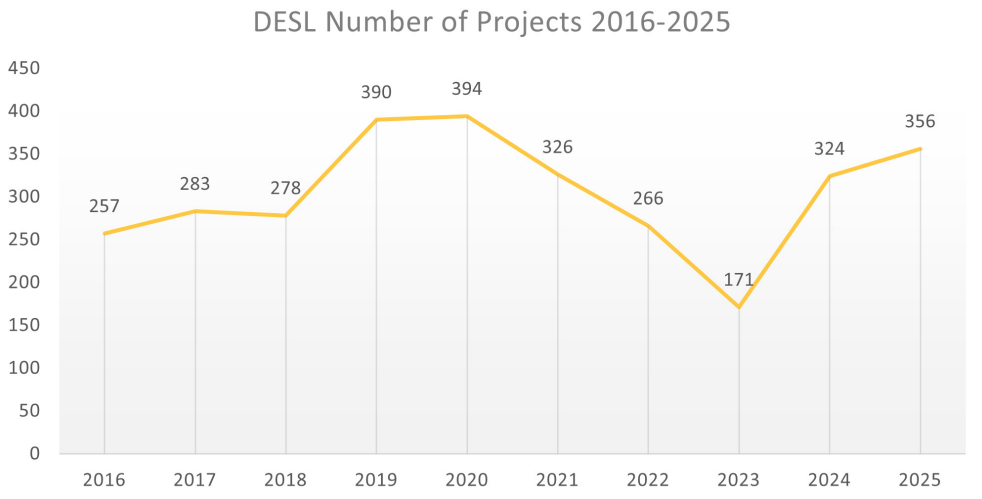


Figure 4 *DWEE*

Between two separate transactions in December 2023 and again in December 2024, Omaha Public Power District provided $1 million to partner with the agency's DESL Program to provide a 3% financing option covering a variety of energy saving measures for both their residential and small business customers. Some eligible project types are replacement appliances, replacement windows and doors, insulation and weatherization, replacement high-efficiency HVAC equipment, lighting, and wind and solar systems. The new partnership launched in March 2024. More information can be found at https://dee.nebraska.gov/state-energy-information/dollar-energy-saving-loans/3-oppd-dollar-energy-saving-loans.

From March 1990 to June 30, 2025, 31,530 energy saving projects totaling more than $418 million have been financed using low-interest loans from participating lenders and DWEE. More than $214 million of the $382 million has come from the agency's revolving loan fund. The state's participating lenders provided more than $147 million. The balance, more than $55 million, was spent by the borrowers for the remaining cost of eligible improvements along with any non-eligible related items.

Loans have financed projects in all the state's 93 counties, as illustrated in Figure 5. Douglas County, with 3,548 projects totaling more than $55 million, tops the list with the most

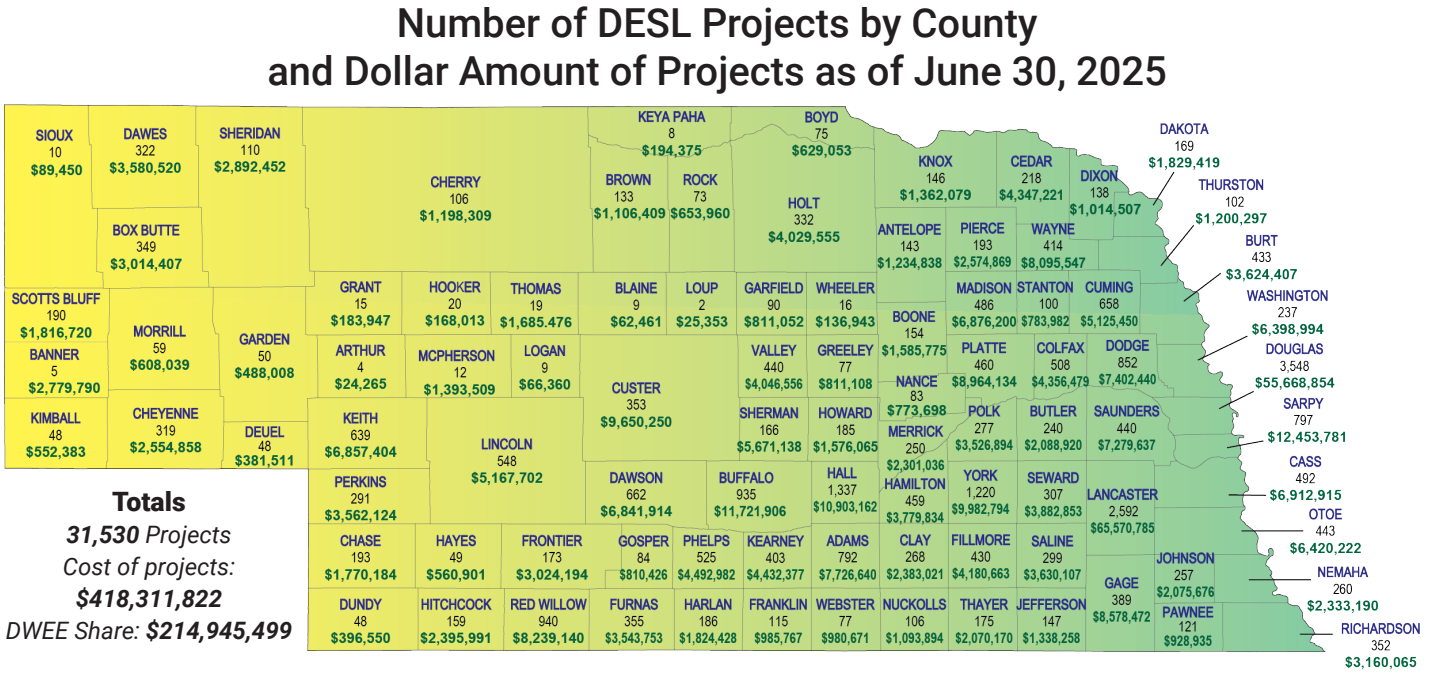


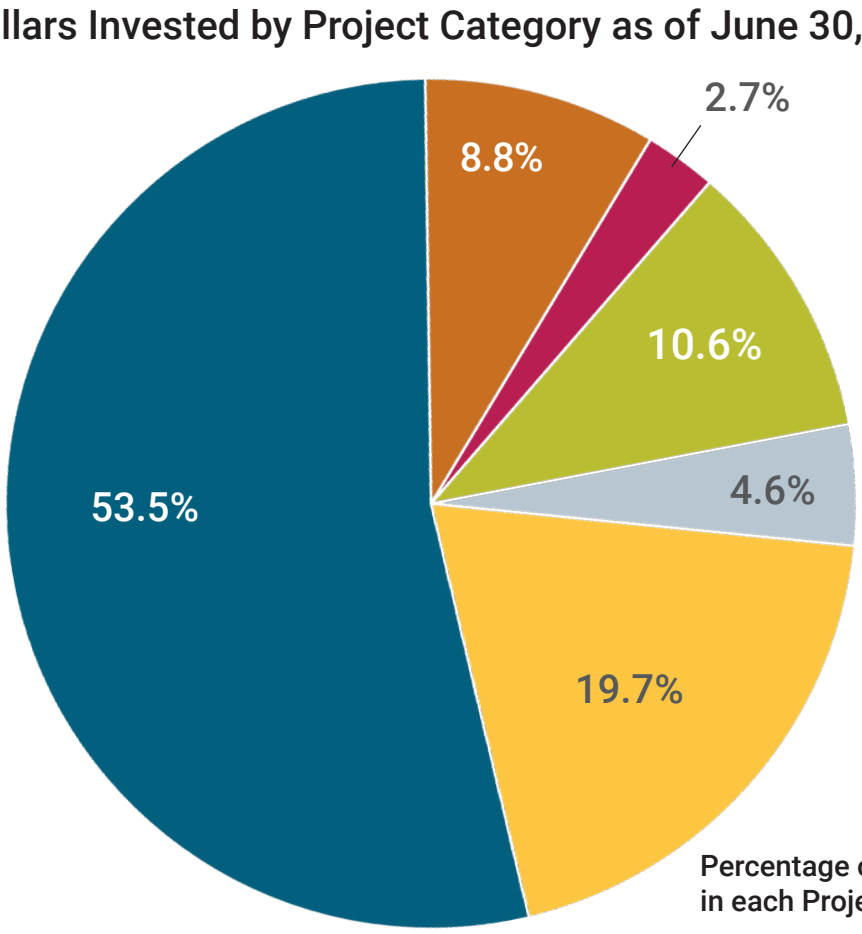
Figure 5 *DWEE*

dollars invested at over $65 million, albeit on fewer projects—2,592. Hall and York Counties come in third and fourth with 1,337 projects totaling over $10.9 million, and 1,220 projects totaling over $9.9 million, respectively. Following are the number of projects by congressional district:

- First Congressional District: 11,007
- Second Congressional District: 4,476
- Third Congressional District: 16,049

During this reporting period, 356 new projects totaling over $16.4 million were financed. The number of energy efficiency projects financed since 1990 are shown in Figure 5 and total 31,530.

Figure 6 quantifies loans in six different areas: residential; energy efficient housing (new construction); agricultural/commercial/industrial (including agriculture, business, and non-profits); local government; wind, solar, and fuel cell systems; and alternative fuel/telecommunications. It also provides the number of projects by category and the total cost in each category. Several of the largest categories are detailed as follows:



Totals
Total costs of projects: **$418,311,822.47** | Total DWEE Share: **$214,945,498.84** | **31,530** Total Projects

Residential
(single- and multi-family retrofits)
Total costs of projects: $223,692,739
DWEE Share: $116,669,310
29,043 Projects

Energy Efficient Housing
(new construction)
Total costs of projects: $82,464,709
DWEE Share: $30,641,681
305 Projects

Wind, Solar and Fuel Cells
Total costs of projects: $19,177,189
DWEE Share: $12,670,698
234 Projects

Agriculture/Business/ Non-profit
Total costs of projects: $44,514,822
DWEE Share: $21,577,158
1,738 Projects

Alternative Fuel/ Telecommunications
Total costs of projects: $11,473,505
DWEE Share: $7,147,364
44 Projects

Local Government
Total costs of projects: $36,988,805
DWEE Share: $26,239,288
166 Projects

Figure 6 *DWEE*

Residential
Single- and multi-family Nebraska home retrofits make up 92.1% of all energy efficiency projects financed with loans through the DESL with more than $223 million being used to finance residential energy saving improvements such as replacement of inefficient furnaces, air conditioners and heat pumps; replacement of windows and doors; and insulation of walls and ceilings.

Energy Efficient Housing (New Construction)
Through the DESL Program, the Department has helped fund the new construction of 305 highly energy-efficient, above-code houses across the state, making up just over 1% of the total projects undertaken by Nebraskans using loan program funds, and 19.7% of total project costs.

Agricultural/Commercial/Industrial
Over $44 million has been used to make building and system improvements in 1,738 projects since 1990, ranking third highest among all loan areas at 10.6% of funding, and 5.5% of total projects. Typical improvements in this category include replacement of doors and windows; heating and cooling equipment; installation of insulation; lighting upgrades; low-pressure irrigation systems; replacement of irrigation pumps and motors; grain dryers; and well modifications.

Agricultural funding efforts have been complemented by rebates to replace diesel irrigation engines with all-electric equipment, provided by grants from the U.S. Environmental Protection Agency. DWEE's ONE RED program currently has over 70 irrigation projects in the works from the first round of applications. The Department's Clean Diesel Rebate Program, funded through the Diesel Emissions Reduction Act, previously helped fund 174 clean diesel engine projects between 2017 and 2023.

Local Government
Nebraska's local government buildings account for only a half percent of total projects, but this category takes fourth place for dollar amount with over $36.9 million spent on energy efficient updates for municipal buildings and public schools. DWEE has proudly helped finance several energy efficiency projects for Nebraska's public school districts by offering 1% interest loans and 90% participation to participating lenders.

Wind, Solar, and Fuel Cell Systems
About 4.6% of funds—$19.1 million—has been used for 234 wind, solar, and fuel systems projects since 1990. Typical improvements in this category include new photovoltaic systems, solar hot water, and wind for residential, commercial, and agricultural applications.

Alternate Fuel/ Telecommunications
Since 1990, nearly 3% of funds from all categories—$11.47 million—has been used for 44 alternative fuel and telecommunications projects, ranking fifth highest among all loan areas. Typical improvements in this category include conversions to dedicated alternative fueled vehicles, fueling equipment, alternative fuel facilities, network access equipment, video products, and audio conferencing.

