2025

COMMITTEE ON NATURAL RESOURCES

NEBRASKA LEGISLATURE

December 30, 2025

LR 159

Interim Study Report

Interim study to examine how the nameplate capacity tax affects the development, operation, and long-term viability of privately developed renewable energy generation facilities located in Nebraska.

ONE HUNDRED-NINTH LEGISLATURE

FIRST SESSION

NATURAL RESOURCES COMMITTEE MEMBERS

Senator Tom Brandt, Chairman
Senator Barry DeKay, Vice-chairman
Senator Mike Moser
Senator Jana Hughes
Senator Danielle Conrad
Senator Stan Clouse
Senator Margo Juarez
Senator Jane Raybould

2025 LR159 TABLE OF CONTENTS
NATURAL RESOURCES COMMITTEE

A hearing was held by the Natural Resource Committee on LR 159 on Friday, September 5, 2025. There was testimony from five (5) invited testifiers. A copy of the hearing transcript is included with this report.

I EXECUTIVE SUMMARY

The proposed direction of this resolution was to ascertain whether further evaluation is needed to examine how the nameplate capacity tax in Nebraska affects the development, operation, and long-term viability of privately developed renewable energy generation facilities located in the state.

Among several criteria, the study evaluates whether the current nameplate capacity tax framework and rate of three thousand five hundred eighteen dollars ($3,518) per megawatt continues to support Nebraska's energy infrastructure goals and renewable energy development objectives while ensuring fair compensation to localities hosting these facilities.

As part of this evaluation, the study looked at whether the current nameplate capacity tax rate remains appropriate given changes in renewable energy technologies, development costs, and market conditions since the tax's implementation in 2010, or whether adjustments should be made to better align with Nebraska's energy development priorities.

In conducting this interim study, the Natural Resources Committee held a hearing on September 5, 2025, and conferred, or may have conferred with state agencies, county officials, other standing committees of the Legislature, and developers, owners and operators of privately developed renewable energy generation facilities.

In 2010 a group explored the issue of how to encourage development of wind energy in the state of Nebraska for export, while providing a benefit for Nebraskakans in an environment where wind turbines were personal property being taxed in accordance with the federal depreciation schedule. The depreciation schedule caused large costs to developers and correspondingly large checks to taxing entities like schools in the first five (5) years, followed by pretty small amounts in the last two (2) years and then nothing at all. The group considered and developed a method to spread the costs and benefits over an estimated 15-year life-span of renewable projects.

Energy is a key driver when considering economic development challenges and, since 2011, the needs of a modern economy are very energy intensive."[1] Development of renewable energy generation has grown tremendously since 2010 as can be seen on the Nebraska Department of Revenue Summary of 2011-2024 Tax Receipts found at page 9 of this report and which can be accessed at **www.https://revenue.nebraska.gov/PAD/nameplate-capacity-tax**

[1] Jennifer Craeger, testimony at LR159 hearing Sept. 5, 2025.

Statutory and Regulatory Authority
Neb. Rev. Stat. §77-6201 established a nameplate capacity tax, which replaced the local assessment and taxation of the tangible personal property of renewable energy generation facilities.
Neb. Rev. Stat. §77-6202 defines a renewable energy generation facility and nameplate capacity. A renewable energy generation facility means (a) a facility that generates electricity using wind as the fuel source or (b) a facility that generates electricity using solar, biomass, and landfill gas as the fuel source if the facility was installed on or after January 1, 2016, and has a nameplate capacity of one hundred kilowatts or more. Nameplate capacity means the capacity of a renewable energy generation facility to generate electricity as measured in megawatts, including fractions of a megawatt based on the facility's alternating current capacity.
Neb. Rev. Stat. §§77-6203 identifies and directs that owners of certain renewable energy facilities are subject to pay nameplate capacity tax for equipment previously subject to personal property tax.
Neb. Rev. Stat. §77-202(9) defines the depreciable tangible personal property that is exempt from property taxation:

II. Link to 2025 LR 159:

http://www.chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://nebraskalegislature.gov/FloorDocs/109/PDF/Intro/LR159.pdf

A. INTERIM STUDY HEARING TESTIMONY:

Advisory Contacts: The following people were invited to testify at the hearing:

- **David Levy -** attorney at Baird Holm, LLP. Mr. Levy was part of the group considering and fashioning the nameplate capacity tax in 2010. He testified about the historical perspective and potential for updated study with original economists.
- **Jon Cannon** - Executive Director, Nebraska Association of County Officials (NACO) Testimony regarding Impact to counties and county perspective on nameplate capacity tax.
- **Kevin Quinn -** Senior Manager of government affairs for Invenergy, a large privately held developer, owner, and operator of American energy. Testimony from a developer perspective and opinion and basis for opinion that any increase in Nameplate Capacity tax will serve as a competitive disadvantage for NE.
- **Jennifer Creager** - Registered lobbyist for the Greater Omaha Chamber testified about a Business perspective and increasing need for energy.
- **Eric Stocker -** (AES) representing the Clean Energy Division of AES and presented the developer perspective and ensuring if there are any changes that must be prospective and not apply to existing projects where financing has already been determined.

B. THE HISTORY

In 2010, through LB1048, introduced by the Natural Resources Committee, Nebraska added to its energy policy, an intention "to encourage and allow opportunities for private developers to develop, own, and operate renewable energy facilities intended primarily for export from the state, under a statutory framework which protects the ratepayers of consumer-owned utility systems operating in the state from subsidizing the costs of such export facilities through their rates.[2]

Prior to the passage of LB1048, wind turbines were considered personal property that largely exists above ground and were subject to federal depreciation guidelines of five years.[3] This meant that investors with large upfront costs of up to 140 million dollars for development projects paid approximately 97 million of value in personal property tax in the first year, while approximately 24 million was determined to be real property value.[4] Hence, investors had no time to offset those costs in the face of large initial and early tax bills and that government entities had no consistent means of measuring and budgeting revenue from the developments, and that within a fairly short period of time, there would be no revenue as the asset depreciated to zero. Furthermore, if new turbines were installed to replace the original turbines, or if used turbines were to be sold to another owner, the net book value method would begin again and produce another increase in taxable value.[5]

An advisory committee/working group (Working Group) consisting of a group of parties with varied interests worked to remedy this disfavored result. The Legislature hired an economist from the University of Nebraska to determine the outcome in the event that the taxing jurisdictions got, and developers paid, a consistent tax spread out over the anticipated life of a renewable project.

Ultimately, LB1048 repealed the relevant property tax laws and replaced the property taxes and personal property taxes on wind infrastructure with a method that determined tax liability based upon the rate of a special excise tax multiplied by the capacity of each turbine measured in Megawatts (MW). LB1048 established the Nameplate Capacity Tax in Nebraska[6] as an alternative to traditional property taxes for utility-scale renewable energy generation facilities. LB1048 exempted all property value, real and personal, associated with personally developed wind farms.[7] The goal was to provide stable, predictable revenue to local governments while simplifying administration of tax on renewable energy

---

[2] Neb. Rev. Stats. §70-1001,§77-6201, Laws 2010, LB1048, §2, §12.
[3] LR 496 Interim Study: Nebraska's Taxation of the Wind Energy Industry, Moore, S. and Lock, B., Revenue Committee, Nebraska Legislature, pg. 2, January 10, 2011.
[4] Id. at pg. 4.
[5] Id. at pg. 4.
[6] Neb. Rev. Stat. §77-202, Laws 2010, LB1048 §12-15
[7] Structure of the Nameplate Capacity Tax, Catalyst Public Affairs, presented for hearing on LR159, Sept. 5, 2025; LR 496 Interim Study: Nebraska's Taxation of the Wind Energy Industry, Moore, S. and Lock, B., Revenue Committee, Nebraska Legislature, pg. 2, January 10, 2011.

generation.[8] LR496 was introduced to provide a legislative study on the tax aspects of LB1048.[9]
The Working Group worked to determine the net book value of wind turbines for taxation purposes, and the average property tax rate across the state,as well as the anticipated megawatt hours that could be generated by facilities. The tax base of the projects generally was calculated "based on three major factors: (1) the average capital costs of renewable energy at the time; (2) the statutory net book depreciation schedule for the facilities over their lifetimes; and (3) property tax rates, with the revenue distribution to counties where located and passed through based on the proportion of political subdivision property taxes in the county.[10] A nameplate capacity excise tax value of $3,518 per megawatt hour generated was established.

LB1048 enacted the "nameplate capacity tax which has replaced the central assessment and taxation of the tangible personal property of renewable energy generation facilities. A renewable energy generation facility includes facilities that generate electricity using wind, solar, biomass, and landfill gas as the fuel source. The tangible personal property used directly in the generation of electricity using wind as the fuel source is exempt from property tax and subject to the nameplate capacity tax. While the associated costs of developing other alternate energy sources was not included in the computation, "[t]he tangible personal property used directly in the generation of electricity using solar, biomass, or landfill gas is also exempt from property tax if the depreciable tangible personal property was installed on or after January 1, 2016, and has a nameplate capacity of 100 kilowatts or more." [11]

The amount of the nameplate capacity tax was set by LB1048 to be calculated and paid annually at a rate equal to the total nameplate capacity of the commissioned wind turbine of the facility multiplied by a tax rate of three thousand five hundred eighteen dollars per megawatt ($3,518).[12] Though it is reported that costs of facilities have decreased, the $3,518 rate has remained the same since 2010.[13]

---

[8] Id.
[9] LR 496 Interim Study: Nebraska's Taxation of the Wind Energy Industry, Moore, S. and Lock, B., Revenue Committee, Nebraska Legislature, pg. 2, January 10, 2011.
[10] Invenergy Report; Structure of the Nameplate Capacity Tax, Catalyst Public Affairs, presented for hearing on LR159 on Sept. 5, 2025; Nebraska Legislature LB1048 (2010) Natural Resources Hearing, February 24, 2010. https://www.nebraskalegislature.gov/FloorDocs/101/PDF/Transcript/Natural/2010-02-24.pdf;Hearing testimony of Jon Cannon on September 5, 2025.
[11] Nebraska Department of Revenue Directive 16-1, May 25, 2016.
[12] Neb. Rev. Stat. §77-6203, Laws 2010, LB1048 §14(1).
[13] It is reported that since 2010, utility-scale wind energy capital costs have declined from $1.5M/MW to $1M/MW and solar prices have declined to $1.43M/MW. Structure of the Nameplate Capacity Tax, Catalyst Public Affairs, presented for hearing on LR159, Sept. 5, 2025 (Catalyst Report). https://emp.lbl.gov/publications/land-based-wind-market-report-2024

Of note, battery storage technology was not yet fully on the scene and solar development was in early stages, so neither was fully considered in the formula calculations for the nameplate capacity tax, although both are subject to the tax[14]. Additionally, since 2010, the lifespan of the turbines has been observed to be shorter than initially anticipated in 2010 and re-powering of turbine units, which was considered avoidable as a part of the computations in 2010, might be considered to "reset" the lifespan back to original expectations. [15]

III. STUDY DIRECTIVES

Directive 1: An analysis of how the nameplate capacity tax has influenced renewable energy development across Nebraska since its creation in 2010, including an analysis of revenue collected and distributed.

From its creation, nameplate capacity tax has been collected by the state. The Department of Revenue collects it, and distributes it in full to the county where the renewable energy generation facility is located[16].

While there was a single county that approved a facility prior to the creation of the nameplate capacity tax in 2010, the number of counties receiving revenue from nameplate capacity tax on renewable energy projects has grown tremendously. In 2011, the nameplate capacity tax generated was $42,707, distributed in Boone and Richardson counties. In 2012 that revenue grew to $466,750 with Keya Paha county also receiving disbursement. In 2013, Custer and Knox counties received nameplate capacity tax revenue for projects in their counties, as well and the amount collected totalled $668,220. In 2014, Jefferson and Gage counties received proceeds from projects in those counties and the total collected was $1,131,905. By 2019, there were 26 counties receiving $5,074,702 in nameplate capacity tax proceeds and by 2023, there were 37 counties receiving $11,398.875.[17]

As shown in the 2024 Collections of Nameplate CapacityTaxes by county report from the Nebraska Department of Revenue, depicted on page 9 of this report, as of December 2024, there were 42 counties that received nameplate capacity tax from 83 facilities.[18] The facilities generated 3,578.80 Megawatts, which generates approximately $12,357,182.90 in Annual Nameplate Capacity Tax (Megawatts x $3,518).[19] The number and scope of projects in the United States, and in Nebraska, continues to grow.

---

[14] Neb. Rev. Stat. §

[15] Hearing testimony of Jon Cannon on September 5, 2025.

[16] Neb. Rev. Stat. §77-6203.

[17] Nebraska Department of Revenue, Nameplate Capacity Tax Summary 2011-2024.https://revenue.nebraska.gov/PAD/nameplate-capacity-tax

[18] Jon Cannon, testimony at Sept. 5, 2025 hearing.

[19] Nebraska Dept. of Revenue, Renewable Energy Generation Facilities (3/2025), https://revenue.nebraska.gov/PAD/nameplate-capacity-tax accessed online zNov. 4, 2025..

David Levy was part of the group that developed the nameplate capacity tax in 2010.[20] He testified at the September 5, 2025 hearing on LR159 that a wind turbine today, on a per megawatt basis costs about two-thirds of what it cost in 2010 and in many places levy rates have decreased, meaning that the same calculations used in 2010 could result in a per megawatt assessment of $2,300 rather than $3,518 assessed in 2010.[21]

It is estimated that a wind energy generating facility will generate approximately $5,000 annually in new property tax revenue per MW of nameplate capacity and a solar energy generating facility will generate approximately $4,000 annually in new property tax revenue per MW of nameplate capacity.[22]

Estimates provided indicate that a wind facility in the United States has a 35% operational capacity. Considering Nebraska's Nameplate Capacity Tax, it is estimated that nearly $3 million in nameplate capacity tax revenue is generated each year from the five operational Invenergy-developed projects in the state alone.[23]

A 2014 report from Dr. Eric Thompson at the University of Nebraska presented an analysis of the Economic impact on wind energy in Nebraska to that date.[24]

The Nebraska Department of Revenue data shows that county governments receive only about 22.19% of the nameplate capacity tax collected, with schools receiving 62.61% on average and other political subdivisions receive the remaining 15.6%..[25]

[20] https://nebraskalegislature.gov/FloorDocs/101/PDF/Slip/LB1048.pdf
[21] See also Catalyst Report.
[22] Impacts of Wind and Solar Energy Development on Property Taxes and Rural Economics in Nebraska. David C. Levy and Lee E. Greenwald, Baird Holm, LLP Spring 2023. (Baird Holm Report)
[23] The Invenergy Report,
[24] Final Report: The Economic and Tax Revenue Impact of the Nebraska Wind Energy Industry., Bureau of Business Research Department of Economics, College of Business Administration, University of Nebraska-Lincoln, Dr. Eric Thompson, Director; Catalyst Public Affairs Analysis presented at September 5 hearing (Exh. 2)
[25] Id.

Source: Nebraska Department of Revenue[26]

Nameplate Capacity Tax Receipts		**Summary**	**2011-2024***	
County	**2024**			
			Kimball	$ 105,540
Adams	$ 5,981		Knox	$ 327,353
Antelope	$ 2,249,561		Logan	$ 3,166
Boone	$ 533,791		Madison	$ 16,394
Brown	$ 1,724		Nuckolls	$ 14,015
Burt	$ 2,322		Perkins	$ 387
Cherry	$ 6,508		Platte	$ 49,173
Colfax	$ 882		Polk	$ 9,100
Cuming	$ 8,795		Richardson	$ 221,080
Custer	$ 490,289		Saline	$ 1,210,698
Dakota	$ 13,456		Scotts	$ 528
Dawson	$ 13,187		Seward	$ 6,507
Dixon	$ 1,130,709		Thayer	$ 970
Dodge	$ 2,322		Valley	$ 554
Fillmore	$ 24,274		Washington	$ 17,590
Franklin	$ 157,044		Wayne	$ 2,631,212
Gage	$ 75,567		Webster	$ 1,079,815
Hall	$ 4,604		Wheeler	$ 224,835
Holt	$ 1,407,200		York	$ 11,222
Howard	$ 1,054			
Jefferson	$ 201,511		**State Total**	**$12,279,831.21***
Keith	$ 5,207			

[26]This includes receipts through December 2024.
www.https://revenue.nebraska.gov/PAD/nameplate-capacity-tax

<u>Directive 2</u>: An assessment of whether the current nameplate capacity tax structure continues to serve its original purpose of supporting renewable energy infrastructure development by replacing traditional property taxes while maintaining appropriate compensation to localities.

As of October 2024, there has not been a slowdown in the development of renewable energy projects with funding in the state and testifiers at the LR159 hearing reported that capital costs for developing utility-scale wind energy have declined from $1.5/MW to $1M/MW while solar prices have declined to $1.43/MW[27] The United States Department of Energy reports that in 2024, generators added 30 GW of utility-scale solar to the U.S. grid and the trend upward is expected to continue. [28] Recently, however, The Department of Energy announced termination of funding for 223 Projects with cancelled funding totalling over $7.5 billion and the government is considering further cuts.

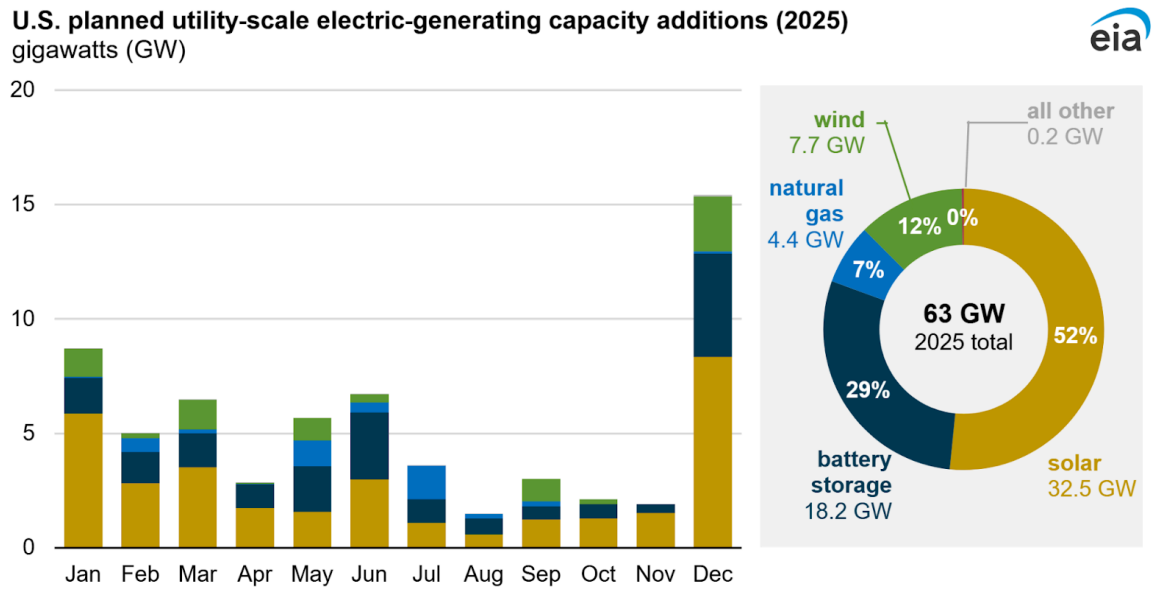
Some opine that the cancelled funding at the federal level could result in delays, cancellations of projects, and/or willingness of investors. [29] A graph developed by the US Energy Information Administration is included on the following page of this report and depicts a different picture, however. Assuming that the growing energy needs of industry continue to escalate, it seems likely that planned utility-scale projects on the horizon will continue to grow to some extent with or without incentives.

Even as technology and development in solar energy and battery storage at large generation facilities grows, neither was specifically considered in the original discussions and computation of the nameplate capacity excise tax. The U.S. Department of Energy anticipates 63 gigawatts (GW) of new utility-scale capacity to be added to the U.S. power grid in 2025, representing nearly a 30% increase from 2024, in which 48.6 GW capacity was installed, and that together, solar and battery storage account for 81% of the expected total capacity additions, with solar making up over 50% of the increase.[30] The past five (5) years have seen a large build-out of the utility-scale solar and wind facilities. These projects are in the early stages so "they haven't had the time to actually realize the full cost and full revenue."[31]

Given the growth in the solar industry and newer developments in the area of battery generation storage, a review of potential state revenues in those areas may warrant a discussion as to whether the ratepayers/taxpayers in Nebraska are still being compensated in appropriate proportions.

---

[27] David Levy, testifier at September 5, 2025 hearing on LR159.
[28] Solar, battery storage to lead new U.S. generating capacity additions in 2025, U.S. Energy Information Administration, February 24, 2025.
[29] "Energy Department Announces Termination of 223 Projects, Saving Over $7.5 Billion, The Department of Energy, October 2, 202.
[30] Solar, battery storage to lead new U.S. generating capacity additions in 2025, U.S. Energy Information Administration, February 24, 2025.
[31] Testimony at hearing on LB159 on September 5, 2025.



Data source: U.S. Energy Information Administration, *Preliminary Monthly Electric Generator Inventory*, December 2024

In 2025, LB50 marked somewhat of a shift in distribution of nameplate capacity tax revenues originally designed to replace property tax to all taxing subdivisions, to distributing the nameplate capacity tax as a revenue stream needed to cover "holes" created in Community College budgets by diverting the first five percent (5%) of the nameplate capacity excise tax to funding for the community college in the area where the wind project is located in Nebraska.[32] It is unclear whether this could be done in the future for other specific uses, given the Legislative declaration that "[t]he nameplate capacity tax should not be singled out as a source of General Fund revenue during times of economic hardship."[33]

Directive 3: An evaluation of changes in renewable energy development costs, technological efficiencies, and expected facility lifespans and how these and other factors may necessitate adjustments to the current nameplate capacity tax rate.

At the September 5, 2025 hearing on LB159, it was reported that the costs of renewable wind energy infrastructure development has decreased over the years.[34] This does not appear true for all aspects of the wind energy projects or necessarily true for solar, battery storage, or other sources of renewable or clean energy. The United States Dept of Energy, Office of Energy Efficiency & Renewable Energy, in its 2023 Edition of the Land-Based

[32] Neb. Rev. Stat. §77-6204, Laws 2025, LB50. § 1; Hearing testimony by Jon Cannon, NACO onSeptember 5, 2025; Nebraska Community College Association (NCCCA), The Nameplate Capacity Excise Tax Supports Community Colleges, "What does LB 50 do?",..

[33] Neb. Rev. Stat. §77-6201 (4).

[34] David Levy, testifier at September 5, 2025 hearing on LR159.

Wind Market Report reported costs increased at the same time that aging projects are decreasing in performance.[35] Additionally, battery storage generation capacity has increased as a separate resource from wind or solar due to technological advances. Battery storage in Nebraska is not considered a renewable energy source itself, so its equipment is generally subject to personal property taxes and depreciation. The nameplate capacity tax to owners of battery storage technology depends on whether or not the storage equipment is associated with a large capacity facility using solar, wind, biomass, or landfill gas as a fuel source **and** that has a nameplate capacity of 100kW or more. In which case, the storage equipment is exempt from property tax and is subject to the nameplate capacity tax instead.

One aspect of change over the past decades is the strong push by some companies to utilize only renewable energy, which has given way to the realities of known resource availability limitations in the dispatchability of renewable energy- in other words, challenges in wind and solar energy not necessarily dispatchable 24/7.[36]

It should be noted that any changes to the nameplate capacity excise tax or other taxes related to energy resource development should probably consider how those changes would affect power purchase agreements (ppas) between developer/producers and Nebraska utilities and determine if existing projects or projects with existing ppas would be exempt from any new multiplier or prorated to conform with the term of the existing ppa agreements. That said, it seems there may still be an opportunity to adjust how generation by means of solar, battery storage, and other innovations are taxed in order to meet the goals of increased revenues to localities for property tax replacement.

<u>Directive 4:</u> An analysis of how Nebraska's renewable energy tax framework affects the competitiveness of the state's energy industry compared to other taxes imposed on energy production from other sources in the state.

"The nameplate capacity tax should be competitive with taxes imposed directly and indirectly on renewable energy generation and development in other states."[37]

Nebraska imposes various taxes on different energy sources, primarily through motor fuels and excise taxes for transportation fuels, a severance tax on extracted resources, and a nameplate capacity tax on most commercial renewable energy generation facilities.

Another example of an energy tax is a proposed U.S. carbon tax, which proponents hope to implement on the federal or state level, or both. A carbon tax is a fee paid by businesses and industries that produce carbon dioxide through the burning of fossil fuels. Nebraska

[35] Land-Based Wind Market Report: 2023 Edition, U.S. Department of Energy, Office of Energy Efficiency & Renewable Energy, pgs. x-xiii.
[36] Jennifer Creager, on behalf of Greater Omaha Chamber of Commerce, testimony at hearing on LR159 on September 5, 2025.
[37] Neb. Rev. Stat. §77-6201 (2).

does not have a general carbon tax, but has passed legislation for specific carbon-related incentives and programs, such as the Sustainable Aviation Fuel tax credit.[38]

<u>Directive 5</u>: A determination of whether the nameplate capacity tax is competitive with taxes imposed directly or indirectly on renewable energy development in other states, particularly other states within the Southwest Power Pool.

Nebraska law directs that the nameplate capacity tax should be competitive with taxes imposed directly and indirectly on wind generation and development in other states, providing that the tax should be fair and nondiscriminatory when compared with other taxes imposed on other industries in the state; and that the tax should not be singled out as a source of General Fund revenue during times of economic hardship.[39]

Nebraska's nameplate capacity tax system is unique in the state's overall taxing scheme. It is, however, said to be attractive to developers and investors because it is simple, understandable, and predictable. It provides a "flat tax", if you will.[40]

The footprint of the Southwest Power Pool (SPP) includes a part or all of fourteen (14) states including Nerbraska. Other states in SPP include Iowa, Kansas, Louisiana, Minnesota, Missouri, Montana, New Mexico, North Dakota, Oklahoma, South Dakota, Texas and Wyoming.
[41]

Testifiers indicated that Nebraska's nameplate capacity excise tax makes development of renewable energy competitive with projects in Kansas, South Dakota, Missouri, and Iowa,[42] and Nebraska has the 3rd highest nameplate capacity tax rate out of the five states which wholly overlap with the Southwest Power Pool (SPP).[43] Currently, South Dakota is considering a system that taxes solar and battery-stored energy generation separately from wind energy and perhaps even, separate from one another.[44]

At the same time, while Nebraska grants sales and use tax exemptions for community renewable energy projects and property tax exemptions for renewable facilities, testifiers indicated that Kansas and New Mexico grant additional financial incentives that keep their equivalent nameplate capacity taxes under $3,000 per megawatt.[45]

---

[38] LB937, Laws 2025.
[39] §77-202, Laws 2010, LB1048 §12(2)-)(4).
[40] Eric Stocker, testimony at hearing on LR159 on September 5, 2025.
[41] SPP.org
[42] David Levy, testifier at September 5, 2025 hearing on LR159.
[43] Invenergy, The Future Impacts of Changing the Nameplate Capacity Tax, 2025; Testimony of K. Quinn, September 5, 2025. (The Invenergy Report)
[44] Eric Stocker,
[45] Kevin Quinn Testimony at Sept. 5, 2025 hearing; .

Developers doing "the math" estimate that Nebraska is "quite competitive . . coming roughly at the middle of the pack" when compared to surrounding states, with Wyoming and Montana levying upwards of $6,000 to $7,000 per megawatt or more, while Kansas and New Mexico granting financial incentives for clean energy projects, keeping their equivalent nameplate capacity taxes under $3,000 per megawatt.[46] Currently, testimony revealed a developer perspective that there are six (6) states bordering Nebraska that already have a more favorable property tax treatment than the nameplate capacity tax at its current rate.[47]

<u>Directive 6:</u> An analysis of anticipated impacts to businesses, counties, and the energy development landscape if the nameplate capacity tax rate were increased or decreased.

According to the Greater Omaha Chamber of VCommerce, "energy and . . . infrastructure needs . . are core components of the future of economic development in Nebraska." [48] Energy is a key driver that necessarily includes consideration of economic development because "the needs of a modern economy are very energy intensive, and investment decisions are increasingly influenced by the power generation capacity of potential locations."[49] The Chamber suggests "[I]t's better to think of the increase in energy needs as the natural evolution of our economy."[50]

In 2024, the Nebraska State Chamber identified energy development as the state's second most important economic issue, behind only workforce development. Beyond immediate tax and power generation benefits, renewable energy facilities enable significant job creation utilizing Nebraska's core agricultural industry.[51]

Impacts on Renewable Facility Development:
According to testifiers and their materials, the prevailing school of thought is that a change to the Nameplate Capacity Tax would make Nebraska less competitive in the industry.[52] Kevin Quinn testified that based upon project spend, anticipated infrastructure and construction costs, asset performance modeling, and other financial factors like the lifetime tax liability, developers decide what price to offer customers on completed projects.[53]

Mr. Quinn expressed that an increase in the nameplate capacity tax would potentially cause project delays, as well as potential delays in payments to the state, landowners and communities and delivery of online electricity if the change required negotiation and

[46] Kevin Quinn, Invenergy, Testimony at Sept. 5, 2025 hearing.
[47] Kevin Quinn, Invenergy, Testimony at Sept. 5, 2025 hearing.
[48] Jennifer Creager, Greater Omaha Chamber of Commerce, Testimony at September 5, 2025 hearing.
[49] Jennifer Creager, Greater Omaha Chamber of Commerce, Testimony at September 5, 2025 hearing.
[50] Id.
[51] Scott Madden Report, Nebraska Chamber of Commerce, October 2024.
[52] The Invenergy Report.
[53] Kevin Quinn, Testimony at Sept. 5, 2025 hearing.

execution of new contracts.[54] "If the tax is increased too dramatically, this could disincentivize future development in the state and force businesses like Invenergy to prioritize investments elsewhere."[55]

Impact on Economic Development:
While the Greater Omaha Chamber has not weighed in on the rate of the nameplate capacity tax, the Chamber posits that "it's crucial to emphasize that our state's economic future is directly tied to our ability to have a grid that will meet our state's future growth needs. Anything less places an artificial ceiling that will cause us to fall behind states that are making these investments." [56] Ms. Creager pointed to South Dakota as an example of a nearby competitive state and indicated that the state currently charges a lower tax than Nebraska on their wind and solar development at $3,000 per megawatt. "States that make investments across the board will be the leaders in future economic development. States that restrict their options to certain sources will see slower energy growth and missed opportunities."[57]

States and communities must keep in mind the increasing energy needs involved in not only electrification in the private sector, but also in agricultural technology, Artificial Intelligence (AI), manufacturing practices, data centers and cryptocurrency mining. "The selection of non-greenhouse gas-emitting resources has been encouraged not only by net-zero goals (of states, municipalities and private companies) but also by tax incentives.[58]

As a top agricultural producer in the nation, Nebraska currently uses nearly 45% of its energy consumption and 39% of retail electrical sales go to the industrial sector, which includes meatpacking, agriculture, livestock, food processing and chemical and machine manufacturing.[59] Renewable energy accounted for about 23% of energy consumed overall in 2021.[60]

Nebraska has between 18 and 39 reported data center facilities, including several Google centers operating and/or planned. Incentives have sparked growth for several years.[61]
The current trends in manufacturing shows "every stage of the manufacturing process is becoming more advanced, making manufacturing much more power hungry in general."[62]

[54] Kevin Quinn, Testimony at Sept. 5, 2025 hearing.
[55] Kevin Quinn, Testimony at Sept. 5, 2025 hearing.
[56] Jennifer Creager, Greater Omaha Chamber of Commerce, testimony at LR159 hearing Sept. 5, 2025.
[57] Id.
[58] The Madden Report, page 7.
[59] The Madden Report, p. 10.
[60] Figure 2: Nebraska's Overall Net Primary Energy Consumption by Fuel Ty;e (2021), NDEE 2023 Annual State Energy Report, The Madden Report pg.10.
[61] The Impact of Data Centers on the Nebraska Economy, Mangum economics for NetChoice, March 2022. Accessed online on Nov. 25, 2025 @
[62]Jennifer Creager, Testimony at Sept. 5, 2025 hearing.

Across the United States, solar energy and battery storage is expected to lead the way in new generating capacity additions in 2025.[63] Nebraska is no different. Nebraska's public utilities alone are planning to add up to 125 MW of battery storage, and 1,000-1,500 MW of renewable and other generation resources (OPPD);[64] 100 MW battery storage and a battery storage project tied to solar array (NPPD)[65].

Below is a table showing Nebraska communities solar power development in recent years.

Nebraska Community Solar Power Generation

Operating Solar Projects	Year of Commercial Operation	Total kW (AC Power)
Lincoln	2016	3,600
Aurora	2017	480
Central City	2017	600
Holdrege	2017	56
Kearney	2017	5,700
Lexington	2017	3,750
Scottsbluff	2017 and 2020	4,503
South Sioux City	2017	2,000
Venango	2017	96
Fremont	2018	2,320
Grand Island	2018	1,000
Superior	2018	1,000
Atkinson	2019	180
Ft. Calhoun	2019	5,000
Gothenburg	2019	930
Hastings	2019	2,500
Burt and Dodge counties	2021	1,400
Ainsworth	2021	500
Clay County	2021	1,000
Cozad	2021	2,400
Custer County	2021	2,325
York	2022	3,200
Norfolk	2022	8,500
Total		**53,040**

Note: Projects with more than one year listed have multiple facilities that began operations in different years.

NEBRASKA
DEPT. OF ENVIRONMENT AND ENERGY

<u>Directive 7:</u> A recommendation of whether the nameplate capacity tax should be increased, decreased, or remain the same, based on the criteria. included in the study and its impact on Nebraska's energy infrastructure and development goals

Potential recommendations:

1. Re-assess current per megawatt calculations of wind, solar power, and battery storage capacities. Neither solar power, nor storage were used for the 2010 discussions and computation of the tax.[66] There is now more data about the life span of the facilities and costs throughout that life that might result in an increase in the

[63] U.S. Energy Information Administration, "Today in Energy", Feb. 24, 2025.
[64] OPPD Resolution, attachment A (Appendices)
[65] NPPD begins the process to add a new generation for future growth." February 8, 2024.
[66] David Levy, testimony at Sept. 5, 2025 hearing.

nameplate capacity tax if the same calculation method used in 2010 is used;[67] Also, it is unknown whether a further study would show a tiered approach would make sense given the differences in costs of infrastructure.

2. Determine whether to subject all battery storage equipment to the nameplate capacity tax, regardless of size and/or to separate utility-scale battery storage and any future technologies in the energy economy to the nameplate capacity tax.
3. Consider that with the growing use of solar power generation and utility-scale battery storage, it might be a useful idea to have the industry or the Legislature hire an economist to reassess the 2010 study but including both an analysis that includes the solar industry projects and utility-scale battery storage projects and using the same methodology for calculating the cost per megawatt hour in order to consider any new rate and whether to add battery storage projects to the nameplate capacity tax. Ideally, (Mr. Levy recommends that, as a matter of fairness and stability, any new calculations, as they relate to existing projects, and projects under construction when changes might be made should remain under the same computation as is currently assessed.)

[67] Jon Cannon, testimony at Sept. 5, 2025 hearing.

INDEX OF APPENDICES

APPENDICES	TITLE
Hearing Documents:	
1	Transcript: Legislative Resolution 159 hearing September 5, 2025.
2	**Hearing:** Position Comments online.
3	**Hearing Exh. 1:** Impacts of Wind and Solar Energy Development on Property Taxes and Rural Economics in Nebraska. David C. Levy and Lee E. Greenwald, Baird Holm, LLP Spring 2023. (Baird Holm Report)
4	**Hearing Exh. 2**: Introducing Invenerg;; Rough Estimations for Nameplate Capacity Tax Equivalencies. NE's Nameplate Capacity Tax is Competitive with Other SPP States. (Kevin Quinn) (Invenergy Report)
5	Nebraska Department of Revenue Directive 16-1 Assessment of Renewable Energy Generation Facilities. May 25, 2016. Superseded.
6	Nebraska Department of Revenue Directive 23-3 Assessment of Renewable Energy Generation Facilities. January 9, 2023. Superseded by Directive 24-3.
7	2024 Nameplate Capacity Tax Received Across Top 10 Revenue Receiving Counties, Catalyst Public Affairs.
8	The Nameplate Capacity Excise Tax Supports Community Colleges, NCAA, 2025.
9:	LR 496 Interim Study: Nebraska's Taxation of the Wind Energy Industry, Moore, S. and Lock, B., Revenue Committee, Nebraska Legislature, pg. 2, January 10, 2011.
10	Scott Madden Report, Nebraska Chamber of Commerce, October 2024. (Madden Report)
11	Relevant Statutes. Chapter 77, Article 6. 77-6201; 77-6203

APPENDIX NO. 1

TRANSCRIPT OF HEARING

SEPTEMBER 5, 2025

(Available online at Nebraskalegislature.com LR159 2025

BRANDT: Welcome to your Natural Resources Committee. I am Senator Brandt from Plymouth, representin-- representing the 32nd District. And I serve as chair of the Natural Resources Committee. The committee will take up the lis-- legislative resolutions in the order posted. This public hearing is your opportunity to be part of the legislative process and to express your position on the proposed legislation before us. If you are planning to testify-- and today is, is-- this is the opening for a regular hearing. We just have invited testimony today. And if you are an invited testifier, you can fill your green sheet out ahead of time and give it to Sally. I think she's contacted a lot of you. Bri-- be sure to print clearly and fill it out completely. Skip, skip, skip. When you come up to testify, please speak clearly into the microphone. Tell us your name. Spell your first and last name to ensure we get an accurate record. We will begin each bill-- invited testimony today with the introducer's opening statement. We will finish with a closing statement by the introducer if they wish to give one. We will be using a five-minute light system for all testifiers. When you begin your testimony, the light on the table will be green. When the yellow light comes on, you have one minute remaining. And the red light indicates you need to wrap up your final thought and stop. Questions from the committee may follow. Also, committee members may come and go during the hearing. This has nothing to do with the importance of the resolutions being heard. It is just part of the process, as senators may have bills to introduce in other committees. I know that's where Senator Clouse is currently at the moment. A few items to facilitate today's hearing. If you have handouts or copies of your testimony, please bring up at least 12 copies and give them to Sally. We do not have a page today. Please silence or turn off your cell phones. Verbal outbursts or applause are not permitted in the hearing room. Such behavior may be cause for you to be asked to leave the hearing. Finally, committee procedures for all committees state that written position statements on a bill to be included in the record must be submitted by 8 a.m. the day of the hearing. The only acceptable method of submission is via the Legislature's website at nebraskalegislature.gov. Written position letters will be included on the official hearing record, but only those testifying in person before the committee will be included on the committee statement. I will now have the committee members with us today introduce themselves, starting on my left.

CONRAD: Good afternoon. My name's Danielle Conrad. I represent north Lincoln.

HUGHES: Hello. Jana Hughes, District 24, which is Seward, York, Polk, and a little bit of Butler County.

DeKAY: Barry DeKay, representing District 40, which consists of Holt, Knox, Cedar, Antelope Counties, northern part of Pierce, northern part of Dixon County.

BRANDT: Go ahead, Mike.

MOSER: Mike Moser. I represent Platte County and most of Stanton County.

JUAREZ: And Senator Margo Juarez: south Omaha, District 5.

BRANDT: Also sitting the-- assisting the committee today: to my right is our legal counsel, Cyndi Lamm; and to my far right is our committee clerk, Sally Schultz. And I will turn it over to Vice Chair DeKay.

DeKAY: You ready?

BRANDT: Yep.

DeKAY: The first LR that we're going to discuss today is LR159, brought by Senator Brandt. You're welcome to open.

BRANDT: Good afternoon, Senator DeKay and fellow members of the Natural Resources Committee. I am Senator Tom Brandt, T-o-m B-r-a-n-d-t. I represent the 32nd District: Fillmore, Thayer, Jefferson, Saline, and southwestern Lancaster Counties. I appear before you today to introduce LR159, an interim study to look at the nameplate capacity tax here in Nebraska. Last session, there was a bill, LB468, to essentially double the nameplate capacity tax in an effort to help replace the inheritance tax. I was told by some that increasing the nameplate capacity tax would have no competitive disadvantage, and I was told by others it would be detrimental to Nebraska's energy sector. That bill did not pass last session, and so I figured since we are the committee of jurisdiction for many of the energy-related policy changes that we should study the issue and have a logical discussion before making drastic policy changes. I have encouraged those stakeholders working on this study to also seek an outside study with the economists to help the Legislature determine the original number of $3,518 per megawatt. My hope is that a new study can help us make the best decisions as senators and that this new study can be provided to the committee and Legislature before we start our work next January. I believe that we-- that will be

happening this fall to supplement the hearing we are having today. I have invited a testifier who was here when the nameplate capacity tax was adopted in 2010 and to give some historical context. We will also have testifiers from the business and developer community. And lastly, I've invited NACO to testify because of their role in the bill referenced last session, their role in approving or denying these projects, and to hear about the impalact-- impact the nameplate capacity tax has on our counties. And with that, I would be happy to answer any questions.

JUAREZ: I--

DeKAY: Thank you. Any questions? Senator Juarez.

JUAREZ: Yes. Senator Brandt, would you clarify your comment about what you want to happen in the fall?

BRANDT: Yeah. That was-- wasn't written the best. We're encouraging the people that brought LB468 to work with the economists to get us some solid numbers on how this will affect the state of Nebraska.

JUAREZ: OK. Thank you.

BRANDT: Or, entities in the state of Nebraska, I should say.

JUAREZ: OK. Thank you.

DeKAY: OK. Thank you. Senator Conrad.

CONRAD: Thank you, Vice Chair. Thank you, Chair Brandt. Good to see you as always. And appreciate your opening. Definitely want to give you an opportunity to respond if you wish, but I do just want to note for the record that, as a senior member of the Legislature, I find it disheartening that there is an emerging trend from this committee and other jurisdictional committees to lock the public out of public hearings. I see that you have designated both of the hearings before the committee today as invitation only, and I think that does a disservice to our second house.

BRANDT: Can I respond?

CONRAD: Please.

BRANDT: OK. I guess, historically, all the LRs I've been involved with have always been invited testimony. And so I, I just thought I was

following precedent by allowing the introducers to bring the people they thought that could best answer the questions that the LR asked.

CONRAD: Mm-hmm.

BRANDT: And, and that-- and, I mean, that's my reason. I didn't have anything nefarious in not letting the public testify. And I know some of the subjects that, that we're going to approach on our hearings-- a lot of people have contacted me about that. I've encouraged them to contact the introducer of the LR to see if they would let them testify. And if not, they're welcome to submit written testimony or, or contact the committee directly. And I think a lot of you-- hopefully-- they told me they were going to send emails to you, and hopefully they did.

CONRAD: They did, and I, I think that kind of speaks to the point. A lot of the constituents who reached out to me who have a great deal of interest in the matters of public policy-- public policy-- before this committee and as referenced in these specific interim study hearing resolutions were additionally dismayed and disappointed that they would not have a way to weigh in. And while written comment or individual communications with individual senators is indeed better than nothing, it is not subject to dynamic conversation with senators of this committee and the testifier. It is not part of the public hearing transcript that is relevant for a variety of policy deliberation, potential litigation, and historical purposes. And I would encourage you to rethink how you structure these hearings moving forward.

BRANDT: So noted.

CONRAD: Thank you.

DeKAY: Thank you. Any other questions? I have one. Senator Brandt, today's hearing is more of an informational meeting rather than-- we're not going to be acting on this. So coming out of this hearing, if something's being brought forward in the fall, that's when there would be more availability for public information, public testimony. Is-- am I right in saying that or--

BRANDT: I would-- I-- and-- this is how I view this, is to gather this information. LB468 was Senator Clements' bill-- and he is here today. And he originally brought a bill to abolish the inheritance tax and to use the nameplate as a revenue stream. And then he, he had doubled the

nameplate capacity in, in the discussion on the floor. I think there was some confusion as to what this-- how this would affect counties and community colleges and schools and the people that pay the nameplate tax, and this is an effort to clarify those positions. And-- so if, if something comes after this, I would hope it would be included if Senator Clements is going to bring that bill forward again and it would go through debate on the floor.

DeKAY: Thank you. Any other questions? Senator Moser.

MOSER: Thank you, Senator DeKay. I don't think our office got any-- hardly any contact at all about either of the hearings today. In my opinion, this is more of an inside baseball discussion of the nuts and bolts of the nameplate capacity tax and also the net-zero issues. I think-- I've had people talk to our office in the past about wanting greener energy and being ecologically, environmentally sensible about how we generate electricity. And we certainly understand that. To me, this is more of a discussion of what obstacles there are in the way of achieving net zero. I mean, how far are you gonna take that to get-- to accomplish net zero? What are you going to do to rates, ratepayers, and [INAUDIBLE]?

BRANDT: So the, the, the net zero will be the next hearing?

MOSER: Yeah.

BRANDT: OK. So this is--

MOSER: I think her-- I, I think Senator-- speaking for my colleague-- I think she was com--

CONRAD: No need to, Senator. I can speak for myself.

MOSER: Well-- and you certainly do. I just think that there wouldn't be a lot of new information we're going to learn from constituents. I understand the position of the ones we've got and so-- anyway. Move on. Thank you.

BRANDT: So this is, this is more of a historical--

MOSER: Yeah.

BRANDT: This was passed in 2010. It has not changed since 2010. It's been 16 years. Is it time to change it? Up, down, indifferent? That's what we hope to find out today with some of our testifiers.

DeKAY: OK. Thank you. Any other questions? Seeing none. We are going to have invited testimony today. So I'm just going down the list of-- our first testifier will be David Levi or Levy.

DAVID LEVY: Levy.

DeKAY: Levy.