Residential Dollar and Energy Saving Loans July 2024 - June 2025	
Investment	$5,338,247
Residential Projects	315
Energy Impacts	
Electric Energy Savings (kWhs)	89,352
Natural Gas Energy Savings (therms)	67,199
Present Discount Value of Future Savings	$1,343,423
Present Day Value Economic Impacts	
Output	$4,931,088
Value-Added	$2,958,321
Labor Income	$2,173,355
Job-Years	56
Air Emission Pollutant Reductions (Pounds All Years)	
Carbon Dioxide (CO2)	18,763,568
Sulfur Dioxide (SO2)	9,693
Nitrogen Oxide (NOX)	18,884
Particulate Matter <2.5 micro-meters (PM2.5)	168
Volatile Organic Compounds (VOC)	370
Particulate Matter < 10 micro-meters (PM1.0)	269
Total Present Discount Value of Environmental, Comfort, Health and Safety	$1,154,686
*These figures are estimations only.	

Figure 7 *DWEE*

Energy, Economic and Environmental Impacts

In 2012, a study analyzing the energy, economic, and environmental impacts of Residential DESL was completed by the University of Nebraska-Lincoln. Beginning January 2014, data from Residential DESL has been entered into the database. The energy, economic, and environmental benefits of these loans from July 1, 2024, through June 30, 2025, are illustrated in Figure 7.

State Energy Formula Grants

In 2025, Nebraska received $665,760 for this federally funded effort. These funds are used to provide energy efficiency services to consumers and other small energy users, and include the publication of this annual report and the Nebraska Energy Quarterly, as well as maintenance of the state's energy database (https://dee.nebraska.gov/state-energy-info-stats/energy-statistics).

These funds also provide program support for a wide array of activities that include energy supply shortage tracking and management and emergency preparedness; education and information; Dollar Energy Saving Loan (DESL) operations; support of renewable energy activities; and residential and commercial building energy efficiency activities.

Energy Codes and Compliance Collaborative

In 2019, the Nebraska Energy Code was updated from the 2009 standards established by the International Energy Conservation Code to the 2018 standard. Nebraska was among the first states to adopt the 2018 standard. With the adoption of the updated code, homeowners of the typical three-bedroom house are projected to save between $165 and $206 annually on energy costs.

DWEE staff continue to be actively involved in providing training on the 2018 code through training partnerships with the Midwest Energy Efficiency Alliance (MEEA) and other organizations. Through the partnership with MEEA, more than three dozen virtual and in-person training sessions have been held on many different aspects of the Nebraska Energy Code. The agency continues virtual and in-person training efforts through this partnership and will host practical trainings with an emphasis on teaching stakeholders in Nebraska how to perform the new testing and verification methods defined in the Nebraska Energy Code. DWEE and MEEA host the Nebraska Energy Codes Collaborative Meeting, where stakeholders and code officials from across the state meet quarterly to discuss the hurdles that Nebraska faces in energy conservation in building practices. Strategies and experience overcoming these hurdles are shared to improve compliance with the Nebraska Energy Code. Ideas and strategies for future energy conservation in Nebraska are also discussed.

The agency performs on-site inspections each year when receiving complaints from owners of newly built houses. If a home is found to not comply with the Nebraska Energy Code within two years after construction, DWEE issues an order to the prime contractor to take the necessary actions to bring the building into compliance.

DWEE also reviews all new buildings constructed with state funds (in whole or in part) to ensure that these buildings are being designed with the energy efficiency and conservation measures intended by the Nebraska Energy Code. The department reviews anywhere from two to four dozen different state funded building applications per year. This fiscal year the department reviewed 43 applications. If the designs are found to not comply with the Nebraska Energy Code, DWEE issues an order to the prime contractor to take the necessary actions to bring the building design into compliance.

In 2025, the department provided a new Energy Impact Study Report, prepared by an independent firm, to show how updating Nebraska's Energy Code can affect energy savings for households. Reports are available for both the 2021 and 2024 International Energy Conservation Codes (IECC) and can be accessed online or by request.

Nebraska Wind and Solar Conference

Since 2008, the agency has partnered with many stakeholders interested in wind and solar energy to produce a statewide Wind and Solar Conference & Exhibition. Agency staff members help develop and execute communications for the conference, including news release development and distribution and social media promotion. Given the remarkable growth of both solar and wind energy generation in Nebraska, the conference is an ideal venue for DWEE staff to provide education and learn about solar and wind energy and the interdependencies of all energy and environmental issues.

The Nebraska Wind & Solar Conference & Exhibition held its 18th annual event on October 20-21, 2025, at the Cornhusker Marriott Hotel in Lincoln. This year's conference was a huge success, with more than 300 registered attendees, 30 sponsors and exhibitors, and over 60 speakers and moderators from the wind and solar industries. Individuals from across

the country participated in general and breakout sessions that shared the latest information on wind and solar energy development. Participants represented diverse stakeholders, including public power, private sector developers, public officials, landowners, environmental interests, wildlife interests, and the public.

National Association of State Energy Officials

Participation in the National Association of State Energy Officials (NASEO) programs is also included in the State Energy Program. The agency participates in NASEO webinars and conference calls and attends national and regional NASEO meetings and conferences concerning energy issues. Over the past year, DWEE staff have been active in panels associated with state energy issues and have presented on the creation and long-term success of Nebraska's Dollar and Energy Savings Loan program.

National Energy Efficiency Partnership

DWEE was a founding member of the Nebraska Energy Efficiency Partnership (NEEP), which includes representatives from Nebraska's three largest electric utilities—Lincoln Electric System, Nebraska Public Power District, and Omaha Public Power District—as well as the Municipal Energy Agency of Nebraska. NEEP meets to share knowledge, program ideas, and other information related to making the most efficient use possible of Nebraska's energy resources

State Heating Oil and Propane Program

The Energy Information Administration (EIA), the independent statistical and analytical agency within the U.S. Department of Energy (DOE), conducted the State Heating Oil and Propane Program (SHOPP) from September 15, 2024, to September 14, 2025. During the heating season, October to March, DWEE staff collected heating oil and propane prices for the program each week from a sample of Nebraska vendors and provided the prices to EIA, who combined the data from multiple states and published state, regional, and national average prices.

The data was used by DWEE to monitor the prices during the winter season in an effort to maintain awareness of developing price or supply irregularities. DWEE wrote an annual report describing the variables that comprised the winter season and an analysis of the prices and supplies. The data was also used by policymakers, industry analysts, and consumers.

Price data may be found at:

- Propane Prices: https://dee.nebraska.gov/state-energy-information/energy-statistics/fuels/propane/nebraska-residential-propane-prices
- Heating Oil Prices: https://dee.nebraska.gov/state-energy-information/energy-statistics/fuels/heating-oil/average-residential-heating-oil-prices-nebraska
- Annual Report: https://dee.nebraska.gov/state-energy-information/state-nebraska-heating-oil-and-propane-program-shopp

Oil Overcharge Funds

Beginning in 1982, Nebraska received oil overcharge—or petroleum violation escrow—funds because of several court actions against oil companies that overcharged their customers during the period of federal price controls from 1973 to 1981. Since direct restitution to injured customers was not practical, the courts ordered the money be distributed using a system of indirect restitution. The funds were provided to the states and used, within parameters established by the courts and a federal regulator, to fund energy assistance and efficiency programs.

Nebraska Energy Settlement Fund
Summary of Exxon, Stripper Well and Diamond Shamrock
Oil Overcharge Funds as of June 30, 2025

	Exxon	Stripper Well	Diamond Shamrock	Total
Funds Received	$15,504,944	$15,680,564	$359,172	$31,544,680
Interest Earned and Miscellaneous Income***	$13,919,700	$12,521,351	$271,147	$26,712,198
Total	**$29,424,644**	**$28,201,915**	**$630,319**	**$58,256,878**
Funds Budgeted	$29,424,644	$28,201,915	$630,319	$58,256,878
Low Income Designated	$0	$0	$0	$0
Uncommitted Balance	$0	$0	$0	$0

***Amount reported in prior SFY adjusted in the cumulative amount

Figure 8 *DWEE*

These funds were used for several purposes throughout the agency. Most notably, the funds helped create the DESL program. Since the beginning of the DESL program, the agency has provided more than $214 million in loans, and Nebraska is one of the few states that continues to revolve these funds into additional loans. The final petroleum violation escrow payment from the U.S. Department of Energy to the then-Nebraska Energy Office was received March 28, 2017.

The Legislature and the DOE require annual reports on the disposition of these funds. This report, specifically the DESL explanation noted in Figure 8, which shows a Nebraska Energy Settlement Fund summary of activities, fulfill this requirement.

Financial Activity

Total energy-related expenditures for the year were $19,650,362, an increase of 19.9% from the previous year. Energy loans accounted for 56.1% of expenditures, aid payments accounted for 35.6%, and the remaining 8.3% of expenditures were for salaries and operations. Of the funding for these expenditures, 48.5% came from the Oil Overcharge Funds, 50.6% from federal funds, and 0.9% from state and other funds. A complete listing of expenditures by funding source and category is illustrated in Figure 9.

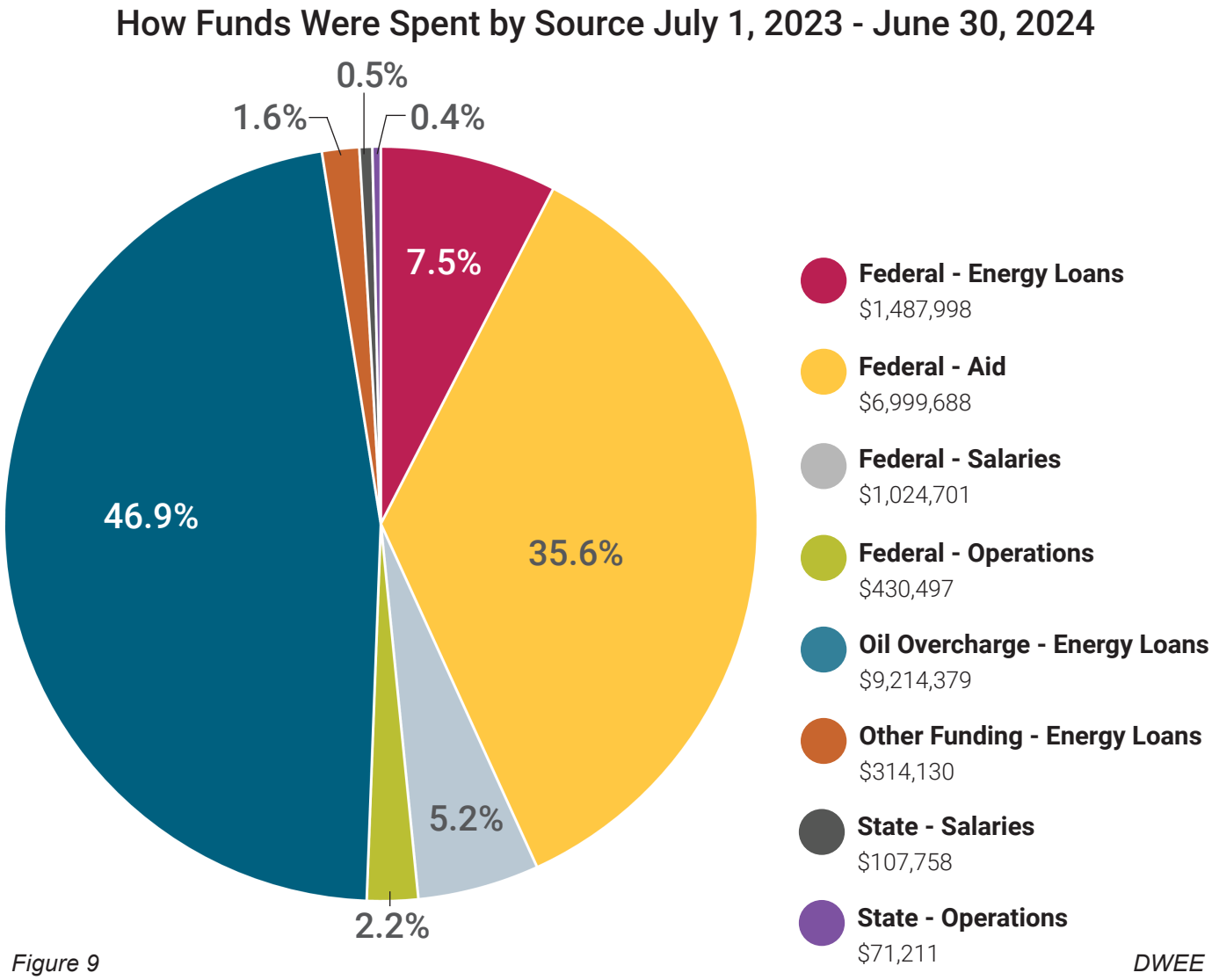


Figure 9 *DWEE*

New programs under development and early implementation

The Infrastructure Investment and Jobs Act (IIJA) of 2021 and the Inflation Reduction Act (IRA) of 2022 provide $97 billion in funding to the U.S. Department of Energy (DOE) for investments in energy projects and initiatives over several years.

Over time, DWEE's State Energy Program expects to receive approximately $37 million in IIJA formula funds and approximately $93 million from IRA formula funds from the DOE for grid resilience, energy efficiency and conservation, renewable energy technologies, and workforce development. The formula funding described below is predetermined and noncompetitive, but DWEE was required to apply for each funding opportunity to receive the funds.

State Energy Program — IIJA Funding

The purpose of this formula grant is to provide states with financial resources and support to reduce emissions, increase energy efficiency, and advance energy initiatives. DWEE plans to support K-12 public schools with grants for energy audits to identify retrofit projects that could improve energy efficiency and/or air quality in school buildings and other planning activities and programs. This program has been awarded to DWEE and is being implemented.

Energy Efficiency Revolving Loan Fund Capitalization Grant Program

This formula grant provides capitalization funds to states to establish a revolving loan fund, through which the State will provide loans and grants for energy efficiency audits, upgrades, and retrofits to increase energy efficiency and improve the comfort of buildings. The Department plans to support energy efficient measures in residential, public, and commercial buildings, with an emphasis on K-12 schools, by providing low-interest loans to finance projects. DWEE will partner with Nebraska lenders by purchasing a percentage of the loans at zero interest, which lowers the interest rate and leverages lender funds for each loan. DWEE will use a portion of the funding to provide free energy audits to qualifying schools. This program is being implemented.

Preventing Outages and Enhancing the Resilience of the Electric Grid/Hazard Hardening

The purpose of this formula award is to prevent outages and enhance the resilience of the electric grid. DWEE is supporting grid improvement projects that result in a more resilient electrical grid. Granted projects will rebuild and restore infrastructure for transmission and distribution, protect existing equipment from weather-related events, support new adaptive protection technology, and provide recruitment and retention of energy technology workers. DWEE has awarded $15.6 million in subawards to 14 utilities.

Ansley — Update distribution system from 2.4kV delta to 12.5kV grounded wye. Replace poles, transformers, overhead conductors, and regulators. Add a primary feed from Cornhusker Public Power District Substation to provide a dedicated circuit into the community.

Chimney Rock Public Power District — Install new electronic reclosers with control panels, install distribution automation radios with ethernet ports, and add new software and programing for all equipment in existing substations.

Cozad — Replace power poles and construct distribution tie lines to add redundancy. The project objective is to harden the system against severe weather incidents that could cause at-risk power poles to fail and customers to lose power.

Fairbury — Retire existing 34.5kV line and install 1.5 miles of new, weather-resistant 34.5 kV line. The new line is anticipated to address existing system susceptibilities, improve reliability, guarantee system redundancies, and reduce system losses by increasing the line's thermal and transfer capacity.

Falls City — Upgrade existing 5kV infrastructure with a 13.8kV system to ensure the continuity of essential services, such as power supply to critical facilities. The project will install underground cabling; replace the 50-plus-year-old wooden

structure with modern, resilient components; and implement of advanced monitoring equipment.

Fremont — Relocate one of the 69kV transmission circuits, which will include storm mitigation-based design standards using upgraded poles and conductors. The transmission relocate will be a total of three miles. Eliminates a double-circuited power supply.

The Midwest Energy Electric Cooperative — Rebuild 14.5 miles of a radial line on the 69kV transmission system connecting the Grant and Venango substations. The rebuild line will have shorter spans and more robust poles to be able to better withstand wind and ice loading and reduce the chance of wind causing lines to slap together.

Nebraska City Utilities — Replace switchgears and relays and incorporate substation into existing Supervisory Control and Data Acquisition. Construction of climate-controlled enclosure for equipment. The objective is to enhance the resilience and reliability to reduce future outage durations.

Nelson — Inspect, repair, or replace aging utility poles and cutouts in the city's distribution system. Replace cracked and potentially hazardous cutouts to ensure the safety of maintenance workers and the public.

Northeast Nebraska Public Power District — Replace distribution system infrastructure. The project will manage utility poles, harden power lines, and replace old overhead conductors or underground cables.

Oxford — Convert the remainder of the system to 12.5kV, replace switchgear breakers, install underground circuits, and construct a 12.5kV distribution line around the community.

Red Cloud — New underground and overhead power lines will provide an upgraded circuit to 13.8Y/7.96kV. It will include a combination of conductors, new poles, and underground equipment, providing redundancy.

Tecumseh — Add and replace substation equipment, including switchgears and transformers; install new meters; and add building to house equipment for protection from inclement weather.

Wymore — Replace and rebuild critical infrastructure replacing and rebuilding aging H structure poles along the feed lines from the substation, upgrading existing transformers and adding additional transformers to meet load requirements.

State-Based Energy Efficiency Contractor Training Grant Program

The purpose of this formula award is to reduce the cost of training, testing, and certifying residential energy efficiency contractors and electrification contractors. States can partner with nonprofit organizations to develop and implement these programs. States can put contractors to work who are trained through this program by connecting them with projects funded by the Department of Energy's Home Energy Rebates Programs (HER and HEAR). The program is under development.

Energy Efficiency and Conservation Block Grant Program

This formula grant assists states, local governments, and tribes in implementing strategies to reduce energy use, reduce fossil fuel emissions, and improve energy efficiency. In 2024, with the State's formula allocation, DWEE distributed more than $1.1 million among 14 local communities that are implementing high-impact, self-sustaining clean energy projects. Read more about these projects on DWEE's website: https://dee.nebraska.gov/aid/energy-loans-grants-rebates/energy-efficiency-and-conservation-block-grant-program.

Home Efficiency Rebates (IRA §50121) (HER)

The purpose of this program is to award grants to state energy offices to develop a program that will provide rebates to homeowners for whole-house energy saving retrofits. Depending on whether a project meets several different rules, eligible projects can include attic insulation, whole home air sealing, duct sealing, and insulation. DWEE received $1,145,342 from DOE to begin developing this program.

Home Electrification and Appliance Rebates (IRA §0122) (HEAR)

This program provides federally funded rebates to eligible property owners who replace energy inefficient appliances with efficient ones or have other work performed to improve the energy efficiency of the property. DWEE received $1,138,678 from DOE to begin developing this program. Example electrification projects include:

- electric heat pump water heater
- electric heat pump for space heating and cooling
- electric stove, cooktop, range, or oven
- electric heat pump clothes dryer
- electric load service center (e.g. circuit breaker panel)
- insulation
- air sealing and materials to improve ventilation
- electric wiring

Ongoing updates regarding the IIJA formula funding will be posted on DWEE's website: https://dee.nebraska.gov/forms/publications-grants-forms/iija-irafundingstatus.

Nebraska's Energy Security Plan Update

Nebraska's Energy Security Plan is a comprehensive operating manual for state government leaders charged with the responsibility of ensuring the health and safety of its citizens during periods of energy emergencies. The Plan is updated annually. Basic information, such as contact information, is updated as needed.

This year, DWEE submitted Nebraska's Plan to the U.S. Department of Energy. DWEE strengthened the Plan by addressing the six Congressional required elements in IIJA Section 40108. This provision sunset on October 31, 2025, but the Plan will remain a Congressional requirement for funding.

Trends and Needs

Statewide Energy

According to the Energy Information Administration (EIA), Nebraska's total energy consumption in 2023 was 840 trillion British thermal units (Btu), a decrease of 8 trillion Btu—or less than 1% (0.5%)—from 2022 to 2023. (A Btu is a standard measure of heat energy. It takes one Btu to raise the temperature of one pound of water by one degree Fahrenheit at sea level.) Data referred to or included in the figures reflect the most current data available at the time of publication.

Five types of energy sources comprised the energy that Nebraska consumed in 2023 as seen in Figure 10:

- Coal — 22%
- Petroleum (and products) — 28%
- Natural gas — 23%
- Renewable energy — 19%
- Nuclear power — 8%

From 2022 to 2023, the use of natural gas, renewable energy, petroleum, and coal increased. Nuclear power use decreased.

Nebraska is the only state that generates electricity entirely by publicly owned power systems. According to EIA, as of 2023, the statewide average electricity price is the sixth-lowest rate in the country at 9.14 cents per kilowatt-hour (kWh).

Nebraska's Total Energy Consumption by Fuel Type 2023

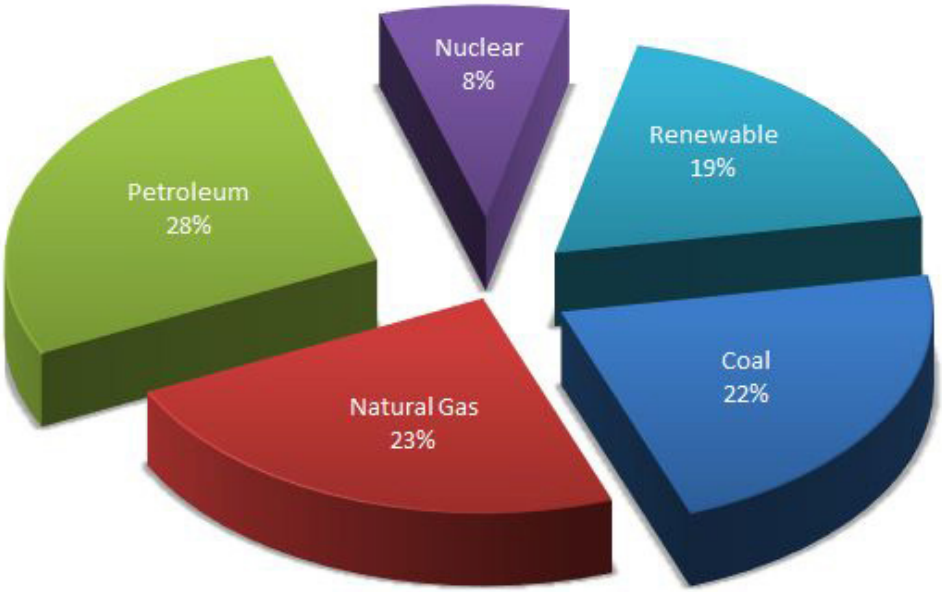


Figure 10 *DWEE/EIA*

Figure 11 shows the amount of energy that Nebraska consumed in each sector in 2023:

- Industrial — 44%
- Transportation — 24%
- Residential — 16%
- Commercial — 16%

Energy Consumed in Nebraska by Sector 2023

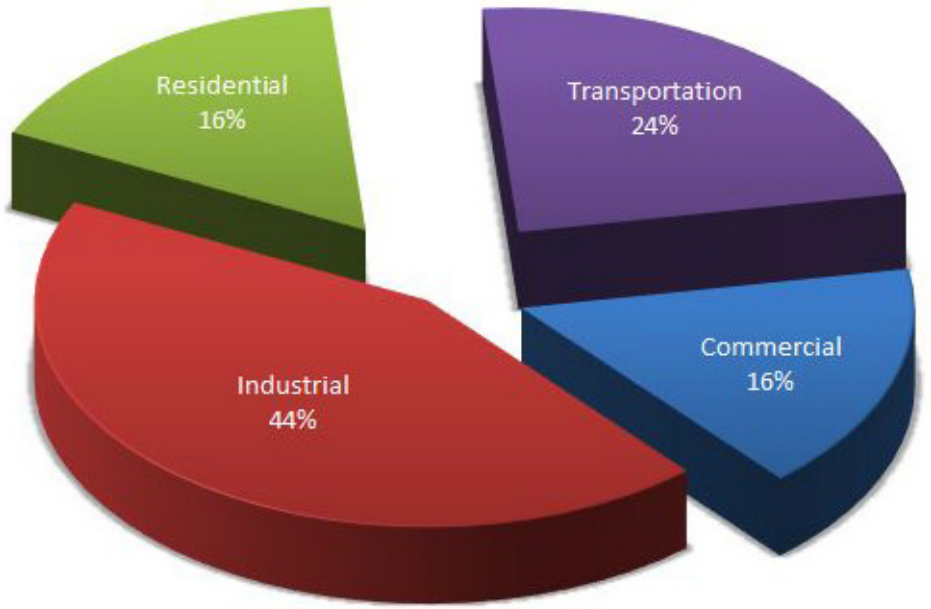


Figure 11 *DWEE/EIA*

Resource Assessment

State Energy Consumption Over Time

The EIA has collected data on energy consumption since 1960. As shown in Figure 12, energy use over the past 63 years has changed markedly. Overall, total energy consumption has nearly tripled from 302 trillion Btu in 1960 to 840 trillion Btu in 2023. The first notable change after 1960 was coal use, which increased nearly ten-fold from