DAVID LEVY: Vice Chair DeK-- DeKay and members of the commi-- committee, good afternoon. David Levy, D-a-v-i-d L-e-v-y, with the Baird Holm law firm in Omaha and Lincoln. We represent most of the developers of utility-scale wind, solar, and battery energy storage projects in Nebraska. Thank you for the opportunity to testify today. I was part of the group that developed the nameplate capacity tax in 2010. I guess that means I'm old now, in that I'm now here to share the history of, of long ago. I remember we had one of the meetings on that bill right here in this room early in the morning, I think, actually sitting up here in the front of the room. Remember it vividly. That group included senators, of course, representatives of the utilities, representatives of NACO, and representatives of the industry, such as myself. At that time really, what we were talking about was utility-scale wind energy. And in my testimony for the most part, I will use wind as my example, but what I'm going to talk about also applies to solar and potentially to utility-scale battery storage as well. As you all know, property tax fundamentally is derived the amount of property tax due and, and paid as-- derived fundamentally from the value times the levy rate. Oversimplifying just a little bit: in a wind farm, everything above the ground is personal property. Nebraska generally follows federal law in determining what's personal property, what's real property, and the class life, the depreciation schedule of what's personal property. So most of the, the value, most of the assets in a wind farm, for example, the part that's above the ground is personal property. Again, that's taxed. The value of that for property taxes are the-- the resulting property tax is the value times the levy rate. But for personal property, the levy-- the, the value depreciates. And for wind energy facilities, federal law tells us that that has a seven-year class life. So what happened before the nameplate capacity tax was most of the property tax on a wind farm was personal property tax. That meant that there would be a big tax bill and a big revenue source in year one, and after about eight years there would very little tax bill and very little revenues to the counties. Nobody really was happy with that. It was difficult to draw investment because it was difficult for the developers who have just invested all that money and hadn't had time yet to recoup that

investment to then have that very large tax bill. And it was difficult for the taxing entities to budget when that revenue was not going to be sustainable, was not going to carry on beyond about that, that eighth year. It was also hard for the local county assessors to value that property. They're not used to valuing wind turbines like they may be a house or an agricultural operation or something like that. So in 2010, again, that group that I talked about got together, and ultimately the Legislature hired a-- an economist from the University of Nebraska-Lincoln from the Bureau of Business Research to determine what would happen if the taxing jurisdictions got the same revenue over the life of the project that they would under the then-current system but did so in an even series of payments-- again, over the average life of a project. The result of that was the nameplate capacity tax, which the Legislature adopted with LB1048 in 2010, and the amount was $3,518 per megawatt per year. Again, that just took that tax bill that was very front-loaded, spread it out in even payments over what they determined was the average life of a, of a wind energy project, which I believe at that time they determined it was 28 and a half years. They surveyed counties across the state to get a-- kind of an average levy rate, because that of course helps determine the tax bill as well-- and, and they came up with that $3,518 per megawatt. The statute on the nameplate capacity tax, which is entirely in four sections in Chapter 77, Article 62, requires the Department of Revenue to collect the tax and distribute it proportionately to the taxing entities in the same manner as county treasurers to distribute real property tax. That means that, with the nameplate capacity tax, for example, school districts get 60% to 65% of that tax, counties get around 22% to 25%. Fire and ambulance districts get their share, NRDs get their share, and so on. Anything after the average life of the wind farm is a windfall-- no pun intended-- to those taxing entities. Right? So wind farms typically exist longer than the 28 and a half years, and anything paid after is, is extra revenue. Thus, the nameplate capacity tax has benefited those taxing entities in that regard as well. Today, a wind turbine costs per megawatt-- and I see the red light is on. You want me to conclude or--

DeKAY: If you, if you can conclude in just a few brief statements.

BRANDT: OK. Real quickly. So today, the cost of a wind turbine on a per megawi-- per megawatt basis is about two-thirds of what it was in 2010. And levy rates have gone down as well generally thanks to the, the work of, of this Legislature and, and many others. And so if you did the, the same calculation that the economists did in 2010 today on

a wind project, by my math-- this is lawyer math, not economist math-- but the, the, the rate-- instead of $3,518 would be about $2,300.

DeKAY: That-- that's your time. We gotta keep moving.

DAVID LEVY: OK.

DeKAY: Any questions? Go ahead.

CONRAD: Thank you, Vice Chair. Thank you, Mr. Levy. Good to see you again.

DAVID LEVY: Thank you.

CONRAD: Thank you for a refresher on the history regarding nameplate capacity. I think I was in the Legislature the last go-around when it was first established and initiated. I remember my friend Senator Langemeier chairing the committee and, and leading that effort. And in addition to providing kind of an updated revenue structure for new energy development, there was also a dual eye towards property tax relief, as it is always a perennial issue in Nebraska. And then-- you know, we hadn't really heard much about the nameplate capacity tax until the inheritance tax repeal came to the forefront over the last couple of years, and it's been lifted as a potential revenue replacement in that regard so as to not overburden property taxes if we eliminate the inheritance tax. So-- but for the discussion related to the inheritance tax, should this committee or should the Legislature perhaps work with the university like we did in the past to update the formula or do a comprehensive study about this because it's been a while or is the only reason we're having this conversation is to scramble around and find money because Senator Clements wants to repeal the inheritance tax?

DAVID LEVY: That's-- thank you for the question, Senator. I'm not going to wade into the inheritance tax debate. I-- you know, I think it's a fair point that the nameplate capacity tax is a fixed excise tax, and it's been fixed at that number for 16 years now or 15 years now. As I mentioned, if one were to redo that math, the number would actually be lower. There's been an, an assumption that there's been inflation over time. And so, naturally, that tax should go up. But in fact, due to economies of scale, ma-- maturation of the industry and things like that-- as I mentioned, the cost of wind turbines, for example, per megawatt has gone down. I don't think it's a bad idea, necessarily, to, to hire the university, either have the industry hire

the university or, or have the Legislature hire the university or some economist, doesn't-- you know, whoever it might be-- to look at this for wind and for solar. When solar was added to the nameplate capacity tax in 2015, we didn't-- or, the Legislature didn't redo the study. We just used the same number. I, I am told that if you were to do the math for solar today, the tax-- and you did the same methodology, the tax would be about $3,200 a megawatt per year. And I also think back then we didn't have utility-scale battery energy storage. We do now. That's pretty commonplace with utility-scale solar projects. There's standalone battery energy storage as well. And, and I think it-- it's-- bears looking at whether to add the battery part of, of this new energy economy to a nameplate capacity tax as well. So I do think it makes sense to look at it again, but I, I see both sides of it because I think what the result could be is that the number would be lower. And I think there's a couple of issues there, right? One is that-- you all know way better than I do-- you've got budget challenges. And you've got counties who are relying on these tax revenues now. And I've been at lots of hearings and told counties, you're going to receive X if you permit this wind project. I think you'd have to exclude existing projects probably if, if the rate went up or down. I think that would be fair. But long answer to your question, I, I, I think it makes sense to, to go look at it again because, as I mentioned, the, the cost of a wind turbine has changed. We didn't do the, the analysis for solar, and I think it bears looking at adding battery energy storage to this system as well. This system has worked really well. The certainty of it is very attractive to people who want to invest in our state.

CONRAD: That was actually a follow-up question. And I appreciate your response there too, but I know that you work with different companies that are developing these different technologies and have a lot of expertise in energy development and wind and solar. And one thing that I heard during our debate on the repeal of the inheritance tax and the, I think, more than double-- I think it was far more than double. I think it was something closer to almost an 80% or 90% increase in nameplate capacity that was put forward by, by Senator Clements in a-- what I, I consider to be an arbitrary fashion. One thing that I did hear back from people is that there would be a disruption to the development of existing or current projects because the financing had already taken into account how Nebraska assesses this excise tax to figure out the cash flow and to figure out how to make the projects work. So if we were to make adjustments to the nameplate capacity tax up or down in the short term or near term, how-- what do we need to

think about in terms of a runway to minimize disruption in development?

DAVID LEVY: Yeah. I-- thank you again for the question. I think you would have to-- you don't have to do anything. My suggestion is that you would exempt or-- you know, you'd leave the tax--

CONRAD: Grandfather or something.

DAVID LEVY: --the same for-- grandfather, thank you-- projects that are certainly operating and, and those that are under construction, just as, as a starting point. I, I just-- I think that, you know, from attracting and, and being open for business kind of a standpoint. I can also say we, we do work on these projects in Kansas, South Dakota, Missouri, Iowa. And with our nameplate capacity tax as it is, we're, we're in the ballpark with those other states. But we're better off because we have a very simple, understandable system. If we were to, let's say, double the nameplate capacity tax, we would not be competitive.

CONRAD: Right.

DAVID LEVY: Full stop.

CONRAD: That's--

DAVID LEVY: I, I really believe that to be the case. And I know you all face the very hard job of balancing-- wanting to be competitive and grow the economy as a way to create property tax relief with-- increasing taxes is a way to create tax relief. So again, a long answer to your question, but I think at a minimum you'd have to grandfather existing projects and projects under construction and really think about the competitive impacts if you were to do something like double it. I also just don't think it's justified based on the, the math. And I think it singles out one industry for kind of targeting a tax increase that-- I don't think any industry should be singled out in that way.

CONRAD: Yeah.

DAVID LEVY: So I think-- that's another thing--

CONRAD: The old power to tax is the power to destroy, so. Yeah. For some of my colleagues, there's a-- I think definitely a clear motive here to destroy alternative energy projects. So the last pie--

question I have for you, and you dovetailed on it very clearly, was I want to make sure that this committee doesn't look at this particular issue myopically because, of course, as we compare competitiveness to our sister states, there also might be straight-up incentives for development of alternative energy projects or otherwise. And just making sure that as we focus on nameplate we don't forget kind of the overall economic picture and approach that some of our sister states may or may not be taking who are a bit further the-- ahead than Nebraska despite our abundant natural resources in the development of these technologies and, and energy sources to balance out our existing approach to meeting consumer and business energy need. So when you work in Kansas or Iowa or Colorado or South Dakota or wherever it might be, the, the present landscape today as you described is that Nebraska is in a somewhat competitive position because of our general approach to taxation on these issues?

DAVID LEVY: We are. We're-- our nameplate capacity tax, because of its amount and its simplicity, makes us competitive. I want to be clear too, there is also a real property component, the foundations, roads, those things. So on a wind farm, the total tax paid as a rule of thumb is about $5,000 per megawatt per year. On a solar farm, it's $4,000 dollars per megawatt per year. So there's some real property. I didn't want to not mention that. But with those-- yeah. That really helps us be competitive. Our regulatory structure at the state level is straightforward. That helps us be competitive. Quite frankly, our situation at some county boards when they're exercising their land use jurisdiction is incredibly challenging. That doesn't help our competitiveness, but we're not unique among other states in that regard as well, so.

CONRAD: Thank you so much. Thank you, Vice Chair.

DeKAY: Thank you. Senator Moser. Senator Moser.

MOSER: OK. Thank you, Vice Chair. So has there been a slowdown in the development of these energy projects with funding and tax credits and all the things that have changed nationally?

DAVID LEVY: Not yet. We are busier than ever in this part of our practice because--

MOSER: Trying, trying to get it up before it changes?

DAVID LEVY: Precisely.

MOSER: So you say that changing it after the contracts are signed is not a good idea, unfair, however you want to say that, but yet since it's cheaper to develop the generation capacity for these massive amounts of electricity, the nameplate capacity tax actually has declined, as you said, because they're economies of scale, they're able to generate it with less the investment.

DAVID LEVY: The cost of the infrastructure has, has come down, yes, as the industry has matured. Now, the nameplate capacity tax has stayed flat.

MOSER: But the cost of that is all baked into the cake at the beginning. That would only be relevant for future projects.

DAVID LEVY: If, if it went up or down?

MOSER: Yes.

DAVID LEVY: Correct.

MOSER: Yeah. And if, if the tax was doubled, what's that going to do to your industry?

DAVID LEVY: I, I, I truly believe it would significantly-- it would make Nebraska less competitive. And especially right now when people are trying to beat the clock, if you will, at the federal level, resources are stretched. And so you're really down to-- you know, you might not be able to pursue all the projects you want to pursue. Suddenly Nebraska has an unfavorable tax climate. I might go build a project in Iowa if I had to choose.

MOSER: OK. Thank you.

DeKAY: Senator Hughes.

HUGHES: Thank you, Vice Chair. Thanks for coming in, Mr. Levy.

DAVID LEVY: Thank you.

HUGHES: I-- I'm going back to-- you didn't get to finish at the beginning, and I'm kind of a numbers person. You had mentioned that if you did the same math today on a wind project it would be-- was it $2,800 straight up or--

DAVID LEVY: The number I actually got was $2,322.

HUGHES: $2,300. OK.

DAVID LEVY: $2,322 per megawatt per year.

HUGHES: Thank you. And then-- just-- this is-- now I'm just asking curiosity questions. Is the expected-- you, you said at the beginning expected life of a wind farm was around 28.5 years.

DAVID LEVY: Correct.

HUGHES: Is that still the same? Today, now we're 15 years in, are they lasting 28.5? Or do we know?

DAVID LEVY: Typically, because technology advances, projects are repowered, is what they call it, after 10 or 15 years, which means that you change out typically the, the guts of the, the generator part of it. You leave the tower and the foundation. So-- but I, I-- you know, you would think that, as technology improves, if you wanted to that wind turbine go, it would go for longer than 28 and a half years today.

HUGHES: OK. And then if redone-- like, if we-- you know, we are potentially doing a new study, whatever-- and I'm kind of curious what other states do. Like, right now, we have the one tax flat-- I mean, whatever it is for wind or solar, potentially battery storage-- would you recommend a separate solar versus wind versus battery storage or do-- is that part of our competitiveness, is that you said it's very easy? Is it better to keep it one just straight across?

DAVID LEVY: It, it certainly is simpler to keep it one, but, but if you were going to do the study and, and just purely follow the results of the study and follow the numbers, which essentially is what the Legislature did in 2010, I think you would end up with three different nameplate capacity tax rates. It's still a fairly simple system.

HUGHES: Yeah. Do-- and, and since we're looking at this, do you have any recommendations-- I mean, aside from relook-- you know, redoing the numbers-- do you have any other recommendations for us, especially with your background of looking at what Iowa does or South Dakota or whatever? Is there anything they do-- you know, best practices that they do that maybe we should consider implementing?

DAVID LEVY: In this regard, no. I, I wish I had some--

HUGHES: No, I--

DAVID LEVY: --clever ideas for you, but I--

HUGHES: That's good to hear, right? I mean, that we're--

DAVID LEVY: --I, I really-- I think the na--

HUGHES: --on the right path, so.

DAVID LEVY: I think so. I think the nameplate capacity tax has served us very well. It's served the counties and the taxing entities well. They know what to expect. Department of Revenue's figured it out. I, I think it, it works quite well. We do struggle some with the real property part of it, again, just because-- county assessors, they, they have a very hard job. This is not what they do every day. And so we work with them and provide them values of, you know, feet of roads and yards of concrete and those things. But you can't change that because the constitution and proportionality and those things. So you have to leave the real property piece of it alone. That part's a little bit challenging. But no, I-- the-- our current system has served us very well. It's made us more competitive. I think the taxing jurisdictions have done well and they've appreciated the simplicity of it. And certainly the industry has appreciated it.

HUGHES: Very good. Thank you.

DAVID LEVY: Thank you.

DeKAY: Thank you. Any other questions?

JUAREZ: Yes.

DeKAY: Senator Juarez.

JUAREZ: Thank you very much for coming today. So I have a question about what other taxes or payments do renewable energy developers pay to Nebraska communities? Are you familiar with other taxes that they pay?

DAVID LEVY: So other taxes that they pay-- I mean, they pay sales tax on, on the equipment. They have employees who receive income, and of course then pay income tax. Many projects-- this isn't a tax, but they contribute financially to various community endeavors and community projects. Really-- you know, property tax, sales tax, and then income tax at some level or some point of-- all affect this industry, like other industries.

JUAREZ: OK. And could you remind me-- I've forgotten from my tax days. On an excise tax, is that something that's paid at state and federal, or is excise just a state tax?

DAVID LEVY: This particular tax is, is only a state tax. And, and typically property taxes, at least to my knowledge and in my experience, are a state-level tax, not a federal tax.

JUAREZ: Right. And, and could you comment as far as, I mean, how much we can predict the behavior anyway at the federal level? Do we find that the-- at that level they're supportive of renewable energy projects? Or what do you feel has been the voice from that level?

DAVID LEVY: Currently, I would say definitely not supportive.

JUAREZ: Not supportive?

DAVID LEVY: Yeah.

JUAREZ: OK. Thank you.

DAVID LEVY: Mm-hmm.

JUAREZ: I'm done. Thank you.

DeKAY: Thank you. Any other questions? Mr. Levy, real quick, you talked about the tax window being around eight years or so. Was that modeled off of any kind of depreciation scale of any other industry or not?

DAVID LEVY: So Nebraska follows the federal depreciation tables. And so federal law says a wind farm is seven-year class life property. And-- so you follow the, the federal depreciation schedule, essentially. I'm not an accountant, but that's, that's essentially how, how it was done when it was classified and taxed as personal property.

DeKAY: OK. Thank you. If there was legislation that would come forward, in your opinion, what, what do you think that legislation should look like coming-- if it-- something does come forward after this hearing?

DAVID LEVY: I, I would suggest, respectfully, two things. One, that legislation add utility-scale battery energy storage to the nameplate capacity tax and that legislation come up with some kind of a system

to have the nameplate capacity tax amount evaluated and calculated for wind and solar and batteries with current projects grandfathered and maybe that it-- that legislation require that re-study every ten years or something like that, potentially. You know, one of the bad things for industries is uncertainty, and, you know, the-- we want to avoid that. And so if industry knows, OK, we're coming up on that ten years, or, OK, they redid the study and these are the amounts, that, that helps attract industry, that-- industry likes certainty, investment likes certainty.

DeKAY: OK. Thank you. Any other questions? Seeing none. Thank you.

DAVID LEVY: Thank you very much.

DeKAY: Before the next testifier, Senator Clouse, would you like to introduce yourself?

CLOUSE: Yes. Senator Clouse, District 37, which is Kearney, Shelton, Gibbon, and Buffalo County.

DeKAY: OK. Our next testifier will be Jon Cannon with NACO.

JON CANNON: Good afternoon, Vice Chair DeKay, members of the Natural Resources Committee. My name is Jon Cannon, J-o-n C-a-n-n-o-n. I'm the executive director of the Nebraska Association of County Officials, otherwise known as NACO, here to testify today on LR159. Appreciate Senator Brandt bringing this bill. I think it's certainly worth looking at. There's been a lot of conversation about the nameplate capacity tax, whether it's right, it's wrong, or it's indifferent. And I, I certainly think that, given a lot of the testimony that you've heard today and also the testimony that was elicited back in 2010 under LB1048, if I recall, that it's always worth taking a look at. I, I, I probably couldn't give you the history any better than Mr. Levy did. He's, he's certainly very knowledgeable in this. I do want to say this used to be subject to property tax. And in the constitution, we have the ability to exempt classes of, of personal property. And so that's why we have that distinction between we're going to exempt the personal property of a renewable energy generation facility but not the real property, and that's, that's what that distinction's all about. So we exempted the personal property of renewable energy generation facility and we replaced it with an excise tax. And so that excise tax, of course, is the nameplate capacity tax. How we figured that-- again, Mr. Levy did a good job, but I, I do want to go over it because there's some components I want to talk about a little bit

later in my testimony. We took the original cost of these turbines, what the average would be, and we sa-- we said that's that-- what-- what's going to be called the net book value for taxation purposes. We termined-- determined what the property tax rate was across the state. If you wanted to quibble, you could say you should look at the average rural rate, but that's neither here nor there. We determined the average amount of tax that's going to be paid for these struct-- generation facilities over a seven-year period. And as Mr. Levy noted, it was a very high tax that you paid in the first year and it went all the way to, to zero in, in years eight and beyond. And so from, from the county's perspective and from the local political subdivision's perspective, they said, you know, everyone's having biscuits for dinner in the first year because, you know, you're, you're having this, this huge amount that's going to be paid in, and in year eight, there's, there's nothing further that's coming in. So from a, from a personal property perspective, that's one of those things where-- you know, from industry's perspective and, and also from the county's perspective, they were kind of adverse to each other in that it was really good for the local political subdivisions at first and not so good at the end, and for industry it was not so great at the beginning because it's this huge tax bill at the beginning, but it dwindles away to nothing after years and, and beyond. We divided that by the typical length of the project-- and I'll get to that in a moment-- and then we de-- divided by the number of megawatts, and that's how we came up with $3,518 per megawatt. If we did re-examine this-- as Mr. Levy had mentioned, we have the data to re-examine all of our assumptions. We know what the original costs are; and through economies of scale, those have generally come down. We know what the average length of a project typically will be. Back in 2010, the testimony was that these things are going to be on average about 30 years. Experience has shown us that it's actually probably a little bit less than that, and so that would probably drive up the, the, the nameplate capacity tax if you refigured it in, in-- under that. You also would want to look at what taxes would be generated. And there's an important distinction here-- and I'm glad that Mr. Levy mentioned the repowering because, under a personal property tax regime, if, if I have a, a, a property that's a seven-year class life and I replace it with something, we're resetting; we're going back to zero. The original calculations for the nameplate capacity tax did not take that into account. They said, here's the original cost of the guts of the turbine and, and everything that's above the ground. And we're just going to take that number, do all the division, and, and go from there. If you were to recalculate this, you would want to know, you know, what's the average

life of-- a span of an inverter going to be and of the motor and the chassis and of all these different things and figure out, if this was subject to personal property tax, how much tax would it actually generate? And I think that number's going to a little bit different than what was determined back in 2010. You know, the other part of-- the other aspect of this is the-- how you distribute those taxes. And so, originally, what it was determined under LB1048 is that we're going to take the, the-- essentially this excise tax and we're going to distribute it according to the property tax distribution in that tax district, wherever that property is [INAUDIBLE]. And things went very swimmingly until just a couple of years ago. And a couple of years ago, the Legislature said, we're going to take community colleges off the property tax rolls. And so-- and you'd think, OK, what does that have to do with anything? What that did is it created a little bit of a problem for Ne-- Northeast Community College, Senator DeKay, and as you recall, you brought LB50. Because Northeast Community College said the state is going to take us off the property tax rolls and they have promised us that they will replace all the property tax that we had generated in years prior or would have generated this year but for the fact that we're off, off the rolls. And then Northeast Community College said, wait a minute. What's this $650,000 hole on our budget that, that came up? That's because that was the nameplate capacity tax that they were getting from a lot of those projects that are up in northeast Nebraska. And so LB50 said, you know what? Here's what we're going to do. We're going to go away from that distribution model. You know, instead of saying that we're replacing property taxes, what we're going to do is we're going to take 5% off the top-- I see my red light's on. And I'd be happy to take any questions.

DeKAY: Are there any questions for Mr. Cannon? Senator Conrad.

CONRAD: Thank you, Vice Chair. Thank you, Mr. Cannon. Good to see you.

JON CANNON: Good to see you, ma'am.

CONRAD: I know we have discussed this in a recent debate around revenue replacement if we repeal the inheritance tax, but it's worth I think perhaps reaffirming the committee's understanding for purposes of this hearing. There's a certain set of counties that benefit from nameplate capacity tax because of their approach to the development of alternative energy--

JON CANNON: Yes, ma'am.

CONRAD: --that doesn't comport or match up with counties' collections in regards to inheritance tax.

JON CANNON: Yes, ma'am.

CONRAD: So could you perhaps just talk about that generally? I think there's, what, five, ten counties that receive the majority of nameplate? Is that right? Something of-- something in that regard.

JON CANNON: Yes, ma'am.

CONRAD: OK.

JON CANNON: Five or six or seven, yeah. Somewhere along there.

CONRAD: OK.

JON CANNON: Yeah. So that-- great question, ma'am, and I, I appreciate it. And this, this ties into where I was testifying when I was near the end of my testimony, and so I'll, I'll kind of delve into that just a little bit. With, with LB50, we said we're going to redistribute. We're going to take 5% off the top and we're going to give that to community colleges and then we'll redistributed according to the property tax distribution. But what, what we did through LB50 is we said, look, this is no longer a replacement for property taxes. This is, this is an excise tax and it's a pot of money that's going to get distributed in some way, shape, or form. You know, from, from the county's perspective as far as, you know, how many counties are receiving-- you're, you're right. The, the, the bulk of the nameplate capacity tax is, is being collected by those counties that, that saw fit to approve these wind and energy projects back in the day. Knox County was the very first one. They had an-- they had a renewable energy generation facility before we even passed LB1048, and that created its own issues, but that's neither here nor there. You know, from there, though, we started-- you started to see that glo-- gradually start to pick up. We had two counties that were, that were receiving nameplate capacity tax in 2011, the first year that we, that we had this. And we have 42 counties today-- or, 2024, that were-- that received nameplate capacity tax distribution. So the number has certainly grown, and, and the question becomes, you know, if there's a-- would that number grow even more if there was an incentive for the folks that take the political risk of approving or disapproving a renewable energy generation facility? And so that's why this ties into the dist-- the distribution model. If, if the Legislature has decided

that it wants to go away from a-- just a, a simple redistribution of property taxes, it, it certainly can do so. And if they wanted to say, well, we're going to incentivize further the development of, of renewable energy by, by giving an incentive to the people that take the political risk and, oh, by the way, have the damage to their roads-- I'm talking about the counties, by the way-- then-- you know, the s-- the Legislature certainly can do that.

CONRAD: OK. La-- I have another follow-up question. So I was grateful to be a part of the working group that was looking at whether or not there was a thoughtful way to repeal the inheritance tax without increasing the burden on property taxes. And I know that you and your staff and a real diverse set of stakeholders came together to dig pretty deep into all of the different line items and revenues and expenses impacting counties. And that was an important learning opportunity and, and a lot of good policy discussions. But one thing that did not emanate from that working group was-- I gue-- I'm still puzzled as to how an 86% increase in nameplate capacity tax as proposed during the last legislative session came to fruition. Do you have any insight as to how Senator Clements or others supporting that measure came up with that?

JON CANNON: No, no, ma'am. I, I don't-- I wouldn't want to speak for Senator Clements, especially since--

CONRAD: No, I wouldn't want you to either. Yes. Very good. Thank you.

JON CANNON: Yes, ma'am. Thank you.

DeKAY: Thank you. Any other questions? Senator Hughes.

HUGHES: Thank you, Vice Chair DeKay. Thanks for coming in, Jon.

JON CANNON: Yes, ma'am. Thank you.

HUGHES: Is the current distribution that we've got-- I mean, we, we passed the LB50, which pulls off that top. But the current distribution within a county, does that make sense to you or-- I mean, it's just--

JON CANNON: Prior to LB50 passing, I would have said that it makes sense because what we had determined under LB1048 was that we want the excise tax to replace the property taxes that have been lost due to the exemption. When we, when we-- when, when you-- sorry. I, I, I-- in the building, I feel like we're, we're all big-- one-- part of one

big, happy family. When, when the Legislature passed LB50 last year, the message was very, very clear that this is no longer just a replacement for property taxes. This is, this is an excise tax and it's a pot of money. And so once you've severed that link between we're going to replace the distribution of property taxes, I, I think then it's fair game. And-- now, I, I might get myself over the tips of my skis because, you know, the Legislature could say, yes, counties get nothing. We would testify against that. But, you know-- but, but when you look at who has the actual damage to their infrastructure when these things are being put up, who takes the political risk for approving or disapproving a renewable energy generation facility-- I, I think it's pretty obvious where, where my loyalties lie, but, but I, I think any person, any, any-- anybody that I would talk to would say, well, that makes sense, that, that the counties would probably get a, a larger share of the, of the pie.

HUGHES: Yeah. OK. Thank you.

JON CANNON: Yes, ma'am. Thank you.

DeKAY: Thank you. Any other questions? Real quick, LB50, that just kind of did-- in my mind, I think it righted the ship. The tax that was lost to the community colleges and stuff the year before was a-- kind of a windfall for the counties at that point. It was just kind of leveling the playing field back to where it was before with the amount of dollars being talked about?

JON CANNON: If, if you're looking at it, Senator, strictly from the perspection-- perspective of who was getting what prior to the passage of the bill that, that took community colleges off the property tax rolls, then yes, you're absolutely correct. If you're looking at it, however, from the, you know, kind of the fundamental philosophical view of, this was intended to replace property tax distributions, period, full stop, then once the state said, we're no longer going to have community colleges that are going to be on the property tax rolls-- and, and, oh, by the way, the, the question had come up when we were, we were talking to the community colleges and, and, and their very capable representative Ms. Wittstruck about what became LB50, you know, one of the questions that came up-- not from us-- was, well, why don't you just ask the state to make that-- make up what, what you're losing in nameplate capacity tax? And, and after some chuckling, polite chuckling, no, that's not going to work because, you know, the state's probably not going to, to make up 650 grand for Northeast and however much for Western, you know, and so on and so forth. And, and

that's fine. But again, the, the point was being made that we're not interested in this as a distribution to replace property taxes. We're interested in just-- and, and this is a pot of money that we have access to.

DeKAY: OK. Senator Hughes.

HUGHES: Thank you. You prompted me to have one more question. On that, the piece that goes now to community colleges, do they distribute it among the community colleges how they-- prior? Like, Northeast, for example, had a lot of nameplate, but maybe Southeast Community didn't, or is it evenly distributed? Do you know? Or is it just go in the pile of money that goes to community colleges?

JON CANNON: I, I believe that it's distributed essentially according to what, what their nameplate capacity would have been.

HUGHES: Yeah. Thank you.

JON CANNON: Yes, ma'am.

DeKAY: Thank you. Any other questions?

JUAREZ: I have a question.

DeKAY: Senator Juarez.

JUAREZ: OK. So-- and I don't really know the history behind when the community colleges were, you know, benefiting from this tax, but now that our university has been cut, you know, in their budget, with the support from the state, can the university somehow participate in getting benefits from the nameplate capacity tax? Is that possible?

JON CANNON: Well-- and, and, and again, ma'am, you, you hit the nail right on the head, because prior to LB50, it was just a replacement for property tax, period. And, and the University of Nebraska-- and-- the University of Nebraska doesn't, doesn't receive property taxes. They don't levy for a property tax. However, when-- after LB50 passed and we said we're identifying this as a, as a revenue stream and not a replacement for property taxes, then all bets are off. If, if the state-- if the Legislature said, you know what? We're going to have what-- the nameplate capa-- I'm going to get in trouble, by the way-- but we-- if the Legislature said we want to have the nameplate capacity go-- tax go 95% to the University of Nebraska and 5% to community colleges and that's it, the Legislature can do that. And,

and again, we've severed that link between saying it's a replacement of property taxes that are lost because these things of-- would otherwise have been exempted to this is a-- this is a revenue stream that's, that's-- it's up for grabs.

JUAREZ: OK. Thank you.

JON CANNON: Yes, ma'am.

DeKAY: Senator Conrad.

CONRAD: Thank, thank you so much. And I-- thank you, Mr. Cannon. I know that sometimes we speak in shorthand because time's compressed and we're try-- trying to cover a lot of complex topics in a short time, but is it actually accurate to say that LB50 cut the link between property tax and nameplate? Because the legislative findings in the, the statute that established the prop-- the ec-- the nameplate capacity tax was very clear that nameplates should never be singled out as a source of general revenue during time of economic hardship. And I'm looking at Senator DeKay's LB50 and that was not repealed.

JON CANNON: Right.

CONRAD: OK. Thanks.

JON CANNON: Yes, ma'am.

DeKAY: Thank you. Any other questions? Thank you.

JON CANNON: Thank you, sir. Thank you, everyone.

DeKAY: Next testifier: Kevin Quinn from Invenergy.

KEVIN QUINN: All right. Good afternoon, Natural Resources Committee. My name is Kevin Quinn, K-e-v-i-n Q-u-i-n-n. I'm the senior manager of government affairs for Invenergy. Invenergy is the largest privately held developer, owner, and operator of American energy solutions with a proven track record of over two decades and a portfolio that includes natural gas as well as wind and solar. We've been working in Nebraska for over a decade and have developed over 800 megawatts of wind projects across Antelope, Boone, and Wheeler Counties, which represent about 20% of all clean energy in the state. These projects generate about $2.8 million in nameplate capacity tax revenue each year. I'm here today to bring the perspective of how a change in the nameplate capacity tax would impact the companies that develop these

assets. Developing a wind or solar facility often takes several years with a whole host of complex processes to navigate and numerous costs incurred along the way. Only toward the end of this multiyear process do developers begin looking for prospective buyers using project spend, anticipated infrastructure and construction costs, asset performance modeling, and other financial factors like the lifetime tax liability to determine what price to offer customers. So what happens when there's a change in the tax regime? In the short term, changing the nameplate capacity tax for projects in development will create delays. Whether a project is already contracted and not yet built or just being marketed to prospective customers, a change in the tax liability will directly impact the price of energy in the contract, which will necessitate going back to the drawing board to reprice or renegotiate to account for the new financial input. That's going to cause a delay. As a result, this is going to delay payments to Nebraska landowners and communities and delay bringing online the electricity needed by Nebraska consumers, not to mention the fact that project delays add cost to developers. In some cases, a dramatic tax increase on a project at a late stage could make the asset un-- uneconomic altogether, resulting in a cancelation. In the long term, a change in the nameplate capacity tax will be accounted for in the cost of future projects; and if it's higher, it will unsurprisingly increase project cost. However, like any good or service, increased taxes almost always trickle down to the consumer. Clean energy provides about one-third of Nebraska's electricity needs, so raising taxes on future projects will result in higher prices charged by developers, higher costs paid by the public power districts that purchase the electricity, and ultimately likely higher utility bills for Nebraska ratepayers. If the tax is increased too dramatically, this could disincentivize future development in the state and force businesses like ours to prioritize our investments elsewhere. Comparing different tax regimes is often like comparing apples and oranges-- some do it at the state level, some assess at the local level, but we did some really rough math to convert the surrounding state's wind energy property taxes to dollars per megawatt, like the nameplate capacity tax, and saw that Nebraska's actually quite competitive, coming in roughly at the middle of the pack. States like Wyoming and Montana levy upwards of $6,000 to $7,000 per megawatt or more, whereas states like Kansas and New Mexico offer financial incentives for clean energy projects, keeping their equivalent nameplate capacity taxes under $3,000 a megawatt. For reference, our back-of-the-napkin math suggests that four of the six states bordering Neba-- Nebraska already have a more favorable property tax treatment

than the nameplate capacity tax at its current rate. Of course, there are many things we look at when deciding where to develop and how we can price our projects, but state taxes are not an insignificant consideration. The point I'll conclude with is that, like many industries, the clean energy sector is evolving quickly and navigating a multitude of changes to our tax and policy regimes. This creates a level of uncertainty that, frankly, makes investing difficult. For many years, we've found Nebraska to be a bu-- business friendly state with a measured approach to tax policy and have appreciated the opportunity to work with you all and lend our voice to the conversation about the nameplate capacity tax. As referenced before, we do anticipate a more detailed third-party analysis regarding a recalculation of the tax and look forward to continuing discussions with you about how this analysis shapes up and how it could inform future policy decisions. Thank you for the opportunity to testify. Happy to stand for any questions.

DeKAY: Thank you. Are there any questions? Senator Hughes.

HUGHES: Thank you, Vice Chair DeKay. Thank you for coming in. When we were-- you heard the prior testimony that they're suggesting a study done on-- since we haven't done anything since 2010 or whatever. Do you feel like a separate tax solar-- a separate one for sol-- nameplate-- solar, wind, and storage makes sense? Do other states do that? What have you seen?

KEVIN QUINN: I'm actually not aware of other states that do it that way, but I think, to Mr. Levy's point, like, the conclusion of that study would probably indicate that that makes sense. Because if the nameplate capacity tax is, is more or less a proxy of property taxes, the, the biggest factor there is the cost of the infrastructure, and that's going to be different among solar, wind, and storage.

HUGHES: OK. And then how does-- like, this is all a balance too because you guys also receive some federal tax credits for these types of renewable energy produc-- projects. How does this relate to that? I mean, is it kind of like, well, the tax credits offset what you're paying on these nameplate or-- just big numbers.

KEVIN QUINN: Sure.

HUGHES: I know it's gonna be different per state, but.

KEVIN QUINN: It is-- it's pretty different. Yeah. I think the, the state taxes is something that, you know, we, as I've mentioned, factor into the price of the energy that we then offer to buyers and then as-- in all likelihood, we maintain ownership through a per-- power purchase agreement. So we're, you know, paying those taxes. The, the federal tax situation's a little bit of a different conversation because those tax credits are at a level that is larger than our company's tax liabilities. So we often pursue tax equity investors to invest in a project where then they get the benefits.

HUGHES: They're getting--

KEVIN QUINN: Right.

HUGHES: Got it. OK. Thank you.

DeKAY: Any other questions?

JUAREZ: I have a question, please.

DeKAY: Senator Juarez.

JUAREZ: So what would you comment about what are some of the challen-- other challenges for renewable energy sources that come to our state? I mean, is there any other issues that we should address besides, you know, considering the nameta-- nameplate tax?

KEVIN QUINN: So I, I would just, with a broad brush, paint that, across the country, I think the two biggest challenges for renewable energy are, are interconnection and transmission. I was surprised to learn that, you know, once you identify a, a good site to, to put a wind or solar facility, you know, in addition to lining up the, you know, land campaign, signing leases, and, and understanding what permits are needed, you, you almost immediately apply for the ability to plug it into the grid because that often takes many years and is, is often the outside sort of driving factor of, of how long it takes to conclude development, is when you finally are able to understand what impacts that project will have to the grid, pay for it, and then be able to move forward. Then the other one is, is a bit more abstract. You know, I think that one-- the transmissiu-- transmission issue sort of fundamentally comes down to the fact that most wind and solar facilities are built in, in rural, you know, more sparsely parp-- populated parts of the country, and a lot of the energy is needed in load centers in cities. And so it sort of presents this chicken-and-egg problem where, you know, do you build a wind farm in

the middle of nowhere and hope that someone will build a transmission line to connect that to the city? Or do you build a transition line to nowhere and the hope that some, you know, developer will build a wind farm out there? And so I think that has continually been a challenge. Not to mention just general grid constraints of moving energy and electrons from one place to another.

JUAREZ: OK. Thank you.

DeKAY: Any other questions? Seeing none. Thank you. Is Jen Creager here?

JENNIFER CREAGER: Good afternoon. Good afternoon, Vice Chair DeKay, members of the Natural Resources Committee. For the record, my name is Jennifer Creager, J-e-n-n-i-f-e-r C-r-e-a-g-e-r. Appear before you today as a registered lobbyist for the Greater Omaha Chamber. This is a great opportunity for us to offer a big picture, high-level view of this state of power availability and its impact on business. We first want to thank Senator Brandt for bringing the interim study and continuing this conversation on how best to meet our energy and infra-- infrastructure needs, both of which are core components of the future of economic development in Nebraska. We stand at a crossroads right now in energy generation and economic development in a way that very few people expected a decade ago. Simply put, the needs of a modern economy are very energy intensive, and investment decisions are increasingly influenced by the power generation capacity of potential locations. And this just isn't clustered in a few areas like tech and data. In an effort to stay competitive, businesses are modernizing their practices and becoming more innovative. As a result, every stage of the manufacturing process is becoming more advanced while we see things like additive manufacturing, smart factories, and just generalized automaza-- automation in general become more commonplace. These trends are making manufacturing much more power hungry in general. It is not as simple as saying we can solve the grid strain by saying we'll avoid one or two industries. It's better to think of the increase in energy needs as the natural evolution of our economy. Fortunately, Nebraska is better positioned than most. Our partner OPPD is already in the middle of a massive demand-driven effort to double its generation capacity by the end of the decade. If we want to achieve this goal, it will require an all-of-the-above strategy for generation-- natural gas, oil, coal, landfill gas, nuclear, solar, wind, hydroelectric, you name it. We can't afford to be picky. This is why LR159 is particularly well-timed, as renewable sources make up a larger percentage of our state's generation than some realize. In

2022, the Department of Energy found that Nebraska ranked third in the nation in land-based wind capacity installations, adding 602 megawatts of production, which compri-- which is comprised of 21% of in-state nameplate generation. I do want to make sure that I know that historically the Greater Omaha Chamber has not weighed in on the rate of the nameplate capacity tax itself. We've not taken positions on those bills. However, it's crucial to emphasize that our state's economic future is directly tied to our ability to have a grid that will meet our state's future growth needs. Anything less places an artificial ceiling that will cause us to fall behind states that are making these investments. For example, South Dakota already charges a lower tax on their wind and solar development at $3,000 per megawatt. We don't compete in a vacuum. States that make investments across the board will be the leaders in future economic development. States that restrict their options to certain sources will see slower energy growth and missed opportunities. We appreciate Senator Brandt and the committee's willingness to take a look at our energy needs. And I'm happy to, happy to answer any questions.

DeKAY: Are there any questions? Senator Conrad.

CONRAD: Thank you, Vice Chair. Thank you, Ms. Creager. Good to see you as always. And I know you're speaking perhaps on behalf of your colleagues at the state chamber as well. I had a chance to look over their recent energy report, and I think it indicated that in terms of economic development and economic prosperity challenges that Nebraska's looking at-- workforce, of course, number one-- the challenges that we're all well-aware of-- but that energy was close second.

JENNIFER CREAGER: Absolutely.

CONRAD: And I thought that was a very el-- illuminating finding. I don't know if you want to expound upon that or--

JENNIFER CREAGER: Sure.

CONRAD: --just talk about perhaps even anecdotally how your conversations go with recruiting and retaining businesses in the Omaha area. Are, are you already kind of up against the wall? Is that a top issue for businesses that are seeking to contribute to our economy and, and grow our economy? Is, is that something that's top of mind for them when they're making siting decisions and, and your chatting with them?

JENNIFER CREAGER: Yeah. I mean, I could go on and on about the--

CONRAD: That's OK. Just a general idea.

JENNIFER CREAGER: I think power-- and business development and power availability have always been interconnected. In fact, when we do our economic development at the Omaha Chamber, OPPD has their own in-house economic development team. We work hand in glove on all of our projects and, and have in the 11 years that I've been at the chamber and probably before that. I would say when I first started at the chamber it was-- the issue was always we're such a great place to be because power is so affordable in Nebraska. I wouldn't say that's changed a lot, but it has transferred from, please come here, we-- it's so affordable to-- we-- now it's all about, can you meet our demand? Can you meet the needs that we have? Site development is a huge part of economic development. That kind of infrastructure availability is, I would say, at the forefront of every project conversation from the beginning. And I-- I've-- I hope my OPPD colleagues would concur with that. Mr. Fernandez is sitting behind me, so he can throw things at me if I'm speaking out of turn, but. I, I think-- and I think they've done a good job of resource planning and thinking about what projects are on the horizon and-- but they are always at the table with us when we are recruiting projects, when we're talking of-- to compa-- other companies about expanding. I think pow-- power is so interlinked with economic development. It's, it's a very essential component, so.

CONRAD: Thank you so much.

JENNIFER CREAGER: You bet.

CONRAD: Thank you, Vice Chair.

DeKAY: Thank you. Senator Clouse.

CLOUSE: Yeah. Thank you, Senator DeKay. Jen, in, in your working with the economic development, do-- have you seen the shift from, well, we're going to be here because it was renewable energy; or we don't care where it comes from, we just want the power?

JENNIFER CREAGER: I think sometimes it depends on the company and sometimes it depends on industry. We've obviously-- we have a large data clu-- center cluster in O-- the Omaha area. I know when that was happening 15 to 10 years ago, they were very insistent on renewable energy only, either only or the majority of their power coming from

that. So I, I think it depends only the, the business and I think it depends in the industry. But we've-- they have been more selective maybe is the right word or, or choosy about, about making those demands on, on generation tech.

CLOUSE: Because they realize that renewable's not dispatchable and they can't have it when they want it. And so now they're-- power is more important to them than where it comes from.

JENNIFER CREAGER: Right. I, I, I think-- I don't know-- I, I guess I don't know how that's changed, but I know that some companies in the past have been very specific about, they want it from a certain source. I think to your point, now that it's kind of-- there are availability challenges all over the country, I think that they're probably less res-- constrictive about that.

CLOUSE: Thank you.

DeKAY: OK. Any other questions? Senator Conrad.

CONRAD: Thank you so much, Vice Chair. Actually, I wasn't going to ask anymore, but my good friend Senator Clouse piqued my interest, which is the whole point of public hearings, to have a dialogue with colleagues and stakeholders and the public on the record. But to your point, each corporate has a different corporate culture and corporate ethos as guided by their board of directors. And I know that when Nebraska has celebrated some, let's say, significant gets or wins in the economic development field, looking at those big multinational corporations, there has been as part of that site selection a clarity and a requirement that renewable energies are on the table. But for that option and opportunity, we would not be having those celebrations, is that fair to say?

JENNIFER CREAGER: I do think that's been fair to say in the past, yes.

DeKAY: Any other questions? Thank you.

JENNIFER CREAGER: Thank you.

DeKAY: According to my sheet, our last testifier will be Eric Stocker.

ERIC STOCKER: Thank you. Eric Stocker, E-r-i-c S-t-o-c-k-e-r. Good afternoon. I'd like to thank members of this committee for the invitation to have the opportunity to speak to you today. My name is Eric Stocker. I'm the manager of government relations for AES. AES is

an American-based energy company that owns and operates an all-of-the-above portfolio of energy assets in 48 states, as well as global operations in Central and South America, Europe, and Asia. We operate utilities in the Midwest and liquefied natural gas operation. I represent our clean energy division that builds, owns, and operates utility-scale solar, wind, and energy storage facilities. And we are the proud operators of Nebraska's current largest solar energy facility, the 81-megawatt Platteview Solar located in Saunders County. I appreciate the opportunity to testify from a point of view as an operational company and the effects that changing the nameplate capacity would have on our business. First, I'd like to talk about a couple of the ways that companies can go about and contract different types of energy. So you would have development transfer agreements where you would do most of the development and pre-work ahead of time and then sell that off to another party to finish that. You have a build transfer agreement, where we would develop, build it, and then sell it to another entity where then they would own and operate it. But the vast majority of the contracts today and the ones that we mostly use are power purchase agreements, or PPAs. And this is a model that we have contracted our project with. And with this approach, we develop, build, own, and operate, and then we sell that at a fixed rate to our customer over the course of a 15- to 40-year contract. So those are generally the amount of, of years varying within there that these terms are set for, so. And I think there's been a lot of announcements today from either third-party corporates or either OPPDs or NPPD, where they've announced these PPA contracts that they've had. So when calculating these fixed rate costs, we need to consider the cost to build the project plus other things such as property taxes or nameplate capacity tax in order to figure out that per megawatt price. So the current rate, obviously, is set at $3,518 per megawatt. And according to the Nebraska Department of Revenue, from a recent 2024 report, there was over $12 million that was collected from, from the nameplate capacity tax. Looking at when it started, most of the revenue increases, it was quite small. And then it came within the past five years, which correlates to where we've seen the large build-out of these utility-scale solar and wind facilities. So that means that most of these projects that are operating under PPAs have not-- are very early in their contracts. So they haven't had the time to actually realize the full cost and full revenue. So any sort of sudden change to that capacity tax would have dire consequences on the projects and finances. And that could really create a great concern for their viability. So this would be essentially moving the goalpost in the middle of the game. Sorry, I know it's football season, so.

Couldn't help myself with that. But our project, we're expected to pay nearly $5.5 million in the nameplate cata-- capacity tax alone. So when looking at LB468, where it would almost double it, we'd be looking at paying over $10 million, and all of that would have to come out of our, our budget, so-- which would obviously create a huge gap in, in revenue and unanticipated costs with no way to recover those since we've already signed our contract with that. So this is obviously a big concern. Stability and understanding what your projected costs are, are perhaps one of the largest things that we look at when we're going about to build a project. So another potential consequence is, sometimes in these PPAs, there is a point where you can sell that. So let's say if someone was contracting with a, with a utility, if they were to buy that and there was a rate increase, that would be transferred then over to the utility, which would end up resulting in higher rate-- higher rates for ratepayers, so. AES, we're looking-- we're open to looking at a study to see what the true fair market value and for the rate adjusted today would be, but it is vital from our perspective of that any sort of increases would need to be grandfathered in for current operational projects because there wouldn't be a way to recover those costs, so. Thank you for your time today. I'm open to any questions.