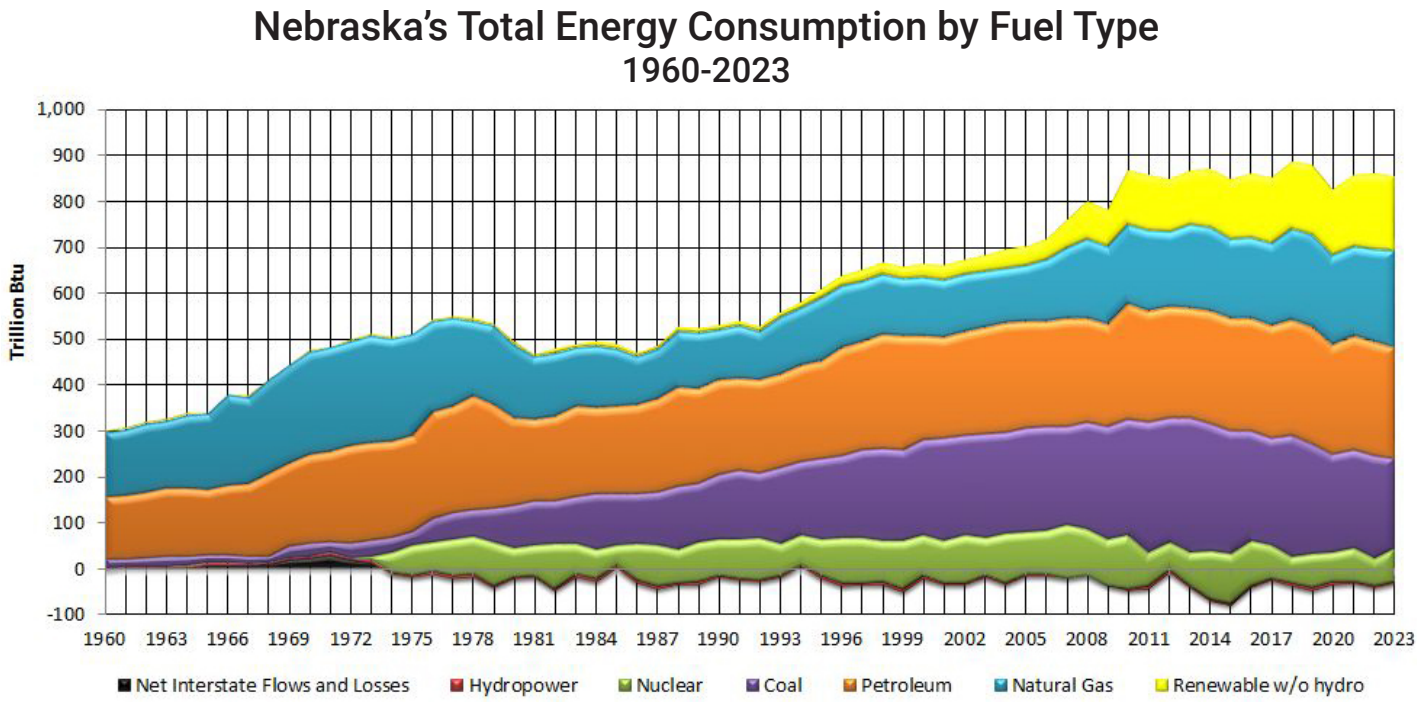


Figure 12 *DWEE/EIA*

20 trillion Btu to 195.6 trillion Btu. Peak use of coal occurred in 2013, when it reached 292.96 trillion Btu. Virtually all this growth is due to the generation of electricity. Coal use is now on the decline as more efforts are being made to rely on carbon-free sources of energy. Nebraska's public power system continues to provide electricity from all sources of energy at economical rates.

Natural gas consumption has varied over the years. Overall, it has grown from 140.43 trillion Btu in 1960 to 206.74 trillion Btu in 2023. Natural gas consumption peaked in 1973 at 230.78 trillion Btu. The variation in consumption of natural gas is, in part, a result of increased equipment efficiency, electric utilities using natural gas for peak power production, and greater availability and use by the industrial sector.

Petroleum product use is another notable change. It nearly doubled over the past 63 years from 136.00 trillion Btu in 1960 to 243.45 trillion Btu in 2023. Overall, petroleum consumption peaked in 2019 at 253.57 trillion Btu. Gasoline and distillate fuel oil—primarily diesel fuel—comprise the bulk of refined petroleum products consumed. Both types of refined petroleum products increased between 1960 and 2023. Gasoline increased by 21.98 trillion Btu, and diesel fuel increased by 85.26 trillion Btu.

Diesel fuel consumption increased nearly five times from 24.18 trillion Btu in 1960 to 109.44 trillion Btu in 2023. Gasoline consumption increased from 78.79 trillion Btu in 1960 to 100.77 trillion Btu in 2023. Gasoline consumption peaked in 1978 at 115.96 trillion Btu. Changes in gasoline consumption can be traced primarily to improved fuel efficiency of vehicles. Motor vehicle miles traveled increased from 12.029 billion miles in 1978 to 21.525 billion miles in 2023, according to the Nebraska Department of Transportation.

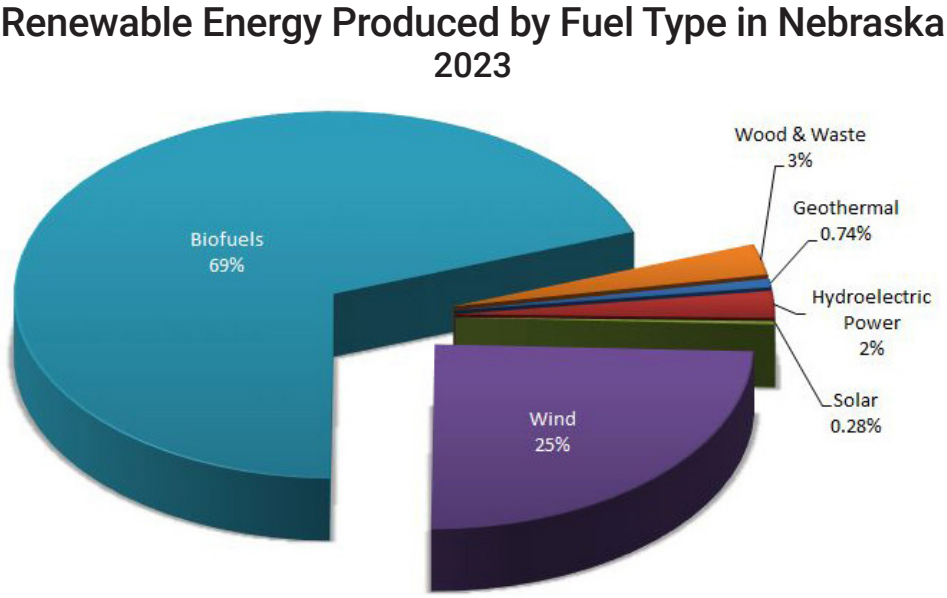


Figure 13 *DWEE/EIA*

The last change of note is the use of nuclear power. Nuclear power was first generated in 1973. Nuclear consumption has increased significantly, rising from 6.54 trillion Btu in 1973 to 72.39 trillion Btu in 2023. Nuclear consumption peaked in 2007 at 115.82 trillion Btu. However, nuclear energy generation decreased for three consecutive years when Omaha Public Power District's (OPPD) Fort Calhoun Nuclear Station, a 478 MW power plant, was shut down on October 24, 2016. In 2019, generation increased 23%, likely due to Cooper Nuclear Station offsetting the loss of Fort Calhoun.

Nebraska is seeing increased, coordinated activity around nuclear energy development. Nebraska Public Power District, Omaha Public Power District, Lincoln Electric System, and Oklahoma's Grand River Dam Authority have formed the Great Plains New Nuclear Consortium to jointly explore new nuclear capacity in the state, including small modular reactors (SMRs), through feasibility studies, site evaluations, and technology assessments. At the same time, Nebraska Public Power District is advancing a state and federally funded, multi-phase SMR siting study that has already narrowed potential host communities and is moving into detailed technical, environmental, and community engagement reviews. Several local communities are actively participating through outreach and informational events. While no construction decisions have been made, these efforts signal growing regional interest in advanced nuclear and long-term planning, alongside continued operation of the Cooper Nuclear Station, Nebraska's only existing nuclear plant. DWEE is participating in NASEO's First Movers Initative.

Feasible Alternative Energy Sources
Renewable energy consumption grew from 6.38 trillion Btu in 1960 to 164.50 trillion Btu in 2023 (Figure 12). Energy production from renewables peaked in 2022. Between 1960 and 1994, the primary renewable energy source was hydropower.

In 1995, biofuel—ethanol and biodiesel—achieved equity with hydropower. By 2007, biofuel production was double the amount of hydropower produced. In 2023, the total amount of renewable energy produced included (Figure 13):

- Biofuels — 69%
- Wind — 25%
- Hydroelectric power — 2%
- Wood and wood waste — 3%
- Geothermal — 0.74%
- Solar — 0.28%

Agricultural Sector

Agriculture is Nebraska's number one industry. For purposes of the annual report, it is important to examine the agricultural sector individually, but it should be noted that the Energy Information Administration (EIA) statistics combine agriculture into the broad industrial sector. In addition to the agricultural information from EIA, DWEE also utilized U.S. Department of Agriculture (USDA) information, particularly the Census of Agriculture and the National Agricultural Statistics Service.

According to the USDA Farm Production Expenditures 2024 Summary, in 2024, fuel accounted for 3.24% of total farm production expenditures in the U.S. and 2.4% of total farm production expenditures in Nebraska. Additional agricultural energy is expended indirectly by activities like transporting seed, feed, and fertilizer to farms and ranches and transporting livestock, wheat, and corn to markets. A large amount of energy is also used to manufacture farm inputs such as nitrogen fertilizer and pesticides and process livestock feeds.

Energy Supply

Energy needs for the state's agricultural sector have been met, though over the years, transportation issues have caused limited and infrequent shortfalls in petroleum products. For example, severe winter weather and extreme cold temperatures in the spring of 2025 disrupted fuel supplies to rural areas. The Governor issued an Executive Order temporarily waiving requirements under 49 CFR part 395.3, the maximum drive time for property-carrying vehicles.

In March of 2025, a severe winter storm impacted the state of Nebraska that included blizzard conditions that included damaging high winds, mixed precipitation, and areas of high snowfall. Extreme conditions during the storm resulted in

significant infrastructure damage to power line transmission systems. Twenty-four counties suffered widespread power outages due to the storm. Local resources were inadequate or had been exhausted for a timely restoration of power systems in the affected areas and required support from surrounding states.

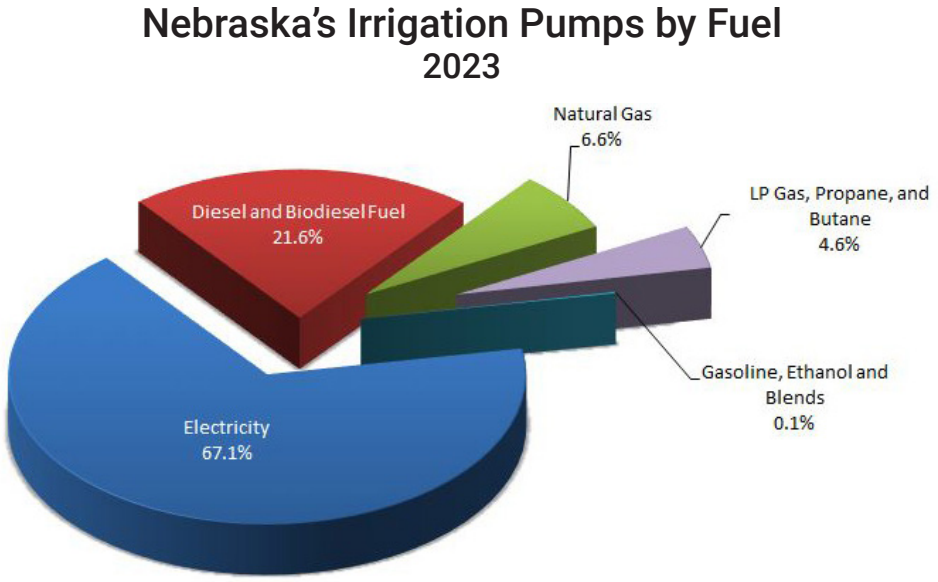


Figure 14 *DWEE/EIA*

In May of 2025, multiple states, including Nebraska, experienced fuel shortages due to high demand for petroleum products. Commercial motor vehicles and motor carriers were engaged in the business of transporting fuel from farther distances and waiting longer at terminals in order to meet needs. The Governor issued an Executive Order temporarily waiving requirements under 49 CFR part 395.3, the maximum drive time for property-carrying vehicles.

Transportation difficulties are not limited to petroleum products—electricity also faces transmission obstacles. Electric transmission is vital to Nebraska's agricultural sector because it is used for irrigation (Figure 14), and while Nebraska has sufficient electric generation capacity, there are times when the transmission system is tested. This is most evident in times of natural disasters when storms destroy parts of the transmission system or when there's unusually high demand in local areas.