DeKAY: Thank you. Are there any questions from the commi-- seeing one. Senator Hughes.

HUGHES: Such a brat. Thank you, Senator-- or, Vice Chair DeKay. Thank you for coming in. Just-- so you heard prior, I think, maybe when we were talking about the first-- with Mr. Levy-- that-- he suggested if anything would change that you grandfather in current projects and projects currently getting built. I'm assuming you're-- you would be yes doing that. You're saying if it changes significantly it-- we run the risk of, you know, pushing development away-- like, no one will come here. Do you think-- kind of like I asked the person prior to-- Ms. Creager-- do you think that doing-- we're going to do a study, doing a separate task-- tax-- nameplate tax-- solar, wind, storage makes sense? Sounds like other states don't really do that. Is it just something-- maybe we see what the numbers come out? I mean, if they're close, you'd keep it the same, but.

ERIC STOCKER: So I-- with, with-- it's sort of like a flat excise tax. I haven't really seen examples in other states where they classify them separately. I have under property tax rates, I know the state of Missouri, they classify wind at a different rate. They're currently going through the process of looking at what to do for solar. And-- so

that's still under discussion of-- they're going to tax it at the percentage or per megawatt rate, so. But currently right now, when I see any sort of flat taxes in that sense, it's usually com-- for all of them.

HUGHES: For all? OK. Thank you. Thanks for coming in.

ERIC STOCKER: Absolutely.

DeKAY: Thank you. Any other questions?

CLOUSE: Is this the last testifier for this?

DeKAY: Yes.

CLOUSE: OK. I just-- it's more like a comment. I drive by a solar array all the time. And they are-- they have articulating panels that follow the sun and they have the nameplate data that's capacity, that's there. And the-- those panels are going every which direction. So I asked the question, I said, [INAUDIBLE] maintenance on this stuff. And they said, well, yeah, they're keeping them clean. I'm like, so why aren't we-- they articulating? Why aren't they managing that? They go, because they're meeting-- the way it is, they're meeting the nameplate data for the capacity. So we're not getting the full benefit of capacity for these solar arrays. And I don't know if it's this particular one or-- but I-- I'm just like, OK. So we're basing on a number that could be higher if they would maintain it better. And it's not-- it-- I'm just making a statement. I don't expect to answer that, but it's just an observation that I've had over the last several months, just, like, what is going on? Because these things shouldn't be-- if they're being maintained right, they should be following the sun, articulating, tracking. And, and, and so-- then I'm correlating that to, well, what's our nameplate capacity? Because they undervalued their en-- their nameplate capacity. Could be generating more. We could be getting more renewable output. Maybe not a lot, but any-- anything helps, so. That's just a comment that I observed.

ERIC STOCKER: Thank you, Senator. Well, I, I do know that if, if you're looking to inject more than what you've initially applied for in the grid, you can only-- and all of the studies are only for, for that amount that you made your application for, so. But thank you.

CLOUSE: [INAUDIBLE].

DeKAY: Any other questions? Seeing none. Thank you.

ERIC STOCKER: Thank you very much.

DeKAY: While Senator Brandt comes up to close-- obviously, this was invited testimony, so there are no letters of support or opposition.

CONRAD: There were, actually.

DeKAY: There were? OK. Sorry. Here it is. There-- for this LR159, no letters of proponents, no letters of opponents, and one letter in neutral capacity. Thank you.

BRANDT: OK. I'll make this pretty quick. Mr. Levy-- first of all, I'd like to thank all the people that testified today. But a, a couple of points need to be reiterated. Maybe now is the time to re-- reevaluate our tax because the industry is so much more efficient. And back in 2010, we didn't have any solar, and now we've got a lot of solar in the state. Developers like the certainty of the current tax, whatever that number is. And we definitely need to add battery storage-- is currently the new thing happening in Nebraska. We need to add that into the tax. And I don't know if it was Senator Conrad or Senator Hughes that brought this up, but when Mr. Cannon was testifying, what would have happened under LB468 is the excise tax would have been divided equally across the state. And coming from a county that's got windmills, I see that as blatantly unfair. And it's unfair because if you're from a rural area and you're going through this energy development, it's like a civil war out there. And so there-- we have a lot of counties that are putting massive setbacks into effect, like three miles between windmills and things like that to keep the industry out. Whereas those counties that did bleed some real blood and get some windmills and, and solar panels in, I believe the incentive needs to be there, that those counties are the ones that benefit from the tax. And that's, that's just an opinion. And with that, I'd be happy to answer any questions. And if there are none--

DeKAY: Any questions?

JUAREZ: Yes, I have.

DeKAY: Senator Juarez.

JUAREZ: Thank you. I'd like to know, how does urban benefit from these projects? Or do they even benefit at all?

BRANDT: They don't-- today, they don't benefit on the nameplate tax, per se, because that goes to the counties. They-- the counties where it's generated primarily, with the exception of the community colleges. Community colleges cover-- in my case, Southeast Community Colleges-- 15 counties. So-- Lincoln's an urban area. They get a benefit from the windmills that we have-- some benefit from the windmills down there. Where you get the real benefit is Google builds their data centers in the Omaha metro area and you get a lot of high-paying jobs, you get business incentives from the state. They turn around and say they want renewable energy. And they go up to Senator DeKay's area up there and they stick in a wind farm. That, that power, on paper, goes to a data center. So that's good business development. So yes, that's, that's the benefit that the urban areas get out of this. This tax per se, not, not very much directly.

JUAREZ: You know, I think that-- when I look at our state overall-- like, I've gone to visit to see the solar project. I was up in the Norfolk area and saw a project up there. But when you look like in the urban areas as far as solar panels on people's homes, you really don't-- you really don't see it a lot, that-- having the solar panels on the homes. And I really wonder, you know, why it is that Nebraska-- it does-- to me, doesn't appear to be going that route. And having the energy from this source in comparison to other states, it's just like-- to me, it's another area where we're so far behind in the development, you know, to he-- to help ourselves to even keep our costs down. And I just think that there's so much work that needs to be done in that area yet. Maybe something that we're missing in our, in our homes to do it. Because like for me as a homeowner, I was mentioning to this someone-- to someone who's in the industry. I said, I'm very scared to do at-- on my house, on my roof because nobody in my neighborhood has it on their roof. And then I worry about, well, am I going to have a hard time selling my house because I'm going to be the only one that has these solar panels up on top of my roof? It's like, to me, Nebraska has so much more progress to make in that area besides transportation, which is a whole other story. But I'm just making the comment I think we could do a lot more work somewhere. You know, there's huge gaps there on why I feel our state isn't taking off in comparison to Colorado, for example.

BRANDT: Sure. There-- other states have better incentive programs. In Nebraska, those small-scale solar would be net metering with your local provider, which in your case is OPPD. In my case, it would be Norris Public Power. They're already maxed out on that. They're already on a phase two kind of a deal. And also, I know one of us on

the Judiciary Committee, the homeowners associations, and Omaha have-- I don't know. Are they codicelles or, or--

CONRAD: Like a restrictive covenant type thing?

BRANDT: A restrictive-- thank you, thank you, Senator-- restrictive covenants on that. And somebody did bring a bill to try and change that, and it, it didn't make it out of committee at that time. But what we're talking about here is large scale, scalable, renewable energy projects. We're talking, you know, 70-, 100-, 200-, 300-megawatt ne-- megawatt projects here. The, the homeowner isn't going to be paying a tax-- a nameplate tax on their 100-kilowatt solar panel.

JUAREZ: OK. Thank you.

BRANDT: Yeah.

DeKAY: Any other questions? Seeing none. This ends the hearing on LR159.

BRANDT: And if everybody would like to take a five-minute break, we are going to resume at 2:35.

[BREAK]

That's not five minutes, buddy.

Have a good one.

Sorry. Oh, it is.

Hey y'all. How you doing? You're welcome. You got to cut the seat for me. Good. Yes, you're probably going to get a few questions. You're probably gonna be closer. You're going to be four o'clock. Four o' clock. You'll see it the best. Cheers. I don't know if you guys are OK. I just wanted to say hello to you. You're welcome. Thank you so much. Thank you for having me. Thank you very much. Have a nice weekend. Have a great weekend. Have a safe trip. Have safe tax. Have a wonderful weekend. Have a happy holiday. Thank you.

I've got most of the committee back.

BRANDT: OK. We are good to go. Senator Storm, you're welcome to start on LR234.

APPENDIX NO. 2

Hearing position online comments

Position Comments for Hearing Record
Full Report - Natural Resources Committee
LR159 — Sep 5, 2025 1:00 PM Room 1525

LR159 Summary: **Proponent** 0 **Opponent** 0 **Neutral** 1

Kevin Connot
58790 Hwy 20
Allen NE, 68710
Neutral
Representing Self

Submitted: Sep 4, 2025 9:30 AM
Verified: Sep 4, 2025 9:49 AM
kconnot@nntc.net
District 40

Dear Senator Brandt and Members of the Natural Resources Committee:

The renewable energy industry is important to the State of Nebraska and we need to do what we can to help it grow. The nameplate capacity tax was an innovative measure that helped to even out the tax revenue for renewable energy facilities.

The Rattlesnake Wind Project in Dixon County pays $1.1 million each year and along with real property taxes has paid over $1.5 million each year since coming on-line in 2019. The Allen Consolidated Schools receives over $500,000 each year and now has a general fund levy rate for 2025 of $.52 per hundred dollars of valuation. This is down from $.92 in 2019 as it has been reduced noticeably in each year.

We, as a state have worked on property tax relief for decades and really have made only incremental progress. What other economic development will make this much of a difference especially in rural communities?

I have heard some say that the tax has not increased while land values have increased substantially. The nameplate capacity tax is meant to take the place of personal property tax as in the case of a wind project it evens out the taxes paid over a much longer period of time. The tax is on a depreciable asset just like a tractor or combine which does not increase in value over time generally. The other issue is the amount of tax. It will be interesting to see how this is affected by much lower installed costs for wind and solar than likely when the tax was first put in place.

We need an equitable tax for property tax relief that still is attractive to lure energy investment to our state.

I urge your support for an equitable taxing system that works for Nebraska citizens and renewable energy investors.

Thank you for your service to the State of Nebraska.

Kevin Connot

APPENDIX NO. 3

Hearing Exh. 1:

Impacts of Wind and Solar Energy Development on Property Taxes and Rural Economics in Nebraska. David C. Levy and Lee E. Greenwald, Baird Holm, LLP Spring 2023. (Baird Holm Report

LR159 Exh 1
David Levy

Impacts of Wind and Solar Energy Development on Property Taxes and Rural Economies in Nebraska

BAIRD HOLM LLP
ATTORNEYS AT LAW

Prepared by:

David C. Levy
Lee E. Greenwald

Spring 2023

Executive Summary.

Nebraska suffers from a declining rural population. This decline increases the property tax burden on rural landowners. As the population and tax base decrease, counties must increase property tax rates to produce enough revenue to cover necessary services.

Wind and solar energy development provides significant property tax relief by substantially increasing the tax base without increasing burdens on government. As renewable energy developers invest in Nebraska, they supplement county revenue.

Renewable energy developers pay two forms of property tax in Nebraska: (i) a flat, statutory excise tax at a rate of $3,518 per megawatt ("MW") on the energy generating facility's "nameplate" or energy-producing capacity, and (ii) ad valorem real property tax on real property improvements and leasehold interests in the underlying land. The nameplate capacity tax is fixed. Ad valorem real property tax will vary because it depends on local valuation and levy rate.[1]

To estimate property tax revenues, a good rule of thumb is that a wind energy generating facility will generate approximately $5,000 annually in new property tax revenue per MW of nameplate capacity. A solar energy generating facility will generate approximately $4,000 annually in new property tax revenue per MW of nameplate capacity.[2]

Using the estimates above, a 200 MW wind energy generating facility, for example, could create approximately $1,000,000 annually in estimated new property tax revenue.[3] In some rural Nebraska counties, the new tax revenue could mean an increase of over 20 percent of the pre-project annual property tax revenue.[4] Local public schools typically receive approximately two-thirds of property tax revenue, subject to local levy.[5] Accordingly, local public schools could receive over $650,000 annually from the wind energy generating facility in this example.

Nebraska counties and other local taxing jurisdictions receive the remainder of the revenue pursuant to local levy. Taxing jurisdictions that benefit, in addition to the counties themselves, are: ambulance and fire districts, educational service units, community and technical colleges, natural resource districts and historical and agricultural societies.[6]

Renewable energy developers also provide direct lease payments to local landowners, attract businesses and create jobs. Those landowners, businesses and employees purchase local goods and services, generating spinoff economic activity. Thus, renewable energy development results in economic growth across the state.

We examine Nebraska's current property tax problem and how the state's renewable energy potential offers a substantial solution. Through renewable energy development, Nebraska can increase its overall tax revenue and revive rural economies, without increasing the current property tax levied on landowners.

Due to substantially increased tax revenue, there is less strain on state tax resources and more funds available for schools, public services and overall economic growth. Most importantly, the increased tax base allows Nebraska counties to decrease the current property tax rate for landowners and to increase services to citizens.

I. Nebraska Requires an Increased Tax Base to Help Address Its High Property Taxes.

Necessary municipal services – such as road maintenance, public education and law enforcement – require funding. To generate funding, the county levies property taxes on landowners by multiplying the assessed value of the property by the applicable tax rate. In many counties across Nebraska, the funding for services outweighs the tax revenue.

According to the Tax Foundation, Nebraska's property tax climate ranks 40th in the nation.[7] Three factors contribute to Nebraska's challenging tax climate: a decreasing tax base, an increasing tax rate and recent tax cuts by the Legislature.

The decline in both the population and tax base of rural Nebraska forces local government officials to stretch tax revenue and increase tax rates to support necessary public services. In 2022, the Legislature passed tax cuts in Legislative Bill ("LB") 310 (reducing inheritance tax) and LB 873 (reducing individual and corporate tax rates) that may further erode the available tax base.[8]

A reduced tax base leaves a county with essentially three options. First, the county can cut the amount or extent of services provided, which is a detriment to the community. Second, the county can increase the tax rate, which hurts landowners. Or third, the county can increase the tax base. This is the most logical option, but often the most difficult.

A. Nebraska's Property Tax System Substantially Burdens Rural Landowners.

The current property tax system places a considerable and increasing burden on rural landowners. Agricultural land accounts for approximately 30 percent of state property taxes.[9] Since 1950, Nebraska property taxes on agricultural land have been 46 percent higher than the national average.[10]

Since 1930, Nebraska's property tax base has grown only 70 percent as fast as the state economy.[11] As a result, Nebraska counties stretched their tax revenue to cover more services. In rural Nebraska, where population is declining, landowners carry the burden of funding necessary government-provided services via property taxes. Rising land valuations also cause higher property taxes and add to the burden on rural landowners.

Nebraska property taxes have increased substantially to keep up with growing economic needs. Property taxes levied at the county level, primarily on agricultural land, increased by an average of almost five percent over the last four years and more than 50 percent cumulatively over the last decade.[12]

B. Recent Tax Cuts May Worsen Nebraska's Property Tax Challenges.

Nebraska's property tax challenges are likely to worsen due to the Legislature's recent tax cuts. LB 310 (2022) sets a schedule for decreasing the amount of money the state collects through inheritance tax each year by reducing the tax rate and raising the tax exempt amount.[13]

The Nebraska Association of County Officials ("NACO") estimates Nebraska counties will experience significant revenue loss due to this change.[14] NACO estimates that each county in Nebraska, excluding the more urban counties of Lancaster County and Douglas County,

could lose approximately $284,000 in 2023 and approximately $495,000 in 2024, compared to the current inheritance tax rates. NACO projects counties will need to offset this loss in revenue with an increase in property taxes.[15]

LB 873 (2022) decreases individual and corporate tax rates, accelerates the phase out of state tax on Social Security income and provides additional tax credits.[16] According to the Legislative Fiscal Analyst Estimate, this bill will cost the state's General Fund almost $950,000,000 in tax revenue by fiscal year 2027-2028.[17]

II. Renewable Energy Provides Property Tax Relief.

Nebraska's tax landscape makes it the perfect location to utilize wind and solar energy resources to provide property tax relief. Local taxing entities (e.g., counties, school districts, fire and ambulance districts, natural resource districts, historical and agricultural societies and community colleges) receive revenue from developers who pay taxes on renewable energy facilities, associated improvements and real property interests. These taxes supplement and offset the property taxes that local landowners currently pay.

Direct tax revenue comes from the nameplate capacity tax, which is a flat, statutory excise tax at a rate of $3,518 per MW on a renewable energy generating facility's "nameplate" or energy-producing capacity.[18] Renewable energy developers also pay ad valorem real property tax on real property improvements underlying a renewable energy facility.

To estimate total property tax revenues, a good rule of thumb is that a wind energy generating facility will create approximately $5,000 annually in new property tax revenue per MW of nameplate capacity. A solar energy generating facility will create approximately $4,000 annually in new property tax per MW of nameplate capacity.[19]

Using the estimates above, a 200 MW wind energy generating facility, for example, could create approximately $1,000,000 annually in new property tax revenue.[20] In the most rural Nebraska counties, the new revenue could mean an estimated increase in annual property tax revenue of over 20 percent (Figure 1).[21] Local public schools typically receive approximately two-thirds of that revenue, subject to local levy.[22] Accordingly, local public schools could receive over $650,000 annually from the wind energy generating facility. None of this revenue exists prior to the wind energy generating facility.

Figure 1. County Property Tax Revenue Comparison (200 MW Wind Energy Facility)

	Before	After	Increase Due to Wind Energy Facility
New real property tax revenue	$0	$296,400 per year	-
New nameplate capacity tax revenue	$0	$703,600 per year	-
Total tax revenue to county	$4,733,604 per year	$5,733,604 per year	21 percent

Through renewable energy development, Nebraska can increase its overall tax revenue and revive rural economies without increasing the current property tax levied on landowners. Due to substantially increased tax revenue, there is less strain on state tax resources and more funds available for schools, public services and overall economic growth. Most importantly, the increased tax base allows Nebraska counties to decrease the current property tax rate for landowners and to increase services to citizens.

A. The Nameplate Capacity Tax Replaces the Personal Property Tax on Renewable Energy Facilities and Contributes Substantially to Tax Revenues.

Until 2010, Nebraska levied personal property tax on depreciable tangible personal property of renewable energy generation facilities with a five-year class life. As a result, the facilities paid large personal property taxes in the first year of operation, but, after five years, paid almost no personal property taxes. The Legislature, recognizing this system caused local budgeting challenges and increased upfront costs for developers, replaced the personal property tax on renewable energy generation facilities with the nameplate capacity tax.[23]

Nebraska counties received over $8,350,000 in nameplate capacity tax revenue alone in 2021. As renewable energy development grows, nameplate capacity tax revenue increases proportionally.

The term "'[n]ameplate capacity' means the capacity of a renewable energy generation facility to generate electricity as measured in megawatts."[24] The Legislature implemented the nameplate capacity tax to "provide a new method for taxing projects that will benefit local communities and the developers by creating an alternative to the five-year accelerated depreciation of personal property tax schedule that [was] currently in place."[25]

The intent of the nameplate capacity tax is to provide the same amount of tax from a renewable energy generation facility the developer would pay in personal property taxes over the life of a project, but in a manner that reduces the annual exaction and spreads payment out over the average life of a project, which will normally exceed 20 years. To determine the nameplate capacity tax, the Legislature determined the average personal property tax the developer would pay on a wind turbine over its useful life and calculated an exact replacement value – $3,518 per MW.[26]

Nebraska counties received over $8,350,000 in nameplate capacity tax revenue alone in 2021.[27] As renewable energy development grows, nameplate capacity tax revenue increases proportionally.

B. Real Property Tax Revenue Increases Due to Land Improvements.

Developers also pay ad valorem real property tax on real property improvements underlying a renewable energy facility. Improvements such as foundations, equipment, fencing, access roads, operations and maintenance buildings and the value of leases with landowners are all subject to local assessment at 100 percent of actual value.[28]

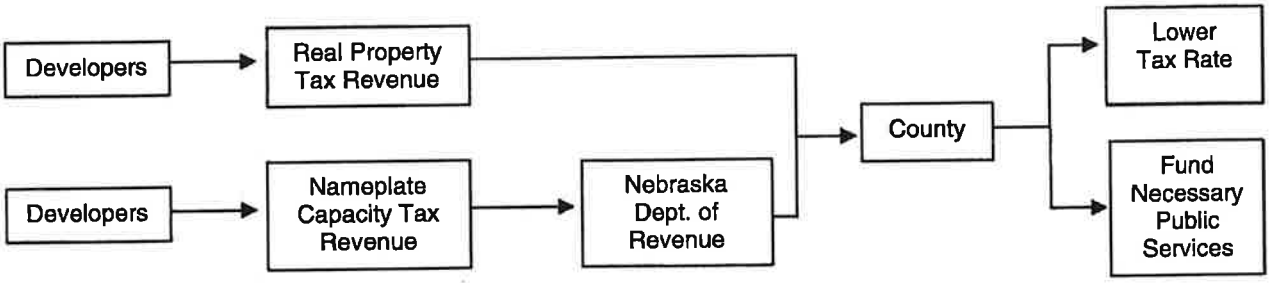
Nebraska law prohibits any value change from affecting the landowner's taxes.[29] However, developers pay much more in ad valorem tax on real property improvements.

C. Increased Tax Revenue Directly Benefits Residents and County Governments.

County governments levy property taxes. All real property taxes remit directly to the county. The nameplate capacity tax, on the other hand, remits first to the Nebraska Department of Revenue. The state then remits these funds to the county, which distributes them according to local levy. In both instances, the county receives 100 percent of the revenue.

Unlike income and sales taxes, property taxes directly increase tax revenue for the county without the county losing a portion to the state. Therefore, revenue from both the nameplate capacity tax and the real property tax directly benefit every county resident (Figure 2).

Figure 2. Impact of Renewable Energy Development on Nebraska Property Tax System



D. Increased Tax Revenue Directly Benefits the State Government.

While Nebraska counties receive direct benefits from renewable energy development, the state receives the advantage of more economically stable counties. Nebraska can earn more tax revenue from manufacturers, developers and individuals who decide to reside in rural Nebraska (via income tax, sales tax, etc.). In turn, counties place a lesser burden on state aid and resources such as Medicaid, Head Start and unemployment.

Additionally, Nebraska counties become less reliant on the Tax Equity & Educational Opportunities Support Act ("TEEOSA"), the state's public school finance formula.[30] The TEEOSA fund is a state reserve financed by state income and sales taxes.

Some schools in Nebraska have greater needs than resources. When a rural school is in need of additional funding apart from what its county allocates, the school receives state TEEOSA funds. In 2021-2022, Nebraska state aid via TEEOSA contributed $1,047,006,024 to schools across the state.[31]

The increased tax revenue from renewable energy development reduces the reliance on state TEEOSA funds. The reduction makes more funds available for other rural schools across Nebraska and for other necessary allocations.

Nebraska has begun utilizing its renewable energy potential. As Nebraska continues to increase its renewable energy development, the state will also increase its tax revenue and reap the benefits of economic growth.

E. Case Study: Holt County, Nebraska Benefits from Wind Energy Development.

Holt County, Nebraska experienced success, increased revenue and economic growth due to wind energy development. The Grande Prairie wind energy generating facility, located near O'Neill, Nebraska, greatly increased the property tax revenue and general economic stability of Holt County. Initial planning for the project began in 2008. Construction commenced in 2015 and the facility became operational in 2016.

Grande Prairie has 400 MW of nameplate capacity. It is the largest single wind energy generating facility in Nebraska.[32] The facility spans approximately 45,000 acres of farm and grazing land. Many of the turbines are located in the corners of the irrigated crop circles to minimize impact on agricultural production.

In 2020, Grande Prairie paid $1,407,200 in nameplate capacity tax.[33] If Grande Prairie pays an estimated $592,800 in real property taxes, it will pay a total of approximately $2,000,000 each year.[34] That is an estimated increase of about five percent of Holt County's total levied property taxes.[35] As shown by the statistics below, both the county and its residents benefit from the wind energy generating facility (Figure 3).

Figure 3. Holt County Property Tax Revenue Benefits

Tax	Increase Due to Grande Prairie
Nameplate capacity tax added per acre	$31.27[36]
Nameplate capacity tax added per county resident	$138.27[37]
Total annual property tax added per acre	$44.44[38]
Total annual property tax added per county resident	$196.52[39]

III. Renewable Energy Provides Economic Benefits.

Landowners and local economies benefit directly from annual lease payments from wind and solar energy developers. Nebraska economies also receive numerous indirect benefits from renewable energy development such as increased spending, economic growth and additional jobs.

Apart from greater tax revenue and the chance to decrease current property tax rates, these benefits entice current residents to invest in Nebraska. They also incentivize new businesses and workers to relocate to rural Nebraska.

A. Landowner Payments Supplement Household Incomes and Local Economies.

Landowner lease payment amounts for land underlying renewable energy projects are contractual and proprietary. They vary between developers and locations and are often confidential between the parties. They typically range between $3,000 and $7,000 annually per MW. Payments for solar energy generating facilities represent the higher end.[40] The payments also typically increase two to three percent annually.

Landowner lease payments help farmers and ranchers derive maximum benefit from their land via passive income. The payments also provide farmers and ranchers financial flexibility in the form of retirement funds, diverse land use and income streams and the ability to keep land in the family if a younger generation does not wish to pursue agriculture.

For a 200 MW wind or solar energy generating facility, landowner lease payments could total over $1,400,000 annually.[41] This money does not exist in the local economy without renewable energy development. Landowners return it to the local economy through their consumer habits.

B. Renewable Energy Attracts Businesses and Jobs to Rural Nebraska.

Nebraska's farmers and ranchers are the lifeblood of rural Nebraska and the state must find a way to decelerate the depopulation that many rural counties are experiencing. Nebraska's population dropped in 69 counties between 1980 and 2020, with 13 of those counties experiencing depopulation over 10 percent.[42] The growth of renewable energy development and Nebraska's reputation as a "renewable energy friendly" state entices businesses to relocate to Nebraska.

Industry, including agriculture and manufacturing, accounts for the largest share of Nebraska's energy consumption – approximately 40 percent.[43] In the past, Nebraska missed investment opportunities by Google and Facebook, who chose to invest a total of $1,500,000,000 in a data center in Council Bluffs, Iowa over Nebraska, due in part to greater availability of renewable energy.[44] Technology companies like these are under pressure to reduce their carbon emissions and therefore set internal goals to use a certain percentage of renewable energy in their operations.

Nebraska learned from these losses, expanding its renewable energy portfolio and bringing these tech centers to the state. Facebook built a data center in Sarpy County and has plans to expand it by 2024 for a total investment of approximately $1,500,000,000.[45] The project will create thousands of temporary construction jobs and about 300 permanent operations and maintenance jobs.[46]

In 2019, Google built a $600,000,000 data center in Papillion and now has plans to expand it.[47] The data center created about 120 permanent operations and maintenance jobs and nearly 65 percent of the property taxes generated from the facility go to local public school districts.[48] Google is currently building an additional $750,000,000 data center in Sarpy County, which it estimates will more than double the amount of Google jobs in Nebraska.[49]

In 2021, Monolith, a manufacturer of clean hydrogen, ammonia and "carbon black" (a strengthening and coloring material used in everything from tires to electrical equipment) obtained a loan for approximately $1,000,000,000 from the US Department of Energy to expand its production facilities in Hallam, Nebraska. The expansion project will create approximately 1,000 temporary jobs. Once complete, "the facility will create approximately 260 direct and 600 indirect, high paying, highly skilled, green energy jobs to support its operations."[50]

Monolith desires to use 100 percent renewable energy to convert natural gas into clean hydrogen and carbon black.[51] These Nebraska facilities, and the substantial economic benefits and tax revenue they generate, would not exist without renewable energy development.

For both renewable energy facilities and the industries they attract, temporary and permanent construction and operations employment provides job opportunities and brings new wage-earners to the area. Employees purchase local goods and services, generating spinoff economic activity and further increasing local government revenue. All county residents gain from the indirect advantages of renewable energy development, not just those who receive direct lease payments from developers.

C. National Renewable Energy Laboratory Model: A 200 MW Wind Energy Generating Facility Could Add Over $180,000,000 of Value to the Local Economy Over its Lifecycle.

According to the Jobs & Economic Impact Model from the National Renewable Energy Laboratory ("NREL"), a 200 MW wind energy generating facility could result in local spending of over $50,000,000 during construction and approximately $2,000,000 annually during operation.[52] This money flows into the local economy for landowner lease payments, labor, materials and related services.

Per this model, the facility could cumulatively add over $40,000,000 of value to the local economy during construction and $4,000,000 annually during operation.[53] Thus, the facility could add over $180,000,000 of value to the local economy over a 35-year lifecycle.

IV. Nebraska's Abundant Renewable Energy Resources Provide Substantial Opportunities for Growth.

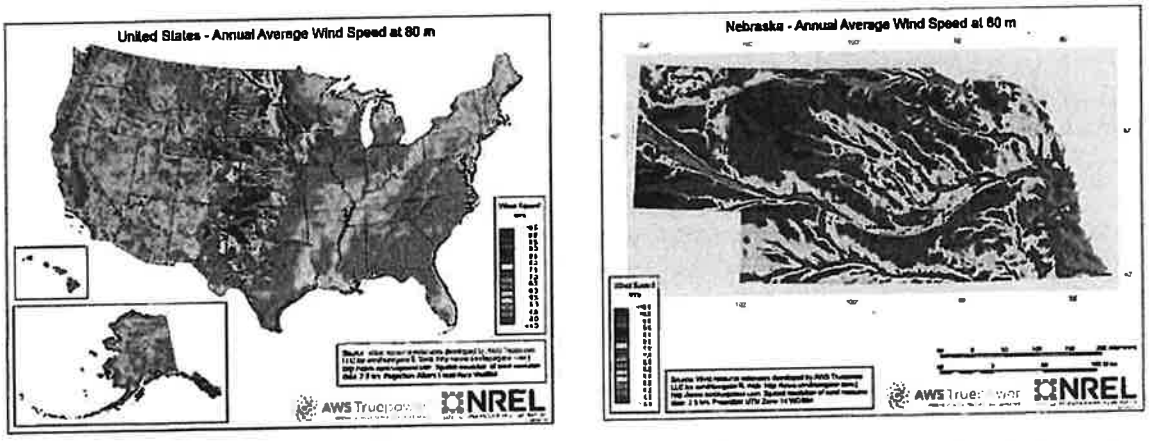
Nebraska's neighbors in every direction are capitalizing on wind and solar resources to provide tax relief and economic growth. Below we discuss how Nebraska can utilize its renewable energy resources to improve its competitive position relative to surrounding states, thus making rural Nebraska more appealing.

A. Nebraska Has Abundant and Underdeveloped Renewable Energy Resources.

i. Wind Energy is Abundant and Underdeveloped in Nebraska.

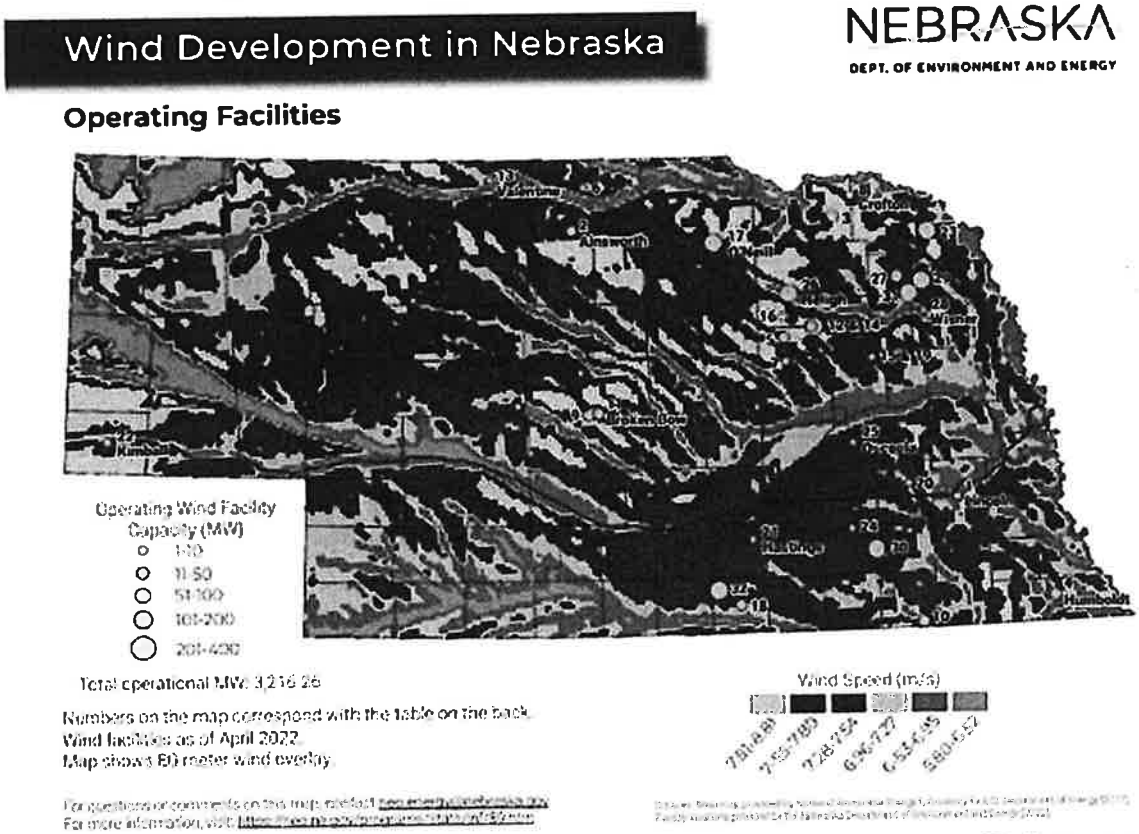
Nebraska has significant wind resources. Wind energy generating facilities typically require wind speeds of 10 miles per hour or greater. Wind speeds in most of Nebraska average approximately 17 miles per hour (Figure 4). In comparison to the wind speeds across the country, the vast majority of Nebraska shows a high potential for wind energy.

Figure 4. Annual Average Wind Speed at 80 Meters[54]



Despite Nebraska's high rank in wind resources – 4th in the nation – the state ranks 16th in installed wind capacity.[55] Nebraska currently has approximately 3,220 MW of installed wind energy capacity (Figure 5).[56] The state also has over 3,000 MW of additional capacity under development.[57] Still, this future amount is not close to Nebraska's potential, nor the installed capacity of Nebraska's bordering states. Wind energy currently provides approximately 25 percent of Nebraska's energy.[58]

Figure 5. Nebraska Wind Energy Generating Facilities[59]



Wind Development in Nebraska
NEBRASKA
DEPT. OF ENVIRONMENT AND ENERGY

	Operating Wind Facilities	Year of Commercial Operation	MW	Turbines	Locations
1	Salt Valley	1998 and 1999	1.32	2	Northeast of Lincoln, Lancaster County
2	Ainsworth Wind Energy	2005	59.4	36	Ainsworth, Brown County
3	Elkhorn Ridge Wind, LLC	2009	81	27	Bloomfield, Knox County
4	Flat Water Wind Farm, LLC	2010	60	40	Near Humboldt and Beatrice, Richardson County
5	Laredo Ridge Wind Farm	2010	80	54	Petersburg, Boone County
6	Springview II	2011	3	2	Springview, Keya Paha County
7	Petersburg, LLC	2011	40.5	27	Boone County
8	Crofton Bluffs Wind Farm	2012	40.6	22	Peona, Knox County (southwest of Crofton)
9	Broken Bow Wind, LLC	2012	77.6	50	Broken Bow, Custer County
10	Steele Flats Wind	2013	75	44	Steele City and Odell, Jefferson and Gage counties
11	Broken Bow Wind II	2014	75	43	Broken Bow, Custer County
12	Prairie Breeze I	2014	200.6	118	Petersburg, Antelope County
13	Valentine Wind, LLC	2014	1.85	1	Valentine, Cherry County
14	Prairie Breeze II	2015	73.39	41	Adjacent to Prairie Breeze I
15	Creston Ridge, LLC	2015	6.8	4	Creston, Platte County
16	Prairie Breeze III	2016	35.8	20	Elgin, Antelope County (adjacent to I and II)
17	Grande Prairie Wind, LLC	2016	400	200	O'Neill, Holt County
18	Cottonwood Wind Project	2017	89.7	52	Webster County
19	Creston Ridge II Wind Farm	2017	6.9	3	Creston, Platte County
20	Seward Wind Facility	2017	1.7	1	Seward, Seward County
21	Hastings Wind Farm	2017	1.7	1	Hastings, Adams County
22	Kimball Wind Project	2018	30	12	Kimball County
23	Rattlesnake Creek Wind Project, LLC	2018	320	101	Dixon County
24	Perennial Wind Farm	2018	6.9	3	Fairmont, Fillmore County
25	Prairie Wind	2018	2.5	1	Osceola, Polk County
26	Upstream Wind Energy, LLC	2019	202.5	81	Neligh, Antelope County
27	Sholes Wind Energy Center	2019	160	71	Wayne County
28	Cuming County Wind Farm	2019	2.5	1	Wisner, Cuming County
29	Plum Creek Wind	2020	230	82	Wayne County
30	Milligan 1 Wind Farm	2021	300	99	Milligan, Saline County
31	Haystack Wind Farm	2021	300	60	Wayne County
32	Little Blue Wind Farm	2021	250	100	Webster and Franklin counties
	Totals		3,216.26	1,399	

	Retired Wind Facilities	Years of Commercial Operation
	Springview Wind Energy	1998-2007
	Valley	2001-2018
	Kimball Wind Project	2002-2017

Note: Operating facilities with more than one year listed have multiple turbines that began commercial operation in different years.

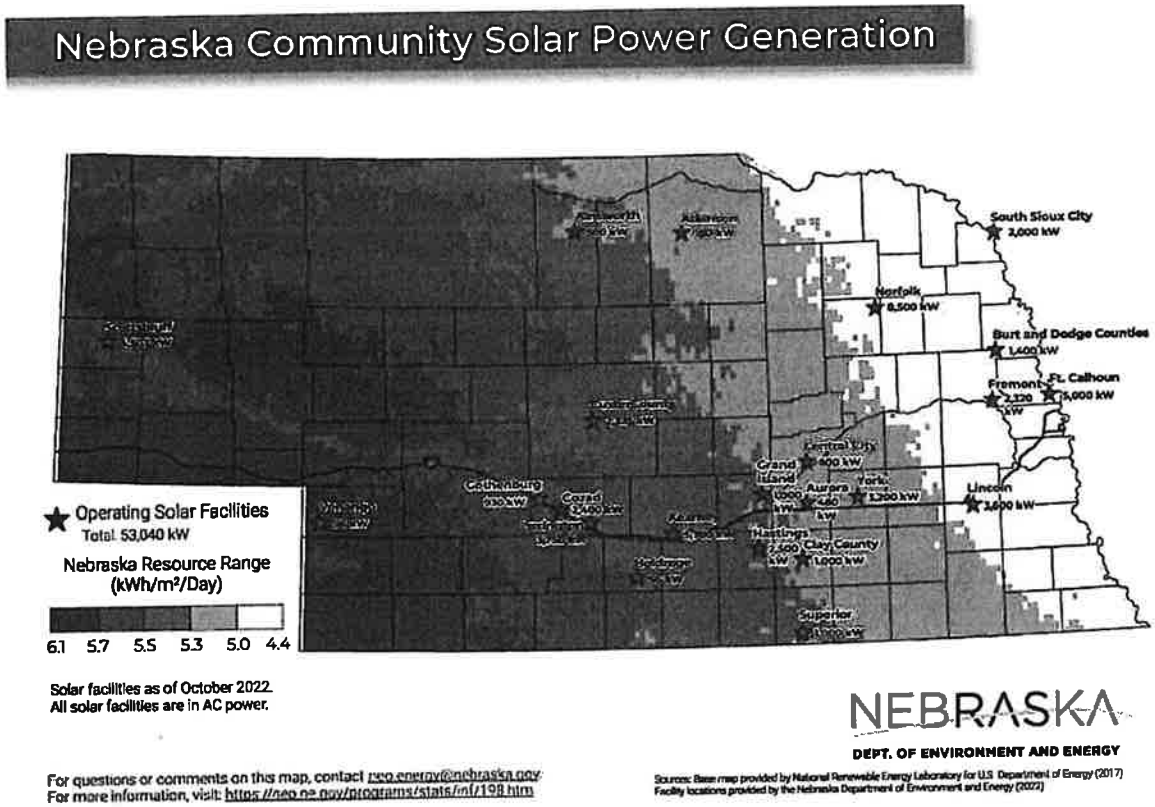
ii. Solar Energy is Abundant and Underdeveloped in Nebraska.

Nebraska also has abundant solar resources. According to a sun index from the NREL, Nebraska ranks 13th in the nation for solar energy potential.[60] Solar energy generation opportunities are greatest in central and western Nebraska (Figure 6).

As with wind energy, Nebraska has yet to reach its potential for solar energy generation. The state currently ranks 47th in the nation in solar energy generation.[61] As of February 2022, Nebraska had approximately 50 MW of installed solar energy capacity.[62]

While solar energy currently provides less than one percent of Nebraska's energy, installed capacity has doubled since 2018.[63] Signaling exponential growth, however, the state has over 2,000 MW of additional capacity under development.[64] The state's largest solar energy generating facility, Goldenrod Solar Energy Center, a 443 MW facility in Pierce County, is currently under development and has an estimated commercial operation date of 2025.[65]

Figure 6. Nebraska Solar Energy Generating and Manufacturing Facilities[66]



Nebraska Community Solar Power Generation

Operating Solar Projects	Year of Commercial Operation	Total kW (AC Power)
Lincoln	**2016**	**3,600**
Aurora	2017	480
Central City	**2017**	**600**
Holdrege	2017	56
Kearney	**2017**	**5,700**
Lexington	2017	3,750
Scottsbluff	**2017 and 2020**	**4,503**
South Sioux City	2017	2,000
Venango	**2017**	**96**
Fremont	2018	2,320
Grand Island	**2018**	**1,000**
Superior	2018	1,000
Atkinson	**2019**	**180**
Ft. Calhoun	2019	5,000
Gothenburg	**2019**	**930**
Hastings	2019	2,500
Burt and Dodge counties	**2021**	**1,400**
Ainsworth	2021	500
Clay County	**2021**	**1,000**
Cozad	2021	2,400
Custer County	**2021**	**2,325**
York	2022	3,200
Norfolk	**2022**	**8,500**
Total		**53,040**

Note: Projects with more than one year listed have multiple facilities that began operations in different years.

NEBRASKA
DEPT. OF ENVIRONMENT AND ENERGY

B. Nebraska's Neighbors Prioritize Renewable Energy Development Despite Less Abundant Resources.

Nebraska lags behind its neighbors in utilizing its renewable energy resources. For example, while Nebraska ranks 4th in the country for wind resources and Iowa ranks 7th, Iowa substantially surpasses Nebraska in total installed capacity.[67]

In 2010, Iowa prioritized wind energy. Over a decade later, it has paid off. Iowa is now home to approximately 12,500 MW of installed capacity, as compared to Nebraska's 3,220 MW.[68] Iowa ranks 2nd in the nation in total installed capacity, behind Texas.[69]

Wind energy provides 55 percent of Iowa's energy – the highest share in the nation – while wind energy provides only 25 percent of Nebraska's energy.[70] To the south, Kansas has installed capacity of approximately 8,300 MW. Wind energy provides approximately 45 percent of Kansas's energy – the third highest share in the nation – behind Iowa and South Dakota.[71]

The Iowa Environmental Council prepared a plan to help Iowa reach 100 percent renewable energy by 2050.[72] To accomplish its goal, the state must double its wind energy capacity by 2030, and double it again by 2050.[73] If it succeeds, employment opportunities will mirror the growth, possibly doubling or tripling by 2030.[74]

Wind energy already employs approximately 9,000 to 10,000 people in Iowa.[75] These jobs are locally based and often in rural communities. In Iowa alone, there are 10 manufacturing facilities that create parts for the wind energy industry in addition to temporary construction jobs for wind energy generating facilities.[76]

Nebraska also falls behind its neighbors in solar energy development. Colorado currently has approximately 2,300 MW of installed solar energy capacity – ranking 13th in the nation – and it projects to more than double that by adding approximately 4,000 MW of capacity in the next five years.[77] In 2021, the solar energy industry employed about 7,500 people in Colorado.[78] As the state installs additional capacity, job growth and overall economic growth will follow.

Renewable energy development does not just create new revenue streams, it also reduces Nebraska's dependence on neighboring states and the associated expenses. Nebraska has the 2nd worst property tax climate in the Midwest region and also reports a relatively high state income tax.[79]

By contrast, Wyoming has no state income tax. In 2020, Nebraska purchased 100 percent of its coal for electricity generation and industrial plants from Wyoming and paid sales tax on the coal to Wyoming.[80] Effectively, Nebraska residents are subsidizing Wyoming's income tax. Homegrown renewable energy allows Nebraska to fund its own counties, rather than Wyoming's.

C. Renewable Portfolio Standards Incentivize Renewable Energy Development.

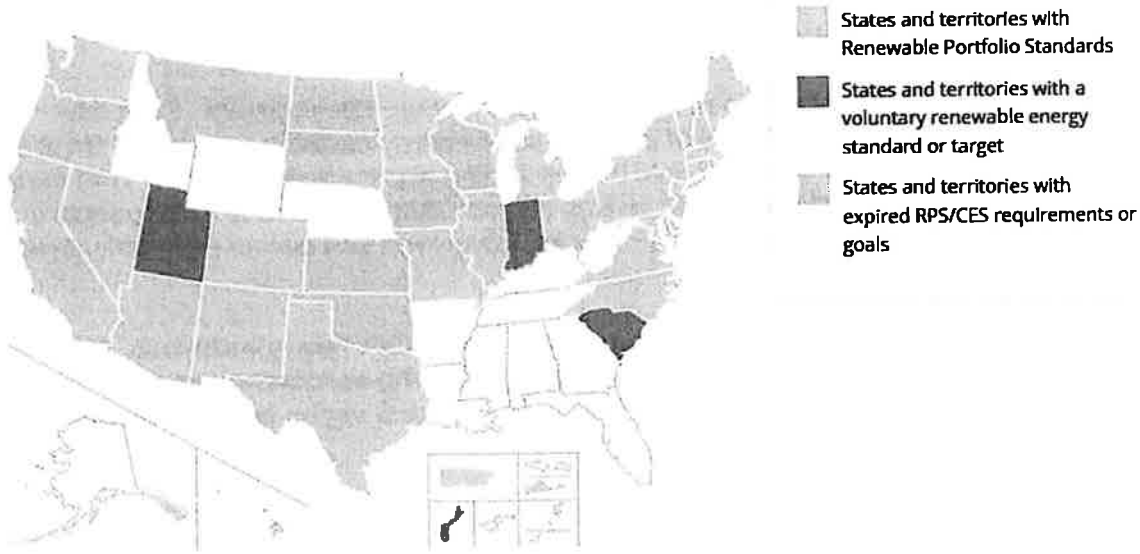
Many of the states surrounding Nebraska have incentive to utilize their renewable energy resources due to a Renewable Portfolio Standard ("RPS"). An RPS is a requirement to increase the amount of energy that comes from renewable sources. Many states enact such standards to encourage a transition to renewable resources.

Some states use a percentage requirement. For example, California has a standard to increase the percentage of energy from renewable sources to 60 percent by 2030 and to require all the state's electricity come from carbon-free resources by 2045.[81]

Other states, like Texas, adopted a standard to require a certain number of MW of energy from renewable sources. In 2005, Texas amended its RPS to require renewable energy production of 5,880 MW by 2015 and 10,000 MW by 2025. Texas vastly exceeded its goals and has not set a new goal as of this writing.[82]

As of August, 2021, 35 states had a state-mandated RPS, including Iowa and Kansas (both of which exceeded their goals) and Colorado (which has a current goal for utilities serving 500,000 or more customers to generate 100 percent of their energy from renewable sources by 2050).[83] Nebraska and Wyoming are the only two states in the region that do not have an RPS (Figure 7).

Figure 7. State-Mandated Renewable Portfolio Standards or Goals[84]



In Nebraska, public power districts are leading the way by setting internal standards. Omaha Public Power District (OPPD) and Nebraska Public Power District (NPPD) have set goals to reach carbon neutral energy generation by 2050.[85] Lincoln Electrical System (LES) has plans to reach net zero carbon emissions by 2040, with a citywide goal to reduce greenhouse gas emissions by 80 percent by 2050.[86]

Reaching these goals will require large investments in renewable energy. This could mean large increases in property tax revenue and economic growth for Nebraska counties receptive to wind and solar energy development.

Nebraska can further realize the benefits of renewable energy by setting uniform statewide standards to incentivize: (i) landowners to participate in renewable energy development, (ii) developers to invest and locate in the state, and (iii) public power districts to purchase renewable energy. Whether incentives come in the form of tax credits, renewable energy goals or an RPS, the economic benefits of utilizing renewable energy drastically outweigh the costs. Through renewable energy development, Nebraska can solve its mounting property tax problem and revive rural economies.

ENDNOTES

[1] *See* Neb. Rev. Stat. §§ 77-6201, et seq.; *See also* Nebraska Department of Revenue, *Directive 16-1* (2016), https://revenue.nebraska.gov/sites/revenue.nebraska.gov/files/doc/pad/legal/dir16-01_Renewable_Energy_Generation_Facilities.pdf.
[2] Actual tax revenue will vary, subject to local levy.
(Minimum of $3,518 per MW (fixed nameplate capacity tax) + variable real property tax)
[3] $1,000,000 total estimated annual property tax = $703,600 nameplate capacity tax ($3,518 per MW * 200 MW) + $296,400 real property tax (estimated at $1,482 per MW * 200 MW).
[4] Nebraska Department of Revenue, *2021 Annual Report*, Property Assessment Division (Mar. 24, 2022) https://revenue.nebraska.gov/PAD/2021-annual-report-property-assessment-division.
(Calculated using annual property tax estimate of $4,733,604 = the average 2021 property tax revenue for Nebraska's 15 least populated counties (Arthur, Banner, Blaine, Dundy, Grant, Hayes, Hooker, Keya Paha, Logan, Loup, McPherson, Rock, Sioux, Thomas and Wheeler))
[5] Actual percentage will vary, subject to local levy.
[6] *See* Nebraska Legislative Research Office, *The Basics of Nebraska's Property Tax* (2020), https://nebraskalegislature.gov/pdf/reports/research/propertytax2020.pdf.
[7] Tax Foundation, *2022 State Business Tax Climate Index*, Table 6. Property Tax Component of the State Business Tax Climate Index (2014-2022) (Dec. 16, 2021), https://taxfoundation.org/2022-state-business-tax-climate-index.
(The Tax Foundation is a non-partisan tax research group based in Washington, D.C.)
[8] *See* 2021 Neb. Laws LB 310, https://nebraskalegislature.gov/bills/view_bill.php?DocumentID=43516; *See also* 2021 Neb. Laws LB 873, https://nebraskalegislature.gov/bills/view_bill.php?DocumentID=47318.
[9] *See* Dave Aiken, *2020 Nebraska Property Tax Issues*, Cornhusker Economics (Feb. 26, 2020), https://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=2041&context=agecon_cornhusker.
[10] *Id.*
[11] Nebraska Legislature, *Taxes in Nebraska*, http://www.nebraskalegislature.gov/app_rev/source/proptax.htm (accessed Oct. 14, 2022).
[12] *See* Nebraska Department of Revenue, *History of Valuation & Taxes Levied by Political Subdivisions 2011 to 2021*, Property Assessment Division (Jan. 3, 2021), https://revenue.nebraska.gov/sites/revenue.nebraska.gov/files/doc/pad/research/valuation/2021/histvt_subdiv_State_93cnties_2011-2021.pdf.
[13] LB 310, *supra* note 8.
[14] *See* Ligenza, Austin, *Fiscal Note for LB 310*, Legislative Fiscal Analyst Estimate (Jan. 14, 2021), https://nebraskalegislature.gov/FloorDocs/107/PDF/FN/LB310_20210217-082641.pdf.
[15] *Id.*
[16] LB 873, *supra* note 8.
[17] *See* Keisha Patent, *Fiscal Note for LB 873*, Legislative Fiscal Analyst Estimate (Apr. 5, 2022), https://nebraskalegislature.gov/FloorDocs/107/PDF/FN/LB873_20220405-105310.pdf.
[18] *See* Neb. Rev. Stat. § 77-6203(1).
[19] Actual tax revenue will vary, subject to local levy.
(Minimum of $3,518 per MW (fixed nameplate capacity tax) + variable real property tax)
[20] $1,000,000 total estimated annual property tax = $703,600 nameplate capacity tax ($3,518 per MW * 200 MW) + $296,400 real property tax (estimated at $1,482 per MW * 200 MW).
[21] Nebraska Department of Revenue, *supra* note 4.
[22] Actual percentage will vary, subject to local levy.
[23] Neb. Rev. Stat. § 77-6201(1).
[24] Neb. Rev. Stat. § 77-6202(2).
[25] Committee Records on LB 1048, *Introducer's Statement of Intent*, 101st Leg., 2nd Sess. 1 (Feb. 24, 2010).
[26] *See* Neb. Rev. Stat. § 77-6203(1).
[27] Nebraska Department of Revenue, *Nameplate Capacity Tax Summary 2011-2021*, Policy Division, Research Section (Dec. 2021), https://revenue.nebraska.gov/PAD/nameplate-capacity-tax.
[28] *See* Nebraska Department of Revenue, *supra* note 1.
[29] *Id.*
[30] Neb. Rev. Stat. § 79-1001 *et seq.*

[31] Nebraska Department of Revenue, *Total State Tax Dollars Allocated to All Local Governments by Category for Fiscal Year 2021-2022* (Sep. 2022), https://revenue.nebraska.gov/sites/revenue.nebraska.gov/files/doc/2022_State_Fund_Report_Total_State_Tax_Dollars_Allocated_by_Category.pdf.
[32] Berkshire Hathaway Energy, *BHE Renewables Announces Plans for the Largest Wind Development in Nebraska* (Apr. 30, 2015), https://www.brkenergy.com/news/bhe-renewables-announces-plans-for-the-largest-wind-development-in-nebraska.
[33] Nebraska Department of Revenue, *supra* note 27.
[34] Nameplate capacity tax: $1,407,200 = $3,518 * 400 MW. Real property tax (estimated): $592,800 = $1,482 * 400 MW. Actual real property tax revenue will vary, subject to local levy.
[35] Nebraska Department of Revenue, *supra* note 4.
(Holt County levied $39,990,114 in property taxes in 2021)
[36] Nameplate capacity tax per acre: $31.27 = $1,407,200 / 45,000 acres.
[37] Nameplate capacity tax per resident: $138.27 = $1,407,200 / 10,177 residents.
[38] Total property tax per acre: $44.44 = $2,000,000 / 45,000 acres.
[39] Total property tax per resident: $196.52 = $2,000,000 / 10,177 residents.
[40] *See* Kathiann M. Kowalski, *For Ohio Farmers, Wind Turbine Revenue Helps Take the Sting Out of a 'Bad' Year*, Energy News Network (Oct. 19, 2019), https://energynews.us/2019/10/31/for-ohio-farmers-wind-turbine-revenue-helps-take-the-sting-out-of-a-bad-year/; *See also* Elizabeth Weise, *Wind Energy Gives American Farmers a New Crop to Sell in Tough Times*, USA Today (Feb. 16, 2020), https://www.usatoday.com/story/news/nation/2020/02/16/wind-energy-can-help-american-farmers-earn-money-avoid-bankruptcy/4695670002/.
[41] Total lease payments: $1,400,000 = $7,000 per MW * 200 MW.
[42] *See* University of Nebraska – Omaha Center for Public Affairs Research, *Nebraska County Census Populations with Decade Changes and Percent Changes: 1980-2020* (Aug. 12, 2021).
[43] U.S. Energy Information Administration, *Nebraska State Profile and Energy Estimates* (Jun. 16, 2022), https://www.eia.gov/state/analysis.php?sid=NE#33.
[44] *See* Devin Coldewey, *Wind Farm Meets Server Farm at Latest Facebook Data Center*, NBC News (Nov. 13, 2013).
(Facebook stated it chose Iowa because it offered a good opportunity to use renewable energy)
[45] *See* Jack Williams, *Facebook Expanding Huge Sarpy County Data Center Campus Again*, Nebraska Public Media (Mar. 24, 2021), https://nebraskapublicmedia.org/en/news/news-articles/facebook-expanding-huge-sarpy-county-data-center-campus-again/.
[46] *Id.*
[47] *See* Will Baur, *Papillion Home to Google Data Center by 2021*, Nebraska Public Media (Oct. 4, 2021), https://nebraskapublicmedia.org/en/news/news-articles/papillion-home-to-google-data-center-by-2021/; *See also* Cindy Gonzalez, *Google Announces Nebraska Growth Plan That Includes New Northwest Omaha Data Center*, Nebraska Examiner (Apr. 21, 2022), https://nebraskaexaminer.com/2022/04/21/google-announces-nebraska-growth-plan-that-includes-new-northwest-omaha-data-center/.
[48] *Id.*
[49] *See* City of Omaha, Nebraska, *Google Data Center Under Construction in Northwest Omaha* (Apr. 21, 2022), https://www.cityofomaha.org/latest-news/883-google-data-center-under-construction-in-northwest-omaha; *See also* Gonzalez, *supra* note 47.
[50] Monolith, *Monolith Receives Conditional Approval for a One Billion-Dollar U.S. Department of Energy Loan* (Dec. 23, 2021), https://monolith-corp.com/news/monolith-receives-conditional-approval-for-a-one-billion-dollar-us-department-of-energy-loan.
[51] *Id.*
[52] *See* National Renewable Energy Laboratory, *JEDI Land Based Wind Model Beta*, JEDI: Jobs & Economic Development Impact Models (Oct. 30, 2020), https://www.nrel.gov/analysis/jedi/wind.html.
[53] *Id.*

[54] U.S. Department of Energy, *U.S. Average Annual Wind Speed at 80 Meters,* Wind Energy Technologies Office, WINDExchange, Maps and Data, https://windexchange.energy.gov/maps-data/319 (accessed Oct. 14, 2022); U.S. Department of Energy, *Nebraska 80-Meter Wind Resource Map,* Wind Energy Technologies Office, WINDExchange, Maps and Data, https://windexchange.energy.gov/maps-data/80 (accessed Oct. 14, 2022).
[55] *See* University of Nebraska-Lincoln, Nebraska Wind Energy and Wildlife Project, *Wind Speeds,* https://wind-energy-wildlife.unl.edu/wind-speeds (accessed Oct. 14, 2022); *See also* Nebraska Department of Environment and Energy, *Wind Facilities' Installed Capacity by State* (Jun. 14, 2021), https://neo.ne.gov/programs/stats/inf/205.htm.
[56] U.S. Department of Energy, *Wind Energy in Nebraska,* Wind Energy Technologies Office, WINDExchange, Maps and Data, https://windexchange.energy.gov/states/ne (accessed Oct. 14, 2022).
[57] *See* Nebraska Department of Environment and Energy; *Wind Energy Generation in Nebraska* (Oct. 18, 2022), https://neo.ne.gov/programs/stats/inf/89.htm.
[58] *See* U.S. Energy Information Administration, Electricity Data Browser, Net generation for all sectors, Nebraska, All fuels and all fuel types, Annual (2021).
[59] Nebraska Department of Environment and Energy, *Wind Development in Nebraska Map* (Apr. 2022), https://neo.ne.gov/programs/stats/inf/89.htm.
[60] Nebraska Department of Environment and Energy, *Comparison of Solar Power Potential by State,* Nebraska Energy Statistics (Mar. 11, 2010), https://neo.ne.gov/programs/stats/inf/201.htm.
[61] Solar Energy Industries Association, *Nebraska Solar* (Q2, 2022), https://www.seia.org/state-solar-policy/nebraska-solar.
[62] U.S. Energy Information Administration, *Nebraska State Profile and Energy Estimates* (Jun. 16, 2022), https://www.eia.gov/state/analysis.php?sid=NE#33.
[63] *Id.*
[64] *See* Nebraska Department of Environment and Energy, *Solar Energy Generation in Nebraska* (Jul. 1, 2022), https://neo.ne.gov/programs/stats/inf/198.htm.
[65] *Id.*
[66] Nebraska Department of Environment and Energy, *Nebraska Community Solar Power Generation* (Oct. 2022), https://neo.ne.gov/programs/stats/pdf/198_map.pdf.
[67] *See* U.S. Energy Information Administration, *Iowa State Profile and Energy Estimates* (Jul. 21, 2022), https://www.eia.gov/state/analysis.php?sid=IA; *See also* U.S. Energy Information Administration, *Nebraska State Profile and Energy Estimates* (Jun. 16, 2022), https://www.eia.gov/state/analysis.php?sid=NE#33; *See also* Nebraska Department of Environment and Energy, *Wind Facilities Installed Capacity by State* (Jun. 14, 2021), https://neo.ne.gov/programs/stats/inf/205.htm.
[68] *See* U.S. Department of Energy, *Wind Energy in Iowa,* Wind Energy Technologies Office, WINDExchange, Maps and Data, https://windexchange.energy.gov/states/ks#capacity (accessed Oct. 14, 2022); *See* also U.S. Department of Energy, *Wind Energy in Nebraska,* Wind Energy Technologies Office, WINDExchange, Maps and Data, https://windexchange.energy.gov/states/ne (accessed Oct. 14, 2022).
[69] *Id.*
[70] *Id.*
[71] *See* U.S. Department of Energy, *Wind Energy in Kansas,* Wind Energy Technologies Office, WINDExchange, Maps and Data, https://windexchange.energy.gov/states/ks#capacity (accessed Oct. 14, 2022); *See also* U.S. Energy Information Administration, *Kansas State Profile and Energy Estimates* (Jul. 21, 2022), https://www.eia.gov/state/analysis.php?sid=IKS.
[72] *See* Iowa Environmental Council, *Iowa's Road to 100% Renewable* (Apr. 21, 2020), https://www.iaenvironment.org/webres/File/IEC20002_PathwayTo100Renewable_F_Web.pdf.
[73] *Id.*
[74] *See* John Streppe, *Iowa Wind Energy Jobs Could Double or Triple over the Next Decade,* The Gazette (Aug. 17, 2021), https://www.thegazette.com/energy/iowa-wind-energy-jobs-could-double-or-triple-over-the-next-decade/.
[75] *Id.*
[76] *See* American Clean Power, *Wind Energy in Iowa* (2022), https://cleanpower.org/wp-content/uploads/2022/08/StateFactSheet_Iowa.pdf.

[77] *See* Solar Energy Industries Association, *Colorado Solar* (Q2, 2021), https://www.seia.org/state-solar-policy/colorado-solar.
[78] *Id.*
[79] *See* Tax Foundation, *supra* note 7.
[80] *See* Nebraska Department of Environment and Energy, *Nebraska's Coal Imports* (Dec. 16, 2021), https://neo.ne.gov/programs/stats/inf/64.html.
(Figure excludes Coke industrial plant)
[81] California Public Utilities Commission, *Renewables Portfolio Standard (RSP) Program*, https://www.cpuc.ca.gov/rps (accessed Oct. 14, 2022).
[82] *See* National Conference of State Legislatures, *State Renewable Portfolio Standards and Goals* (Aug. 13, 2021), https://www.ncsl.org/research/energy/renewable-portfolio-standards.aspx.
[83] *Id.*
[84] *Id.*
[85] *See* David Earl, *OPPD Focused on Reliability, Affordability as Utility Plans for a Changing Climate*, KETV Omaha (Aug. 24, 2021), https://www.ketv.com/article/oppd-focused-on-reliability-affordability-as-utility-plans-for-a-changing-climate/36792502#. *See* also Nebraska Public Power District, *NPPD Board Approves Net-Zero Carbon Goal by 2050* (2021), https://www.nppd.com/press-releases/nppd-board-approves-net-zero-carbon-goal-by-2050?locale=en.
[86] Lincoln Electrical Systems, *LES Decarbonization Goal: Net zero by 2040* (2021), https://www.les.com/les-decarbonization-goal.

Growing Nebraska's Rural Economy with Wind

The Benefits of Harvesting 3,518.58 MWs of Home-Grown Value-Added Wind Energy

- **$17.6 million** of new value-added annual income & **$352 million over 20 years** for landowners.
- **$17.6 million** of new local tax revenues annually for 20 years, and **$352 million over 20 years.**
- 2,200 estimated direct and 7,640 Construction phase jobs in rural Nebraska.
- At least **$6.159 billion** of new capital investment & new tax base.
- Wind energy uses no water, and generates no carbon emissions.

Wind development provides new good paying jobs, annual landowner incomes and new local tax revenues for many years to come. As long as the wind blows, wind projects will provide clean renewable energy.

Nebraska is ranked 3rd in the nation in wind energy potential but 12th in installed capacity.

Let's take a closer look at the numbers.

Through a competitive bidding process, Nebraska public power utilities have contracted with private sector companies to provide for clean burning cost-effective electricity. The total amount of wind energy on line is **3,518.58 MW.**

Our NeFU sampling of contracts for landowner income shows a range of $4,000 to $7,000 per MW. Our rule of thumb conservative estimate is **$5,000 per MW** and $17.6 million of new annual Nebraska landowner value added farm revenue for the next 20 years, or **$352 million total.**

The nameplate capacity tax of **$3,518 per MW** and estimated $1,482 per MW of real property tax realized by local governments adds up to **$5,000 per MW per year for 20 years** or the life of the project. Given this amount, Nebraska's wind farms will produce **$17.6 million of new local tax revenues per year for 20 years,** which could lower local property tax rates or pay for new schools and roads.

Estimated 2,200 new good paying jobs with benefits helps keep rural kids who want to stay in rural communities. At an estimated cost of $1.75 million per MW, wind represents **$6.159 billion of new capital investment.**

Nebraska's wind energy capacity is ranked **3rd** best in the nation at 80 meters, yet is ranked **12th** in actual wind energy developed.

By comparison, Iowa has 13,007 MWs of wind on line, 3.69 times Nebraska's wind development. Iowa is more densely populated, with 1.6 times Nebraska's population, and has less wind energy potential than Nebraska. If Iowa can balance the interests of wind energy development and their rural residents, so can Nebraska.

Harvesting Wind energy:

- Increases, stabilizes, and diversifies incomes for farm families. A wind turbine represents the financial equivalent to a good part time job in town, yet takes no time away from the farm. That welcome additional income helps cover family living costs.
- Creates new property tax base that benefits all property taxpayers.
- Uses no water.
- Emits no carbon emissions that drives extreme weather and climate change.
- Improves air quality compared to coal or natural gas-powered electrical generation.
- Creates new good paying jobs with benefits in rural communities.
- Is a new form of home-grown valued-added agriculture.
- Grows the farm and rural economy.

Wind energy is good for Nebraska landowners, rural communities, rate payers, and our environment. Wind energy is a win-win-win!

Nebraska Farmers Union
(402) 476-8815
www.nebraskafarmersunion.org
1305 Plum Street
Lincoln, NE 68502

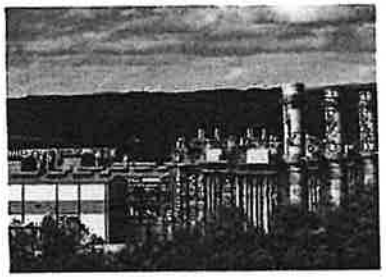
***October 2024 Version**

APPENDIX NO. 4

Hearing Exh. 2:
Introducing Invenerg;; Rough Estimations for Nameplate Capacity Tax Equivalencies. NE's Nameplate Capacity Tax is Competitive with Other SPP States. (Kevin Quinn)
(Invenergy Report)

Introducing Invenergy

AMERICA'S LEADING PRIVATELY HELD ENERGY COMPANY



Natural Gas
13 projects
6,000+ megawatts

Solar
55 projects
7,500+ megawatts

Transmission
4 projects
4,100+ miles of transmission & collection lines developed

Wind
121 projects
19,500+ megawatts

Storage
23 projects
3,000+ megawatt hours
900+ megawatts

WITH A PROVEN TRACK RECORD

212
Projects Developed

34 GW
Capacity Developed

$70B
Completed Transactions

12M
Homes Powered

Invenergy

Over a Decade of Operations in the Cornhusker State

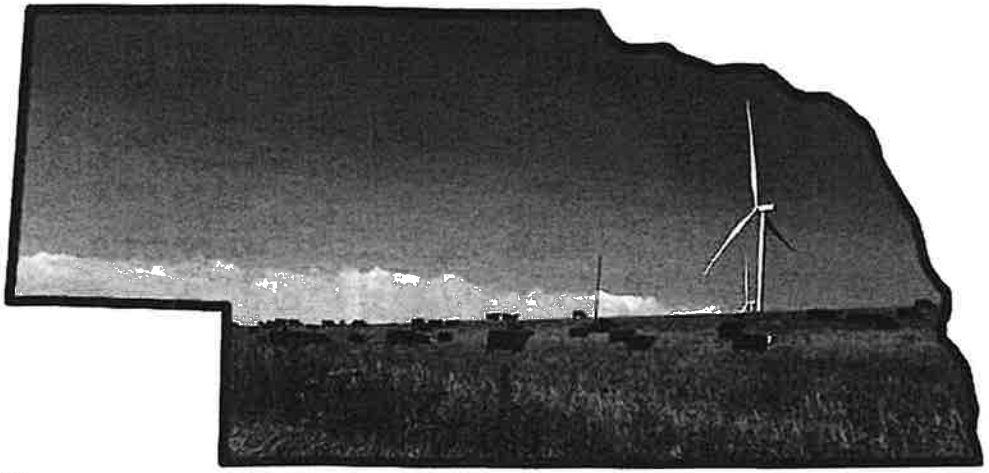
Invenergy-developed projects in Nebraska: 5 in operation

Generation capacity totaling more than **800 megawatts**

Enough electricity to power over **247,000 American homes**

Nearly **$3 million in nameplate capacity tax** revenue each year

More than **$3.9 million** in annual land costs and lease payments, and project generated wages and benefits



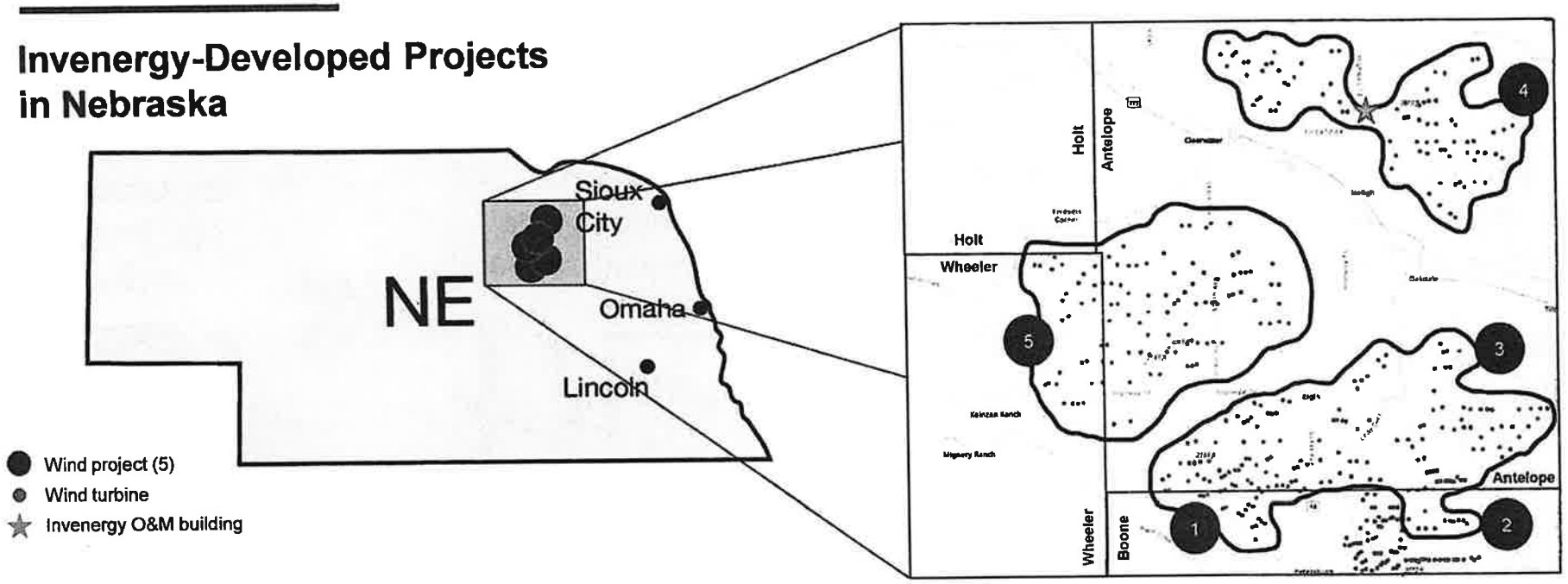
"In our rural area, Antelope County, we grow crops or raise cattle out of the land, and that money circulates around all of us, whether you're a farmer or an in-town business. But this is the first and only thing where money from somebody else comes in to us. It's been nothing but good. It's just been a real economic boom for the county."

Jim Koenig
Landowner & Community Member, Antelope County, NE

Invenergy

Invenergy: A Nebraska Energy Partner

Invenergy-Developed Projects in Nebraska



1 Prairie Breeze I
201 MW; COD: 2014
Offtake Partner:
OPPD

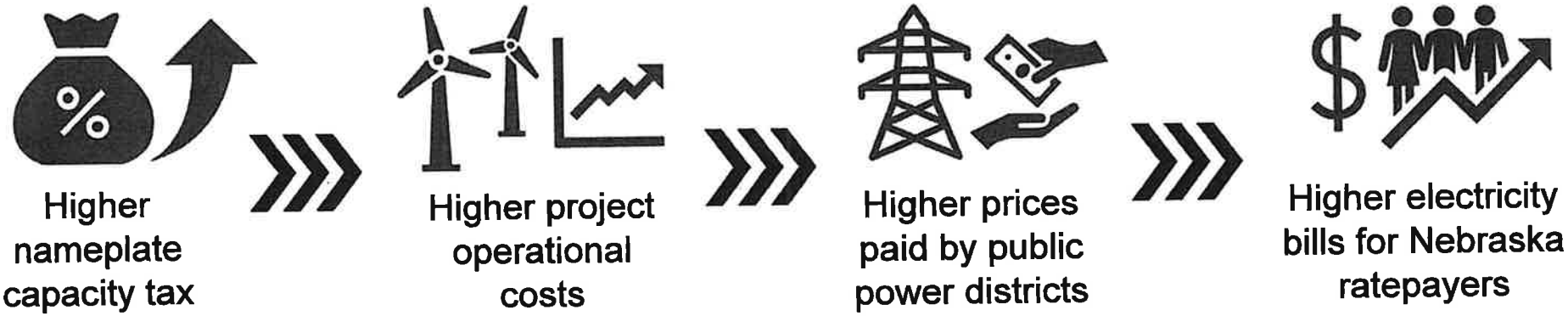
2 Prairie Breeze II
74 MW; COD: 2015
Offtake Partner:
City of Grand Island

3 Prairie Breeze III
36 MW; COD: 2016
Offtake Partner:
Lincoln Electric System

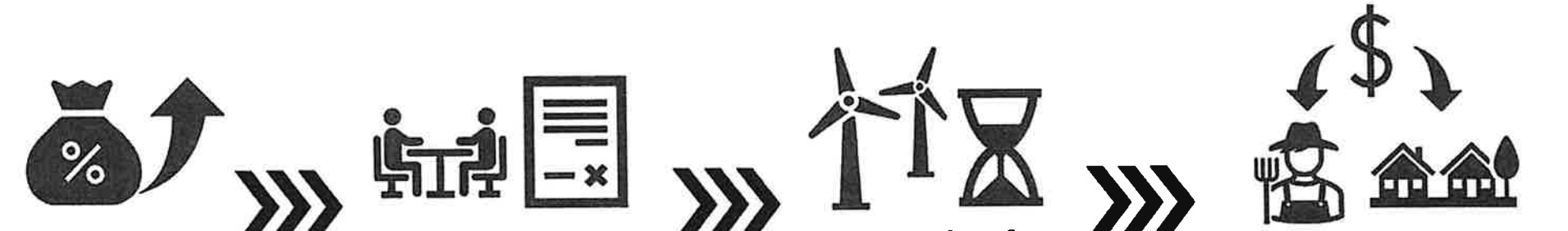
4 Upstream
203 MW; COD: 2019
Offtake Partner:
Allianz

5 Thunderhead
300 MW; COD: 2022
Offtake Partners:
Several Fortune 100 companies

Future Impacts of Changing the Nameplate Capacity Tax



Future Impacts of Changing the Nameplate Capacity Tax



Higher nameplate capacity tax

Projects in development must take time to reprice & renegotiate contracts

Accounting for new tax in pricing delays projects coming online

Delays in payments to Nebraska communities & landowners

Invenergy

Future Impacts of Changing the Nameplate Capacity Tax

Higher nameplate capacity tax

Costs to operate & build new projects in Nebraska becomes too high

Developers pursue projects in other states

Rural Nebraska loses out on future development & investments

Invenergy

NE's Nameplate Capacity Tax is Competitive with Other SPP States

Comparing different taxes is often like comparing apples to oranges, but some back of the napkin math can be performed to convert states' property taxes on renewable energy to nameplate capacity taxes on a $/MW basis

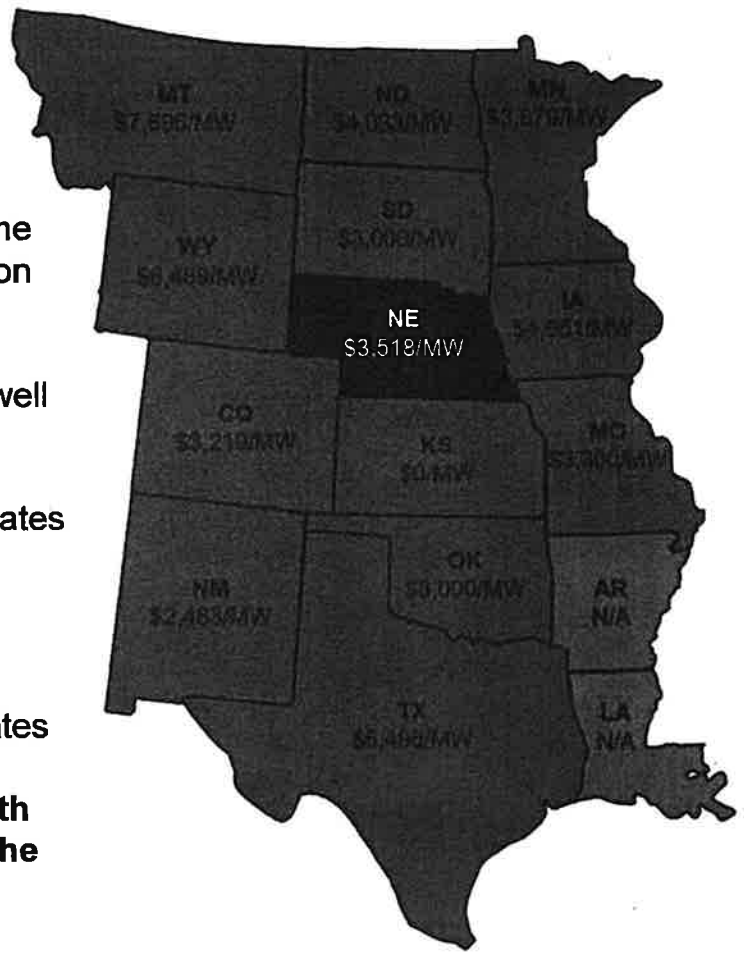
Including states that have some overlap with the Southwest Power Pool as well as neighboring Colorado (excluding AR & LA due to limited data):

- The average nameplate capacity tax in this region is $4,196/MW
- Nebraska has the 8th highest nameplate capacity tax rate out of the 12 states

Accounting only for the five states which wholly overlap with the Southwest Power Pool (NE, OK, KS, SD & ND):

- The average nameplate capacity tax in this region is $3,310/MW
- Nebraska has the 3rd highest nameplate capacity tax rate out of the 5 states

Overall, Nebraska's nameplate capacity tax is relatively competitive with other states' renewable energy taxes, particularly with other states in the Southwest Power Pool



*Note: the equivalent nameplate capacity tax rates shown above are **rough estimates** calculated with the various methods outlined on the subsequent slide*

Rough Estimations for Nameplate Capacity Tax Equivalencies

- The following information was used to calculate the equivalent nameplate capacity tax rates for states surrounding Nebraska. Given that Nebraska's nameplate capacity tax was calculated using the cost of wind energy infrastructure (excluding solar), the analysis below only looks at state's taxes on wind energy.
- There are 8,760 hours in a calendar year, and the average capacity factor of a wind facility in the United States is 35%. This is to say that the average wind facility produces energy for 3,066 hours per year. In cases where a $ per megawatt-hour was determined, this number was multiplied by 3,066 to convert to $ per megawatt on an annual basis.

State	NPCTeq	Explanation
MT	$7,696/MW	Property taxes vary widely based on county and project specifications. A 2024 study found that average wind energy property taxes are approximately $2.51/MWh. This figure, multiplied by 3,066 equals $7,696/MW.
TX	$6,495/MW	Property taxes vary widely based on county and project specifications. A recent Texas energy study cites 46,542.8MW of operational wind projects and $8,751B in lifetime property tax revenue. Using these figures and averaging over a 28.95 facility lifetime, the equivalent nameplate capacity tax would be $6,495/MW.
WY	$6,469/MW	Property taxes vary widely based on county and project specifications, and additionally there is a $1/MWh production tax. Taking both factors into consideration, a 2024 study found that average wind energy property taxes are approximately $2.11/MWh. This figure, multiplied by 3,066 equals $6,469/MW.
OK	$6,000/MW	The average local property tax is $6,000/MW-yr (derived from county data).
IA	$ 4,651/MW	Each county assesses wind projects vastly differently. Accordingly, the statewide total property taxes of wind energy, $60.5M, was divided by the total megawatts of installed wind capacity (13,007 MW) to equal $4,651/MW.
ND	$4,033/MW	In lieu of property taxes, there is a flat $2.50/kW ($2,500/MW) nameplate capacity tax and a $0.0005/kWh production tax. The production tax multiplied by 3,066 equals $1,533/MW, which was added to the nameplate capacity tax, bringing the total to $4,033/MW.
MN	$3,679/MW	In lieu of property taxes, MN levies a production tax of $1.2/MWh. This figure was multiplied by 3,066 equals $3,679/MW.
NE	$3,518/MW	In lieu of property taxes, there is a flat $3,518/MW nameplate capacity tax.
MO	$3,300/MW	M.R.S. § 137.123 sets an assessment rate of 37.5% for tangible personal property associated with a project that uses wind energy to generate electricity. The statewide average effective property tax rate is 0.88%. Taking the average $/MW cost of $1M and multiplied by the assessment rate of 37.5% and the tax rate of 0.88% is $3,300/MW.
CO	$3,219/MW	Property taxes vary widely based on county and project specifications. A 2024 study found that average wind energy property taxes are approximately $1.05/MWh. This figure, multiplied by 3,066 equals $3,219/MW.
SD	$3,000/MW	In lieu of property taxes, there is a flat $3/kW ($3,000/MW) nameplate capacity tax.
NM	$2,483/MW	Property taxes vary widely based on county and project specifications. A 2024 study found that average wind energy property taxes are approximately $0.81/MWh. This figure, multiplied by 3,066 equals $2,483/MW.
KS	$0/MW	K.S.A. § 79-201 provides that wind energy projects receive a full property tax abatement for the first 10 years of operation, after which many projects are fully depreciated. *Note: developers typically utilize Payment In Lieu Of Taxes agreements or Community Benefit Agreements with counties, so counties still receive revenue voluntarily from project owners.*
AR	N/A	There is no clear property tax regime and there are no operational wind facilities in Arkansas to extrapolate data from.
LA	N/A	There is no clear property tax regime and there are no operational wind facilities in Louisiana to extrapolate data from.

APPENDIX NO. 5

Nebraska Department of Revenue Directive 16-1
Assessment of Renewable Energy Generation Facilities.
May 25, 2016. Superseded

Nebraska Department of
REVENUE
PROPERTY ASSESSMENT

DIRECTIVE 16-1

Supersedes Directive 11-3 issued July 22, 2011

May 25, 2016

ASSESSMENT OF RENEWABLE ENERGY GENERATION FACILITIES

Purpose: This directive advises county assessors on the assessment and valuation of renewable energy generation facilities.

Statutory Authority: A nameplate capacity tax has replaced the central assessment and taxation of the tangible personal property of renewable energy generation facilities. A renewable energy generation facility includes facilities that generate electricity using wind, solar, biomass, and landfill gas as the fuel source. The tangible personal property used directly in the generation of electricity using wind as the fuel source is exempt from property tax and subject to the nameplate capacity tax. The tangible personal property used directly in the generation of electricity using solar, biomass, or landfill gas is exempt from property tax if the depreciable tangible personal property was installed on or after January 1, 2016, and has a nameplate capacity of 100 kilowatts or more.

Neb. Rev. Stat. § 77-202(9) defines the depreciable tangible personal property that is exempt from property taxation as follows:

> Any depreciable tangible personal property used directly in the generation of electricity using wind as the fuel source shall be exempt from the property tax levied on depreciable tangible personal property. Any depreciable tangible personal property used directly in the generation of electricity using solar, biomass, or landfill gas as the fuel source shall be exempt from the property tax levied on depreciable tangible personal property if such depreciable tangible personal property was installed on or after January 1, 2016, and has a nameplate capacity of one hundred kilowatts or more. Depreciable tangible personal property used directly in the generation of electricity using wind, solar, biomass, or landfill gas as the fuel source includes, but is not limited to, wind turbines, rotors and blades, towers, solar panels, trackers, generating equipment, transmission components, substations, supporting structures or racks, inverters, and other system components such as wiring, control systems, switchgears, and generator step-up transformers.

Procedure and Implementation: The nameplate capacity tax replaces the assessment of depreciable tangible personal property used directly in the generation of electricity using wind as a fuel source, and the depreciable tangible personal property used in the generation of electricity using solar, biomass, and landfill gas as a fuel source if the depreciable tangible personal property was installed on or after January 1, 2016. A renewable energy generation facility (facility) is a facility that

generates electricity using wind, solar, biomass, or landfill gas as the fuel source. More information regarding the administration of the nameplate capacity tax can be found in Title 316, Chapter 13.

Real Property: The real property of the facility is subject to local assessment. The land associated with the facility will continue to be assessed as it was prior to the existence of the facility. If the land was classified and assessed as agricultural land prior to the facility being built, the land will continue to be classified and assessed as agricultural land. The presence of one or more renewable energy generation facilities or supporting infrastructure is not a factor in the assessment, valuation, or taxation of the real property on which the facility is located.

Real property also includes, but is not limited to: concrete pads; foundations; operations and maintenance buildings; road construction; leasehold value; and lease payments. This real property will be assessed at 100% of actual value. See, Neb. Rev. Stat. § 77-103.

If the facility is owned or operated by the federal government, the State of Nebraska, a public power district, a public power and irrigation district, a municipality, a registered group of municipalities, an electric membership association, or a cooperative; or by a customer-generator, then it is exempt from the nameplate capacity tax and real property tax assessment. See, Neb. Rev. Stat. § 77-6203(2)(a).

Personal Property: "Supporting structures" are included in the definition of the depreciable tangible personal property that is exempt from taxation when used directly in the generation of electricity using wind, solar, biomass, or landfill gas as the fuel source. These "supporting structures" are the portion of the tower that holds the generator and the propellers, including any load-bearing beams or girders. This does not include any of the real property upon which the tower is placed.

For the Tax Commissioner

APPROVED:

/s

Ruth A. Sorensen
Property Tax Administrator
May 25, 2016

APPENDIX NO. 6

Nebraska Department of Revenue Directive 23-3
Assessment of Renewable Energy Generation Facilities.
January 9, 2023. Superseded by Directive 24-3

ASSESSMENT OF RENEWABLE ENERGY GENERATION FACILITIES

Purpose

This directive advises county assessors on the assessment and valuation of renewable energy generation facilities.

Statutory Authority

A nameplate capacity tax has replaced the central assessment and taxation of the tangible personal property of renewable energy generation facilities. A renewable energy generation facility includes facilities that generate electricity using wind, solar, biomass, and landfill gas as the fuel source. The tangible personal property used directly in the generation of electricity using wind as the fuel source is exempt from property tax and subject to the nameplate capacity tax. The tangible personal property used directly in the generation of electricity using solar, biomass, or landfill gas is exempt from property tax if the depreciable tangible personal property was installed on or after January 1, 2016, and has a nameplate capacity of 100 kilowatts or more.

Neb. Rev. Stat. § 77-202(9) defines the depreciable tangible personal property that is exempt from property taxation as follows:

Any depreciable tangible personal property used directly in the generation of electricity using wind as the fuel source shall be exempt from the property tax levied on depreciable tangible personal property. Any depreciable tangible personal property used directly in the generation of electricity using solar, biomass, or landfill gas as the fuel source shall be exempt from the property tax levied on depreciable tangible personal property if such depreciable tangible personal property was installed on or after January 1, 2016, and has a nameplate capacity of one hundred kilowatts or more. Depreciable tangible personal property used directly in the generation of electricity using wind, solar, biomass, or landfill gas as the fuel source includes, but is not limited to, wind turbines, rotors and blades, towers, solar panels, trackers, generating equipment, transmission components, substations, supporting structures or racks, inverters, and other system components such as wiring, control systems, switchgears, and generator step-up transformers.

Procedure and Implementation

The nameplate capacity tax replaces the assessment of depreciable tangible personal property used directly in the generation of electricity using wind as a fuel source, and the depreciable tangible personal property used in the generation of electricity using solar, biomass, and landfill gas as a fuel source if the depreciable tangible personal property was installed on or after January 1, 2016. A renewable energy generation facility (facility) is a facility that generates electricity using wind, solar, biomass, or landfill gas as the fuel source. This regulation was repealed.

Real Property: The real property of the facility is subject to local assessment. The land associated with the facility will continue to be assessed as it was prior to the existence of the facility. If the land was classified and assessed as agricultural land prior to the facility being built, the land will continue to be classified and assessed as agricultural land. The presence of one or more renewable energy generation facilities or supporting infrastructure is not a factor in the assessment, valuation, or taxation of the real property on which the facility is located.

Real property also includes, but is not limited to: concrete pads; foundations; operations and maintenance buildings; road construction; leasehold value; and lease payments. This real property will be assessed at 100% of actual value. See, Neb. Rev. Stat. § 77-103.

If the facility is owned or operated by the federal government, the State of Nebraska, a public power district, a public power and irrigation district, a municipality, a registered group of municipalities, an electric membership association, or a cooperative; or by a customer-generator, then it is exempt from the nameplate capacity tax and real property tax assessment. See, Neb. Rev. Stat. § 77-6203(2)(a).

Personal Property: "Supporting structures" are included in the definition of the depreciable tangible personal property that is exempt from taxation when used directly in the generation of electricity using wind, solar, biomass, or landfill gas as the fuel source. These "supporting structures" are the portion of the tower that holds the generator and the propellers, including any load-bearing beams or girders. This does not include any of the real property upon which the tower is placed.

For the Tax Commissioner

APPROVED:

/s

Ruth A. Sorensen
Property Tax Administrator
January 9, 2023

APPENDIX NO. 7

2024 Nameplate Capacity Tax Received Across Top 10 Revenue Receiving Counties, Catalyst Public Affair

catalyst PUBLIC AFFAIRS

Structure of the Nameplate Capacity Tax

The nameplate capacity tax was established in 2010 through LB1048 as an alternative to traditional property taxes for utility-scale renewable energy generation facilities. Instead of paying property taxes on depreciable personal property like wind turbines and solar panels, these facilities pay an annual tax based on their total generation capacity. The tax was designed to provide stable, predictable revenue to local governments while simplifying administration of taxes on renewable energy generation. The $3,518 rate was calculated based on three major factors: (1) the average capital costs of renewable energy at the time; (2) the statutory net book depreciation schedule for the facilities over their lifetimes; and (3) property tax rates.[1] [2] The tax revenue is distributed to political subdivisions in the county the facility assets are in, and the distribution is based on the proportion of political subdivision property taxes in the county.