Power providers took steps deemed necessary to meet power demands to meet the arctic blast emergency in the spring of 2024, and to continue these actions until such times as the threat to human health and safety created by this situation had been alleviated. Any other entities with capacity to generate electricity that could be added back to the grid or reduce the use of power from the grid were requested to operate their electric generation equipment immediately. Permits, regulations, or laws restricting the State of Nebraska power providers' and other entities' ability to produce electricity were temporarily suspended by the Governor.

The agricultural sector represents an existing and potential source of energy for Nebraska. Biofuels, particularly ethanol, have and will continue to significantly decrease the nation's reliance on foreign sources of energy for our transportation needs.

Renewable natural gas (RNG) could be a largely untapped source of energy in Nebraska's livestock industry. RNG is a transportation fuel made from organic waste. It can drastically reduce carbon emissions by over 300% versus diesel, and at a fraction of the price. Unlike conventional natural gas, renewable natural gas is not a fossil fuel and does not involve drilling or fracking. According to the American Gas Association in 2025, the state of Nebraska has the potential to produce 120 tBtu of RNG per year by 2040. In 2025, the American Biogas Council states that Nebraska could produce up to an estimated 15.9 billion cubic feet of methane to generate 2.1 million MWh of electricity—enough to provide electricity for 23.7% (190,461) of the households (803,157 in 2022) in the state. These are projected figures, and there are a number of challenges to capturing the renewable natural gas from livestock operations, primarily the initial capital costs of constructing the facilities.

According to Marathon's renewable fuels portfolio, Marathon purchased a facility in Beatrice in 2020 to operate as a terminal and pretreatment center for agricultural feedstocks. The facility supplies agricultural feedstocks to Marathon's renewable diesel facility in Dickinson, North Dakota. Operations began in 2021 with a capacity of approximately 85 million gallons of renewable diesel per year.

One of Clean Energy's RNG dairy production facilities, Wood River Dairy, in Miller, Nebraska, has a 4,200 herd with ca-

pacity for 4,600. In 2025, this project is in development and expected to be completed in 2026. The farm will use anaerobic digesters to capture methane from manure, transforming it into pipeline-quality RNG (biogas).

Energy Demand

Over the decades, farms have increased in size; and while energy has replaced labor, energy consumption has decreased in part because of more efficient equipment. These changes have allowed fewer people to produce larger harvests.

Nebraska irrigated 9.4 million acres in 2023 — more than triple the 3.1 million acres irrigated in 1966. Diesel, biodiesel, and electricity power most of the irrigation in the state, as seen in Figure 14.

Energy needs in the agricultural sector account for a significant portion of production costs. Diesel is a critical factor in agricultural energy demand, mainly because it fuels equipment used in planting and harvesting. Another source of energy demand is Nebraska producers' dependence on irrigation, which has increased with time and contributed significantly to Nebraska's larger harvests.

In 1966 , 3.1 million acres in Nebraska were irrigated; in 2023, that number was 9.4 million acres. The availability of irrigation has contributed to the growth of Nebraska's ethanol industry. Corn requires 10 inches of evapotranspiration to produce the first bushel—the highest of all the crops grown in the state. As a result, any rainfall shortage is replaced with irrigation, which requires an energy input.

According to the USDA 2023 Irrigation and Water Management Survey (the latest survey), the fuel used to power irrigation pumps was diverse across Nebraska (Figure 14):

- Electricity — 67.1%
- Diesel and biodiesel — 21.6%
- Natural gas — 6.6%
- Propane — 4.6%
- Gasoline/ethanol — 0.1%

The use of diesel and biodiesel fuel; gasoline, ethanol, and blends; natural gas; and propane for irrigation has been declining over the last decade as farmers switch to electric power. Farmers can receive financial aid for these conversions through the USDA Rural Energy for America Program, from DWEE's incentive program ONE RED, and from DWEE's Clean Diesel Rebate Program.

Conservation

As energy costs have increased, the state's agricultural producers, with assistance from Nebraska Extension agents and university research, have adopted a variety of practices that have reduced energy use. Examples include conservation tillage, which reduces the use of equipment; scheduling and load management; monitoring soil moisture for more efficient irrigation; and switching from fossil fuels to electricity to power irrigation systems.

DWEE's ONE RED program has two initiatives that are or will be available to producers. The first is the ONE RED Ag Data Bank and Grants program, which is designed to engage growers and provide incentives to encourage broader adoption of regenerative agriculture practices supported by precision technologies and data-drive insights. The second program, the ONE RED Irrigation Engine Program, provides rebates to farmers to replace diesel engines powering irrigation well pumps with electric motors or pumps connected to the electric grid.

Industrial Sector

The industrial sector includes manufacturing, construction, mining, forestry, and agricultural operations. Because the Energy Information Administration (EIA) includes agricultural information in the industrial sector, there is an overlap in data between the annual report's agricultural and industrial sections.

This sector relies on more diverse fuel types than the other sectors of the economy. Coal, electricity, natural gas, renewable energy, and a variety of petroleum products are utilized in industrial sector operations.

Renewable energy is playing an increasingly important role in the industrial sector as businesses are seeking to reduce their carbon footprint. One example is the Meta, formerly known as Facebook, data center in Papillion. The data center went into operation in June 2019. The data center went into operation in June 2019, and has since added two more sections, with another under construction. A primary reason Facebook located in Nebraska was the state's reliable supply of renewable energy. Facebook has committed to using 100% renewable energy and is buying wind power from Omaha Public Power District (OPPD). Nebraska, ranking as fourth in the country in terms of wind power potential, appeals to industries with carbon reduction goals. (Source: Climate Central, (2023 April 10), *Wind of Change: Energy Blows Across Nebraska Thanks for Wind Farms*. Retrieved December 8, 2025, from https://www.climatecentral.org/partnership-journalism/wind-of-change-energy-blows-across-nebraska-thanks-to-wind-farms.)

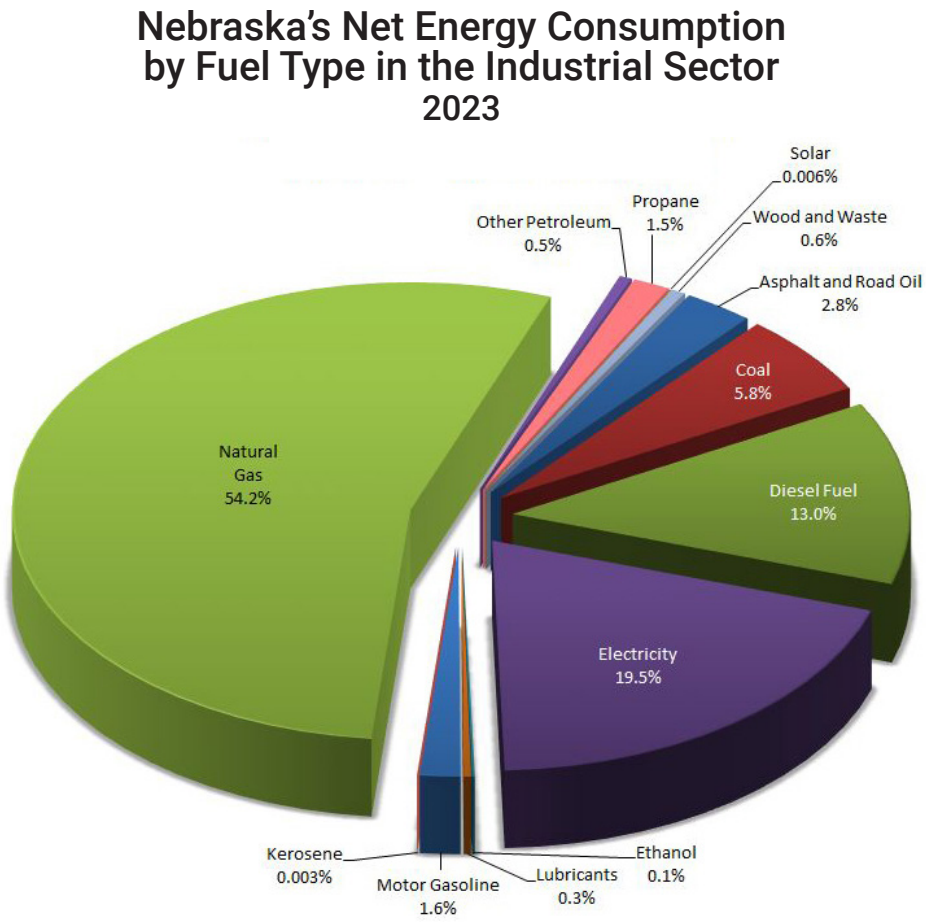


Figure 15 *DWEE/EIA*

Similarly, Google has totally relied on renewable energy since 2017. As of 2024, the company is expanding its footprint in Nebraska with a $930-million investment across three data center campuses (Papillion, Omaha, and Lincoln). The data center in Lincoln is expected to begin service in the fall of 2025.

According to Area Development, a magazine that covers corporate site selection, energy availability and cost consistently rank in the top 10 needs or considerations for businesses that are looking for a new place to expand. With businesses increasingly looking toward renewable energy, electric utilities across the state work with customers and prospects to address their needs involving on-site solutions, rates, or other offerings.

For example, OPPD offers its Rate 261M, which allows large energy users market rate energy pricing via the Southwest Power Pool. When Meta decided to build a data center in Papillion, OPPD helped them navigate a power purchase agreement to buy wind energy from Dixon County, which helps Meta reach its 100% renewable energy goal. These economic decisions can also help utilities fulfill their missions and achieve many of their strategic directives.

New innovative technologies and processes aiming to provide solutions to the energy transition toward decarbonization are developing within the State. Examples are Carbon Capture and Sequestration (CCS) projects. CCS is an approach to reducing emissions of carbon dioxide (CO_2) and other greenhouse gases from large industrial sources such as coal-fired

power plants and ethanol plants. Several financial incentives are available to facilities willing to invest in CCS, such as Internal Revenue Service Section 45Q that provides a tax credit to facilities based on the number of tons of CO_2 sequestered or injected for enhanced oil recovery. In May 2021 the State of Nebraska signed into law LB650, the Nebraska Geologic Storage of Carbon Dioxide Act, which establishes the legal and regulatory framework for potential carbon sequestration projects in the state.

The large number of bioethanol plants in Nebraska and the adjoining states and their low cost of carbon capture make this an attractive target for CCS. CCS has the potential to extend the life and reduce the carbon footprint of fossil-fuel power generating plants and provide an economic benefit to the ethanol industry in Nebraska.

Energy Supply

As shown in Figure 15, coal, electricity, natural gas, and petroleum products met nearly all of the industrial sector's energy needs in 2023. Petroleum products included diesel fuel, asphalt and road oil, propane, lubricants, motor gasoline, and other products. Supplies of these fuel types have been readily available to industrial users.

Trends in fuel types used in industry illustrate this sector's dynamic needs and how industries can switch fuel types over time (Figure 16). The emergence of industries such as ethanol plants and data centers can also alter fuel use patterns.