Arbitrary Increases Versus the Market

Since 2010, renewable energy facility capital costs have decreased. **From 2010 to 2024, utility-scale wind energy capital costs have declined from $1.5M/MW to $1M/MW while solar prices have declined to $1.43M/MW.**[3] [4] [5] Net book value has remained the same,[6] while the average property tax rate has decreased from 1.7424% in 2010 to 1.5326% in 2024.[7] [8] The other calculation factors, discount rates calculated from corporate bonds rates to account for inflation (5.31% vs. 5.49%)[9] and turbine useful life[10] are similar to 2010. Overall, these cost reductions strongly suggest that a recalculation using the existing nameplate capacity tax would lower the nameplate capacity tax rather than raising it. An increase in the nameplate capacity tax

---

[1] Nebraska Legislature LB1048 (2010) Natural Resources Hearing, February 24, 2010 https://www.nebraskalegislature.gov/FloorDocs/101/PDF/Transcripts/Natural/2010-02-24.pdf

[2] Nebraska Legislature LB1048 (2010) Floor Debate, March 17, 2010 https://www.nebraskalegislature.gov/FloorDocs/101/PDF/Transcripts/FloorDebate/r2day44.pdf

[3] Nebraska Legislature LB1048 (2010) Natural Resources Hearing https://www.nebraskalegislature.gov/FloorDocs/101/PDF/Transcripts/Natural/2010-02-24.pdf

[4] Lawerence Berkley National Lab's Land-Based Wind Market Report, 2024 https://emp.lbl.gov/publications/land-based-wind-market-report-2024

[5] Lawrence Berkley National Lab Utility-Scale Solar Report, 2024 https://emp.lbl.gov/publications/utility-scale-solar-2024-edition

[6] Net book value Nebraska Revised Statute 77-120 https://nebraskalegislature.gov/laws/statutes.php?statute=77-120

[7] Nebraska Legislature LB1048 (2010) Floor Debate, March 17, 2010 https://www.nebraskalegislature.gov/FloorDocs/101/PDF/Transcripts/FloorDebate/r2day44.pdf

[8] Nebraska Department of Revenue 2023 vs. 2024 Property Tax Comparison https://revenue.nebraska.gov/sites/default/files/doc/pad/research/valuation/2025/Property_VTR_Change_2023-2024.pdf

[9] Federal Reserve Bank of St. Louis Moody's AAA Corporate Bond Rate https://fred.stlouisfed.org/series/AAA

[10] Department of Energy Wind Energy End-of-Service Guide https://windexchange.energy.gov/end-of-service-guide?utm_source=chatgpt.com

would be based on arbitrary factors. During a time of greater need for energy capacity in Nebraska, increasing the nameplate capacity tax would create uncertainty for renewable energy development, escalating costs for businesses and residential ratepayers.[11]

Uneven Revenue Distribution Across Counties

Nameplate capacity tax revenue is concentrated in a handful of counties that have promoted renewable energy development, making it an inappropriate replacement revenue for statewide tax issues.[12] **The top 10 counties for nameplate capacity tax revenues in 2024 received 91.82% of all nameplate capacity tax revenue in Nebraska, with the remaining 32 counties receiving 8.18%.** On average, in 2024, the top 10 nameplate capacity tax counties received $1,128,546 (shown in **Table 1**). While the remaining 32 counties received an average of $31,439. Using nameplate capacity tax as a revenue source for statewide tax replacement would create significant funding imbalances across Nebraska's 93 counties.

[11] Nebraska Chamber of Commerce & Industry Nebraska's Energy Future 2024 Report. https://www.nechamber.com/uploads/1/3/1/6/131641147/full_energy_report_2024_b.pdf

[12] Nebraska Department of Revenue Nameplate Capacity Tax Summary 2011-2024 https://revenue.nebraska.gov/sites/default/files/doc/research/misc_taxes/MSC_8_Nameplate_Capacity_Tax_2024.xlsx

Table 1: 2024 Nameplate Capacity Tax Received Across Top 10 Revenue Receiving Counties [13] [14]

County	NPCT received	Percentage of total NPCT assessed statewide	Percentage of local NPCT received by the County	NPCT received by the County	Percentage of local NPCT received by Schools	NPCT received by Schools	Percentage of local NPCT received by other subdivisions (combined)	NPCT received by other subdivisions (combined)
Wayne	$ 2,631,212	21.41%	18.69%	$491,773.57	69.25%	$1,822,114.48	12.06%	$317,324.20
Antelope	$ 2,249,561	18.30%	27.53%	$619,304.03	59.58%	$1,340,288.19	12.89%	$289,968.36
Holt	$ 1,407,200	11.45%	25.73%	$362,072.56	60.47%	$850,933.84	13.80%	$194,193.60
Saline	$ 1,210,698	9.85%	21.69%	$262,600.36	62.55%	$757,291.49	15.76%	$190,805.98
Dixon	$ 1,130,709	9.20%	22.75%	$257,236.20	60.12%	$679,781.99	17.13%	$193,690.38
Webster	$ 1,079,815	8.79%	24.96%	$269,521.82	63.24%	$682,875.01	11.80%	$127,418.17
Boone	$ 533,791	4.34%	20.29%	$108,306.23	61.70%	$329,349.16	18.01%	$96,135.79
Custer	$ 490,289	3.99%	17.68%	$86,683.15	64.19%	$314,716.71	18.13%	$88,889.45
Knox	$ 327,353	2.66%	13.47%	$44,094.38	65.67%	$214,972.39	20.86%	$68,285.73
Wheeler	$ 224,835	1.83%	29.09%	$65,404.57	59.37%	$133,484.69	11.54%	$25,945.99
Top 10 Average (mean) NPCT 2024 Revenues	$ 1,128,546			$ 256,700		$ 7,125,808		$ 1,592,658
Top 10 Percentage Average (mean)		9.18%	22.19%		62.61%		15.20%	

County Governments Receive Limited Benefits

County governments bear the political and administrative responsibilities of siting renewable energy projects, yet Department of Revenue data shows they receive only a small share of the revenue generated.[15] County governments take on all potential political risk by approving any utility-scale energy project, yet receive less than a quarter of the nameplate capacity tax. **In the top 10 nameplate capacity tax receiving counties, on average county governments receive only 22.19% of the tax revenue collected, while schools receive 62.61%** (shown in

[13] Nebraska Department of Revenue Nameplate Capacity Tax Summary 2011-2024 https://revenue.nebraska.gov/sites/default/files/doc/research/misc_taxes/MSC_8_Nameplate_Capacity_Tax_2024.xlsx

[14] Nebraska Department of Revenue 2024 Value & Taxes Levied by Taxing Subdivision & by Property Type https://revenue.nebraska.gov/sites/default/files/doc/pad/research/valuation/2025/CurrentYr_VT_PieCharts_State%20%26%2093%20counties%202024.pdf

[15] Nebraska Department of Revenue 2024 Value & Taxes Levied by Taxing Subdivision & by Property Type https://revenue.nebraska.gov/sites/default/files/doc/pad/research/valuation/2025/CurrentYr_VT_PieCharts_State%20%26%2093%20counties%202024.pdf

Table 1) and other political subdivisions receive the remaining 15.60%, limiting its suitability as a replacement revenue for counties.

Economic Impact on Existing Projects

Existing utility-scale energy projects were developed with financial models incorporating the current $3,518 tax level. Many of these projects operate under 20-30 year fixed price contracts with no mechanism to pass on new costs.[16] **A bill from last year proposed an arbitrary 86.5% increase would substantially undermine the economic viability of these projects.** Any proposed annual adjustment to the nameplate capacity tax rate for existing projects would create escalating costs and significant uncertainty for continued energy development.

Negative Impacts on Nebraska's Economic Competitiveness

Last year's proposed 86.5% increase to $6,560 per megawatt would make the state much more expensive to develop in than Kansas, which has an effective complete property tax abatement on wind energy projects and South Dakota, which charges $3,000 per megawatt on wind and solar projects.[17] Beyond lower tax cost, South Dakota also offers property tax exemptions, providing continuous exemptions that apply to 70% assessed value of property where renewable energy facilities are sited. Nebraska utility providers have already gone outside of the state to source renewable energy, in part due to more favorable taxation, decreasing potential tax, power generation, and local secondary economic benefits from developing renewable energy in Nebraska.

A significant cost increase to site a utility-scale renewable energy generation facility in Nebraska would make surrounding states significantly more attractive for renewable energy development at a time where the state requires more power generation. In 2024, the Nebraska State Chamber identified energy development as the state's second most important economic issue, behind only workforce development.[18] Beyond immediate tax and power generation benefits, renewable energy facilities enable significant job creation utilizing Nebraska's core agricultural industry.[19] Sustainable bio-manufacturing, including the DGFuels Sustainable Aviation

---

[16] Types of Power Purchase Agreements (PPAs) for Renewable Energy https://www.landgate.com/news/types-of-power-purchase-agreements-ppas-for-renewable-energy

[17] Kansas: K.S.A. § 79-201 provides that wind energy projects receive a full property tax abatement for the first 10 years of operation, after which many projects are fully depreciated.
South Dakota: §10-35-18 provides that in lieu of property taxes, there is a flat $3/kW ($3,000/MW) nameplate capacity tax with property tax exemptions.

[18] Nebraska Chamber of Commerce & Industry Nebraska's Energy Future 2024 Report. https://www.nechamber.com/uploads/1/3/1/6/131641147/full_energy_report_2024_b.pdf

[19] Nebraska Chamber of Commerce & Industry Nebraska's Energy Future 2024 Report. https://www.nechamber.com/uploads/1/3/1/6/131641147/full_energy_report_2024_b.pdf

Fuel manufacturing plant in Phelps County and the Citroniq Chemicals bioplastics plant in Richardson County, will each create hundreds of jobs in greater Nebraska.[20] [21]

[20] DGFuels Selects Nebraska for its First Midwest Sustainable Aviation Fuel Plant https://www.phelpscountyne.com/in-the-news/p/item/58769/dg-fuels-selects-nebraska-for-its-first-midwest-sustainable-aviation-fuel-plant

[21] Citroniq Nebraska https://citroniq.com/projects/nebraska/

APPENDIX NO. 8

The Nameplate Capacity Excise Tax Supports Community Colleges, NCAA, 2025

Courtney Wittstruck, Executive Director
Nebraska Community College Association
Office: 402.471.4685 | Mobile: 402.381.2084
cwittstruck@nccaneb.org

The Nameplate Capacity Excise Tax Supports Community Colleges

Why do community colleges receive a portion of the Nameplate Capacity excise tax?

- The Nameplate Capacity Tax revenue remains in the areas most directly impacted by renewable energy – where the renewable energy infrastructure is physically located.
- Community colleges are expected to provide the skilled workers necessary to install, operate, and maintain these renewable energy facilities, and, as such, rely on these funds to continue to supply this workforce in the communities where the infrastructure is located.
    - Community colleges use these funds to support the much-needed workforce in our state.
    - The Community Colleges' allocation of Nameplate Capacity excise taxes supports Nebraska's rural workforce needs today and in the future.

How much Nameplate Capacity tax revenue do the community colleges receive?

- The community colleges receive about $500,000 in Nameplate Capacity tax revenue annually.

When did LB50 pass?

- LB50 passed and was signed into law during the 2025 legislative session.

What does LB50 do and why was it needed?

- In short, LB50 simply reinstated the community colleges' Nameplate Capacity Tax revenue that was unintentionally lost as a result of the 2023 funding model change.

How / Why did the Community Colleges lose their Nameplate Capacity excise tax revenue?

- Though NOT a property tax, each property-taxing entity receives a proportional share of the total Nameplate excise tax revenue based on the amount of property taxes it levied compared to the total amount of property taxes levied by all eligible taxing entities.
- When the community colleges' funding model was changed in 2023, the majority of their property levy authority was removed.
- Because the majority of their property tax levy authority was removed, the colleges lost the majority of the Nameplate Capacity excise tax revenue they had been receiving prior to the funding model change.

Was the community colleges' Nameplate Capacity excise tax revenue included in the Community College Future Fund ("CCFF")?

- No.

- The Nameplate Capacity Tax is an excise tax, not a property tax, and, therefore, has never been included in the community colleges' property tax ask.
- The CCFF was created to replace the Community Colleges' general property tax levy authority.
- The CCFF was calculated based on community colleges' actual property tax receipts, which never included Nameplate Capacity excise tax dollars.

Once the Community Colleges' new funding model took effect, what happened to their Nameplate Capacity tax revenue?

- The community colleges lost the majority of the Nameplate excise tax revenue they had been receiving prior to the funding model change.
- The community colleges' normal share of the Nameplate Capacity excise tax was, instead, distributed among the other political subdivisions
  - In 2024, due to the community colleges' funding model change, most of the community colleges' Nameplate Tax funds were proportionally distributed to the other political subdivisions – giving them a higher proportion than ever before.
  - The other political subdivisions, therefore, received a one-year bump in Nameplate Capacity excise tax revenue – more than they ever had received in the past.

What did LB50 cost the State / taxpayers (what was the fiscal note)?

- LB50 cost the State / taxpayers **NOTHING**. **The fiscal note is $0** for the state.
  - It simply shifts Nameplate Capacity Tax revenue paid by private renewable energy companies between political subdivisions.
  - LB50 shifts the portion of Nameplate Tax revenue that had unintentionally been taken away from community colleges, back to them.

How does the formula in LB50 work?

- Counties continue to collect 1% of the total Nameplate excise tax revenue as commission (as they do now).
- Of the remaining 99% of Nameplate excise tax revenue, community colleges receive 5% of the "off the top".
- The remaining amount is distributed as it is now – in proportion to the percentage of property taxes received by each political subdivision
- Note:
  - The community colleges' 5% replaces the Nameplate excise tax receipts proportionate to colleges' former general levy authority that was removed.
  - Plus, CCs receive a proportional share of the remaining funds in the nameplate tax "bucket" based on whatever they levy for capital (capped at no more than 2¢)
    - (CCs retained capital levy authority of up to 2¢ for bond service)
  - The total of the initial 5% plus the proportion represented by the 2¢, roughly equals what the community colleges had been receiving under the old formula.
  - If LB50 had not passed, the other political subdivisions would have received more than their share of Nameplate Capacity tax revenue, and community colleges would have received significantly less.

APPENDIX NO. 9

LR 496 Interim Study: Nebraska's Taxation of the Wind Energy Industry, Moore, S. and Lock, B., Revenue Committee, Nebraska Legislature, pg. 2, January 10, 2011

in previously published guidelines for assessment of such facilities. A portion of the unit value of the Knox County wind farm was classified as real property in the 2009 tax year.

Guidance on enforcement of the new law received by local officials was that the sites of the towers were part of the state centrally assessed property, and were made exempt under LB 1048 based on the Department's interpretation. The effective date of the act occurred prior to the department's required report of centrally assessed value to the local officials. Significantly, Nebraska statute section 77-1201 provides that "All tangible personal property in this state subject to taxation shall be assessed as of January 1 at 12:01 a.m., which assessment shall be used as a basis of taxation until the next assessment" and also requires taxpayers to make "[a] complete list of all taxable tangible personal property held or owned on the assessment date. . . ."

Local officials testified that they were advised to value the land on which the towers stood as though no tower or wind farm use was present. The result is an assessment of these physical sites at agricultural use value, as that is the use of the adjoining land. This will be the result in all other site value determinations occurring in Nebraska for wind farms under the total property value exemption language adopted by the Legislature.

Nebraska's state constitution allows the Legislature to grant exemptions for personal property value, including defined classes of personal property. [Article VIII, section 2(9), of the Nebraska Constitution.] That article provides that:

> "the Legislature may define and classify personal property in such manner as it sees fit, whether by type, use, user, or owner, and may exempt any such class or classes of property from taxation if such exemption is reasonable or may exempt all personal property from taxation. . . ." (Emphasis added.)

Lease payments for commercial site use are made to landowners in Knox County, and appear to be made in most situations. Local assessing officials testifying believed it was appropriate to determine real property value for the sites under site assessment practices used for other commercial sites. However, LB 1048 exempts all property value, real and personal, associated with the wind farms. The wind farms are centrally assessed by the state under the law, and they have been determined to be nontaxable sites. All real and personal property value has been viewed as exempt under LB 1048.

The instructions given the local officials were to assess the land value as though the entire development site and improvements were in use as agricultural land, and no wind farm tower site existed, due to the all-encompassing real and personal property tax exemption granted by LB 1048. Local assessing officials questioned whether this policy was the correct result, given real property value treatment of the centrally assessed wind farm, and current policy on other assessed property.

Under law prior to LB 1048, wind farms which had been subject to taxation under property tax law were required to report the taxable property value to state assessing officials, as wind farms are businesses subject to centralized assessment as public utilities. This policy is implemented by the Division of Property Assessment of the Nebraska Revenue Department. A similar policy applies to other utility and public service properties including telephone utilities, railroads and pipelines.

Personal and real property value was added to the tax base of each government imposing a tax on the site of the wind farm in Knox County. This had occurred in 2009 when the Elkhorn Ridge wind farm was built. Under Nebraska law, the taxable personal property value of the wind farm is determined using the "net book value" concept. Under this concept Nebraska uses federal law on depreciation of assets as a basis for property value and taxation. In the case of the wind turbines installed in 2009, the net book value calculation used a five year depreciation provision found in federal law. These facilities are commonly estimated to have a useful life which is longer than five years, extending to 20 years in some cases. The use of five year depreciated value gave a fixed and limited term impact to the broadening of the local tax base from construction of this approximately 140 million dollar investment. The total taxable value was determined by state officials using methods used for all other "centrally assessed" property. Most of the wind farm value was determined to be personal property (approximately 97 million dollars of value in the first year), while some value (approximately 24 million) was determined to be real property value.

The portion of value that is personal property value decreases rapidly due to the five year period of net book value depreciation. However, under personal property tax law, if new turbines were installed to replace the originally installed turbines, the net book value method would begin anew on that equipment. This would create an increase in the taxable value at the site. In addition, if the used turbines were to be sold to another owner, the net book value method would begin again for that new owner. This would produce another increase in taxable value at a different site, payable by the new owners.

LB 1048 repealed this set of property tax laws, and established a nameplate capacity tax. Under this new tax structure, the tax liability will be determined using a statutorily fixed rate of tax multiplied times the nameplate rated capacity of each turbine. Changes in ownership of the wind farm, or replacement of existing turbines with a new and as yet undepreciated turbines of the same capacity will not change the tax liability of the wind farm site under this new tax structure. Its impact on the local tax base is now fixed by law at 3,518 dollars per megawatt of capacity. In the case of a 81 megawatt facility, this annual tax yield is $284,958 dollars. By way of contrast, the first year impact the turbine project in Knox County was approximately 2 million dollars, with 121 million dollars of total value taxed at a rate of 1.65 dollars per one hundred dollars of taxable value. This combined tax rate ($1.65 per $100 of taxable value) is typical in Nebraska in the rural areas where these wind farms are likely to be located. Notably, in the year prior to the construction of the wind farm the combined tax rate at this Knox county site was approximately 1.9773 dollars per one hundred dollars of taxable value. Addition of this large increment of new taxable value resulted in a 33-cent reduction in tax rate. This yield

and applied rates from the original local property value would have changed over time. We assume the total combined rate would have increased over time as the original taxable value is rapidly depreciated.

Under the new tax structure created by LB 1048, local budget and tax rate decisions will have no impact on the tax liability of wind farms. The total taxes paid will remain the same as long as the installed capacity remains the same.

No higher taxable value or tax liability will emerge when ownership changes, or when failed turbines are replaced with new machines of the same capacity. Replacement of original turbines with more costly and/or efficient turbines of the same capacity will not increase or change in any fashion the tax liability of the wind farm. This gives investors and owners of wind farms and wind farm sites a stable and predictable tax liability into the future. It leaves local government a steady and secure source of local funding, although it will have a much smaller impact on local rates and finances than adding large amounts of value at initial construction.

This policy also removes any significant tax burden shifting the impact on the tax liability borne by other local property taxpayers. Communities will be less likely to benefit from a lower rate from a broader tax base due to economic growth. Nor will there be a significant impact of increased revenue for public services.

Communities would, we assume, base their judgement of the merits of wind farm and transmission line development on the other impacts in their community. These include the impacts from new jobs in the community. There are direct economic impacts for the original land owners of each wind farm site who benefit directly from the additional lease or rental income paid by the wind farm project. Under Nebraska's tax policy there will be no large impact on local tax rates or public services. Discussion by community members will instead focus on economic factors, such as impact on rates, economic externalities (including noise, visual impacts, potential harm to other natural resources, or interference with other economic uses of the land). Tax shifting effects, tax exporting effects, and opportunity for increased public services probably will have minimal effect.

County board testifiers at the Revenue Committee hearing in Bloomfield expressed some concern that road maintenance costs were increased by the projects. They asserted that without an ongoing stream of tax revenues from the project this may shift the service burdens on to other taxpayers. This scenario will only be relevant for the Knox County local governments, as none of them will receive any nameplate capacity revenue for approximately seven years. The credit for prior property taxes paid operates only in that county and only for the Elkhorn Ridge Project, as no other projects existed when LB 1048 was enacted, approved, and became law.

All other qualified wind farms developed after LB 1048 became law will pay the new nameplate capacity tax from the first year of their connection to the electric grid,. This will give a *county* government an annual payment of approximately 55,000 dollars for a 80 megawatt wind farm given the *typical* Nebraska county property tax share of the yield

from the nameplate capacity tax. This amount will be available to fund public service provided by counties governments. The impact on schools—the largest major public service provider and property tax funded local government—will be larger in terms of revenue. The amount typically received by a school district with an 80 megawatt wind farm will be approximately 180,000 dollars of revenue. This would be equivalent to 6.5 percent of the annual 2009 funding needs of the Bloomfield school system.

Under the new nameplate capacity tax the impact on state tax resources will be minimal. The amount added to school resources from this tax will reduce the need for state aid resources. Nebraska's state aid formula will treat the nameplate capacity tax as a new resource, which could reduce the state aid provided to the school district where a wind farm is sited, provided the school is receiving state equalization aid. This will not have a major tax shifting impact on the other property taxpayers or the schools resources for education of children. 800 megawatts of statewide installed capacity may reduce the amount of statewide school aid budgeted by 2,700,000 dollars annually. The actual amount of state aid offset is likely to be much smaller than this, because it appears that most facilities will be built in districts with high taxable value relative to school needs.

Certain wind producing equipment receives a sales tax exemption under Section 77-2704.57, shown here:

(1) Sales and use tax shall not be imposed on the gross receipts from the sale, lease, or rental of personal property for use in a C-BED project or community-based energy development project.

The impact on state finances of this exemption is not well known, as few wind farms have been placed in service. An estimate assumes that taxable sales of 1 million dollars per megawatt would be possible, yielding 55,000 dollars of state sales tax per megawatt constructed. If all such sales are subject to sales tax, the development of 800 megawatts statewide would generate 44 million dollars of sales tax revenue over the period it took to build that much capacity.

We assume most, if not all, wind farm machinery and equipment will be sales tax-exempt under state law.

If wind farms become a successful export industry, taxes paid by the owners and investors could become a source of tax-exporting for Nebraska, much like coal, oil and natural gas industries are for energy rich states including Wyoming, North Dakota, and Montana. Policymakers in Nebraska clearly intend for an export industry to emerge.

State and local taxation has, in some instances, been viewed by courts as a barrier to interstate commerce. Nebraska legislators are cautioned against creating a tax which discriminates against interstate commerce by giving favorable tax treatment to in-state taxpayers at the expense of out-of-state taxpayers. In that regard, we note that under LB 1048, "customer-generators" are exempt from both property tax and nameplate capacity

tax. Commissioned wind generation facilities selling to out-of-state customers are subject to the name plate capacity tax.

If wind turbines and ancillary equipment are eventually manufactured and made in Nebraska, which is a generally accepted goal of the legislation, this will also benefit the Nebraska economy. Nebraska is well prepared to incentivize this goal. Nebraska Advantage Act tax incentives are available to manufacturing industries.

It seems likely that these manufacturing jobs will be created in cities where a large enough workforce with sufficient skills can be assembled to manufacture a complex piece of equipment. If this is the case, tax increment financing by cities may also be available for new manufacturing facilities infrastructure. Ethanol plants provide a recent example of use of this Nebraska economic development tool.

These tax policies, if firmly and clearly established, will provide the public policy environment for this industry to eventually mature and prosper into an important contributor to Nebraska's economy. Nebraskans may expect a result like that obtained from the ethanol industry. We note, however, that production credits and mandated purchases have done much to cause the ethanol industry to grow over the course of its 50-year history. No equivalent policies exist in Nebraska for wind farms.

The short-term prospects for this growth scenario are good, given the existence of federal financing and favorable federal tax treatment for the wind industry. Mandated purchases and rates for wind capacity are in use as policy tools in many other states. Mandated purchases and production credits may be the policy tool used in order to incentivize investment in this emerging industry, much as it did for the ethanol industry.

Federal transfers, favorable federal and state tax treatment, and mandated purchasing of clean energy in other states may cause the emergence of the wind industry in Nebraska as they did for the ethanol industry. Nebraskans may be able to make a contribution to a national energy production goal with a minimal impact on other taxpayers' tax burdens, no increased impact on ratepayers, and a minimal sacrifice of Nebraska's natural resources and environment. This development will have the long term effect of providing good jobs producing energy with known environmental impacts.

Its important to maintain a stable and predictable policy environment, including a tax policy environment which is on firm legal ground, in order for this industry growth scenario to emerge.

In that regard, the nameplate capacity tax will provide stable and predictable tax treatment for investors. It creates a tax liability which will remain known and certain regardless of changes of ownership, purchase of new equipment, and improved technologies. However, reasonable doubts about the legal soundness of this tax policy should be resolved.

Some aspects of this new tax policy may need legislative clarification in order for this stable tax policy environment stability to exist.

In the opinion of Revenue Committee staff, the credit for past property taxes paid against the new nameplate capacity may constitute a commutation of taxes, a policy deemed unconstitutional under Article VIII, section 4, of the Nebraska Constitution, which provides:

> "Except as to tax and assessment charges against real property remaining delinquent and unpaid for a period of fifteen years or longer, the Legislature shall have no power to release or discharge any county, city, township, town, or district whatever, or the inhabitants thereof, or any corporation, or the property therein, from their or its proportionate share of taxes to be levied for state purposes, or due any municipal corporation, nor shall commutation for such taxes be authorized in any form whatever; Provided, that the Legislature may provide by law for the payment or cancellation of taxes or assessments against real estate remaining unpaid against real estate owned or acquired by the state or its governmental subdivisions."

In addition, the total exemption of all wind farm property from property taxation may constitute an overly broad and unconstitutional grant of exemption of a property value under Article VIII, sections 1 and 2, of the Nebraska Constitution. The Legislature's power to exempt real property value from taxation is limited in scope. Exempting personal property must be for a reasonably defined class of personal property.

Resolution of the site value issue raised in Revenue Committee hearings should follow from a clarification of the extent of real or personal property definitions. Determination of that value remains the task of state government officials, as the real property value is part of the determination made through the centrally-assessed valuation process.

Finally, language guiding distribution of the nameplate capacity tax to Nebraska local governments may need revision. This is needed in order to practically divide the yield from the new tax among each relevant local government imposing a separate tax rate on the wind farm site. The procedure that should be used must determine how many turbines of what capacity are sited in which combination of local taxing units. If a wind farm of 80 megawatts is located in two counties, each county should get a share based on the county location of the site of each turbine. If 30 turbines are located in one county, and 50 turbines in an adjoining county, the distribution of the nameplate capacity should be done first by county turbine location. Then each taxing unit in the county must be given its share based on the tax rate applied at the site of each turbine in the prior tax year. If the 30 turbines in one county are located in different school districts, fire districts, and townships, the distribution of those turbines' capacity tax should be a taxing subdivision's percentage share of the total rate applicable to each turbine site. The current language may not provide sufficient guidance for this process, since it makes reference to taxes collected. Given that the wind farms are now exempt from property taxes, this instruction may not provide completely logical enforcement language.

Revenue Committee staff suggest that legislation be introduced to clarify portions of the legislation passed in 2010. As to the nameplate capacity tax credit mechanism for property taxes previously paid, it is arguably a commutation of taxes in violation of Article VIII, section 4, of the Nebraska Constitution. A 2011 legislative hearing on a bill to remove the tax credit provision should give wind-energy representatives an opportunity to represent their legal opinion with respect to this tax policy issue in the Legislature's public hearing environment.

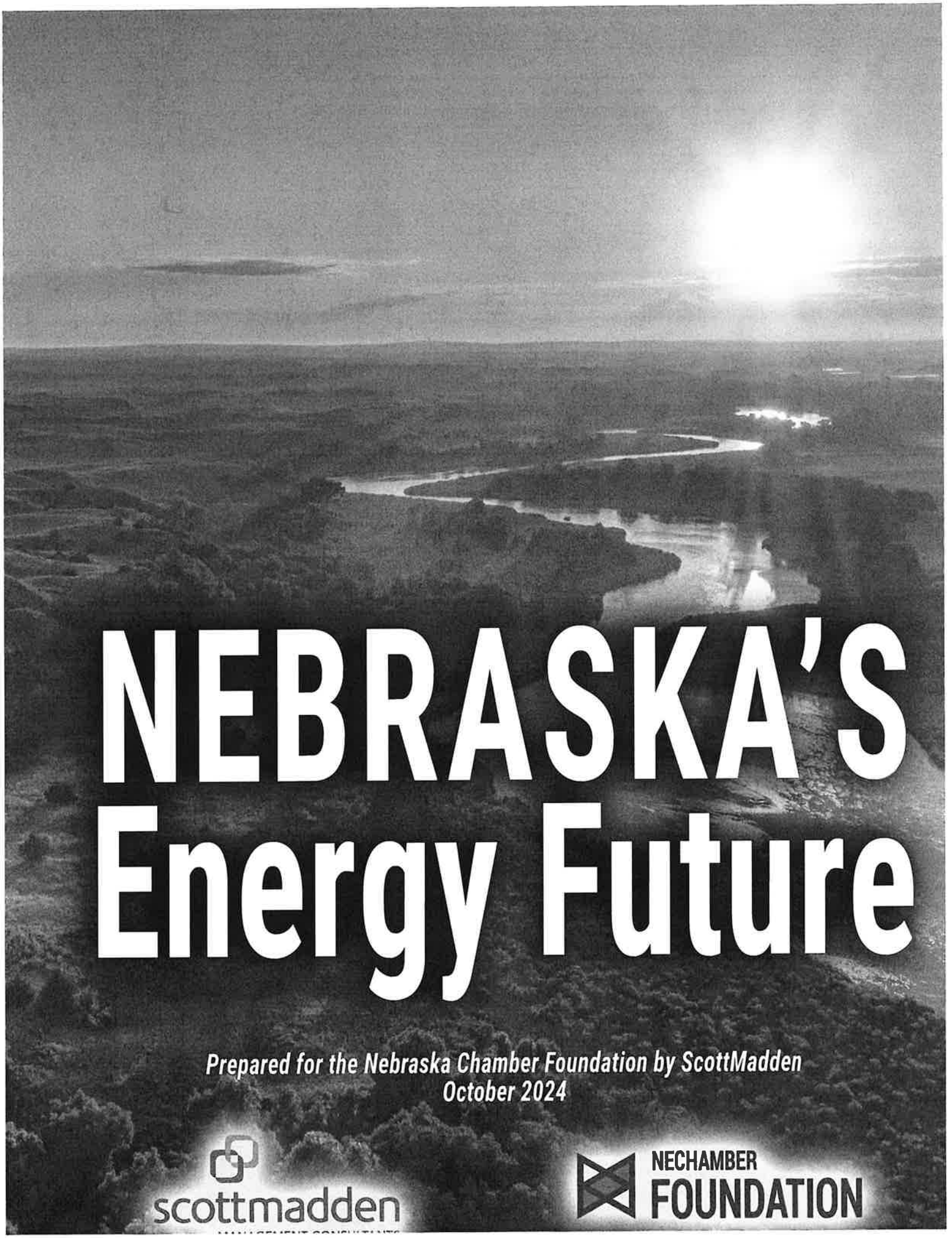
We also recommend changes in the language defining the personal property tax exemption. This exemption should be limited to those items which can clearly be agreed to be depreciable tangible personal property. This language should not include items previously determined to be real property. Legislation to change this provision should be introduced and the issue examined during hearings.

We recommend that both of these issues be the subject of a request for a Nebraska Attorney General's opinion. Such an opinion can only be sought on pending legislation. Therefore, we are recommending the introduction of a bill that raises these issues. If such an Attorney Generals' opinion and the public hearing testimony resolves reasonable doubts about commutation of tax, the constitutionality of the property tax exemption, and other state and federal constitutional issues, the legislation may be unneeded.

Absent a lawsuit from a local government or taxpayer dissatisfied with this resolution of these issues, Nebraska will have a clearly defined and stable tax policy environment for development of the wind industry in Nebraska. The balance of this interim study committee report addresses some of the state and federal constitutional questions which have arisen as a result this interim study.

APPENDIX NO. 10

Scott Madden Report, Nebraska Chamber of Commerce, October 2024. (Madden Report)



NEBRASKA'S Energy Future

Prepared for the Nebraska Chamber Foundation by ScottMadden
October 2024

scottmadden

NECHAMBER FOUNDATION

NECHAMBER
FOUNDATION

NE Chamber Foundation –
LEADING NEBRASKA'S FUTURE

The Nebraska Chamber Foundation's work focuses on key economic issues that will limit or grow our state's economy depending on our ability to take action. We need to be consistently aware of economic headwinds and tailwinds – staying aware of changing demographics, talent supply, housing trends, technology and innovation developments, and other key metrics that fuel Nebraska's growth trajectory.

Our focus is to make Nebraska a top competitive state by investing in the latest nonpartisan research and data on leading issues. Ensuring our efforts are driven by fact and informed by data is key. Our reports equip and empower informed decisions about top priorities to guide communities in the right direction on the road to growth.

Nebraska's Energy Future

Nebraska's economic growth relies heavily on a strong energy infrastructure. This study helps the Foundation create conversations and strategies based on where we are and where we need to be to remain a competitive state.

Foundation Investors

The Nebraska Chamber Foundation thanks all the companies who invested in this study and provided insight for this research effort. This study would not have been possible without the participation of these key stakeholders and partners of the Nebraska Chamber Foundation. You can find all of the NE Chamber Foundation's research work at www.nechamber.com/foundation.

It is our hope that Nebraska leaders will collaboratively leverage the data found in all our studies to find regional and statewide solutions that will strengthen and grow our economy for years to come.

Sincerely,

Tera Norris
President
NE Chamber Foundation

We appreciate our NE Chamber Foundation INVESTORS

INTRODUCTION

The Nebraska Chamber Foundation commissioned ScottMadden to describe the current state of the electric industry in the state and its role in supporting economic development. While this paper primarily focuses on the electric industry, the roles of other sources of energy, such as natural gas, are also described as they are closely linked with both the delivery of electricity and meeting customers' end-use energy needs.

The electric sector is facing several important challenges across the United States, including significant load growth and a changing generation mix. Nebraska faces many of the same issues as the rest of the country, but they may manifest in unique ways. This paper describes the national landscape and how Nebraska is adapting to both local and national needs and trends. ScottMadden conducted both primary and secondary research for this study, including interviews of key stakeholders, and as such were presented a variety of views on the state's energy industry and changes various parties believe are necessary. This paper also provides some areas of opportunity policymakers may consider in enabling further growth of the energy industry in the state.

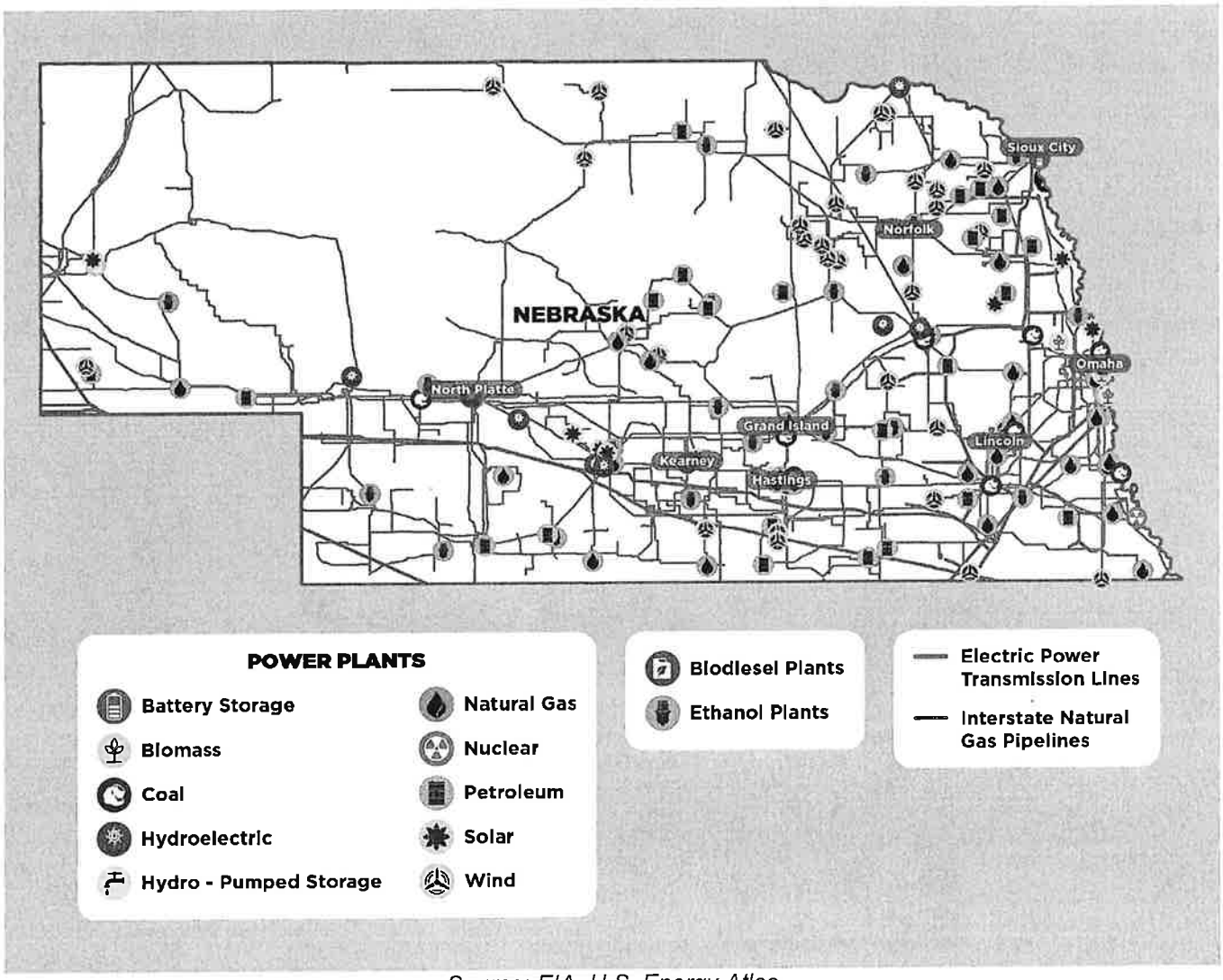
TABLE OF CONTENTS

TABLE OF FIGURES

EXECUTIVE SUMMARY

The availability of affordable, reliable electricity is critical to economic development. More and more, our society depends on electricity to power its vital industries, and those industries are expanding. Nowhere is this more true than in Nebraska. The agricultural sector drives the economy of the state, and as clean fuels become more prevalent, the state is poised for additional industrial growth on this agricultural base. Large technology companies looking to site data centers are also seeking to enter the state or expand their presence in Nebraska. Manufacturers, agribusiness, biotechnology, hydrogen production, and sustainable fuel production are just a few of the other industries that seek to grow their businesses in the state. The growth of these sectors depends on the availability of affordable, reliable energy, and Nebraska has both. The state's electricity ranks among the most affordable and reliable in the country.

Figure 1: Nebraska Power, Natural Gas, Ethanol, and Biodiesel Facilities



Source: EIA, U.S. Energy Atlas

National Context

There are changes in both national and state energy needs that require broad stakeholder consideration.[1] Demand growth for electricity in the United States had plateaued beginning in 2007, coincident with start of the Great Recession. After more than a dozen years of relatively flat electricity consumption growth, demand growth (including peak or maximum hourly demand) has seen a resurgence since 2020.

The drivers vary, depending upon the region, but the key changes are from electrification and emerging large loads (i.e., consumers of power). Vehicle electrification, whether passenger cars or fleets, is growing although not as rapidly as anticipated a few years ago. Building electrification is another area of load growth, as electric heat pumps and other technologies are of increasing interest in replacing older oil- and natural gas-based applications. Industrial applications such as process heating are electrifying, although cost remains a factor.

Large loads are also beginning to appear across the country. Artificial intelligence (AI), web-based commerce, and other internet-based applications require power around the clock for processing at data centers. The amount of power required by AI is several times that needed by traditional applications, meaning the size of these data center loads is much larger than in the past. Manufacturing demand has also grown, buoyed by federal policy and incentives. Interest in Bitcoin and other cryptocurrencies has led to a proliferation of "mining"; these operations have significant computational and energy-related needs to produce units of these currencies.

Grid operators and power providers are determining how to meet this demand with new generating and grid resources. This comes at a time where the composition and characteristics of the country's generation fleet have been changing.

Power supply options are driven by several factors: clean energy policy, availability, and cost of resources to fuel power plants (natural gas, solar, and wind). Coal power plants—traditionally baseload workhorses of U.S. power systems—have been retiring, affected by increasing federal environmental strictures, increasing age and related maintenance, and competition with growing amounts of low marginal cost renewable and natural gas power plants. Meanwhile, many utilities, states, municipalities, as well as many private companies have net-zero goals and renewable portfolio standards that affect which types of power plants are preferred. Indeed, many of the power plants in line for construction are solar, battery storage, or hybrid solar-plus-storage plants. The selection of non-greenhouse gas-emitting resources has been encouraged not only by net-zero goals but also by tax incentives under the Inflation Reduction Act of 2022.

Securing the right power supply resources to meet these new demands is challenging. Grid operators must study the impact of new resources before they connect to the grid. Because new resources are generally smaller in capacity than historically larger thermal plants, and the volume is greater, it takes longer to study those impacts. In the grid with which Nebraska is interconnected, it can take the grid operator more than six years to approve new supply for interconnection.[2]

Moreover, as the nature of generators on the grid shifts from dispatchable (able to turn on and run upon demand) thermal units to an increasing amount of variable and weather-dependent sources, reliability officials are monitoring potential shortfalls during extreme weather and critical demand periods. Grid

[1] See Appendix F: Factors Driving Power Needs Across the United States
[2] See Appendix E: Overview of the Southwest Power Pool

operators are adapting their operating practices and planning power lines to help move needed energy across longer distances.

Nebraska and Regional Trends

Many of these broad national trends are also reflected in regional and state trends in and around Nebraska. Large loads are coming to Nebraska as they are to many other states. In addition, the generation mix is changing as new resources look to connect to the grid.

As new industry comes, whether agriculture-adjacent (e.g., sustainable aviation fuel) or new (e.g., data centers), Nebraska is starting from a solid foundation. Utilities in the state are preparing to meet these increasing electric loads with new generation and grid infrastructure. Importantly, this expansion of infrastructure is taking place at a time when many industries and customers are increasing their commitments to clean energy and reduced CO2 emissions, lowering the carbon intensity of their products.

While Nebraska does not have a renewable portfolio standard, federal incentives and policy and customer demand are driving adoption of renewables both within the state (with its favorable wind and solar resources)[3] and within the Southwest Power Pool (SPP), of which the state's largest utilities are members. Generally, the state is advancing clean energy at the pace of customer adoption through the net-zero objectives of its largest utilities and in support of specific customer needs. The state has also seen development of renewable resources owned by private developers, increasing the availability of these sources of electricity within the state.

Meeting Nebraska's Growing Energy Needs

Energy is vital to all aspects of economic development; however, in recent years the focus on energy has increased as various factors drive load growth. This question is being posed across the country, "Do we have enough energy to power the industries that need it?" In Nebraska, like the rest of the country, energy infrastructure is foundational to economic development, and as such the adequacy of its generation resources and grid infrastructure are being questioned in light of the significant projections of load growth and new industry coming to the state.

While this may seem like a "new" question in Nebraska, the state's utilities have focused on meeting its energy needs for generations. As described in this paper, the state is starting from a very good place in terms of the cost of electricity and its reliability. These remain at the forefront of utility decision-making even with the significant growth happening in the state. The utility mandate to provide reliable, affordable power remains, and load growth in the state is being managed accordingly. The scale of this influx of new customers and loads is unprecedented, but it has not changed the utilities' priorities.

Utilities and power developers, with required approvals, determine what types of resources are to be built in the state, and the SPP plays a significant role in generation development. As described later in Appendix E to this paper, SPP manages the generation interconnection process and assesses the reliability of the grid in light of the new generation facilities looking to interconnect. This both preserves reliability of the network and dictates the timeline within which those resources may be available. This may speed up or slow down the interconnection of large loads dependent on those resources.

[3] See Appendices B and C

The region has seen a large influx of renewable generation. Because of its interconnection to SPP, Nebraska has access to these resources, and many such resources are located in the state. While the "accredited" capacity (to meet peak demand)[4] of renewable energy resources is subject to a different calculation than nuclear or coal plants, they generate significant energy. Nebraska's renewable resources generated nearly 20% of the state's energy in 2022, behind coal but ahead of both nuclear and natural gas. The industry rightly considers accredited capacity to make decisions about meeting demand; however, the energy provided by these resources also helps keep the lights on.

Areas for Consideration

Energy infrastructure and its expansion are necessary to support ongoing economic development in the state. In Nebraska, it is important that the state focus on three things through this period of load growth and transition. First, public education and transparency about energy infrastructure in the state is critical. Citizens, customers, stakeholders, and legislators need to understand the industry and be informed about the need for and trade-offs across different types of critical energy resources. Second, there is an opportunity to consider streamlining zoning and permitting processes for renewables to be more consistent across counties. These facilities are a part of the energy landscape and can play an important role as part of a diverse portfolio of generation resources. Third, the various stakeholders who are working to bring these large load customers into the state can look to create more flexible rate schedules and contracting as well as unique, creative partnerships across customers, utilities, and renewables developers that may facilitate interconnection of these facilities.

New industry and the expansion of energy infrastructure are important economic development opportunities for the state. The infrastructure in the state today has served it well to support a variety of industrial customers. Thoughtful planning, stakeholder engagement, and creative policymaking can enable the energy infrastructure to expand to support the growing industrial base and do so in a way that keeps energy reliable and affordable for all.

---

[4] The Southwest Power Pool requires that all load-responsible entities (i.e., utilities that provide power to customers) maintain adequate capacity to meet seasonal peak demand requirements plus a margin to account for unexpected loss of a generator or transmission line. This is known as a resource adequacy requirement. Capacity for this requirement is not the generator's nameplate capacity but its accredited capacity, which is typically less than nameplate.

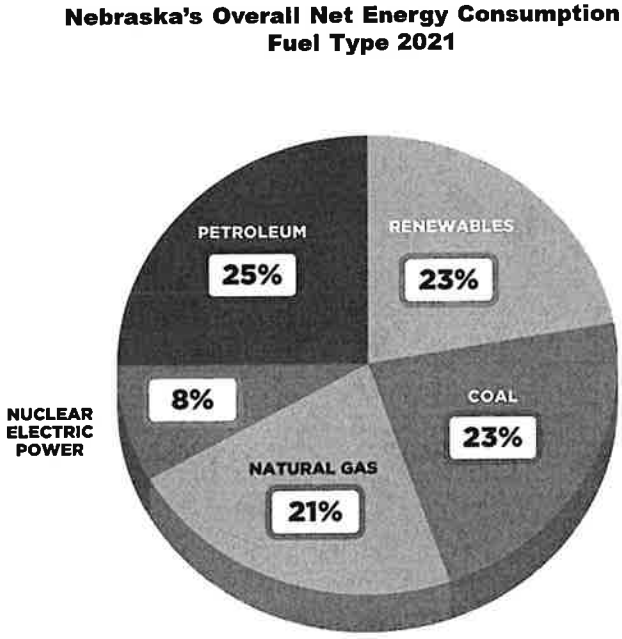
For thermal units, a generating unit's accredited capacity is calculated factoring their performance, discounting capacity based upon historical outage rates. For variable resources (e.g., solar and wind) and energy storage, accredited capacity is based upon probabilistic measure of the facility's nameplate rating that can be relied on to serve load using an analysis known as equivalent load-carrying capability. (Sources: SPP (June 14, 2024), 2024 SPP Resource Adequacy Report; SPP (Aug. 2024), 2024 ELCC Wind Solar and ESR Study Report)

NEBRASKA'S ENERGY LANDSCAPE

Nebraska is a top agricultural state, ranking third nationally in corn production and second in ethanol production and capacity. Because of the combination of energy intensity in the industrial sector and relatively low population, the state ranked eighth in 2022 in per capita energy consumption.[5] Approximately 45% of the state's energy consumption and 39% of retail electricity sales go to the industrial sector, which includes meatpacking, agriculture, livestock, and food processing, as well as chemical and machinery manufacturing.[6]

While electricity provides a significant portion of the energy serving industrial customers, natural gas plays an important role as well. The chart below shows the resources that provide energy to Nebraska's economy.

Figure 2: Nebraska's Overall Net Primary Energy Consumption by Fuel Type (2021)



Source: NDEE 2023 Annual State Energy Report

[5] U.S. Energy Information Administration (EIA), https://www.eia.gov/state/seds/data.php?incfile=/state/seds/sep_sum/html/rank_use_capita.html&sid=US

[6] EIA, Nebraska State Energy Profile (last updated July 20, 2023) (EIA Profile)

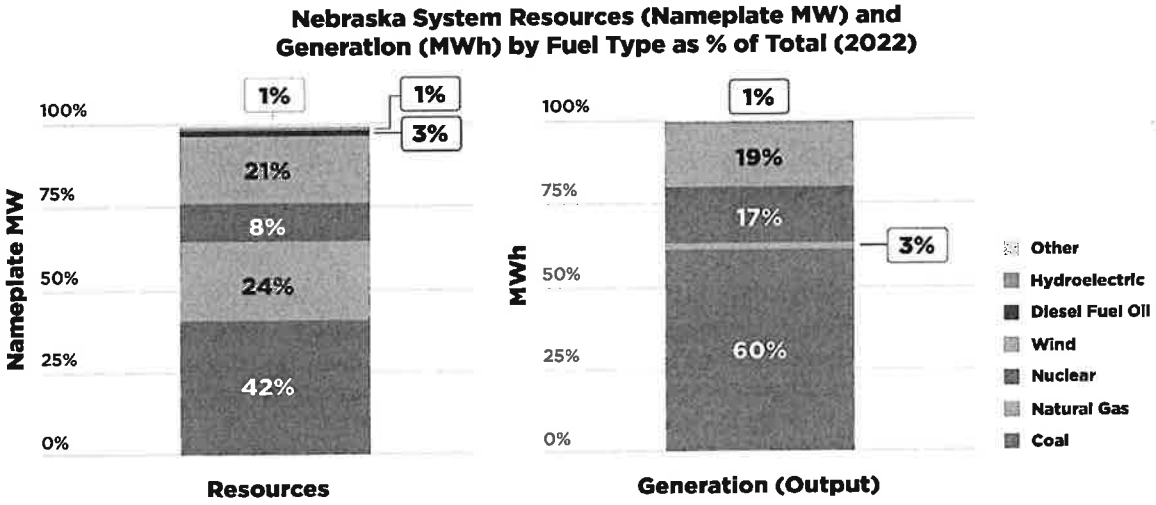
NEBRASKA'S ENERGY RESOURCES AND INFRASTRUCTURE

Electric Power

While Nebraska is interconnected to the regional grid, it is largely self-sufficient in terms of generation resources. There are approximately 9,924 megawatts (MW)[7] (nameplate capacity[8]) of in-state power generation.[9] The peak electric demand for the state for the summer peak was 6,115 MW in 2022. Winter peak was 5,215 MW in 2022.[10]

The state is highly reliant on baseload coal-fired power plants, which provide approximately 60% of its energy in 2022, followed by wind, which produced 19% of megawatt-hours (MWh)[11] in the state, and nuclear generation, which provided 17%. Natural gas-fired generation produced 3% of energy.[12]

Figure 3: Nebraska Power Generation Nameplate Capacity and MWh by Fuel Type (2022)



Source: NPA 2023 Load and Capability Report

---

[7] "A key measure of electricity used in industry is the rate at which it is produced, transferred, or consumed—how much energy per unit of time a generator produces, with the units of electricity called watts. Similar measures are kilowatts (kW) (=1,000 watts), and megawatts (MW) (=1,000 kilowatts). A watt, kilowatt, or megawatt is a unit of power.... The amount of electricity a generator can produce instantaneously is its capacity, which is typically noted as megawatts." (Source: FERC (Dec. 2023), Energy Primer: A Handbook for Energy Market Basics (FERC Primer)).

[8] Nameplate capacity is the maximum generation output from a generation facility based upon ideal conditions, typically expressed in MW. Further discussion of nameplate and accredited capacity is in sections on resource adequacy at Appendices A and E and in the Executive Summary.

[9] Nebraska Power Association (NPA) (Aug. 2023), 2023 Load and Capability Report (Load and Capability Report), Exhs. 7, 14

[10] NPA (2023), Load and Capability Report, Exh. 12

[11] As noted earlier, capacity is the maximum amount a generator can produce. However, a generator may not always operate at full power. The amount of electric energy generated, transmitted, or used over time is measured as the number of watt-hours (also expressed as kilowatt-hours, megawatt-hours, or gigawatt-hours). (Source: FERC Primer)

[12] NPA (2023), Load and Capability Report, Exh. 16

Nebraska's three largest utilities—Omaha Public Power District (OPPD), Nebraska Public Power District (NPPD), and Lincoln Electric System (LES)—are responsible for ownership, maintenance, and expansion of the transmission and distribution infrastructure within their respective service territories.[13] Collectively, they operate an extensive network of approximately 7,000 transmission line-miles, with OPPD owning 1,300, NPPD owning 5,400, and LES owning 300 line-miles.[14] Together they own or lease almost 19,000 miles of distribution lines, connecting their power stations to the customers they service, with OPPD owning 14,000, NPPD owning or leasing 3,000, and LES owning 2,000 line-miles.[15]

The largest utilities in the state are members of the Southwest Power Pool (SPP), a regional transmission organization (RTO).[16] Membership in an RTO sees utilities transfer some control over the operation and planning of generation and transmission assets, while RTOs coordinate the electricity generation and transmission of participants across a region, leading to cost savings and increased efficiency. SPP manages the wholesale electricity market within its multistate territory, balancing supply and demand while overseeing resource adequacy. It operates day-ahead and real-time markets, ensuring reliable electricity supply to customers and managing the financial transactions for movement of energy across its footprint. For Nebraska, SPP provides a platform to sell excess generation or acquire additional energy when needed.

In transmission planning, SPP develops regional transmission plans compliant with Federal Energy Regulatory Commission's (FERC) standards, particularly Orders 1000 and 1920 (issued in 2024) which govern regional planning and cost allocation. SPP also oversees the generation interconnection process crucial for integrating new power sources into the grid. This process involves conducting technical studies, assessing costs, and determining necessary grid updates. Consequently, any new generation resources seeking to connect to the Nebraska system must undergo SPP's comprehensive interconnection evaluation.

(Note: please see Appendix E for further discussion of the functions SPP performs and its operations.)

Renewable Energy

Nebraska has significant solar irradiance and wind speed to support renewables development (see Appendices B and C).[17] According to the Department of Energy (DOE), in 2022, Nebraska ranked third in the nation in land-based wind capacity installations, adding 602 MW that year.[18] As of the end of 2022, wind power comprised 21% of in-state nameplate generation.[19] This level of development is consistent with that of the SPP, in which Nebraska is situated.

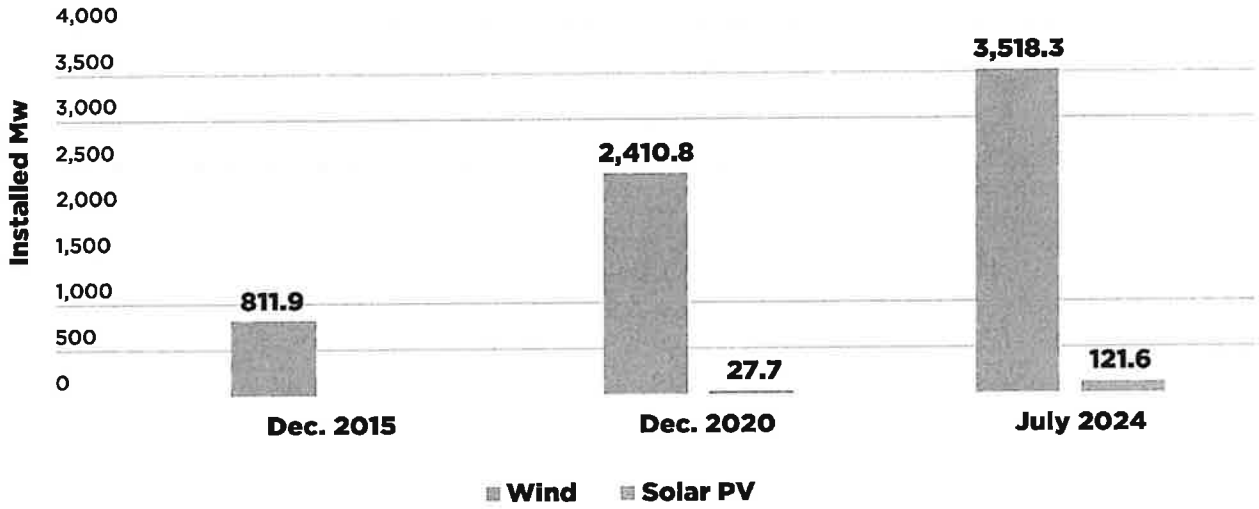
While wind development has dominated renewable capacity additions in Nebraska (see Figure 4 below), utility-scale solar development has been increasing over the past several years, although not at the scale of wind development.[20] The amount of solar energy generated in the state is quite small, only 0.1% of all

---

[13] Rural electric cooperatives and other public power districts and other municipal utilities also operate and maintain electric distribution facilities.
[14] NPPD (2023), Annual Report, p. 3; LES (2023), Key Facts Sheet; OPPD (2021), IRP, p. 52
[15] NPPD (2023), Annual Report, p. 3; LES (2023), Key Facts Sheet; OPPD (2021), IRP, p. 52; The Wire (2018), https://oppdthewire.com/power-lines-15567-miles/; ScottMadden analysis
[16] SPP, at https://www.spp.org/about-us/members-market-participants/
[17] National Renewable Energy Laboratory; U.S. Dept. of Energy
[18] DOE (Aug. 2023), Land-Based Wind Market Report: 2023 Edition
[19] NPA (2023), Load and Capability Report, at Exh. 14. Percentage shown is that of nameplate capacity.
[20] NDEE (2022), Generation in Nebraska by Fuel Type

electricity consumed in 2021.[21] While solar photovoltaic results in a land use change from agriculture, its low-profile footprint is attractive to some communities, and landowners can potentially benefit from higher annual revenue without commodity price risks.[22] As of July 2024, nearly 5 MW of battery storage was operating in Nebraska, with 420 MW of solar with storage under construction in Pierce County.[23]

Figure 4: Wind and Solar Photovoltaic Development over Time in Nebraska (Cumulative Summer Operating Capacity (MW))



Source: EIA Monthly Electric Generator Inventory (last updated Aug. 2024); ScottMadden analysis[24]

Appendix D shows a map of Nebraska electric, gas, and ethanol infrastructure. The location of wind and solar facilities in the state is noted therein.

Natural Gas

As mentioned above, natural gas is an important energy source for the industrial sector; it also provides heating to approximately 60% of residential customers in the state.[25] Natural gas-fired generation is critical part of the power generation fleet in the state, although it is primarily used for peaking capacity. Natural gas provided 26% of accredited generation capacity and 3% of energy (MWh) in 2022.[26]

---

[21] NDEE (2023), Annual State Energy Report (State Energy Report), at Fig. 24
[22] Interviews
[23] EIA, Form EIA-860, "Annual Electric Generator Report;" Form EIA-860M, "Monthly Update to the Annual Electric Generator Report;" ScottMadden analysis
[24] EIA, Form EIA-860. Capacity from facilities with a total generator nameplate capacity less than 1 MW are excluded from this report. This exclusion may represent a significant portion of capacity for some technologies such as solar photovoltaic generation.
[25] EIA Profile
[26] NPA (2023), Load and Capability Report

Nebraska has little natural gas production. Domestic production totaled 0.32 billion cubic feet (BCF) in 2022,[27] compared with about 182 BCF delivered to customers in the state.[28] There is one natural gas storage field in the state with a total capacity of 35 BCF (i.e., less than 20% of deliveries).[29] Nearly all gas is imported from other states and regions.

There are several significant gas pipelines that bring gas across and into Nebraska, including the Rockies Express Pipeline (REX), Tallgrass Interstate Gas Transmission (TIGT), and Northern Natural Gas Pipeline. The REX pipeline is a 1,700-mile pipeline that extends from the Colorado mountains east to Ohio, running across the southern portion of Nebraska. It can bring gas from basins in Wyoming and Colorado east as well as bring Appalachian shale gas west from Ohio. Movement from one direction vs. another depends upon capacity, operations, and relative price attractiveness between east or west regions. REX interconnects with the TIGT system to move gas north across the eastern part of the state.[30]

[27] NDEE, at https://neo.ne.gov/programs/stats/inf/30.html
[28] EIA, Nebraska Natural Gas Summary, at http://www.eia.gov/dnav/ng/ng_sum_lsum_dcu_sne_a.htm (released July 31, 2024)
[29] EIA Profile
[30] Tallgrass company information; interviews

NEBRASKA PUBLIC POWER AND PRIVATE DEVELOPERS

Nebraska is unique in the United States in that all the entities (districts, cooperatives, and publicly owned utilities) that provide electricity to customers in the state are publicly held. These entities are not-for-profit and are supported by customer revenues. The largest public power utilities (LES, NPPD, and OPPD) are vertically integrated, meaning that they own generation, transmission, and distribution assets. Numerous other municipal utilities, rural electric cooperatives, and smaller public power utilities are distribution utilities responsible for delivery of energy to their customers. The governance of these organizations may differ entity to entity, but they are typically governed by a board of elected or appointed officials, ultimately accountable to customers.

Rates for electric service are set by these governing bodies, which typically have very close ties to the communities they serve. Public power rates are based upon the cost of service to customers. Vertically integrated investor-owned utility (IOU) ratemaking is also based upon cost of service. However, IOUs earn a return on equity for capital investment (and included in "rate base"), as set by the state regulator, creating a natural bias toward capital investment over operating and maintenance expense that may not exist in public power entities. The combination of the lack of profit motive and close alignment with communities has been cited as at least part of the reason that the state's electricity rates are so low (see section on affordability).

Public power entities in Nebraska must go through an approval process with the Nebraska Power Review Board (PRB) for the development of electric infrastructure. The PRB serves as the state's regulatory authority, ensuring that all new infrastructure projects meet public need and necessity standards and do not lead to unnecessary duplication of facilities. This process of proving convenience, necessity, economic and feasible supply, and no unnecessary duplication[31] can be arduous. Once entities receive PRB approval, the siting and permitting of infrastructure are relatively straightforward. These entities have rights of eminent domain granted by the state.

In contrast, private renewable generation developers, which are for-profit entities typically developing wind or solar facilities, operate under a different set of rules. They do not have eminent domain authority and must also obtain PRB approval for their projects. However, the approval process for these developers was significantly streamlined by LB 824, signed in 2016, which deregulated the development of renewables in the state. This law provided a simplified approval process through the PRB and removed the requirement for a power purchase agreement to be in place before construction could begin. This regulatory change has fostered a more competitive and diverse energy landscape in Nebraska, spurring renewable development over the past several years.

In 2010 (LB1048),[32] the state instituted a nameplate capacity tax, further amended in 2016 and 2020, that streamlined the costs and replaced the previous property tax being applied to renewable energy projects. This flat rate tax, set at $3,518 per megawatt of nameplate capacity for renewables with a capacity greater than 0.1 MW,[33] was designed to make renewable energy development more financially attractive to localities and to facilitate better cash flow planning for local governments.

[31] Nebraska Revised Statute 70-1014(1)(a), at https://nebraskalegislature.gov/laws/statutes.php?statute=70-1014
[32] See https://nebraskalegislature.gov/FloorDocs/101/PDF/Slip/LB1048.pdf
[33] https://www.cfra.org/sites/default/files/publications/nebraska-nameplate-capacity-tax-1.pdf

This tax is in addition to the real property taxes paid by these facilities and landowners, with solar and wind facilities typically generating around $4,000 and $5,000 respectively in additional revenue per MW nameplate capacity per year.[34] These tax payments are in addition to the lease payments made to landowners for the use of their land.

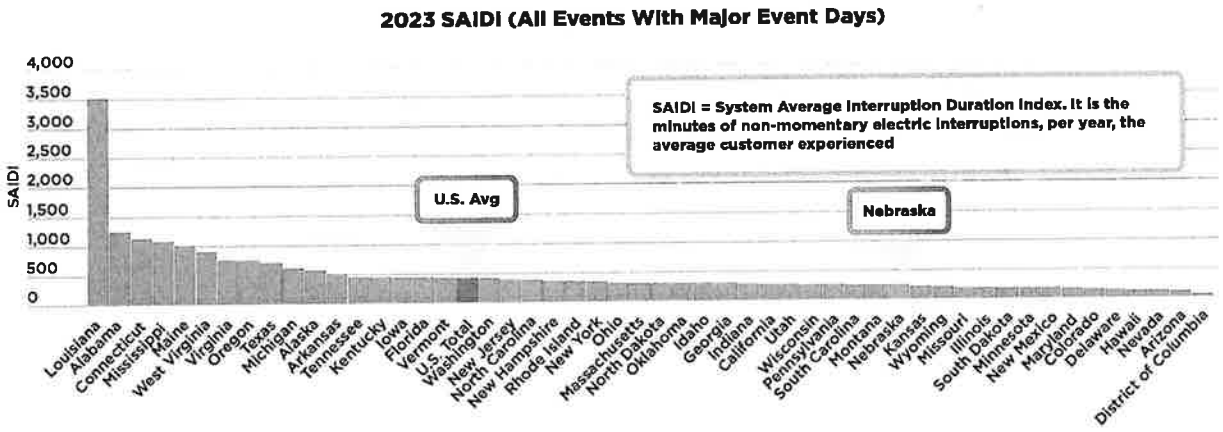
[34] Interviews

RELIABILITY AND AFFORDABILITY OF ENERGY IN NEBRASKA

There are several metrics by which the reliability of an electric system is assessed. This report will focus on two. System average interruption duration index (SAIDI) measures the total time, on average, that a customer experiences non-momentary power interruptions in a one-year period. System average interruption frequency index (SAIFI) measures the frequency of those non-momentary interruptions."[35] Taken together, these metrics provide a perspective on the performance of an electric system.

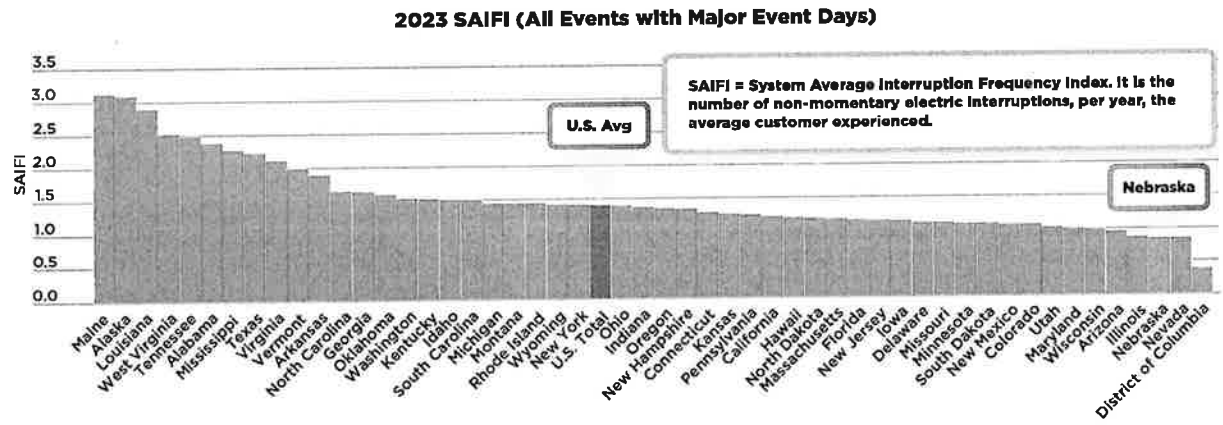
In Nebraska, the metrics for both SAIDI and SAIFI compare favorably to other states.

Figure 5: SAIDI with Major Event Days (2023)



Source: U.S. Energy Information Administration (2023)

Figure 6: SAIFI with Major Event Days (2023)



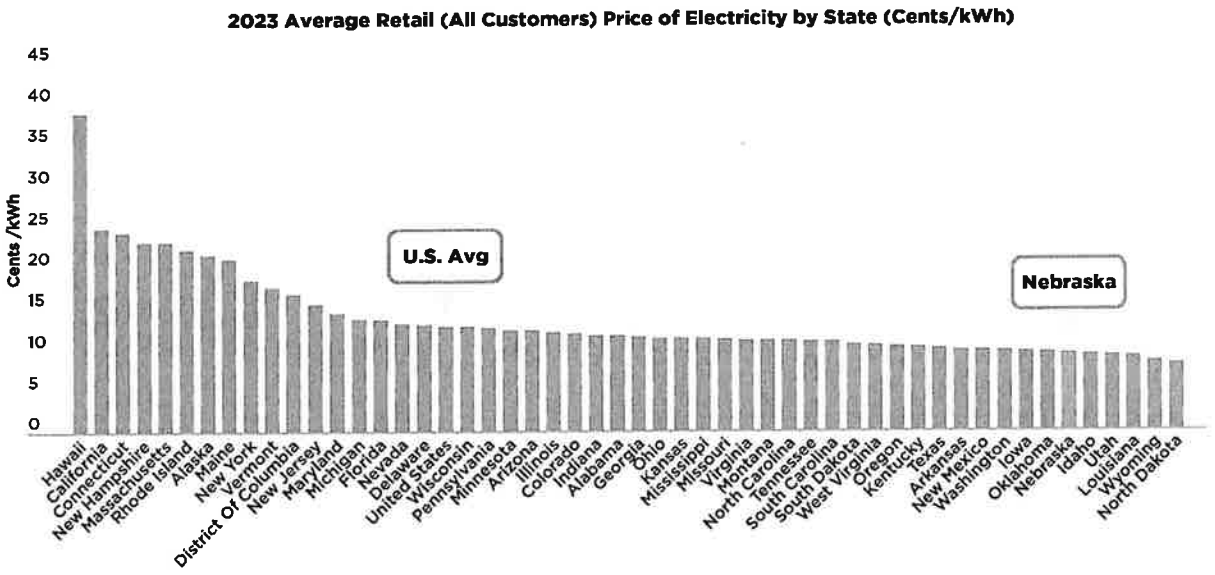
Source: U.S. Energy Information Administration (2023)

[35] EIA, at https://www.eia.gov/todayinenergy/detail.php?id=54639

In terms of the cost of energy, there are a number of metrics that the industry uses to assess how affordable it is to various types of customers.

One source of comparison is the average cost per kilowatt-hour (kWh) of electricity to customers. When compared on this metric, Nebraska's average retail electricity cost of 9 cents/kWh in 2023 placed it among the six lowest in the nation.[36] This includes all customer classes and provides an average for the entire state. A number of the electricity providers in the state tout their records in keeping costs to customers low and at least one has made public commitments to keep these in the lowest quartile nationally.

Figure 7: Average Retail (All Customers) Price of Electricity by State (Cents/kWh) (2023)



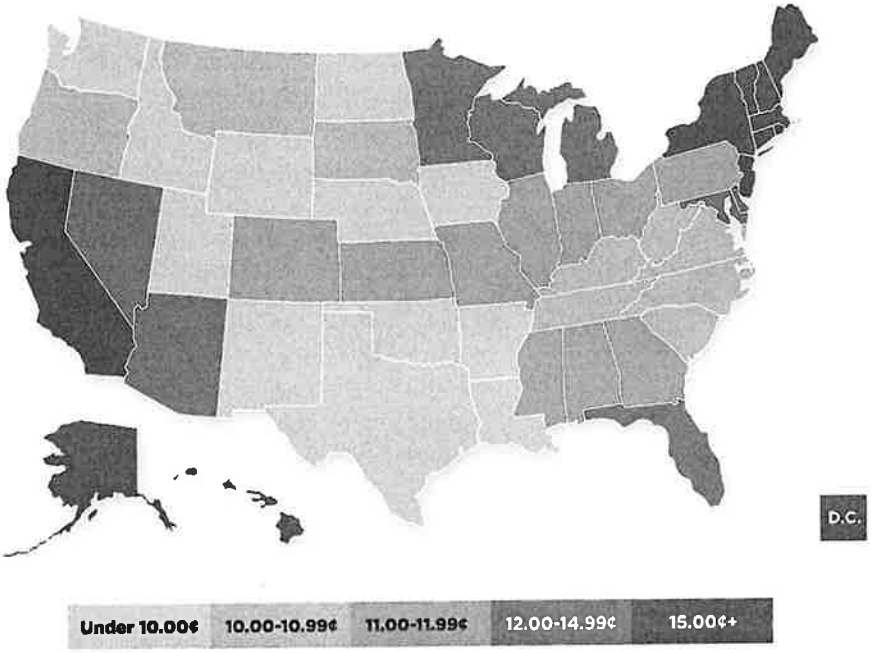
Affordability and reliability remain the primary motivators for each of the top three utilities in Nebraska. NPPD has stated that its "goal is to maintain a total retail base rate position among the lowest 15% of providers," providing retail customers 11 consecutive years of stable rates as of 2024.[37] OPPD recently increased rates to cover costs like grid modernization, and these new rates, up by 1.6%–2.5%[38], remain lower than the national average.[39] LES, too, has kept rates low and stable for the past decade, and recently proposed an increase of 3.3% (around $3.50 on residential customers' monthly bills) to reflect costs of system improvements and inflation, To keep rates affordable, it has adjusted its budget by cutting non-critical capital projects and operating expenses.[40]

It is important to note that several factors contribute to the affordability of electricity in Nebraska. The state has low-cost energy resources such as coal, nuclear, hydro, and wind generation as well as access to SPP market resources. In addition, the state's utilities have made prudent investments in transmission and distribution infrastructure. As shown above on Figure 3, coal continues to comprise a significant

[36] EIA (2022), at https://www.eia.gov/electricity/state/
[37] NPPD (2023), NPPD Board Approves Steady Rates for 2024
[38] Public Power (2024), OPPD Board Approves $2.1 Billion Operating Plan for 2024
[39] OPPD (2024), OPPD's Rates among Lowest in Region and Country
[40] LES ((Sept. 20,2024), LES Proposes Rate Adjustment

portion of baseload resources in the state. As the utilities look to retire or implement carbon capture and storage at these facilities, the generation mix for the state may become more expensive.

Figure 8: Average Electricity Cost per kWh by State (2023)



Source: U.S. Chamber of Commerce, Global Energy Institute (2023)[41]

[41] https://www.uschamber.com/energy/2023-average-u-s-electricity-retail-prices

DEMAND TRENDS IN NEBRASKA

Nebraska's demand drivers reflect, to some degree, national trends summarized in the appendix of this paper. For example, the national trend shown at Figure 19 at Appendix F, showing relatively flat energy consumption growth from 2008 to increasing load growth beginning in 2021, is also reflected in Nebraska's electricity demand trend. However, because of the state's mix of businesses, agricultural base, demographics, and policies, some demand drivers are different than other regions of the country.

As further detailed below, Nebraska economic growth has been strong since the COVID-19 pandemic.[42] Consistent with increased manufacturing given reshoring, federal incentives, and other drivers seen nationally, several Nebraska industries have shown interest in increasing output at existing facilities and expanding operations in the state.

Data centers and cryptocurrency miners (discussed later), which have driven significant recent electric load growth in various regions of the country, have had a presence in the state and are looking to expand as the demand for advanced cloud computing, Internet of Things applications, web-based commerce, and artificial intelligence applications increases and cryptocurrency values remain high (albeit volatile). Nebraska's low power prices are attractive to these customers.

The ethanol industry, unique to a handful of states, including Nebraska, and thus not part of the national demand trend, continues to see steady demand and is looking to expand its product mix, grow production, and reduce its carbon intensity.

Companies are also pursuing manufacturing of products such as hydrogen, ammonia, and sustainable aviation fuels.

Electrification and population growth appear to be smaller factors in driving growth in power demand in Nebraska as compared with other parts of the United States. Vehicle electrification lags most other states because of the lack of charging infrastructure and limited state incentives.[43] End-use electrification has not been significant nor mandated by policy, although selected applications, such as irrigation, have been moving from diesel and other power sources to electricity. Nebraska's population growth has been approximately 0.5% per year for the past three years, and housing has lagged that growth, so new connections and end-use demand in the residential sector has not driven significant load growth.[44]

This section summarizes by customer segment, and anecdotally for some subsegments, the drivers of energy demand growth in Nebraska.

Economic Growth

Economic growth in Nebraska has been strong since the COVID-19 pandemic. Manufacturing (particularly in goods-producing industries) and construction have continued to increase at a steady pace.

---

[42] Federal Reserve Bank of Kansas City, Nebraska Economic Update (Apr. 3, 2024)
[43] Associated Press (July 26, 2024), at https://apnews.com/us-news/nebraska-electric-vehicles-transportation-technology-general-news-45a1c977d9891cf9f6caa062e727b692
[44] Nebraska Examiner (May 20, 2024), at https://nebraskaexaminer.com/2024/05/20/nebraska-exurbs-outshine-suburbs-in-latest-population-growth-figures/

Demand for food and fuel (i.e., ethanol) have led to increases in agricultural commodity production, including food production.[45]

Moreover, as economic analysts have observed, there is an increasing relationship between agriculture and energy. As noted by the Kansas City Fed:

> New technologies and policy efforts to reduce emissions across the transportation sector have incentivized substantial increases in the production of biomass-based diesel, spurring heightened demand for soybean and other oils used to produce these fuels. Like changes in corn acreage due to demand for ethanol, soybean acreage has increased by about 13% since 2012.
>
> Agricultural land has also become an increasingly important source for harvesting renewable energy, and adoption of solar lease contracts has emerged as an opportunity for a modest but growing share of agricultural producers. Adding to the ag and energy intersection, environmental considerations such as carbon also appear likely to have a significant long-term effect.
>
> There is still some uncertainty about the exact path of the agriculture and energy connection, largely because of the effects of government policy. The use of biomass-based diesel in sustainable aviation fuel (SAF) may be a primary source of increased demand for soybeans, but its future production and use remains dependent on national and state subsidies.
>
> The emerging frontier of carbon collection and abatement also presents an opportunity, but many unknowns remain. Despite some lingering uncertainties, ag and energy linkages have deepened in recent years, and there might be more to come.[46]

Overall Growth in Energy Demand

Nebraska's energy consumption has nearly tripled from 1960 to 2021.[47] This includes energy in all forms—electricity, natural gas, motor fuels, propane, fuel oil, and other fuels. As of year-end 2021, industrial use comprised 45% of energy consumption followed by transportation (22%), residential (18%), and commercial (15%) sectors.[48]

Natural gas volumes delivered to consumers grew by a compound annual rate of 2.7% from 2017 to 2022, slightly declining in 2023.[49] Among Nebraska residential customers, 60% used natural gas as their primary heating fuel.[50]

Electricity consumption has been growing as well. Overall, the state's electric kWh consumption has grown on a compounded rate by more than 1.5% per year over the past five years.[51] Industrial usage

---

[45] Nebraska Economist, Federal Reserve Bank of Kansas City, "Producing' Growth" (July 15, 2024, at https://www.kansascityfed.org/omaha/nebraska-economist/producing-growth/

[46] "The Ag and Energy Connection," *Ten* magazine, Federal Reserve Bank of Kansas City (Summer 2024), at p. 15, at https://www.kansascityfed.org/TEN/documents/10265/TEN_SUMMER_07_23_2024_pages.pdf

[47] NDEE (2023), State Energy Report, at p. 15

[48] NDEE (2023), State Energy Report, at p. 14

[49] EIA (July 31, 2024), Nebraska Natural Gas Summary, at http://www.eia.gov/dnav/ng/ng_sum_lsum_dcu_sne_a.htm (data through 2023); ScottMadden analysis

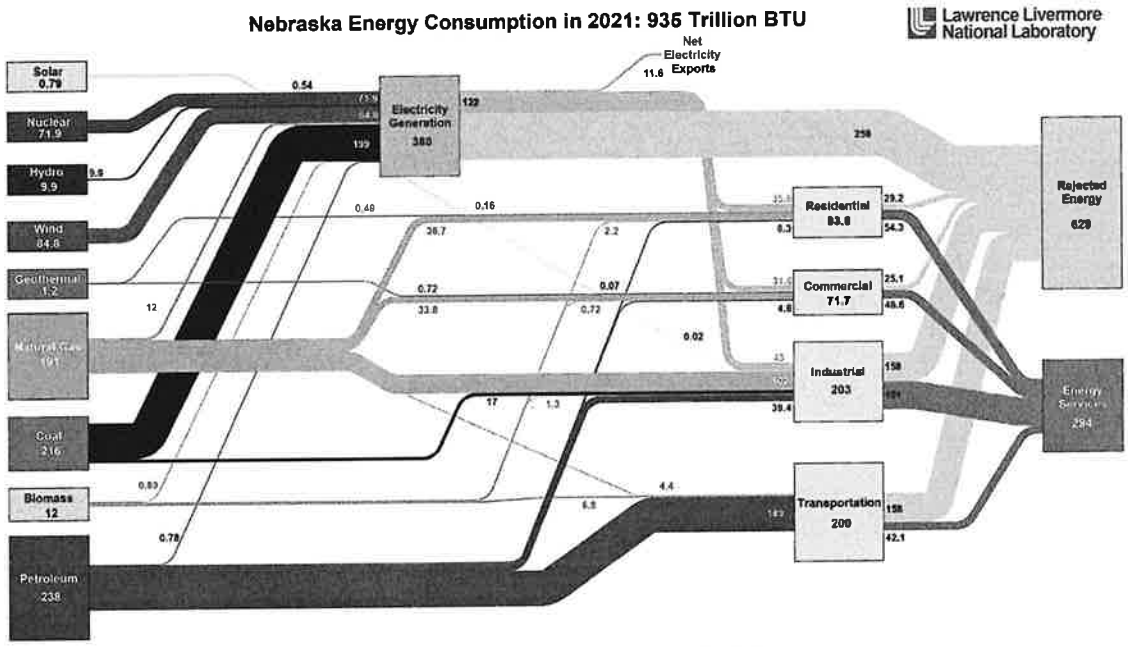
[50] EIA Profile

[51] EIA (Aug. 6, 2024), Retail Sales of Electricity, at https://www.eia.gov/electricity/data/browser (annual data through 2023) (EIA Retail Electric Sales data); ScottMadden analysis

accounts for a significant amount of this growth. Peak load (maximum hourly demand for a year) three-year compound annual growth for Nebraska's major public power utilities has also grown by more than 3%: NPPD (3%), OPPD (5.4%), and LES (4.6%).[52]

The chart below shows Nebraska energy consumption by source and use for 2021:[53]

Figure : Nebraska Energy Consumption by Source (2021)



Source: Lawrence Livermore National Laboratory

Residential Energy Demand Growth

Residential energy usage has been growing steadily across the state over the past several years. The sector accounted for 18% of overall state energy use in 2021. Typical residential uses are home heating and air conditioning, water heating, cooking, clothes drying, refrigeration, and lighting. Natural gas and electricity are the predominant energy sources for households, comprising 89% of energy usage, followed by petroleum (propane, fuel oil, and kerosene together comprise 7%).[54]

Natural gas consumption by residential customers in 2023 has declined by about 4% annually over the past five years.[55] NDEE has attributed that decline to price response (as residential natural gas prices have increased over that same period) and to increased energy efficiency such as furnace upgrades, conversion to heat pumps, and weatherization.[56] Weather patterns, such as generally warmer winters, also play a role in declining gas use.

---

[52] S&P Capital IQ; NPPD, 2023 Financial Report, at p. 3; OPPD, 2023 Annual Report, at p. 88; LES, 2023 Annual Report, at p. 2; ScottMadden analysis
[53] Lawrence Livermore National Laboratory (July 2023), at https://flowcharts.llnl.gov/commodities/energy
[54] NDEE (2023), State Energy Report
[55] EIA data; ScottMadden analysis; NDEE (2023), State Energy Report, at p. 25
[56] NDEE (2023), State Energy Report, at p. 25

Residential electricity sales growth has been increasing but at less than 1% annually (0.5%) since 2018.[57] As of 2021, only 3 in 10 households use electricity for home heating.[58]

Commercial Energy Demand Growth and Drivers

Growth in commercial energy usage was 1.2% year-over-year from 2020 to 2021.[59] The sector accounted for 15% of overall state energy use in 2021.[60] This sector includes accommodations, restaurants, retail businesses, health and educational institutions, and government facilities. Typical energy uses are space heating and air conditioning, water heating, cooking, refrigeration, and lighting.

Growth in commercial electricity usage was low (0.2%) on a compounded annual basis since 2018, but it grew at about 1.7% per year since 2020.[61] Natural gas deliveries to commercial customers declined by 0.4% per year since 2020 and declined at a higher rate (-2.4% per year) since 2018.[62]

According to the U.S. Energy Information Administration (EIA), space heating is the largest contributor to commercial energy consumption in the United States. As such, changing weather conditions toward warmer winters may have contributed to the decline in natural gas consumption.

Industrial Energy Demand Growth and Drivers

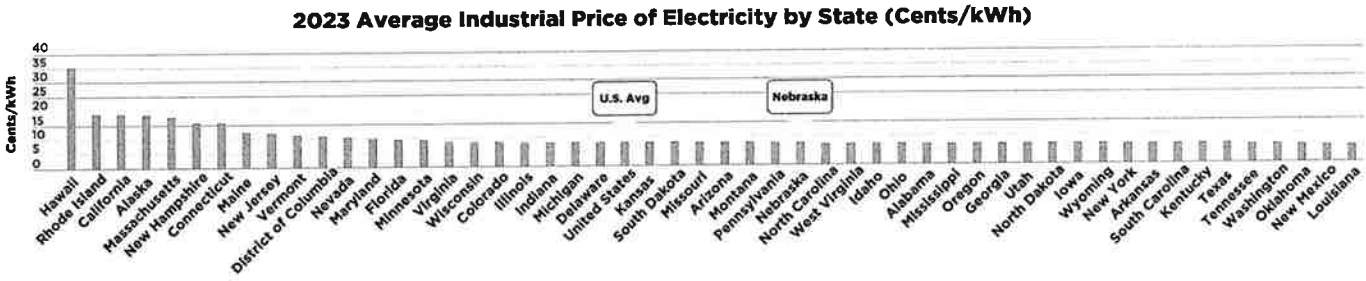
Nebraska's industrial sector includes a variety of industries, including manufacturing, ethanol production, food processing, and agriculture. Sectors such as technology (including data centers) and business services are growing.[63] Industrial use comprises 45% of total energy consumed in the state.[64]

As of year-end 2023, Nebraska ranked third in the nation, after Texas and California, in its number of industrial electricity customers. About 39% of electricity sales in the state went to the industrial sector. These figures include agriculture, where electricity is used to run irrigation systems on a seasonal basis.[65] The state is attractive for new industrial customers and business expansion for many reasons—favorable business climate, central U.S. location, good infrastructure (roads, railways, river access, fiber, energy infrastructure), abundant water resources, technology-friendliness, and an educated workforce. Also attractive to industrial companies is the cost of energy, in particular electricity. Nebraska's electric rates for industrial customers are lower than the national average, despite the higher cost to serve seasonal irrigation load. As noted previously, the state also ranks well in terms of electric reliability.

---

[57] EIA Retail Electric Sales data; ScottMadden analysis
[58] EIA Profile
[59] NDEE (2023), State Energy Report, at p. 22
[60] Ibid.
[61] EIA Retail Electric Sales data; ScottMadden analysis
[62] Ibid.
[63] Nebraska Chamber Foundation, Nebraska Economic Competitiveness Assessment 2024 (Jan. 2024), at p. 1
[64] NDEE (2023), State Energy Report, at p. 15, Fig. 11; EIA Profile
[65] EIA Profile

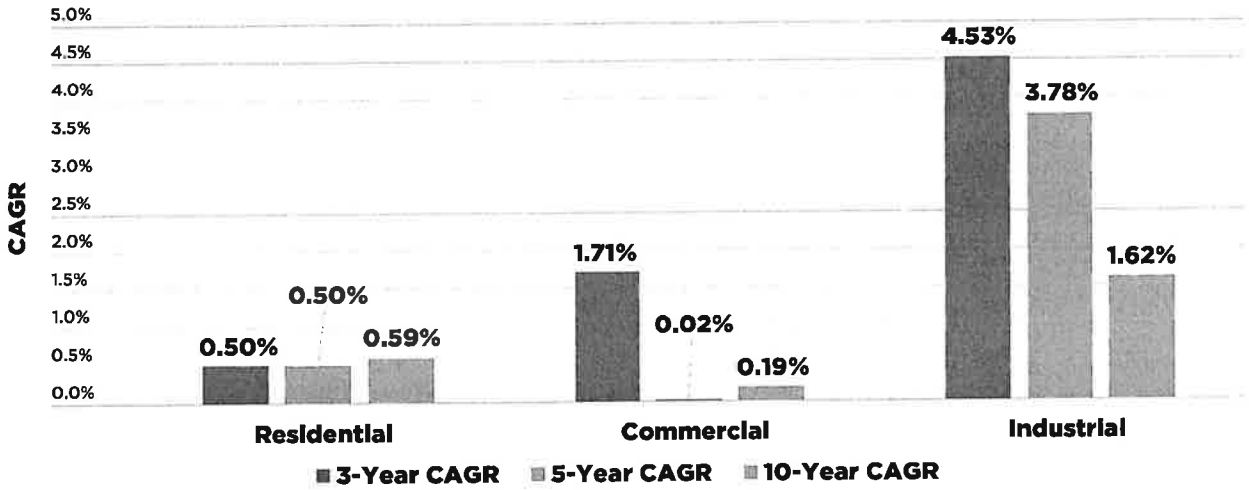
Figure 90: Average U.S. Industrial Electricity Prices by State (2023)



Source: Energy Information Administration

Industrial electricity usage has increased at an annual rate of nearly 3.8% since 2018, while annual industrial customer growth has been about 0.5% over that period.[66] This implies a long-term increase in electric-driven processes or new industrial customers or locations having higher electricity requirements.

Figure 101: Nebraska Retail Electricity Consumption Selected CAGR by Customer Type (through 2023)



Source: Energy Information Administration; ScottMadden analysis

Natural gas demand to the industrial sector was significantly lower year-over-year in 2023, declining from 98 BCF to 86 BCF. Excluding 2023, the five-year compound annual growth rate of gas consumption through 2022 was nearly 2%.[67] Industrial use comprises half of natural gas consumption in Nebraska. Gas is used for operating irrigation pumps and as a feedstock for the manufacture of fertilizer.[68]

---

[66] EIA data; ScottMadden analysis
[67] EIA, Nebraska Natural Gas Summary, at http://www.eia.gov/dnav/ng/ng_sum_lsum_dcu_sne_a.htm (released July 31, 2024)
[68] EIA Profile

Large Loads in Nebraska

One thing that characterizes some of Nebraska's industrial demand is that several significant energy users are also energy producers and providers of energy-related products (e.g., low-carbon fuels). This is also an area where a variety of fuels are used to meet energy needs.

Agriculture

Energy needs for agriculture includes transportation of inputs and outputs from farm production, processing livestock feeds, and irrigation.[69] Electricity is a significant energy source for irrigation (powering nearly 59% of pumps as of 2018). Irrigation demand is seasonal.[70]

Diesel and biodiesel fueled nearly a quarter of irrigation pumps in 2018, while natural gas fueled 11% of pumps. There are indications that increasing digitalization of farming and replacement of labor with mechanical applications is also leading to electrification of irrigation, with farmers converting from diesel fuel and propane.[71] These conversions are facilitated by the U.S. Department of Agriculture and the Nebraska Department of Energy and Environment programs aimed at reducing air pollutants.

[69] NDEE (2023), State Energy Report, at p. 17
[70] Interviews
[71] NDEE (2023), State Energy Report, at pp. 18-19

Ethanol Production

Ethanol serves as a renewable fuel that is blended into gasoline and other liquid hydrocarbons to reduce greenhouse gas (GHG) and other emissions under the U.S. EPA's Renewable Fuel Standard.[72] Nebraska's agriculture industry provides feedstock for ethanol production: approximately 750 million bushels or 29% (net) of Nebraska's annual corn crop goes into producing ethanol.[73] There are 24 fuel ethanol production plants in Nebraska with around 2.4 billion gallons of annual production capacity.[74] In 2022, Nebraska produced 13% of the nation's ethanol. U.S. ethanol production peaked in 2018, dipping in 2020 (with COVID), but production volumes have been rebounding.[75]

Producers are also expanding into sustainable aviation fuel (see sidebar), which, like ethanol, is derived from biomass and blended into jet fuel to reduce aircraft emissions.[76] ADM, one of the largest ethanol producers in the state, desires to produce a low-carbon intensity ethanol that could be used for the production of SAF or other renewable chemicals.

Other Energy-Intensive Industries

Nebraska is home to other process industries, such as steelmaking, carbon black and hydrogen production, cylinders for energy products (natural gas and renewable natural gas) in transportation applications, as well as chemical manufacturing (pharmaceuticals, pesticides, and fertilizers), food processing, and machinery manufacturing.[77] Some example industries and representative participants are detailed below.

Sustainable Aviation Fuel (SAF)
SAF is a biofuel with similar properties to jet fuel but with a smaller carbon footprint. It can be produced from many sources (feedstock), including ethanol, waste fats, oils and greases, agricultural and forestry residues, and non-food crops. SAF can be blended with jet fuel with limits between 10% and 50%.