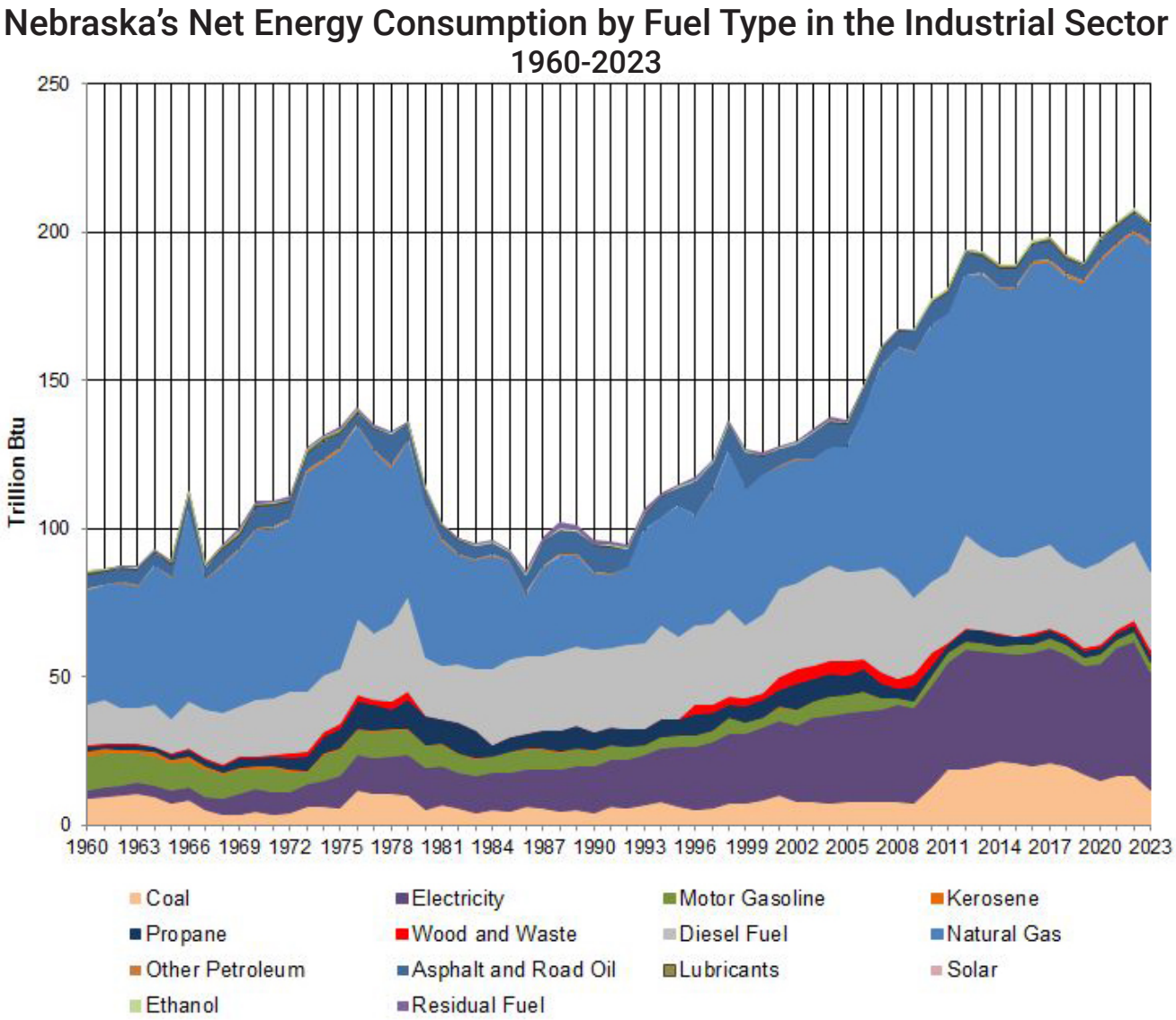


Figure 16 *DWEE/EIA*

Natural gas use in 1960 was 38.27 trillion Btu and soared in 1973 to 73.73 trillion Btu. Subsequent energy price spikes and other factors reduced natural gas consumption to 20.31 trillion Btu by 1986. Natural gas use has fluctuated since then, and a new historical peak occurred in 2023 at 110.09 trillion Btu.

Consumption of diesel fuel nearly doubled from 1960 to 2023, rising from 14.01 trillion Btu to 26.34 trillion Btu. Gasoline consumption fell 7% from 11.27 trillion Btu in 1960 to 3.32 trillion Btu in 2023. Looking at Figure 16, electricity use in this sector increased nearly fourteen-fold from 3.03 trillion Btu in 1960 to 39.72 trillion Btu in 2023.

Energy Demand

The industrial sector made up 44% (366.1 trillion Btu) of the state's energy consumption in 2023 (Figure 11). Figure 16 shows a 4.1% decrease in consumption between 2022 and 2023.

In 1960, the industrial sector used 91.5 trillion Btu and was the second largest energy user after transportation, which used 94.2 trillion Btu. Industrial sector energy consumption surpassed the transportation sector in 1994 and in 2023, industrial was the largest energy-using sector at 366.1 trillion Btu, surpassing the transportation sector by 199.0 trillion Btu.

Overall, energy needs in the industrial sector are subject to the ebb and flow of business demands. National, regional, and local economic trends can also cause spikes or reductions in energy demands. For example, the surge in ethanol production in the state added to the industrial sector's need for electricity and natural gas.

Conservation

The industrial sector is making lighting, energy efficient systems, and building envelope improvements a priority to save costs. Typical improvements to the electrical and mechanical systems in an industrial setting include upgrading lighting systems to LEDs, implementing a building automation system, installing economizers on boilers to make use of waste heat, properly sizing and optimizing pump systems, installing variable frequency drives on motors, reducing leaks in compressed air systems, and upgrading HVAC systems. A building envelope is the physical separator between the conditioned and unconditioned environment of a building. Reducing a building envelope's heat and air transfer can be accomplished by insulation and sealing and can save energy.

As energy is a significant cost factor, industrial sector users are likely to find ways to reduce the costs of their operations, which therefore impact energy use. The roller coaster that is the consumption of natural gas over the past 63 years (Figure 16) indicates the impact of conservation on fuel use and cost, fuel switching, and the impact of new industries.

Commercial Sector

The commercial sector includes non-manufacturing businesses like hotels, motels, restaurants, wholesale businesses, retail stores, and laundries. It also includes service enterprises such as health, social, and educational institutions and federal, state, and local governments. The commercial sector accounts for fuel used to power streetlights, pumps, bridges, and public services. Examples of common uses of energy in this sector include lighting, space heating, water heating, refrigeration, air conditioning, and cooking.

Energy Supply

Natural gas and electricity supplied nearly all of the fuel (93%) used in the commercial sector in 2023 (Figure 17), and their supplies have been sufficient to meet this sector's needs. The only disruptions have been because of temporary weather-related electric transmission issues.

Although natural gas and electricity remain the top two fuel types used in the commercial sector, trends indicate the supply of the two are becoming equal (Figure 18).

Energy Demand

According to the EIA, 137.5 trillion Btu of energy were consumed in the sector in 2023, up 12% or 14.8 trillion Btu, from 122.7 trillion Btu in 2022. This sector accounts for 16% of the state's energy use (Figure 11). Figure 18 shows when data col-

lection began in 1960, the commercial sector demand was 40.2 trillion Btu. In 2023, the amount of energy used in this sector more than tripled to 137.5 trillion Btu. Peak energy use was reached in 2008 at 144.7 trillion Btu.

Energy issues for this sector are not anticipated because there are readily available supplies of both natural gas and electricity—the sector's primary energy sources (Figure 17).

Conservation

Efforts to conserve energy tend to be driven by economic factors. When fuel prices rise and downturns occur in the economy, energy use is reduced.

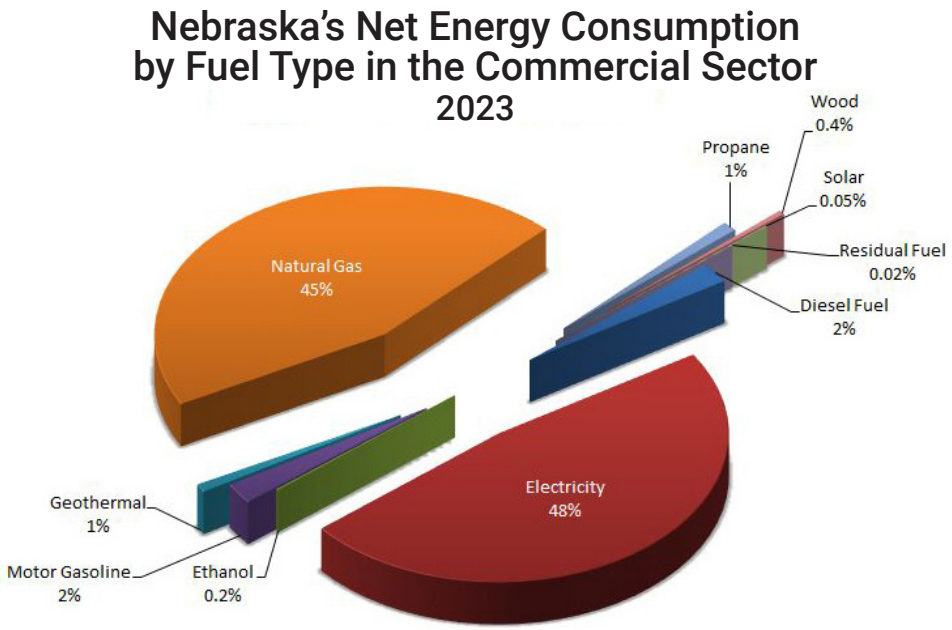


Figure 17

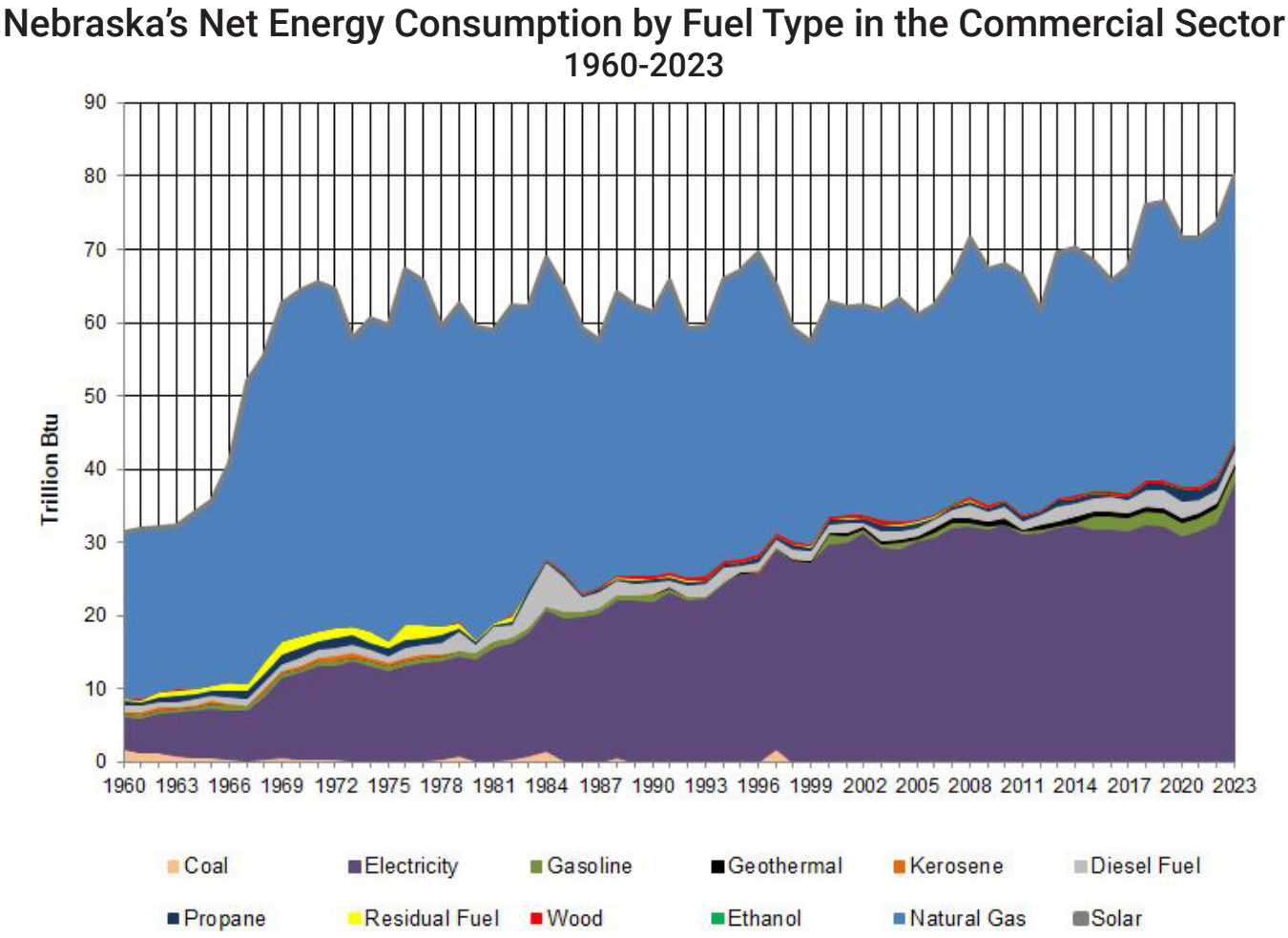


Figure 18 *DWEE/EIA*

Residential Sector

The primary uses of energy in the residential sector are for home heating and air conditioning, water heating, refrigeration, cooking, clothes drying, and lighting. Energy for these uses is mostly provided by natural gas and electricity.

Energy Supply

As shown in Figure 19, in 2023 the residential sector's energy needs were met by:

- Natural gas — 47.7%
- Electricity — 43.6%
- Petroleum — 5.6%
- Renewable energy — 3.1%

Supply trends and fuel types used in the residential sector have not changed substantially over 63 years of data collection.