Jet fuel is a significant contributor to carbon emissions, contributing 9% to 12% of U.S. transportation GHG emissions. The international aviation industry has set a goal of net-zero CO2 emissions by 2050. The U.S. government estimates that 35 billion gallons of annual SAF production will be required by 2050 to meet that goal, and three billion gallons annually will be needed to meet an interim 2030 goal of 50% emissions reduction.

The Inflation Reduction Act of 2022 established a tax credit (Section 40B) starting at $1.25 per gallon of qualifying SAF produced. To qualify under 40B, SAF must have at least 50% less emissions when compared to petroleum-based jet fuels. Lifecycle GHG emissions—GHG emissions in production, transportation, and combustion of SAF—are important for qualification for the credit. The tax credit increases as lifecycle carbon intensity decreases. The IRA does allow for renewable energy credits to be used to qualify for low-carbon electricity use. SAF presents a potentially lucrative market for ethanol producers as major airlines like American, Delta, and Southwest have pledged net-zero emissions by 2050.

---

[72] EIA, at https://www.eia.gov/energyexplained/biofuels/ethanol-supply.php; EPA, at https://www.epa.gov/renewable-fuel-standard-program
[73] Nebraska Corn Board, at https://nebraskacorn.gov/cornstalk/sustainability/ethanol-simplified/ and https://nebraskacorn.gov/corn-101/corn-uses/
[74] EIA, as of Aug. 7, 2023, at https://www.eia.gov/petroleum/ethanolcapacity/
[75] EIA, at https://www.eia.gov/energyexplained/biofuels/ethanol-supply.php
[76] https://www.energy.gov/eere/bioenergy/sustainable-aviation-fuels
[77] Interviews; EIA Profile

Monolith

Monolith, an industrial customer, produces carbon black at its Olive Creek 1 facility. It seeks to expand their current manufacturing facility, Olive Creek 1, to produce additional carbon black and hydrogen through a proprietary, energy-intensive pyrolysis process. It plans to use the hydrogen to produce clean ammonia. The Olive Creek 2 expansion will add approximately 2 million MWh of carbon-free electricity demand to the NPPD system.[78] Monolith is interested in sourcing carbon-free electricity (solar, wind, and energy storage) and renewable energy credits and is working with NPPD for the purchase of those resources. Expansion of the transmission system will also be required to serve this load.[79]

ADM and Tallgrass

ADM has committed to reducing their GHG emissions by 25% by 2035. To advance progress toward that goal, the company has entered into an agreement with Tallgrass to capture CO2 from ADM's corn-processing complex in Columbus, Nebraska, and transport the CO2 to Tallgrass's Eastern Wyoming Sequestration Hub for permanent underground storage.[80] Other ethanol producers are similarly interested in reducing their carbon intensity, including that of their energy sources, to satisfy purchasers' and state and national requirements for products sold to them or into those jurisdictions. Some U.S. states (such as California), Canada, and the European Union have or plan to have such carbon content regulations (see nearby sidebar on Low-Carbon Fuel Standard, for example).

Tallgrass is developing a project to convert its Trailblazer natural gas pipeline to a CO2 transportation service, establishing an approximately 400-mile CO2 pipeline to serve as the backbone of a regional CO2 transportation system. This project will allow for the capture, transport, and sequestration of CO2 to aid communities and customers in carbon capture and sequestration (CCS) projects to meet their own decarbonization goals.[81]

Low-Carbon Fuel Standard:
An Example of Customer Requirements

The Low-Carbon Fuel Standard (LCFS) was designed by the California Air Resource Board as an early measure to reduce carbon emissions in the transportation sector. It was estimated that transportation emissions accounted for 50% of GHG emissions in California.

The LCFS set a carbon intensity (CI) requirement for transportation fuels, including gasoline, diesel, SAF, and other alternative fuels, based on the carbon intensity of gasoline and diesel and equated to a 20% reduction in emissions. Importantly when calculating CI scores, emissions across the entire lifecycle of the fuel are counted, including power source emissions. This results in producers looking to have direct connections with low CI generation to meet the requirements.

The standard gives credit for use of renewable hydrogen in refineries and for use of CCS in alternative fuels production facilities. The LCFS has been adopted in California, Oregon, and British Columbia, with Washington and other regions considering similar standards.

[78] Monolith Corp (2021), at https://monolith-corp.com/news/monolith-seeking-2-million-megawatt-hours-of-renewable-energy-annually-for-planned-expansion
[79] NPPD, Financial Report 2023, at p. 21
[80] Tallgrass (2022), at https://tallgrass.com/newsroom/press-releases/tallgrass-to-capture-and-sequester-co2-emissions-from-adm-corn-processing-complex-in-nebraska
[81] Ibid.

The Trailblazer CO2 pipeline represents an opportunity to improve carbon capture and sequestration capabilities in Nebraska. This does not consider the energy required to capture carbon which will also represent new loads. ADM has already signed on as a partner to utilize the pipeline to capture and transport carbon from their corn-processing plant in Columbus, Nebraska.

Nucor

Nucor is one of the first diversified steelmakers to announce net-zero, science-based GHG emissions intensity targets for 2050. Nucor seeks to meet this target through a comprehensive carbon reduction strategy that includes increased use of clean electricity, CCS, and near-zero GHG ironmaking.[82]

As the above examples demonstrate, the clean energy transition is creating opportunities for Nebraska companies to develop fuels and products that both meet clean energy objectives and take advantage of federal subsidies. The facilities needed to produce these fuels and products also consume energy, often with clean energy requirements. As such, these types of large loads are driving both increased energy demand and the need for more generation and, specifically, non-carbon-emitting energy.

Data Centers

Nebraska is seeing the same influx of data centers as other parts of the country. The large tech companies have either established data centers or are planning facilities in the state, generally in the Omaha and Lincoln metropolitan areas.

There are 10 data centers in Nebraska, all located in the Omaha or Lincoln metropolitan areas.[83] Tech giants Meta and Google have large data centers in and around the Omaha metro area.[84] Meta's data center broke ground in 2017. Google broke ground on its Papillion data center in October 2019. While data centers differ in size, number of servers, function, and efficiency, typical data center electricity demand can range from one MW to hundreds of megawatts.[85]

One benefit of data center demand is that it provides steady, stable, around-the-clock demand. This predictable load profile[86] allows for relatively lower cost to serve and can make these customers financially attractive to an energy supplier or utility.

Meta

Meta, previously known as Facebook, broke ground on its Sarpy Data Center in 2017. Meta has announced plans to expand this data center to nine total buildings, creating a roughly 3.6 million square-

---

[82] Nucor (2024), at https://nucor.com/sustainability

[83] https://www.datacenters.com/locations/united-states/nebraska

[84] NDEE (2023), State Energy Report, at p. 19; Nebraska Examiner (Aug. 22, 2023), "Google Confirms Lincoln's $600M Data Center, Touts This Year's $1.2B Spend on NE Infrastructure"; Meta, at https://datacenters.atmeta.com/all-locations/#united-states and https://datacenters.atmeta.com/wp-content/uploads/2024/07/Nebraska-Sarpy.pdf; Google, at https://www.google.com/about/datacenters/locations/papillion/

[85] https://dgtlinfra.com/data-center-power/

[86] See Appendix A regarding customer and load types.

foot campus.[87] Meta's data center represents an investment of more than $1.5 billion in Nebraska. Since joining the Nebraska community, they have provided more than $3.8 million in direct funding to schools and nonprofits in the area.

Since 2020, Meta has supported its operations with 100% renewable energy by bringing online new renewable energy resources that equate on an annualized basis to the energy their data centers use. It has already brought online 320 MW of wind energy in Nebraska in addition to other new renewable energy resources within the same regional grid (SPP) to support its operations in the region.[88]

Google

Google broke ground on its first data center in Sarpy County, Nebraska. Google has plans to expand in Nebraska by developing data centers in both Lincoln and Omaha.[89] To reach its net-zero goal, Google contracts via renewable power purchase agreements and also purchases bundled renewable energy credits from renewable energy sources located in Nebraska's regional power market (SPP). It recently announced the Pierce County Energy Center, a subsidiary of NextEra Energy Resources, LLC—a 420-MW solar and 170-MW battery energy storage system—in northeast Nebraska that is expected to come online in 2027. This facility along with the High Banks Wind Energy Center, also a subsidiary of NextEra Energy Resources, was deployed in collaboration with OPPD under a new procurement framework as a way to expedite energy procurement and address increasing electricity demand. OPPD and its customers will benefit from the clean capacity attributes of these facilities.

Figure 112: Selected Large Customer Clean Energy Goals

Company	Commitment	Time Frame
Google	Net-zero emissions across all operations and value chain	2030
Meta	100% renewable energy and net-zero operational emissions Net-zero emissions across whole value chain	Since 2020 2030
ADM	25% reduction in GHG emissions	2035
Nucor	Net-zero emissions	2050

Source: Interviews, company disclosures

Cryptocurrency Mining

The state is also seeing cryptocurrency mining loads looking to interconnect to the system. Those operations—creating cryptocurrency such as Bitcoin—are computationally intense and have significant power requirements. Typically, these customers seek inexpensive power, potentially without regard for its source.[90] These loads are flexible, depending upon energy costs and cryptocurrency values, and they can ramp up and down operations accordingly.

---

[87] Meta (July 28, 2022), at https://www.facebook.com/SarpyDataCenter/posts/pfbid02wGy6wFfKbqgXLouRvrLRSgnQNonyv85coDbF1oCeaQ8ouiXC8Ub8ZXS8GFRsvXCSl

[88] Meta (2022), Economic Impact of Meta-supported U.S. Renewable Energy Projects; interviews

[89] Nebraska Examiner (2022), Google Announces Nebraska Growth Plan that Includes New Northwest Omaha Data Center; Nebraska Examiner (2023), Google Confirms Lincoln's $600M Data Center, Touts This Year's $1.2B Spend on NE Infrastructure

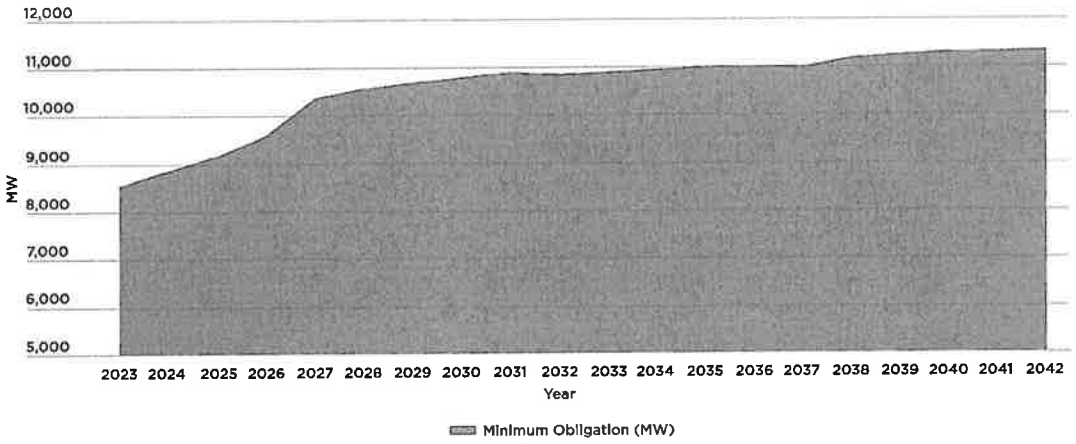
[90] White House Office of Science and Technology Policy (Sept. 2022), Climate and Energy Implications of Crypto-Assets in the United States, at https://www.whitehouse.gov/wp-content/uploads/2022/09/09-2022-Crypto-Assets-and-Climate-Report.pdf

Power Demand

The proposed location of new, large spot loads in Nebraska and expansion of existing operations of current large energy consumers are leading to significant increases in energy demand in the state.

Nebraska Power Association (NPA) studied the growing demand in Nebraska in their load and capability report. One metric is the minimum obligation which represents the minimum amount of energy the utilities need to be able to provide to support Nebraska and is calculated by adding the net reserve capacity obligation to the forecasted annual system demand. NPA estimates that the minimum obligation for Nebraska would increase from around 8,500 MW in 2023 to nearly 11,000 MW in the next 10 years.[91]

Figure 12: Nebraska Summer Minimum Capacity Obligation (MW) for Resource Adequacy (as of August 2023)



Source: 2023 NPA Load and Capability Report

Both NPPD and OPPD state in their integrated resource plans (IRPs) that they have updated their load forecasts with known large loads. These large loads were indicated to be primarily industrial customers, including data centers, and increased the load forecasts by hundreds of MWs. These load forecasts are used in their IRPs to plan future resources, as well as used in the Nebraska Load and Capability report to understand minimum load obligations.

When considering the customers either expanding operations or requesting new connections to the Nebraska grid, as described above, many have net-zero commitments or specific requirements for the use of non-carbon-emitting generation to produce their products. As such, this combination of requirements adds complexity in resource planning by the utilities and will drive additional clean resources in the state (or contracts through SPP). Please see Load Growth and Clean Energy Demand section below.

Natural Gas Demand

Several generating stations in Nebraska are considering repowering from coal to natural gas to improve their emissions profile and position the generating resource portfolio for Nebraska utilities' net-zero objectives. These conversions could increase natural gas demand in the state. While natural gas demand

[91] NPA (2023), Load and Capability Report

for power generation is relatively small compared with other fuels (natural gas-fired power production consists of about 3% of Nebraska's total MWh power production in 2023),[92] repowered facilities and new gas-fired facilities may increase gas's share in the fuel mix. A few examples of potential new gas-fired power generation are:

- **Sheldon Station:** In its latest IRP, NPPD indicated that it is investigating potential restoration of the 216 MW Sheldon site to natural gas operation.[93] No studies have been completed nor decisions made on this resource.
- **Standing Bear Lake and Turtle Creek Stations:** OPPD is constructing these stations, which will add 150 MW of gas-fired reciprocating engines (Standing Bear) and 450 MW of dual-fueled gas-fired combustion turbines (Turtle Creek) to meet growth in energy demand. The units are expected to be operational in 2024/2025.[94]
- **North Omaha Station Units 4 and 5:** OPPD plans to repower these units (nameplate 278 MW)95 with natural gas but will await operation of Standing Bear Lake and Turtle Creek Stations before doing so to maintain reliability.[96]
- **900-MW Natural Gas Capacity Expansion:** OPPD has contracted for four 225-MW Siemens dual fuel combustion turbines. Three are to be sited at its Cass County Station; one is to be sited at its Turtle Creek Station.[97]

Black Hills Energy, the largest natural gas distribution company in Nebraska, has seen its number of customers growing by more than twice the rate of the state's population growth since 2018 (3.6% annually vs. 1.7%).[98] The company is planning to invest $513 million in its Nebraska assets 2024-2028.[99]

[92] Ibid.
[93] NPPD (2023), Financial Report, at p.9
[94] OPPD 2023 Annual Report, at pp. 25-26
[95] OPPD 2021 IRP, at p. 92
[96] Ibid.
[97] OPPD (June 18, 2024), at https://www.oppd.com/media/319925/2024-6-june-new-generation-and-transmission-update.pdf
[98] Black Hills Energy, Presentation at the AGA Financial Forum (May 2024), at p. 6
[99] Black Hills Energy, Presentation at the AGA Financial Forum (May 2024), at p.31, ScottMadden analysis

PATH FORWARD

Nebraska's energy landscape is experiencing a significant transformation driven by unprecedented load growth and an increasing demand for clean energy. This section explores the key drivers behind this shift, the strategic responses from the state's major utilities, and the common themes shaping Nebraska's energy future.

Key Drivers

Load Growth and Clean Energy Demand

As described in this paper, load is growing at a rate not seen in generations. The shift that the electric sector is undergoing with the rapid emergence of large loads across the country and the electrification of transportation and heating is unprecedented.[100] Nebraska itself is experiencing substantial load growth, driven by large-scale industrial customers, including industrial agriculture, data centers, and cryptocurrency mining operations. The rapid deployment of new generation and grid investment are critical to meeting the growing needs of these large-load customers—specifically data centers and manufacturing companies—who are making load interconnection requests of hundreds of MWs, something the industry has never seen before.

However, electric infrastructure, particularly certain types of generation and greenfield transmission, can take a decade or more to build. As a result, the rate at which electric infrastructure investments can be made in Nebraska will, at least partially, determine the degree to which the state can take advantage of the influx of new customers and industry.

The degree to which the pace of change in the industry has accelerated cannot be overstated. In mid-2023, the industry was only just beginning to talk about large loads, and the first major industry report on the topic was published in December 2023.[101] The fact that load forecasts are showing significant increases year to year is also new and, importantly, was not anticipated. As such, frequent revisions to load forecasts and required generation and grid infrastructure should be expected through this period.

As sustainability becomes a priority for industries and consumers, the demand for clean energy sources is intensifying. Major customers, such as tech giants and industrial agricultural companies like ADM, are setting ambitious net-zero-carbon goals. For example, Google aims to achieve net-zero emissions across its operations and value chain by 2030[102], and ADM targets a 25% reduction in absolute Scopes 1 and 2 emissions[103] by 2035.[104] This demand is prompting utilities to transform their generation mix, integrating more renewable resources like wind, solar, and energy storage.

---

[100] See Appendix F: Factors Driving Power Needs Across the United States

[101] Grid Strategies 2023 Report, at https://gridstrategiesllc.com/wp-content/uploads/2023/12/National-Load-Growth-Report-2023.pdf

[102] Google (2024), Net Zero Carbon

[103] Scope 1 emissions are direct emissions from owned and controlled facilities by the company. Scope 2 emissions are indirect emissions from energy purchased from utilities. Source: GHG Protocol

[104] ADM (2022), ADM's Net Zero Aspirations

Regulatory Landscape and Its Impact on Infrastructure Development

It is also important to note that Nebraska is not isolated from national or regional regulation that will impact the development of generation and transmission infrastructure. In the case of generation, EPA's recent revisions of emissions regulation under §111 of the federal Clean Air Act, if implemented in its current form, will dramatically change the parameters within which both coal and natural gas plants must operate. In the case of coal and high-capacity new gas plants, it will require carbon capture and storage. In addition, the generation queue in SPP directly impacts the ability to get generation projects approved for deployment in Nebraska. Developments at the EPA on GHG emission regulation and at FERC and SPP on generation queue reform will have significant implications for the nature and speed at which resources can be deployed within the state.

Utility Near-Term Responses

Nebraska utilities are responding to this load growth by expanding their generation resources to ensure reliability while integrating greater amounts of renewables into their system to meet the goals of their customers. These actions reflect the utilities' commitments to aligning their development of infrastructure with the pace of customer demand for both generation and grid investments.

Integration of New Resources

LES, OPPD, and NPPD are increasingly integrating a variety of resources into their portfolios to meet growing demand and achieve their emissions-reduction targets (to meet both their own goals and those of their customers). These resources are being developed through both independent project development and strategic collaborations. While the utilities continue to build out projects to meet load growth, they are using a variety of energy sources, both traditional and renewable, to continue providing reliable energy.

To meet the short-term increase in demand growth, the utilities are taking several steps:

- **OPPD** plans to add 2.5 GW of generation over the next decade to meet the anticipated annual load growth of 100 MW,[105] which includes 1,100 MW of solar, 500 MW of wind,

NPPD Load Queue Process

In 2024, the NPPD established a new process to manage the growing demand of large-load customers. This process was developed to manage customer expectations around timelines and enable NPPD to plan capacity to ensure reliability for existing customers. It applies to any project greater than or equal to 5 MW for new and expanding customers.

The process follows several milestones before customers are given an in-service date. The "New Load Queue Process" requires an application, a signed memorandum, and two security deposits amounting to $12,000/MW. Once the application is submitted, two studies are conducted to assess the feasibility of the project. If transmission upgrades are required, customers are responsible for the added construction costs related to potential stranded assets, outlined in the Transmission Facilities Construction Agreement. New load projects are then added to the project queue in the order they were received. The queue is reviewed twice a year to determine if certain projects can be brought online sooner than anticipated if other projects fall through.

[105] OPPD (2024), Generation Expansion

and 150 MW of energy storage by 2030.[106]

- **NPPD** approved a budget[107] in early 2024 for new generation resources to meet growing demand, including 50 MW of battery storage near the Ainsworth Wind Facility, 50 MW of battery storage capacity purchased from an existing, privately owned wind facility, 216 MW of dual-fuel reciprocating internal combustion engines, and 420 MW of dual-fuel combustion turbines.
- **LES** continues to expand its renewable energy portfolio as outlined in its IRP.

Innovative Partnerships and Rates

OPPD has collaborated with NextEra Energy Resources and Google to access 600 MW of wind capacity at the High Banks Wind Energy Center. In this arrangement, OPPD benefits from increased renewable energy resources, NextEra Energy Resources gains a committed customer, and Google retains the energy and environmental attributes to support its climate goals. These partnerships create mutual benefits by aligning the interests of utilities, developers, and companies pursuing sustainability targets.[108]

Utilities are developing innovative rates to manage demand and support the integration of renewable resources. These rates are designed to provide flexibility and incentivize customers to shift their usage to periods of high renewable generation, thereby improving the overall efficiency and sustainability of the grid. For example, LES's dynamic pricing structure encourages energy efficiency and aligns consumption with renewable energy availability, helping to reduce peak demand and integrate more renewables into the grid.

Rate Innovation: OPPD's 261M Rate

In 2017, OPPD was the first U.S. utility to offer a green rate through its 261M rate, a program that lets customers buy large-scale renewable energy through its system. The rates are market based and cover the utility's fixed costs. This program was developed and approved within three months to address growing demand from Fortune 500 companies for renewable energy to meet their energy and climate goals.

These new rates are only applicable to commercial- and industrial-size customers with a demand of 20 MW at 161,000 volts or 200 MW for 345,000 volts (transmission levels). The rate allows customers 18 months to ramp up to the minimum energy demand which is then billed a monthly service charge of $10,000, a demand charge of $18.36/kW, an energy charge which covers the cost of energy purchases from SPP, and a 5% gross revenue charge in lieu of taxes.

The structure provides a mechanism to pay for grid upgrades specific to these customers and enables them to access energy through the SPP market.

Technological Advancements

The exploration of new, or emerging, technologies, such as energy storage, hydrogen, and carbon capture and storage, is critical for achieving long-term sustainability goals while maintaining system reliability. Nebraska utilities are investigating and investing in these resources to support their transition to cleaner energy. However, technology readiness is an important consideration. Several non-emitting energy technologies, such as long-duration storage and advanced nuclear generation (including small

[106] OPPD 2021 Integrated Resource Plan, at p. 87
[107] NPPD (2024), New Generation for Future Growth
[108] OPPD, at https://www.oppdcommunityconnect.com/generation (accessed Sept. 13, 2024)

modular nuclear reactors), are years away from commercialization and, while promising, are not available in the time frame required to meet currently anticipated, near-term load growth. Many of these technologies require further demonstration, technology improvements, cost improvements (that come with learning curve improvements), and in some cases new regulatory frameworks.

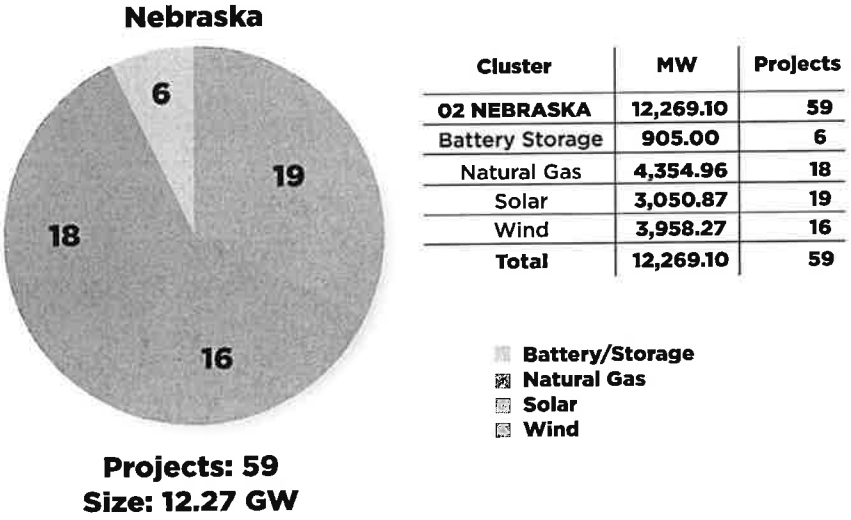
Interconnection for Private Renewables

Private renewable energy developers are a growing part of Nebraska's energy landscape. The state has rich wind and solar resources, and federal subsidies under the IRA are driving the development of these facilities.

Nebraska offers a streamlined approval process through the PRB for private renewable developers, which helps expedite project development once the project has cleared the SPP interconnection queue. This streamlined process is described in more detail in the Nebraska Public Power and Private Developers section. It is important to note that while the PRB approval process is streamlined, zoning and permitting is done at the county level and can prove very challenging.

In addition, the SPP generation interconnection queue, through which new generation resources seeking to connect to the grid are studied, has become increasingly congested. As of 2024, there were more than 80,000 MW of generation capacity in the queue with significant portions allocated to wind, solar, and energy storage projects.[109] The long wait times in the SPP queue—averaging over five years—pose a significant barrier to the timely development of all new generation projects.

Figure 13: SPP Generation Interconnection Queue for Nebraska Subregion (as of Late August 2024)



Cluster	MW	Projects
02 NEBRASKA	12,269.10	59
Battery Storage	905.00	6
Natural Gas	4,354.96	18
Solar	3,050.87	19
Wind	3,958.27	16
Total	12,269.10	59

Sources: SPP Generation Interconnection Queue Dashboard, accessed Aug. 2024

[109] SPP Generation Interconnection Queue, link from https://www.spp.org/engineering/generator-interconnection/

Black Hills Energy: Delivering Natural Gas to Support Nebraska's Economy

Black Hills Energy conducts annual gas supply planning to forecast peak demands and ensure supply. According to their annual report, Black Hills Energy has deployed $590 million to support their infrastructure, including improving risk detection and replacing leaking or damaged pipes.[110] The company has also seen customer growth in the agricultural sector from soybean, beef, and ethanol producers who have been looking for renewable natural gas (RNG) sources. Black Hills Energy currently has four RNG interconnection sites in Nebraska and has plans for a fifth interconnection site.[111] The company is planning to spend around $513 million through 2028 on its infrastructure in the state.[112]

Utility Long-Term Responses

Nebraska's major utilities develop long-term IRPs that outline their strategies for meeting future energy needs while transitioning to cleaner energy sources. These plans reflect each utility's approach to balancing reliability, affordability, and sustainability in the context of Nebraska's unique energy landscape. Each of the utilities emphasizes the need for flexibility in planning, particularly in the face of load growth, clean energy demands, and regulatory changes. Ensuring reliability while transitioning to cleaner energy sources is a key priority for all of them.

Example Trend: Rapid Update of Resource Plans—Georgia Power Company (GPC)

GPC updated its 2022 IRP in October 2023 when its projected load growth increased from 400 MW to 6,600 MW through 2030, driven primarily by data center load growth in its service territory. Importantly, this need has emerged as the company just added approximately 2,200 MW of generation capacity with the completion of Vogtle Units 3 and 4.

GPC's revised IRP was filed to request approval for power purchase agreements, contracted resources, and planned resource investments. GPC will invest in new battery energy storage systems, develop solar capacity, build new simple-cycle combustion turbines, and expand distributed energy resources and demand response programs. In addition, the company expects to add 10,000 MW of new renewables by 2035.

To address flexibility concerns it established a framework within which the company can procure additional capacity ("flex capacity") ahead of its 2025 IRP filing.

All three major utilities have set net-zero targets, with LES setting the most ambitious target to be achieved by 2040 and NPPD and OPPD by 2050. The IRPs provide a roadmap for achieving these goals through a combination of renewable energy expansion, fossil fuel transition strategies, and the integration of new technologies such as energy storage. Summaries of the IRPs and selected updates for each utility are provided below:

OPPD IRP and Generation Updates

- **Power with Purpose Initiative**: OPPD's strategy prioritizes carbon reduction by ceasing coal operations at the North Omaha Station. This involves retiring Units 1-3 (241 MW) in 2026 and converting Units 4-5 (278 MW) to natural gas in the same year.

[110] Black Hills (2023), Annual Report
[111] S&P Global (2024), Gas utilities continue to line up new pipeline links to RNG projects
[112] Black Hills Energy, Presentation at the AGA Financial Forum (May 2024), at p.31

- **Renewable Expansion**: OPPD began operations of 81-MW Platteview solar project in May 2024[113] and plans to add 1,000 – 1,500 MW of renewable generation through 2030, and 125 MW of energy storage by the end of 2027. By 2050, these targets expand to 3,000 MW of solar, 3,800 MW of wind, and 800 MW of energy storage. This significant increase in renewable capacity is central to OPPD's plan to achieve its net-zero goals.
- **Planned Projects**: OPPD expects to bring natural gas generation, totaling 600 MW, online in 2024/2025 and is pursuing an additional 900 MW of gas-fired generation.[114] These projects are part of OPPD's broader strategy to meet growing energy demand, particularly from large industrial customers and data centers, while transitioning to cleaner energy sources.
- **Flexibility in Near-Term Planning**: In response to unprecedented load growth, OPPD has shown flexibility in its planning processes, delaying some retirements and conversions while adding new natural gas turbines to ensure reliability.

Growing Importance of Gas-Fired Generation and Natural Gas Supply

One of the trends that the electric industry has witnessed in recent years is an increasing reliance on natural gas for both base-load generation, as coal has retired, and balancing a growing portfolio of renewables. While natural gas-fired generation represents a relatively small portion of the generation fleet today in Nebraska, it is forecasted to play a larger role as coal plants retire and more renewables are integrated into the system. Recent winter events (such as Winter Storms Uri and Elliott) have demonstrated the outsized role that natural gas can play in extreme winter weather.

Developing natural gas-fired plants (and the pipelines that supply them) is not without challenges. New gas-fired generation in the state will be subject to the same interconnection challenges facing all new generation in SPP. In addition, incremental gas supply to the state may also be required as usage of the fuel expands. Fortunately, there are several pipelines that run through Nebraska today, which could ease access to supply. Lastly, new gas plants will also be subject to EPA's §111 GHG emissions rule, depending on what happens with myriad legal challenges currently underway. If implemented in its current form, the rule will dictate the amount of CO2 that can be emitted as they operate.

NPPD

- **Natural Gas Conversion at Sheldon Station**: NPPD is exploring the restoration of natural gas as the primary fuel at Sheldon Station beginning in 2028. This is part of a broader strategy to maintain a diverse energy portfolio while reducing carbon emissions.
- **Nuclear License Extension:** NPPD is pursuing a 20-year license extension for Cooper Nuclear Station, which would allow it to continue providing emission-free electricity until 2054.[115]
- **Renewable Energy and Energy Storage**: NPPD plans to maintain and expand its Tier 1 wind and solar resources as part of its commitment to sustainable energy. NPPD is also

[113] OPPD, https://www.oppdcommunityconnect.com/power-with-purpose-solar
[114] OPPD (2024), at https://www.oppd.com/media/319925/2024-6-june-new-generation-and-transmission-update.pdf and https://www.oppd.com/media/320139/2024-9-sept-sd-9-integrated-system-planning-monitoring-report.pdf
[115] NPPD, "Cooper Nuclear Station Celebrates 50 Years of Reliability" (August 2024)

focusing on energy storage technologies, recognizing their importance in balancing intermittent renewable energy with reliable grid operations.

- **Coal Plant Retirements and Carbon Capture**: By summer 2026, NPPD plans to evaluate an expanded energy mix, including the potential for retiring or upgrading existing coal resources with carbon-capture technology. This aligns with the utility's longer-term goals of reducing reliance on coal while ensuring grid reliability.
- **Demand Response Programs:** NPPD has pilot demand response programs[116] for both wholesale and retail customers, which supports resource adequacy requirements.[117]

LES

- **Renewable Energy Development**: LES plans to maintain its Tier 1 wind resources and develop Tier 1 solar resources. These efforts are part of LES's broader strategy to increase the share of renewables in its energy mix.
- **Energy Storage and Microgrids:** LES is actively exploring energy storage technologies, including a battery storage pilot project. Additionally, LES is expanding its community microgrid solar initiatives, which are designed to enhance grid resilience and support local energy needs.
- **Dynamic Pricing and Demand Response**: To better manage demand and integrate renewable energy, LES is implementing a dynamic pricing rate structure for its customers. This approach aims to incentivize energy efficiency and align consumption with periods of high renewable generation.

Role of Rural Electric Cooperatives, Public Power, and Municipal Utilities

The state's rural electric cooperatives, municipal utilities, and smaller public power districts are key players in meeting customer demand and serving communities throughout the state. In looking at utility responses and plans to meet changing energy demands in the state, we have focused in this paper on the larger public power districts, which supply most of the power to distribution utilities and municipalities as well as end-use customers.

Takeaways

Nebraska's energy landscape is undergoing significant transformation driven by rapid load growth and demands for clean energy. The state's utilities are responding with comprehensive plans that balance immediate needs with long-term sustainability goals. Through strategic investments in new generation, renewable energy, streamlined regulatory processes, and innovative rates, Nebraska is positioning itself to meet future challenges while continuing to provide reliable, affordable energy to its residents and industrial customers.

---

[116] Demand response programs encourage customers to voluntarily curtail usage at times of high prices or system stress in exchange for compensation or reduction in electricity charges.
[117] NPPD, at https://docs.nppd.com/Board/2023/October7.pdf

SUPPORTING ENERGY INFRASTRUCTURE IN NEBRASKA: AREAS FOR CONSIDERATION

Stakeholder Education

On the whole, the average American citizen is relatively uninformed about the energy industry, infrastructure development, energy costs, and the industry's fundamental role in our economy. There is also significant misinformation available about the health and environmental effects of certain types of energy infrastructure. In Nebraska, there is often community pushback about the appearance of infrastructure, the proximity of farmland to renewable installations, or the use of farmland for renewables development. In addition, these arguments both for and against various types of projects have become highly contentious. Unfortunately, energy is a complex and multifaceted subject that does not lend itself to easy answers or sound bites.

Because energy is such an important enabler of economic growth in Nebraska, the state has an opportunity to educate its myriad stakeholders and policy makers about the industry and its benefits. This education should include:

- The basics of energy infrastructure (electric and gas)
- The critical role energy plays in the broader Nebraska economy
- How the cost and reliability of electricity in the state compares to its neighbors
- Facts about various types of generation in Nebraska and their health impacts (or lack thereof)
- The benefits of a diverse portfolio of generation for both cost and reliability, including the role of natural gas and fuel flexibility in ensuring reliability
- Nebraska's approach to clean energy and its importance to companies moving to the state or looking to grow
- The economic benefits of renewables to the counties where they are located (e.g., nameplate tax revenue)

Creating a base of educational materials that can be used by utilities, developers, economic development offices, state and local officials, and companies looking to invest in the state could both align the parties on key facts and dispel some of the misinformation that is available.

It is critical that policymakers lead the way in becoming educated about these topics. Making sure that their own positions are both well informed and grounded in fact can guide the state in making decisions that both preserve reliability and affordability while enabling economic development. Understanding the role that clean energy will play as the state's energy ecosystem evolves to meet the needs of a changing customer base will be critical.

Permitting and Zoning

The permitting and zoning processes to build generation are different for public power entities and private developers. Public power entities go through a review process with the PRB that assesses questions of need, cost effectiveness, and public benefit. However, once those thresholds are met, the utilities have relatively little difficulty in siting and permitting.

Private developers go through a streamlined approval process for projects (which does not include meeting the same thresholds as public utilities); however, they must then go through a zoning and permitting process that may be unique to each county in the state. As with the siting of any type of infrastructure, stakeholder opposition can be extensive. As such, the process can take significant time and effort and yield very different results from county to county.

The state might consider a "model rule" approach to permitting and zoning to streamline the process and provide a consistent approach and set of requirements to developers. This could include identifying leading practices from projects considered successful by both communities and developers. Based on these leading practices, a "standard" process could be introduced to counties grappling with these challenges.

Private developers pay a combination of real and personal property taxes and nameplate capacity taxes to the counties within which they operate. The nameplate tax was designed to provide a stream of income to the county roughly aligned with the life of the asset; 26 years was used to calculate the nameplate capacity tax. Some counties have touted the benefits of these funds to their communities. There may be an opportunity to align the receipt of this tax revenue, or a portion of it, to the use of the model rule described above. These funds could also be earmarked for particular county programs or funds.

Large Loads

As the role of technology in our modern economy continues to grow, data center developers are searching for optimal locations. Access to affordable, reliable electricity is a key criterion in their evaluations of potential locations. Given the size and quantity of these load interconnection requests, utilities across the country are grappling with how to assess and then plan for the infrastructure needed to support these customers. Importantly, this is true across the country; Nebraska is not unique in this challenge.

In considering the build of infrastructure to support large loads, particularly from data centers (because of how quickly they can come online) but also for other types of facilities, it is important to recognize that utilities typically build infrastructure when they have a clear line of sight to load coming online. To the extent that a load is "speculative" or "uncertain," the utility typically does not build grid or generation facilities, as there is no clear path to recovery of the costs of those assets. As such, gaining clarity on the development plans of large-load customers and aligning their commitments to locate in the state with the utility's requirements to build infrastructure are important.

This approach is not unlike recent FERC reforms to the generation interconnection process that require generation (primarily renewables) developers to meet certain thresholds or criteria before they advance in the regional "queue" to be studied as a new generator on the system.

As Nebraska's utilities work to bring on these new loads, mechanisms that enable both line of sight to load being connected and financial commitments to support the needed infrastructure are critical. In

addition, given the amount of infrastructure that may be required to connect these loads, it is important that these customers pay their portion of incurred costs and that the utility is able to hold its other customers harmless to the degree that is appropriate. To the extent that infrastructure initially needed to meet large loads benefits customers more broadly (i.e., transmission investments), those costs can and should be borne by all beneficiaries.

A combination of creative contracting and rate structures can enable utilities to gain lines of sight to interconnection and customers to provide financial commitments to the service territory. Utilizing SPP to provide energy to these large loads provides a mechanism by which to procure energy but not necessarily require the build of all additional generation by utilities within Nebraska. Of course, Nebraska utilities must provide sufficient additional generation deliverable to meet resource adequacy requirements under regional reliability rules.

Given the significant need for generation resources to meet the loads coming to the state, "all hands on deck" will be needed to meet these needs. This includes both electric and gas utilities as well as public and private entities. Public power entities generally have the flexibility to enter into partnerships with both customers and their peers to site generation or other infrastructure. There may be options to expand natural gas offerings to certain types of customers. Expanding these creative structures and contracting could benefit both utilities and their customers as the state looks to support both new load and customers.

CONCLUSION

Nebraska has reliable, affordable energy. The state has maintained a portfolio of energy resources that have served it well in keeping energy costs low and reliably meeting demand. Access to low-cost, reliable energy underpins a very successful agriculture sector and has attracted a variety of other industries to the state. These include agriculture-adjacent industries like ethanol production, as well as steel manufacturing and data centers.

In recent years, the United States has seen a significant increase in requests by large customers to interconnect to the grid. This has been driven by the onshoring of manufacturing, the expansion of data centers to support advanced cloud computing, Internet of Things applications, web-based commerce and growth in artificial intelligence applications, and growth in cryptocurrency mining. Favorable federal policy for products like ethanol has also driven demand for agriculture-adjacent industry. As a result, the number and size of load interconnection requests has ballooned across the country and within Nebraska. Many of these large customers have net-zero or carbon-emissions-reduction targets and are trying to procure clean energy to help meet these goals. Some customers produce products that have a requirement to use only "clean," "zero-emitting," and/or low-carbon-intensity resources in their production.

Federal and state policies supporting clean energy and renewables is driving a wholesale shift in the types of generation available across the country. The system is moving away from baseload fossil power plants and integrating increasing amounts of renewable resources in quantities that are twice the amount of currently installed power plants. Generous federal subsidies to renewable energy and the availability of rich wind and solar resources in Nebraska are bringing renewable developers to the state. However, local resistance to these projects can be significant. These developers follow different processes to develop projects from public power entities; however, they have a role to play in meeting the energy needs of the state.

Natural gas also plays an important role in delivering affordable, reliable energy to Nebraska customers. It provides end-use customers both heating and energy for industrial processes as well as fueling 26% of the accredited generation capacity in the state. Given the significant gas infrastructure in the state, its role in meeting customer needs for energy and heating is critical. The commodity has the potential to play an even larger role as the state looks to meet the new customer load described above and gas-fired power remains a key, proven, and dispatchable energy resource.

Nebraska is generally well positioned to support increased load; however, infrastructure planning and development have never been easy. In addition, the time frame within which new customers are looking to connect is challenging the processes and time frames within which energy systems have traditionally been planned and built. The utilities in the state are responding to these needs but doing so in a way that continues to prioritize low-cost, reliable energy. The development of *clean* energy, however, is increasingly important as customers bring their requirements to the state.

Given these needs and drivers, the time is ripe for all participants in and customers of Nebraska's energy systems to work together to develop innovative, constructive models to support infrastructure development. Stakeholders and customers would benefit from being better informed about the critical role this industry plays in the economic success of the state and how different types of resources can contribute to that success. Regarding the development of renewables in the state, there are opportunities to create a standard or "model" zoning and permitting process that could facilitate the interconnection of renewables developed by private developers. In working with customers who want to connect significant

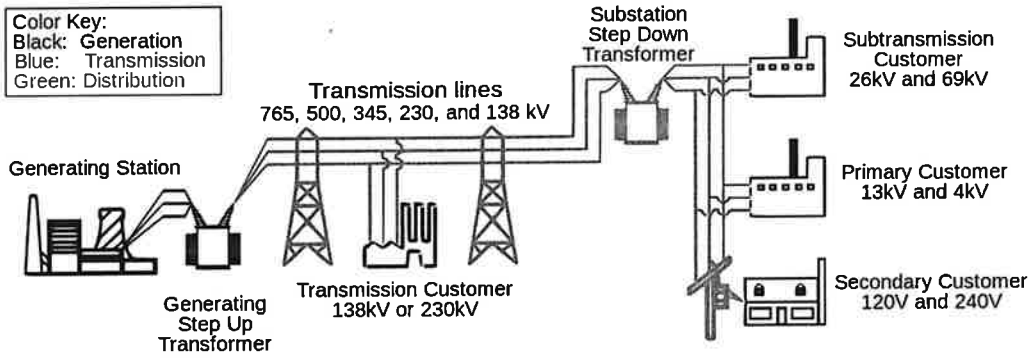
loads to the system, there may be an opportunity for creative partnerships across public power, private developers, and natural gas utilities to provide the energy needed.

APPENDIX A: KEY PRINCIPLES – ELECTRICITY 101

Segments of the Electric System

An electric utility system is a multifaceted structure responsible for generating, transmitting, distributing, and delivering electricity to consumers. An electric system is broadly divided into three parts: generation, transmission, and distribution. Distributed energy resources such as rooftop solar are sometimes considered part of this system when on the customer's side of the meter.

Figure 145: Centralized Electric System Model



Generation is the production of electrical energy from another primary source. These primary sources may be coal, natural gas, oil, nuclear power, and other natural sources such as water, wind, or solar energy. Generators typically have different operating schedules based upon their technology and anticipated electricity demand:

- **Baseload:** Operates much of the day and night with limited fluctuation. Often, these units are thermal (coal, nuclear, or gas fired), involve the production of steam, and have lower fuel costs but higher fixed costs. These units are inefficient when cycled (i.e., ramped up and down). Renewables, including hydropower, do not technically operate as baseload but are run with baseload when available because their marginal cost (sun, wind, water) is zero.
- **Intermediate:** More flexible than baseload, output of these units can be increased and decreased, depending upon demand. Sometimes referred to as load-following, they may be turned off at night or on weekends, depending upon actual and expected demand.
- **Peaking:** Very flexible plants that can be started and stopped quickly. Typically, these units have low fixed costs but high variable (operating) costs, in part because frequent startups consume large amounts of fuel. As the name implies, these units are called upon at times of day and seasons when demand is highest. Energy storage is increasingly used as a peaking resource.

The transmission and distribution system is responsible for transporting electricity from generation facilities to consumers. Generation typically produces electricity with a voltage range from 11 kV to 25 kV. Transmission lines are then used to carry electricity over long distances but can be subject to some energy loss in the form of heat due to resistance as electricity flows through the conductor (or lines). To reduce losses, "step up" transformers are placed at the interconnection of generation facilities and

transmission lines, which increase the voltage to between 110 kV to 765 kV. Substations are then used to "step down" voltages from the transmission lines to distribution lines to between 4 kV and 69 kV (primary voltages).

Distribution lines deliver power from substations to consumers through primary lines and secondary lines. Line transformers and pad-mounted transformers then "step down" the primary voltages to secondary voltages (120V to 240V) used by small commercial businesses and residential customers.

Thermal Generation

Electricity is a secondary source of energy, as it requires the conversion of other sources of energy into electrical power. Thermal generation is responsible for converting heat energy into electrical energy, typically using sources such as natural gas, coal, oil, or nuclear reactors (in which controlled fission generates heat). Thermal generation involves burning these fuels at high temperatures to heat water in a boiler. The water is converted into high-pressure steam, thus transforming it into kinetic energy to spin a turbine. This kinetic energy turns the generator to produce electricity. A condenser then cools the steam back into water which is recycled back to the boiler. Gas turbines do not use steam but, like a jet engine, take in air, compress and heat it, and use the force of exhaust to rotate blades and turn a generator.

For thermal generation, there are environmental considerations of emissions from combustion of fuels, which produce sulfur dioxide, nitrous oxides, mercury, and particulate matter. Plants typically have emissions control systems that capture or reduce those emissions. Carbon dioxide, also emitted during fuel combustion, is typically uncontrolled unless it is captured and sequestered underground.

The capacity factor of a generation facility is the ratio of actual electric generation produced by a generating unit over a period of time to the maximum electric generation that could have been produced if the generation unit operated at continuous full power. Thermal plants run more efficiently when operated much of the time. Illustrative capacity factors for fossil fuel sources are a function of how often they are called to operate. Coal plants in 2023 averaged 42% nationally; natural gas combined cycle averaged near 59%.[118]

Solar and Wind Generation

Solar and wind generation have become favored resources due to technological improvements, federal tax credits, interest in non-emitting energy resources, and decreases in installed cost. Solar photovoltaic technology can convert radiation from the sun into electrical current. Wind power utilizes the natural wind currents to spin a turbine to generate electricity.[119] These renewable sources of energy, unlike fossil fuel generation, do not require fuel, and the electricity they produce varies with wind currents and availability of sunlight, respectively.[120]

One key difference between renewable energy sources and fossil fuel energy sources is that renewable generation may not align with peak demand times. Solar is plentiful during summer afternoons with high air conditioning demand but less so in early winter mornings with high electric heat demand. Wind can be plentiful in low demand times such as overnight hours but also in winter. Thermal generation, by

[118] https://www.eia.gov/electricity/monthly/epm_table_grapher.php?t=epmt_6_07_a
[119] U.S. Dept. of Energy (July 2015), United States Electric Industry Primer
[120] Congressional Research Service (Apr. 25, 2023), Electricity: Overview and Issues for Congress

comparison, is considered dispatchable; that is, it can be ramped up and down to produce more or less energy on demand.