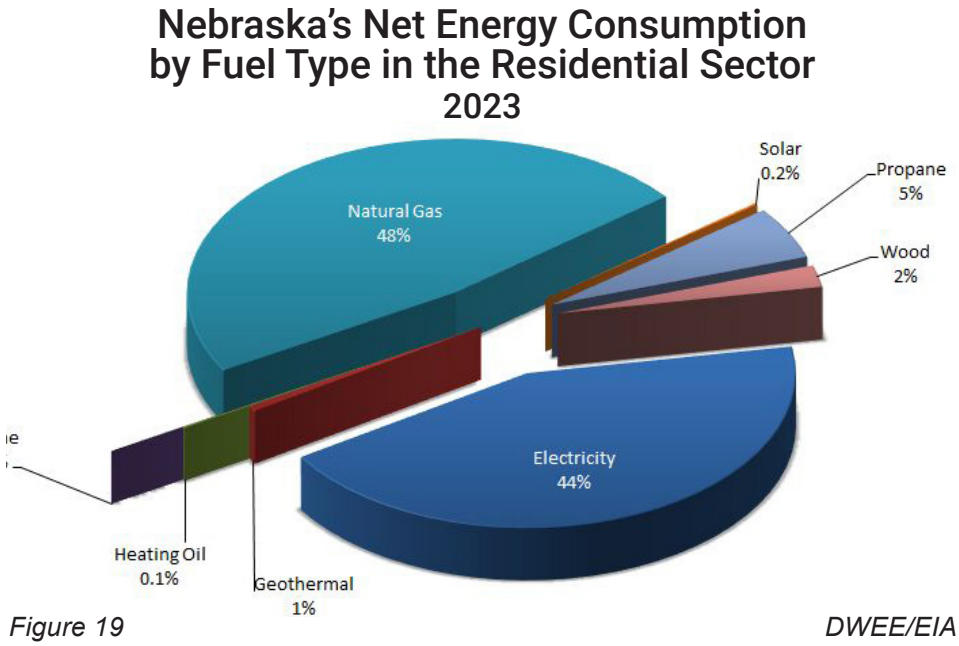


Figure 19 *DWEE/EIA*

Energy Demand

In 2023, the residential sector accounted for 16% of the state's total energy demand (Figure 11). Residential demand decreased by 4.1% from 143.4 trillion Btu in 2022 to 137.5trillion Btu in 2023. Petroleum use decreased 21.0% from 2022, natural gas use decreased 4.4%, and electricity use decreased 2.9%. Renewable energy use decreased 1.1% (Figure 20).

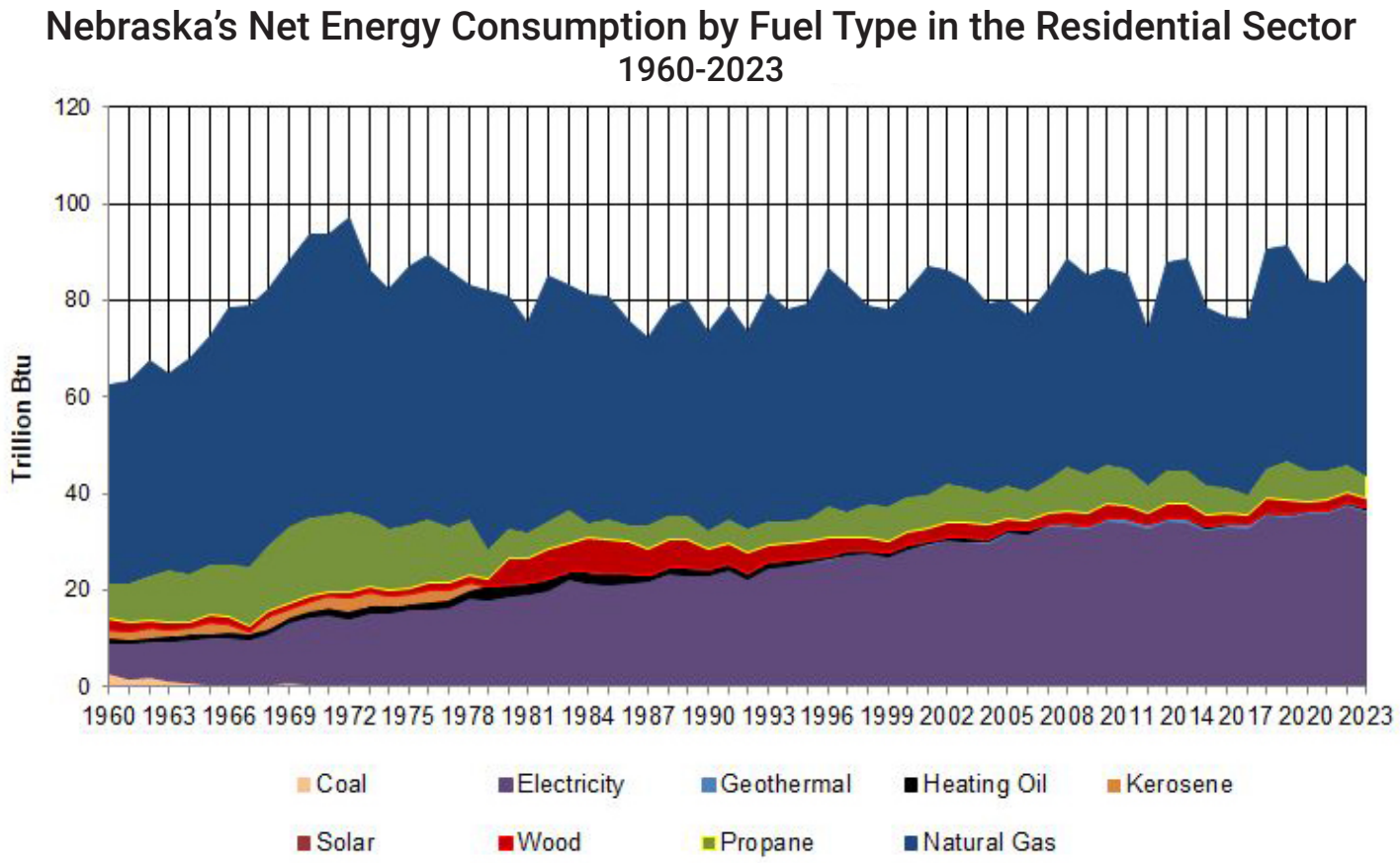


Figure 20 *DWEE/EIA*

Conservation

Price, weather, and efficiency improvements influence conservation in the residential sector. Like most sectors, residential users are responsive when price rises. For example, increases in natural gas prices have resulted in reduced average annual consumption over the decades. Higher heating bills have compelled homeowners to make energy-saving improvements, such as replacing aged furnaces with new efficient models or efficient electric heat pumps; adding insulation; and installing energy efficient windows and doors. Of course, adjusting the thermostat is one of the simplest ways to save money in response to higher energy bills.

When it comes to new housing, updated energy codes also play a role in energy conservation. In 2019, the Nebraska Legislature adopted the 2018 International Energy Conservation Codes (IECC), which has updated residential construction to have more cost-effective energy measures.

Transportation Sector

The transportation sector includes traditional methods of transportation, such as public and private vehicles, railroads, and aircraft, as well as energy used to transport oil and natural gas through pipelines. Transportation is a challenge in Nebraska, the nation's 17th-largest state; long distances between locations contribute to the energy demands in the transportation sector, accounting for 24% of Nebraska's total energy demand in 2023 (Figure 11).

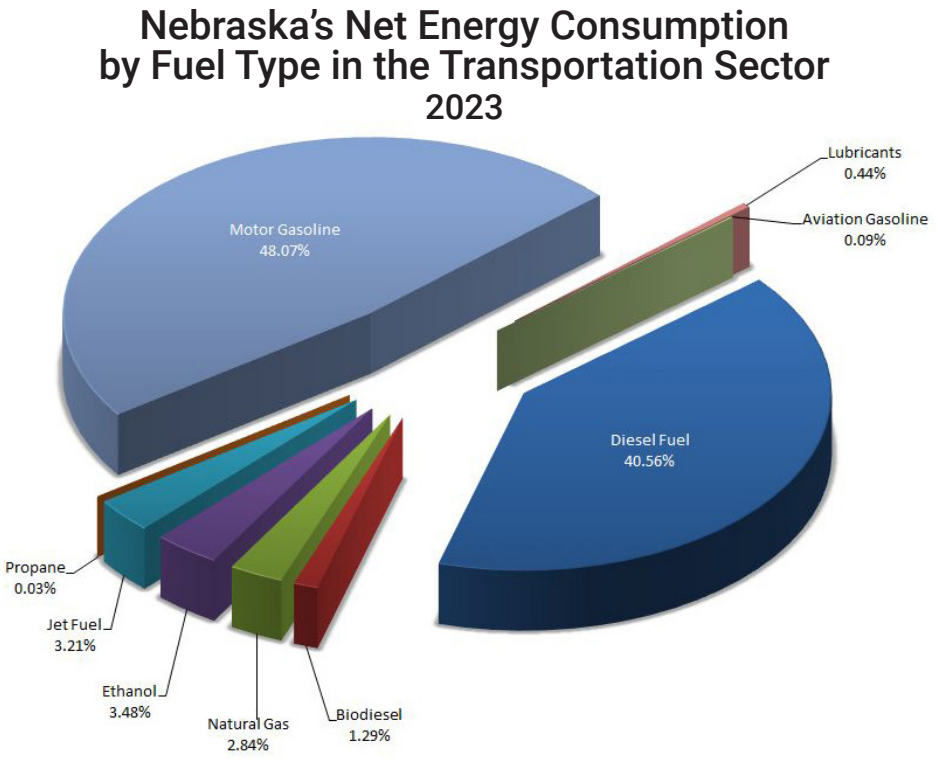


Figure 21 *DWEE/EIA*

Energy Supply

In 2023, 92% of energy used in transportation—199.0 trillion Btu—was in the form of petroleum products, primarily diesel fuel and gasoline (Figure 21). The next three fuel types used in consequential amounts were ethanol at 6.92 trillion Btu, natural gas at 5.65 trillion Btu, and biodiesel at 2.57 trillion Btu. Generally, supplies of these fuel types have been readily available to transportation users.

As shown in Figure 22, trends in fuel types used in the transportation sector illustrate the static nature of this sector and how little modes of transportation have changed since record keeping began in 1960. The major overall changes over this period were increased fuel use, the growing share of diesel fuel, and the introduction and modest growth of biofuels. However, the expected growth in the use of battery-electric and plug-in hybrid vehicles over the next decade should add electricity as a major additional transportation energy source. In reviewing the transportation sector's historical energy supply, it was nearly totally dependent on petroleum-based fuels in 1960 and remained just as dependent in 2023.

Energy Demand

The transportation sector used 199.0 trillion Btu, nearly one-fourth of the state's energy consumption in 2022 (Figure 11). The decrease in demand from 2022 to 2023 totaled 1.45 trillion Btu, a decrease of less than one percent (0.72%).

In 1960, the transportation sector was the largest energy-using sector at 94.2 trillion Btu, 31.2% of consumption of all sectors. By 1994, the industrial sector eclipsed the transportation sector as the largest energy user and has remained so to the present.

Every year, automotive engineers improve vehicles' fuel economy, reducing demand for liquid fuels. However, two offsetting trends have increased that demand. The first is the longstanding trend of consumers purchasing sport utility vehicles and pickup trucks, which have lower fuel economy than passenger cars. The second trend is the gradual increase in the number of motor vehicle miles traveled (Figure 23). This annual total has increased nearly every year from 1978 (12.03 billion miles) to 2023 (21.53 billion miles).

Additionally, trends in price and vehicle technology, as well as federal government requirements have an impact on energy use in this sector.

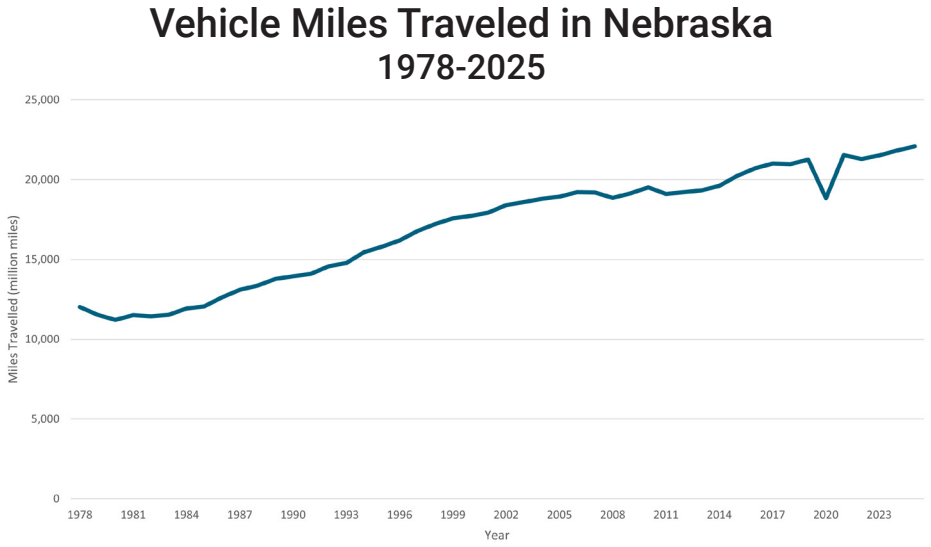


Figure 23 *DWEE/Nebraska Department of Transportation*

According to the Number of Registered Vehicles in Nebraska by the Fuel Consumed report, as of December 2023, there were 38,089 electric and hybrid vehicles registered in Nebraska. According to the same source, the electric vehicle market share in Nebraska was 1.99%.

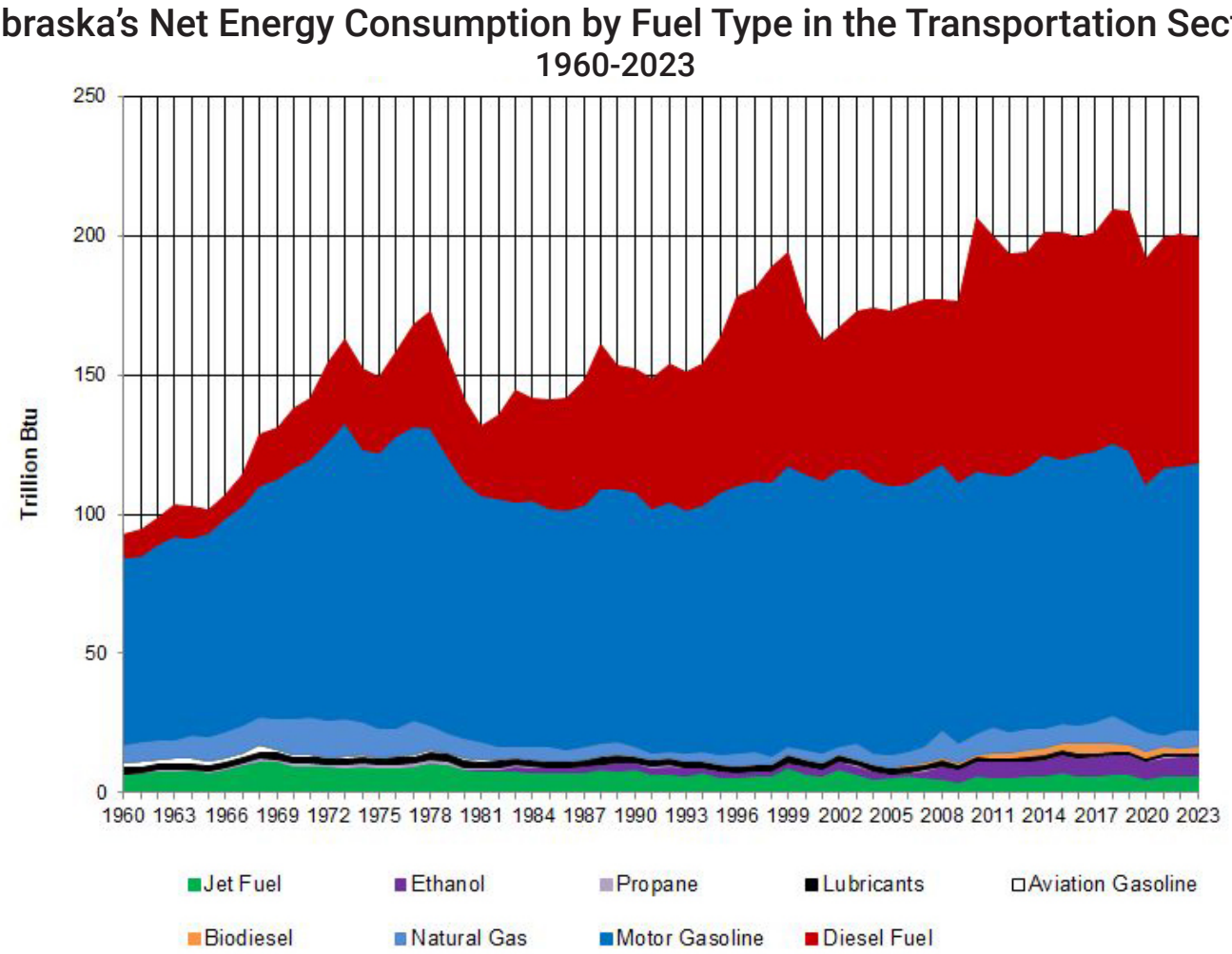


Figure 22 *DWEE/EIA*

Conservation

Over the decades, local, state, and federal governments have used a variety of measures to make this sector less dependent on petroleum products, including increased reliance on ethanol, mandated Corporate Average Fuel Efficiency standards, the introduction of efficiency technology in vehicles, lighter-weight vehicles, and the Nebraska Clean Diesel Rebate Program.

Since 1991, fluctuating pump prices for petroleum-based fuels have had a significant impact on demand, which in turn affects energy conservation. The precipitous decline in transportation sector energy use from 1999 to 2001—from 194.2 trillion Btu to 162.4 trillion Btu—was caused by dramatic price increases, demonstrating an elasticity of demand for transportation fuel. After 2001, demand increased gradually then sharply to a peak of 206.5 trillion Btu in 2010 as gasoline prices fell. The low prices were short-lived, however, rising over one dollar per gallon by 2012 as transportation sector demand fell again to 193.2 trillion Btu. Since then, lower prices at the pump have resulted in gradually rising transportation sector demand, reaching 209.5 trillion Btu in 2018.

It should be noted that increased reliance on electric vehicles has the potential to adversely impact the role of biofuels. Conversely, the wide introduction of engines optimized to work with higher ethanol blends may increase reliance on biofuels. These lower-displacement, higher-compression engines would use mid-level ethanol blends (15-40%), offer fuel economy similar to gasoline and, like current blends of ethanol, reduce pollutant emissions.

Electric Power Sector

The electric power sector consists of facilities that generate electricity primarily for use by the public. Energy is used for the generation, distribution, and transmission of electric power.

Energy Supply

Looking at Figure 24, in 2023, 58% of the electric power energy feedstocks came from coal. The next most used fuels in this sector were nuclear (23%) and wind (13%). Two lesser fuel sources supplied nearly all of the remainder:

- Natural gas — 5%
- Hydroelectric power — 1%

Minor amounts came from wood and waste, solar, and petroleum.

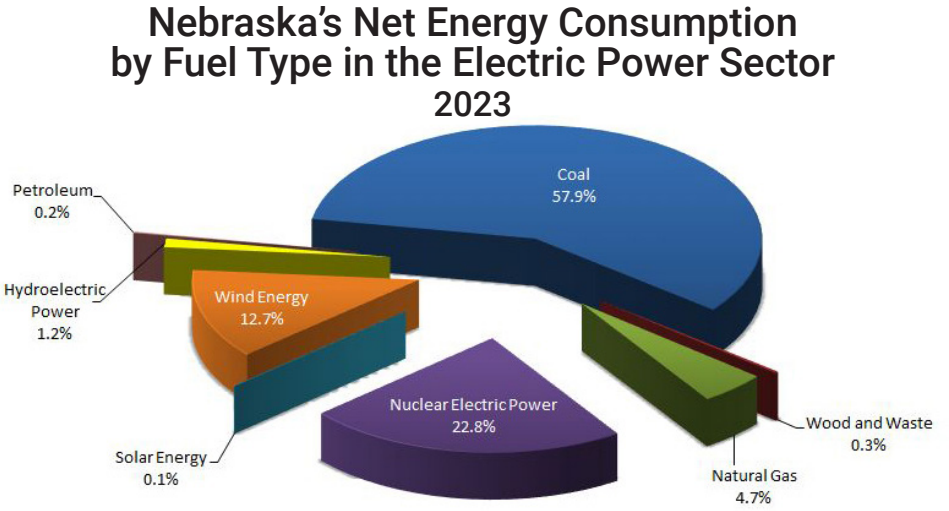


Figure 24 *DWEE/EIA*

Generally, supplies of these fuel types have been readily available to the state's electric utilities. Most of these utilities are members of the Southwest Power Pool (SPP), a regional transmission organization that oversees the electric grid in all or parts of 14 states stretching from north Texas to North Dakota. Within that area, SPP balances electric supply and demand (load-balancing) to ensure that there is sufficient generation to meet current demand and to maintain adequate power reserves. Membership in SPP allows Nebraska utilities to sell excess energy into the market and to share costs of projects that improve the reliability of the grid.

Energy Demand

As shown in Figure 25, trends in fuel types used by the state's electric utilities illustrate how the industry has evolved over 63 years. In 1960, 74.3% of the electricity generated came from natural gas, with coal (14.7%) and hydroelectric power (7.6%) supplying most of the balance.

Among the changes in fuel used to generate electricity in 2023 were increased use of hydroelectric power, natural gas, nuclear, petroleum, solar energy, and wood and waste along with a reduction in coal and wind.

The demand in the state's electric power sector in 2023 totaled 317.1 trillion Btu, a decrease of 3.0% from 2022 demand.

Electricity purchases generated by hydroelectric power for use by Nebraska utilities from the Western Area Power Administration in 2023 totaled 1.886 billion kWh at an average price of four cents per kWh. In 2023, the amount of power provided from Western Area Power Administration met 5.6 % of the electricity demand in the state.

Nebraska's electric utilities more than met their customers' needs while continuing to export electricity to customers outside the state. Between 1990 and 2023, electricity exports varied from a low of 9.4% of generation in 1994 to a high of 26.1% in 2015. In 2023, electricity exports were 14.9% of generation. This was a decrease of 1.9% from 2022.

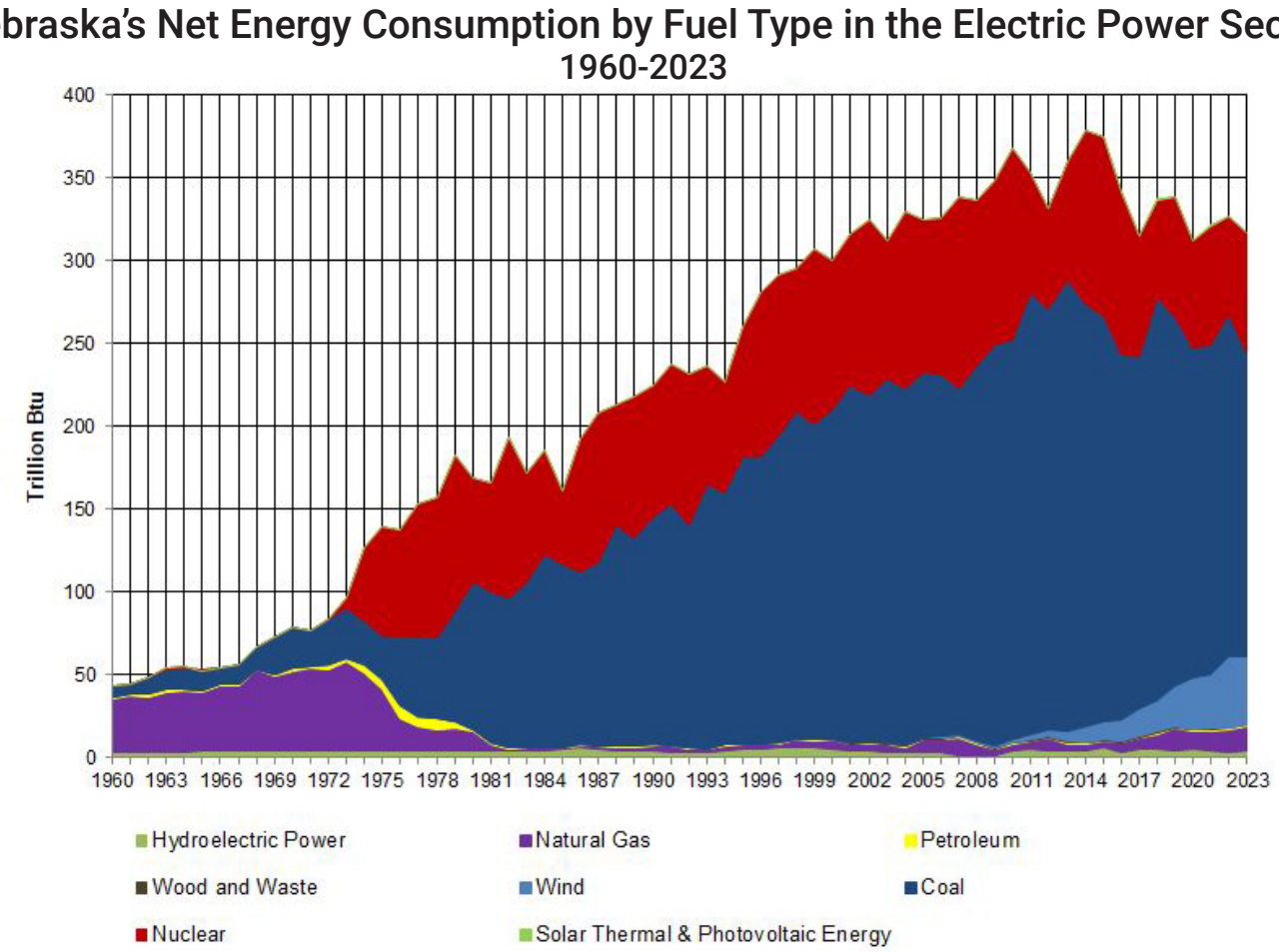


Figure 25 *DWEE/EIA*