Average nationwide capacity factors for wind plants in 2023 was 34% and 23% for utility-scale solar.[121]

Construction Time for Various Energy Resources

As mentioned elsewhere, generation interconnection can add a significant amount of time to development of new generation resources. Time to develop, permit, engineer, and construct are also key factors. Those time frames can vary by technology, region, and myriad other factors. To understand "typical" time frames, the table below summarizes selected technologies and the construction and total lead times that the U.S. Energy Information Administration uses in its analyses:

Figure 15: Typical Generic Lead Times for Selected Technologies (Months), Excluding Interconnection Queue

Technology	Construction Time (Months)	Total Lead Time (Months)
Battery energy storage system (4-hour duration)	12	18
Combustion turbine – simple cycle (4 x 54 MW)	22-24	40
Combined cycle (1 x 1 x 1)	22	40
Advanced nuclear (brownfield) (2 x AP1000)	52	84
Small modular reactor (6 x 80 MW)	42	66
Wind (200 MW)	9	21
Solar PV (150 MW-ac, single-axis tracking)	12	36

Source: EIA (Jan. 2024), Capital Cost and Performance Characteristics for Utility-Scale Electric Power Generating Technologies

Permitting of thermal resources often involves considerations of water usage, effluents, and air emissions which can affect development timelines. The estimates above assume technology readiness. Nuclear may take longer than indicated above given the technology developments that must still occur.

Transmission and Distribution Planning

In addition to generation resources, transmission and distribution facilities need to be planned, designed, and built to replace obsolete and aging facilities and to accommodate increasing demand from customers. As customer demands increase (load growth) the capacity of transmission and distribution system needs to increase to accommodate this demand.

Local utilities have significant autonomy over improvements on their distribution systems, but also coordinate with transmission providers when upgrading or constructing new facilities. Transmission owners must propose projects through the RTO's (i.e., SPP) regional transmission planning process. The RTO assesses needs in collaboration with transmission owners, studies the impact of proposed transmission projects on the region, and develops a long-term transmission plan that is refreshed annually.

The time required for these studies and the approval process, as with new generation, is a consideration in expanding the bulk power grid in Nebraska.

[121] Federal Reserve Bank of Dallas, at https://www.dallasfed.org/research/energy/indicators/2024/en2404

System Balancing

Electricity is a physical commodity where supply and demand must be always in balance. This balancing is required to ensure frequency and voltage levels within the system are stable and within a narrow range of tolerances. One can think of an electric grid like a bathtub, for which the water level must be kept the same at all times—as some is drained, more must be added.

Resource Adequacy

Reliability of the bulk power grid depends in large part on having adequate resources at all times to serve demand (or load). Resource adequacy is defined as the ability of the electric system to supply the aggregate electric power and energy requirements of the electricity consumers at all times, taking into account scheduled and expected unscheduled outages of system components.[122]

Resource adequacy requires maintaining sufficient capacity above forecasted peak demand to serve peak load. This margin (reserve margin) is intended to account for potential weather events or loss of a large generator or transmission line. The margin does not require "never out" but is usually based upon a probabilistic 1-in-10 years loss of load standard.[123]

System operators and planners require demonstration of sufficient capacity to meet this reserve margin. As more variable (solar and wind) resources are integrated into the grid, those operators calculate capacity, accounting for its availability at peak demand times. This is termed effective load carrying capability (or ELCC), which is the ability of a generation unit to produce electricity to reliably meet demand, especially during electricity shortfalls. ELCC is usually less than nameplate capacity for solar and wind resources because of their variable nature. But other resources may have lower ELCC (less than 100% of nameplate capacity) due to unit performance (from unit breakdown and outage history).

Kilowatts, Kilowatt-hours, and Pricing of Electricity

A key measure of electricity used in industry is the rate at which it is produced, transferred, or consumed at an instant, with the units of electricity called watts. Similar measures are kilowatts (kW) (=1,000 watts) and megawatts (MW) (=1,000 kilowatts). How much energy per unit of time (typically an hour) a generator produces or a consumer uses is called a watt-hour. Similar measures are kilowatt-hours (kWh) (=1,000 watt-hours) and megawatt-hours (MWh) (=1,000 kilowatt-hours). For example, an incandescent bulb may be rated at 60 watts (instantaneous power required to illuminate it) or .06 kilowatts. If you operate the bulb for 16-2/3 hours, it consumes 1 kilowatt-hour of electricity (.06 kW x 16-2/3 hours = 1 kWh).

Electricity prices for retail customers are a function of the rate schedule (sometimes called a tariff) of the customer's class, e.g., residential, commercial, lighting, and industrial. The schedule sets forth the charges for the customer's service. These charges may include fixed charges (to pay for infrastructure like wires that do not vary with customer usage), customer charges (for billing and other services), societal charges (for low income and other programs), taxes, and volumetric charges based upon energy used.

Volumetric charges are typically based upon energy consumption (typically in kilowatt-hours) over a billing period measured in kilowatt-hours. A rate (in cents per kilowatt-hour) will be set at which the customer's energy charge will be calculated.

---

[122] NERC (Dec. 2023), 2023 Long-Term Reliability Assessment, at p. 130
[123] Ibid., at p. 129

Some larger customers may incur demand charges. Those charges are to help pay for resources and other costs of supplying peak demand. Utilities apply demand charges based upon the maximum amount of power that customer used over a billing period. Demand is typically measured in kilowatts. Typically, the customer's rate schedule will specify the maximum power demand the customer may have. If the customer exceeds that demand over several months, it may be moved to another rate schedule with a higher demand charge.[124]

Customer and Load Types

Retail electricity end-use customers are customarily divided into three types: residential, commercial, and industrial. Residential customers typically use electricity for climate control, lighting, refrigeration, and operating appliances and equipment such as computers. Air conditioning is the largest use of electricity in homes.[125] The average U.S. household uses about 10,500 kWh per year.[126]

Commercial customers range from service-providing facilities and commercial establishments to office and government buildings to warehouses. Typical commercial uses of electricity are for operating computers and office equipment (combined), refrigeration, space heating and cooling, lighting, and ventilation. The average usage can vary widely based upon the building, alternative energy sources such as gas, and nature of the establishment.

Industrial customers are larger, energy-intensive customers that use electricity for operating machinery: generating process heat; and cooling, freezing, and refrigeration. They also use electricity for space heating and cooling and lighting of their facilities. Agriculture is included in the industrial use category; as mentioned elsewhere, irrigation is another end use among industrial customers.

A load profile is the shape of a load versus time curve over a defined period (e.g., hours). Depending on the shape of that curve, the cost to the utility to supply power could be higher or lower. Some utility rates can be based on averages of many load profiles for customers within a given class. Residential customers tend to have "peakier" consumption, with higher demand at the beginning and end of the day, while lower during the workday and at night. Customers with long operating schedules (e.g., hospitals, data centers, round-the-clock manufacturing) tend to have flatter customer load profiles.

Flatter load profiles tend to be less expensive to serve because their continuous steady demand can be served with a set of baseload resources at high-capacity factors without ramping up and down. Peakier loads tend to be more expensive to serve because resources must be reserved to meet the higher demand parts of the day but may be less utilized during the day and night. Load profile data is used for determining cost of service, planning the utility system, as well as evaluating energy management and peak load reduction and efficiency opportunities.

---

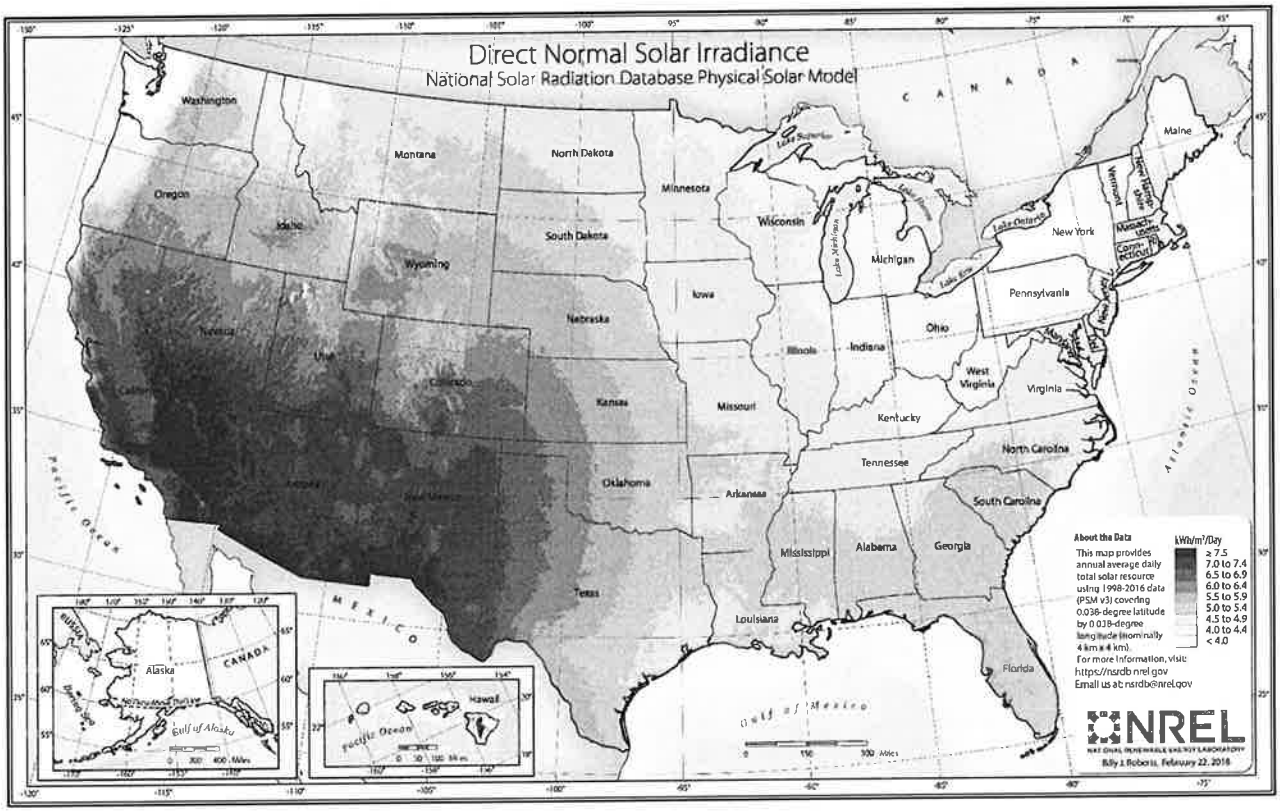
[124] See Renewable Energy World (June 6, 2017), "Making Sense of Demand Charges: What Are They and How Do They Work?"

[125] https://www.eia.gov/energyexplained/electricity/use-of-electricity.php

[126] https://www.eia.gov/energyexplained/use-of-energy/electricity-use-in-homes.php

APPENDIX B: SOLAR RESOURCES IN THE UNITED STATES

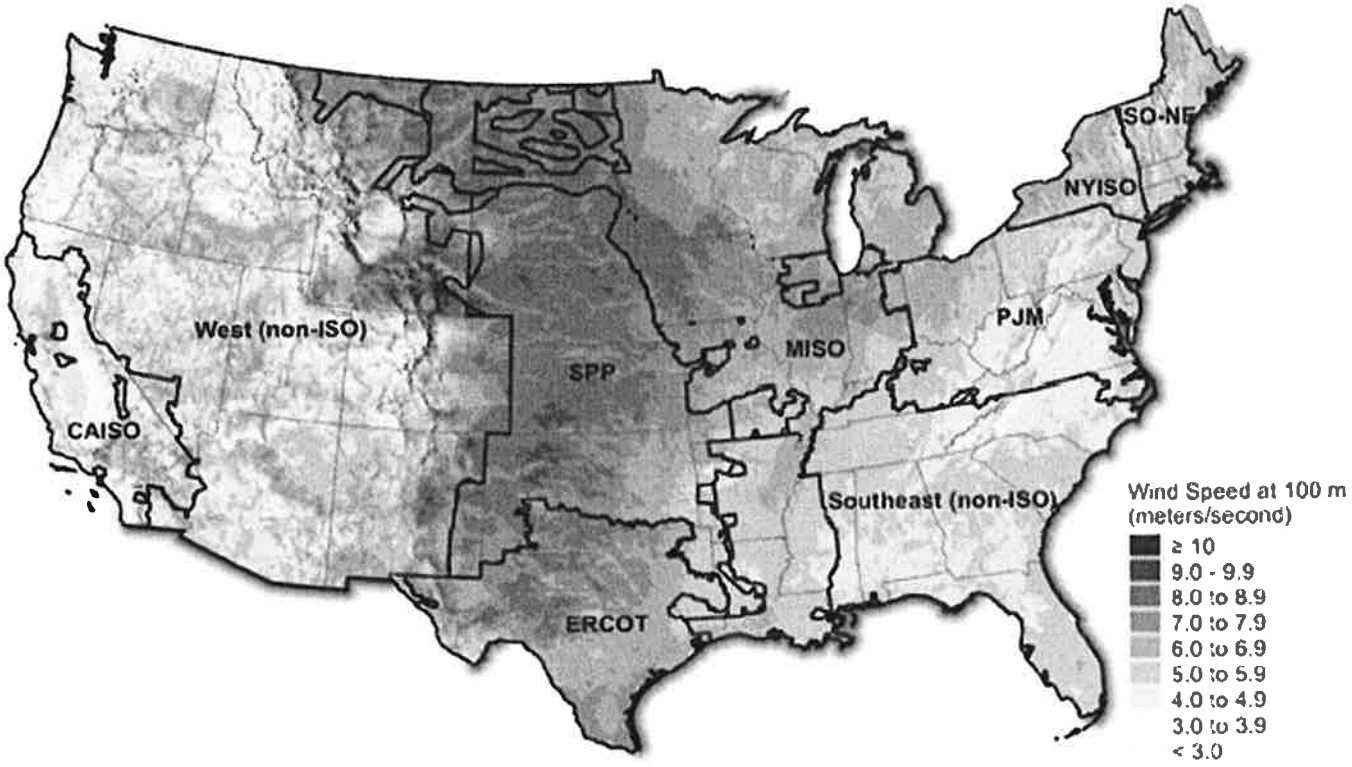
The following map shows solar irradiance in terms of annual average daily total solar resource, using 1998-2016 data, presented in kilowatt-hours per square meter per day.



Source: National Renewable Energy Laboratory, at https://www.nrel.gov/gis/assets/images/solar-annual-dni-2018-01.jpg (accessed Sept. 13, 2024)

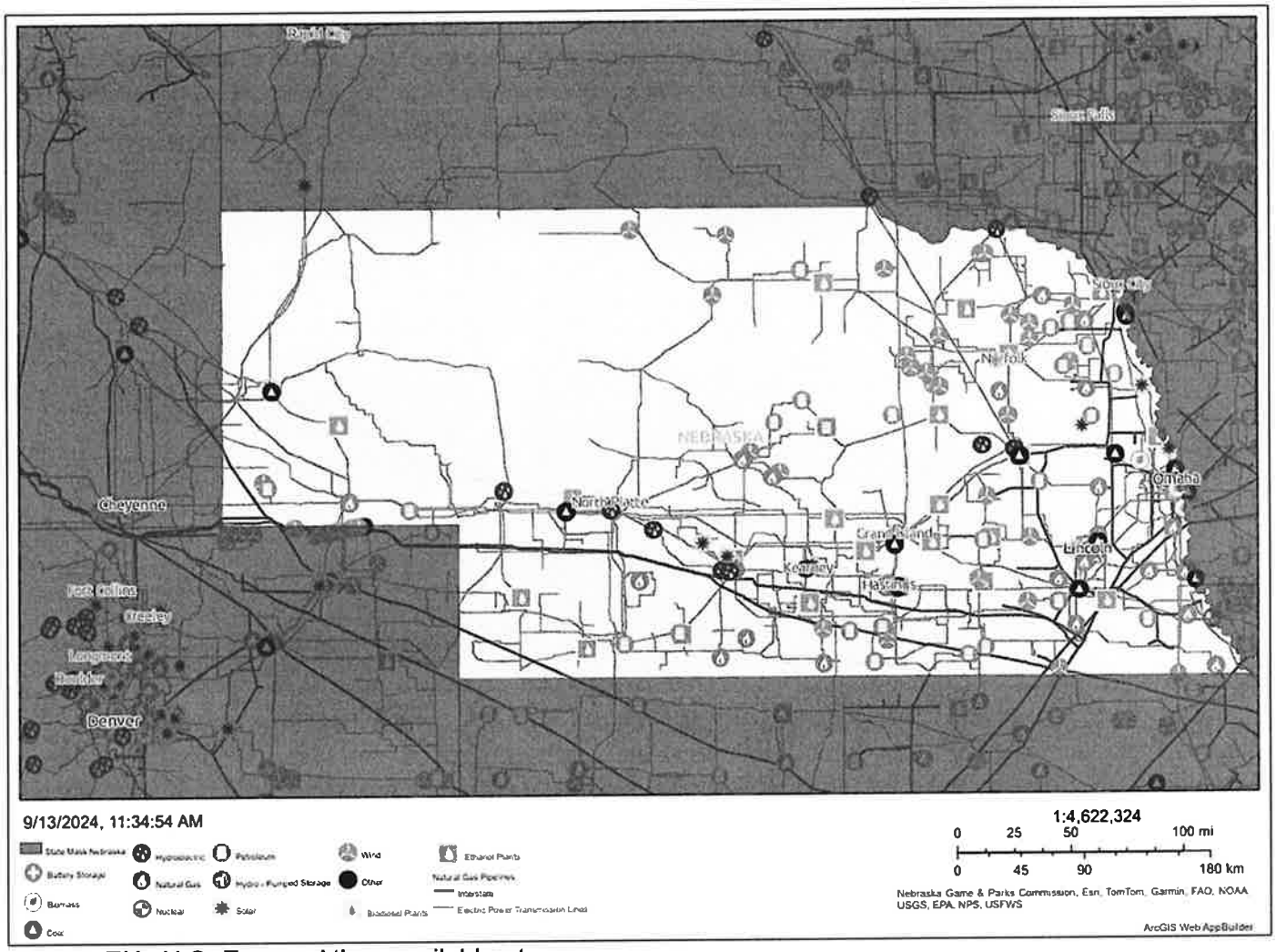
APPENDIX C: WIND RESOURCES IN THE UNITED STATES

The following map shows wind resource in terms of annual average U.S. wind speed at 100 meters above the ground. The map also shows the boundaries of nine regions, seven of which align with organized wholesale power markets (i.e., independent system operators).



Source: Dept. of Energy, Land-Based Wind Market Report: 2023 Edition (Aug. 2023), at https://www.energy.gov/sites/default/files/2023-08/land-based-wind-market-report-2023-edition.pdf (citing AWS Truepower and National Renewable Energy Laboratory)

APPENDIX D: NEBRASKA POWER, GAS, ETHANOL, AND BIODIESEL FACILITIES

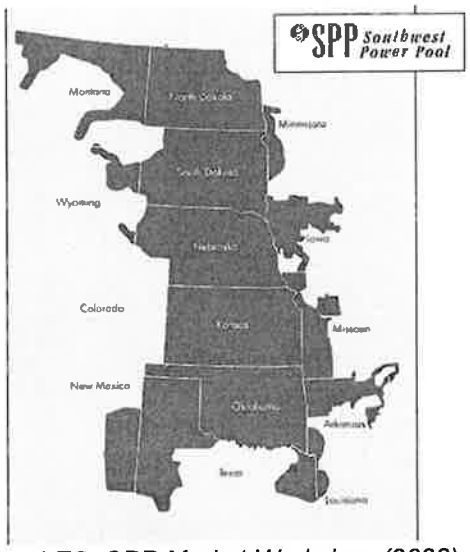


Source: EIA, U.S. Energy Atlas, available at https://atlas.eia.gov/apps/5039a1a01ec34b6bbf0ab4fd57da5eb4/explore

APPENDIX E: OVERVIEW OF THE SOUTHWEST POWER POOL

Nebraska is part of the Southwest Power Pool (SPP). SPP is one of the nine regional grid operators in the United States, covering part or all of 14 states from Oklahoma to North Dakota. SPP serves as "air traffic control" for the high-voltage regional grid, balances supply and demand across the region, maintains reliable grid operations, operates the wholesale energy market, and performs regional transmission planning. As the regional transmission expansion planning authority, SPP works with its members and stakeholders to develop transmission projects needed to meet reliability, economic, and public policy needs. SPP is made up of 111 members, including utilities, power producers, marketers, customers, and state agencies.

Figure 16: Geographic Footprint of the Southwest Power Pool



Source: LES, SPP Market Workshop (2022)

Role of SPP as an Energy Market and for Transmission Planning and Development

SPP provides a market for buying and selling wholesale electricity within its footprint and balancing supply and demand. It is responsible for setting resource adequacy accreditation and managing the day-ahead and real-time markets. Essentially, SPP ensures that supply and demand are balanced so that customers within its territory are supplied with electricity. In this role, it also manages financial transactions that underpin the movement of energy across its footprint.

One advantage of RTO membership is the ability to import and export energy when it is needed or in surplus, respectively. Nebraska is a net exporter of energy in the region, having exported about 10% of the state's generation to the regional grid in 2021.[127]

In terms of transmission planning, SPP is responsible for developing a regional transmission plan that complies with FERC's standards for planning and cost allocation. FERC Orders 1000 and 1920 (which was issued in 2024) establish the rules under which regional planning and cost allocation are to be performed by the region. Given the recent promulgation of Order 1920, each regional planning

[127] EIA, Nebraska State Energy Profile (updated July 20, 2023) (accessed Aug. 7, 2024); EIA Profile

organization in the United States will be required to submit compliance filings describing how its revised processes comply with that order. Depending on the success (or failure) of challenges to that order, new processes for transmission planning and cost allocation may be implemented in 2025 or 2026 for the region.

Through SPP's regional planning and cost allocation processes, the need for transmission is identified and costs for those projects are allocated to the transmission owners. The cost allocation is determined based on the attributes of the project. For instance, for projects greater than 300KV, 100% of those costs are allocated across the footprint as a "postage stamp" rate. For projects at lower voltages, their costs are allocated partially across the footprint, and a share is allocated to a smaller region within SPP (depending on the location of the project).

Generator Interconnection Queue

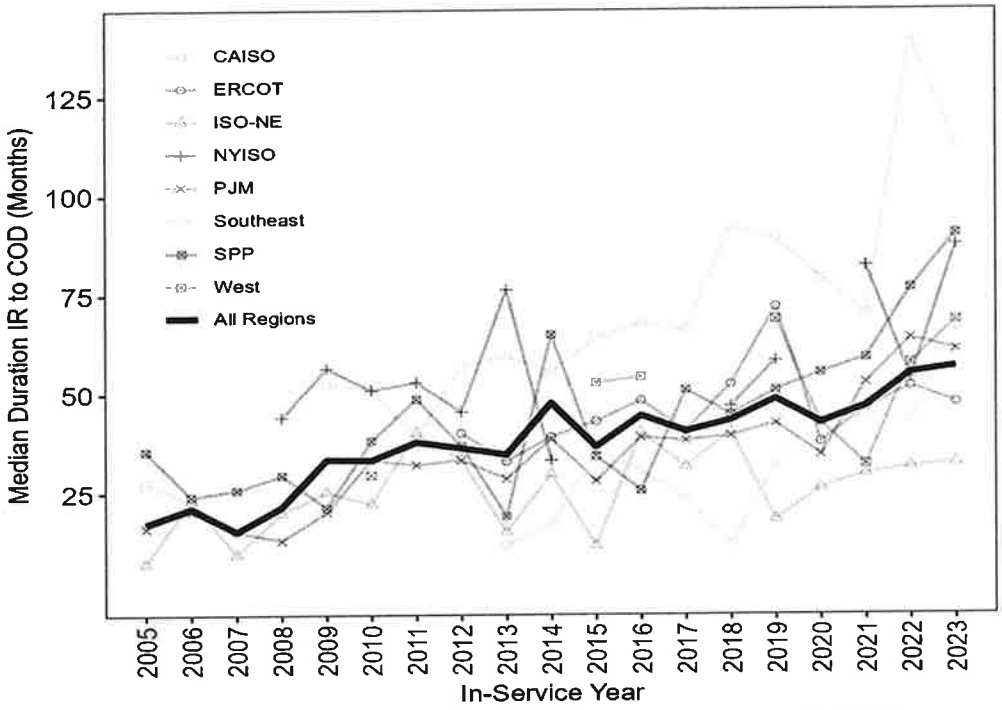
Part of SPP's role is to manage the generation interconnection queue for generation developers that want to interconnect to the transmission system. The generator interconnection queue process provides a means for generation planners and developers to submit new generation requests into the queue for validation, study, analysis, and ultimately, execution of a generator interconnection agreement. The purpose of these studies is to determine the effect on the grid of newly sited generation, identifying any transmission or substation upgrades needed, and assess other system impacts that new resources might present.

As of August 18, SPP had more than 85,000 MW of generation in its interconnection queue. In recent years, generation interconnection queues have become extremely congested. These interconnection processes were originally designed to accommodate a relatively small number of large generator requests. In recent years, as renewables have become the dominant resources requesting interconnection, these queues have become congested due to the volume of requests from relatively small resources. While FERC Order 2023 may, over time, improve RTO processes related to these queues, it is likely that delays in interconnection will remain a reality for the foreseeable future.

Per a study by Lawrence Berkeley National Lab, the time from entering the interconnection queue to commercial operation date takes on average more than six years.[128] SPP itself has stated that any new generation requests will take at least five years.[129]

[128] Lawrence Berkeley National Lab (2024), Queued Up
[129] Interviews

Figure 17: Interconnection Queue Operational Timeline[130]



Source: Lawrence Berkely National Lab, Queued Up report (2023)

This matters for Nebraska because, as we describe in this paper, the need for generation in the state is increasing. Both utilities and private developers are looking to interconnect generation in the state, and this queue is a potential barrier to all parties.

Governance and SPP's Regional State Committee

The Regional State Committee at SPP is comprised of state utility commissioners from each of the participating states and has primary responsibility over electric resource adequacy, coordination with neighboring systems, cost allocation for transmission upgrades, and allocation of financial transmission rights assets. [131] This governance feature is unique to SPP, as it grants authority to state representatives on an equal voting basis, giving them more collective state regulatory agency input on matters of regional importance as compared to other RTOs/ISOs.

Resource Adequacy and Capacity Accreditation

The question of capacity accreditation is another example of how the changing generation resource mix is causing the industry to reassess how to measure and assure reliability. Given the different operating characteristics of renewables (as opposed to coal, natural gas, or nuclear resources), there is an ongoing need to assess their performance on the grid and their ability to meet demand under all conditions, including extreme weather.

---

[130] IR means interconnection request. COD means commercial operation date. RTO/ISO acronyms are defined in Appendix G.

[131] SPP (2019), 2019 and Beyond Operational Objectives, Regional State Committee

For reliability, load-serving entities in SPP must demonstrate adequate accredited capacity to meet projected peak load with a reserve margin in the event of non-performance of a significant generation or transmission resource. That reserve margin has historically been 15%. SPP is now considering increasing seasonal planning reserve margins to 16% in summer and 36% in winter, beginning in 2026.[132]

To more adequately represent resource adequacy, SPP proposed an effective load carrying capability (ELCC) accreditation methodology for wind, solar, and energy storage resources and a performance-based accreditation (PBA) for thermal and other conventional resources. The ELCC is designed to account for the reduction in reliability with increased number of renewable resources and is based around wind, solar, hybrid, and storage resources' collective ability to perform during the highest-risk hours. The PBA, which is designed around improving performance, would be based on a power plant's "equivalent forced outage rate" during times the resources are needed[133].

There have been challenges to the new accreditation approach and it has not yet been approved by FERC. Some parties have urged FERC to reject the proposal, as it does not treat wind, solar, and battery storage resources the same as thermal resources. Others contend that the proposal will increase ratepayer costs because SPP will have to buy high-priced power when power plants that have been given unrealistically high accreditation fail to perform and represents an over-accreditation of thermal causing a long-term risk to reliability.[134]

In Nebraska, the question of capacity accreditation will matter, as the resource mix is poised to change along with the rest of the industry. In addition, as different resources receive different accreditations, generation planning by the utilities in the state will have to take into account the needs of the system against a more diverse and variable portfolio of resources.

---

[132] SPP, at https://www.spp.org/documents/71928/prm%20recommendation%207-2-24.pdf

[133] Utility Dive (2024), SPP Proposes Renewable, Thermal Resource Accreditation Reforms Aimed at Bolstering Reliability

[134] Utility Dive (2024), SPP Capacity Accreditation Plan Disadvantages Clean Power, Threatens Reliability, ACP, Others Say

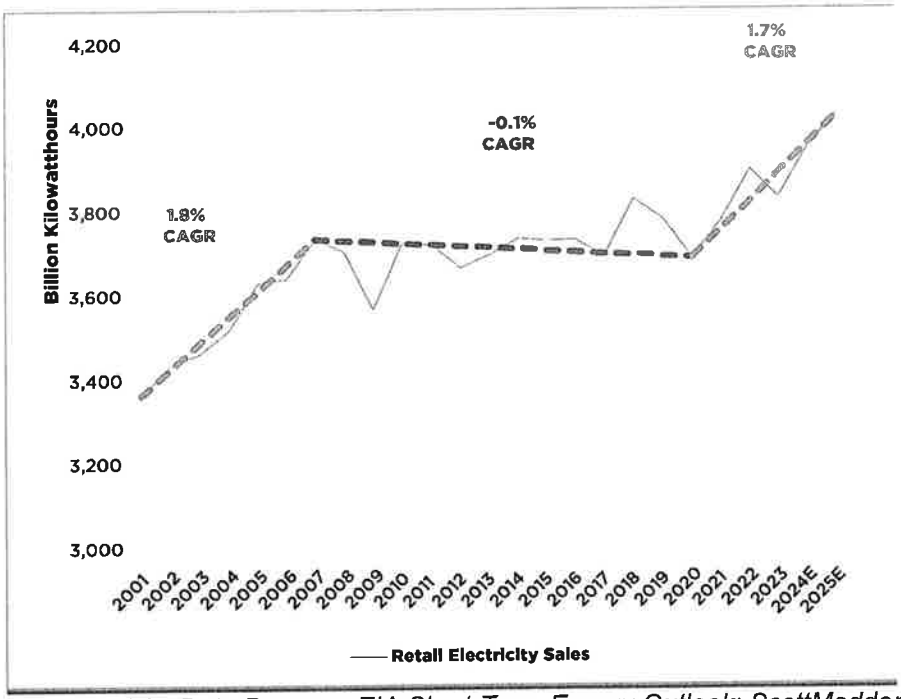
APPENDIX F: FACTORS DRIVING POWER NEEDS ACROSS THE UNITED STATES

In considering Nebraska's energy infrastructure, and particularly the challenges emerging in terms of growth, it is necessary to put these in the context of the rest of the United States. This section describes key national trends in load growth, new demand, and clean energy that are also impacting the state.

Historical and Current Forecast Consumption and Peak Demand Growth

The demand for electricity in the United States is increasing at a pace not seen in decades. The Great Recession, which lasted from December 2007 to June 2009, marked a turning point for retail electricity sales. Prior to the economic downturn, annual electricity sales increased at a compound annual growth rate (CAGR) of 1.8%. Following the Great Recession, retail electricity sales remained essentially flat for well over a decade. Retail electricity sales resumed growth following the COVID-19 pandemic. From 2020 to 2025, retail electricity sales are expected to grow an average of 1.7% per year (see Figure 19).

Figure 18: Historical and Projected U.S. Retail Electricity Sales (2001-2025)

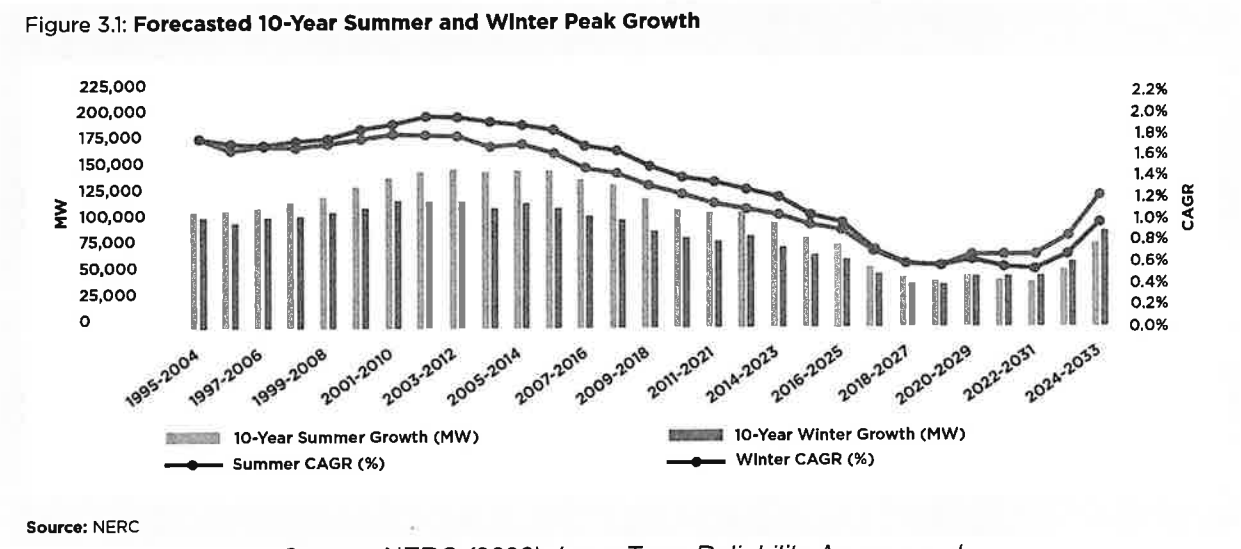


Sources: EIA Electricity Data Browser; EIA Short-Term Energy Outlook; ScottMadden analysis

Similar trends are seen in summer and winter peak demand forecasts. Peak demand refers to the predicted maximum level of electricity demand within a specific time period. Long-term forecasts produced by the North American Electric Reliability Corporation (NERC) show a sharp reversal in declining or flat growth rates. In their most recent analysis, NERC forecasts aggregated summer peak demand will rise by 80,000 MW and aggregated winter peak demand will rise by 91,000 MW from 2024 to 2033 (see Figure 20).[135]

[135] NERC (2023), 2023 Long-Term Reliability Assessment

Figure 19: Forecasted 10-year Summer and Winter Peaks Growth



Source: NERC (2023), Long-Term Reliability Assessment

The increasing demand for electricity can be attributed to a combination of secular long-term changes—notably the electrification of buildings and transportation—and the emergence of large loads, such as new data centers. Each trend is discussed in more detail below.

Long-Term Changes: Electrification

A major trend underway in the United States is the electrification of transportation, building, and industrial sectors. The term electrification refers to the shift away from non-electric sources of energy to electricity at the point of final consumption.[136] In the building sector, electric heat pumps offer an alternative to natural gas furnaces and oil-based space heating. Electrification opportunities in the industrial sector include boilers, space heating, and process heating service demand.[137]

In the transportation sector, more than 1.4 million plug-in electric vehicles (PEVs) were sold in 2023; 80% of the vehicles were fully battery electric.[138] The PEV sales accounted for 9.3% light-duty sales, up from 6.8% in 2022.[139] Vehicle electrification also extends to medium- and heavy-duty vehicles used in fleet operations. The increased adoption of electric vehicles will result in increasing electricity consumption. In 2023, light-duty PEVs consumed an estimated 7.6 million MWhs in 2023—surpassing the amount of electricity consumed by the rail systems for the first time.[140] Incremental annual growth in electricity consumption is expected but will vary significantly by state and region.

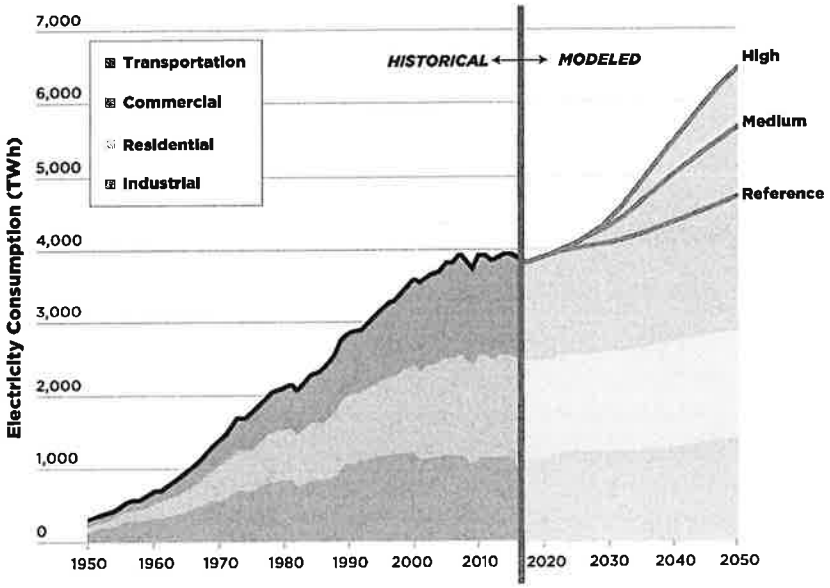
A robust analysis conducted by the National Renewable Energy Laboratory (NREL) illustrates the potential scale and scope of electrification through 2050 (see Figure 21). The shift toward electrification may provide an array of benefits, including lower costs, reduced emissions, and less energy consumption

---

[136] NREL (2018), Electrification Futures Study: Scenarios of Electric Technology Adoption and Power Consumption for the United States
[137] Ibid.
[138] Argonne National Laboratory (September 2024), Light Duty Electric Drive Vehicles Monthly Sales Updates
[139] ScottMadden calculations using historical sales data published by Argonne National Laboratory
[140] EIA (May 20, 2024), U.S. Electricity Consumption by Light-duty Vehicles Likely Surpassed Rail in 2023

while providing equal or better service.[141] However, the impact for electric grid operators will be an increasing demand for electricity, shifts in peak loads (e.g., higher winter peaks due to electric heat pumps), and changes in load shapes (e.g., timing or size of expected electricity demand).

Figure 20: Impact of Electrification on Projected Annual Electricity Consumption



Source: NREL (2018), U.S. National Electrification Assessment

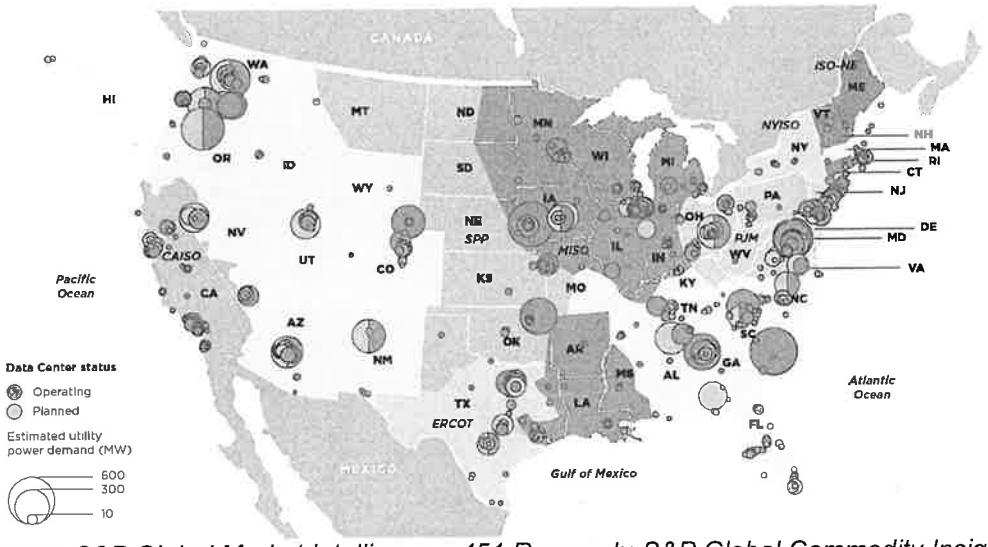
Emerging Large Loads and Drivers

Advanced cloud computing, Internet of Things applications, web-based commerce, and growth in artificial intelligence applications are driving the need for new data centers and increased electricity demand. The Electric Power Research Institute (EPRI) reports AI-driven data requests require 10 times the electricity needed for traditional Google data inquiry.[142] Forecasting future data center growth, EPRI estimates data center load could grow to consume 4.6% to 9.1% of U.S. electricity generation by 2040—up from an estimated 4% today.[143]

In addition, data centers are often highly concentrated in specific geographic regions. Data center developers are often drawn to similar regions due to favorable infrastructure or economic development policies. Therefore, 80% of the national data center load in 2023 was concentrated in 15 states, led by Virginia and Texas.[144] This trend is expected to continue as most planned data centers are in existing clusters (see Figure 22).

[141] EPRI (2018), U.S. National Electrification Assessment
[142] EPRI (2024), Powering Intelligence: Analyzing Artificial Intelligence and Data Center Energy Consumption
[143] Ibid.
[144] Ibid.

Figure 21: Operating and Planned Data Centers in the United States



Sources: S&P Global Market Intelligence; 451 Research; S&P Global Commodity Insights

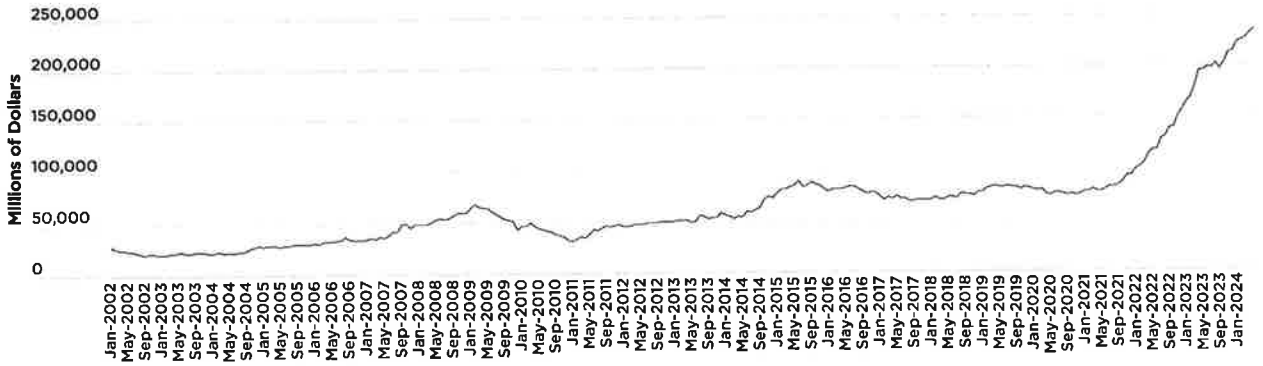
Two additional emerging sources of large loads are cryptocurrency mining and growth in domestic manufacturing. Cryptocurrency mining involves computationally intensive processes to create digital assets such as Bitcoin.[145] The scope of the industry is not well known, but cryptocurrency mining may account for up to 2.3% of annual electricity sales.[146]

Cryptocurrency mining differs from other types of data centers in that the loads can be flexible as crypto miners can cease "production" of crypto and reduce or stop operations (and the associated electricity use). Traditional data centers typically run 24/7 and have limited flexibility in terms of demand, which is tied to global internet demand. Depending on the price of energy and interruptible rates available, cryptocurrency mining facilities may adjust operations based on the price of energy and what they can earn through demand response or interruptible rates.

Meanwhile, monthly construction spending on manufacturing has more than tripled since the end of 2020 (see Figure 23). This trend is bolstered by onshoring interests following COVID-related supply chain disruptions and incentives to expand domestic manufacturing following the passage of the CHIPS and Science Act and Inflation Reduction Act of 2022 (IRA).

[145] The White House, Climate and Energy Implications of Crypto-Assets in the United States (Sept. 2022), at p. 10
[146] EIA (2024), Tracking Electricity Consumption from U.S. Cryptocurrency Mining Operations

Figure 22: Value of Manufacturing Construction (January 2002–March 2024)

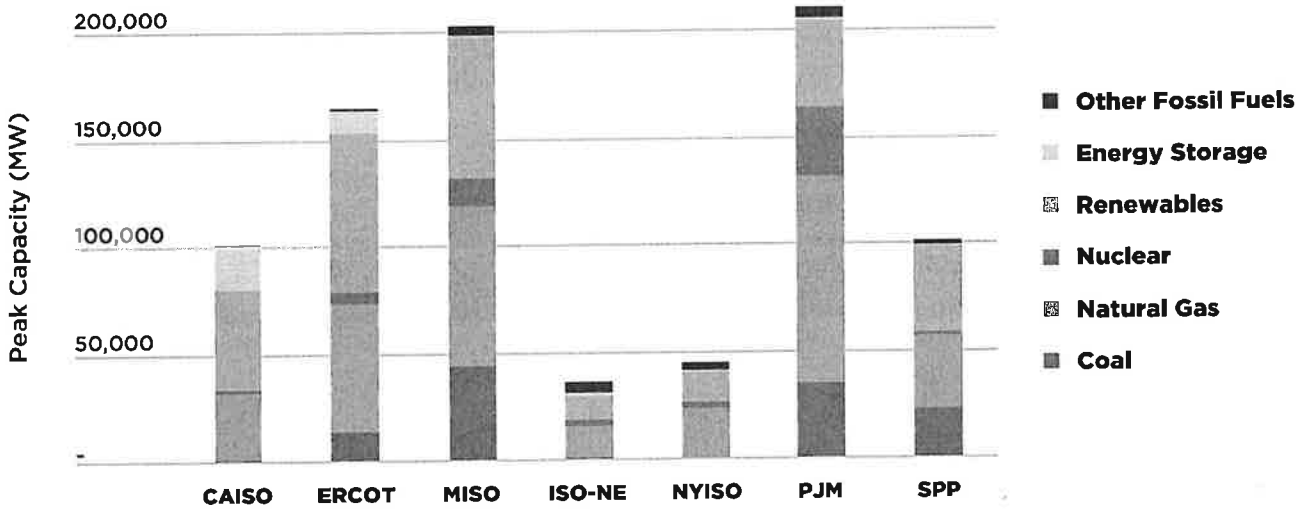


Source: U.S. Census Bureau (2024)

Electricity Supply Mix Varies by Region

The supply of electricity and pace of the energy transition varies dramatically by region (see Figure 24). Notable drivers influencing regional electricity supply include the availability of energy resources (e.g., fossil fuels or renewable resources), existing energy infrastructure (e.g., natural gas pipelines and transmission networks), and public policy. These factors have led some regions to transition more quickly from coal to natural gas (i.e., PJM). Elsewhere, regions with abundant renewable resources have seen a significant uptick in wind and solar (i.e., SPP and ERCOT).

Figure 23: Installed Summer Peak Capacity by ISO (MW) (2024)



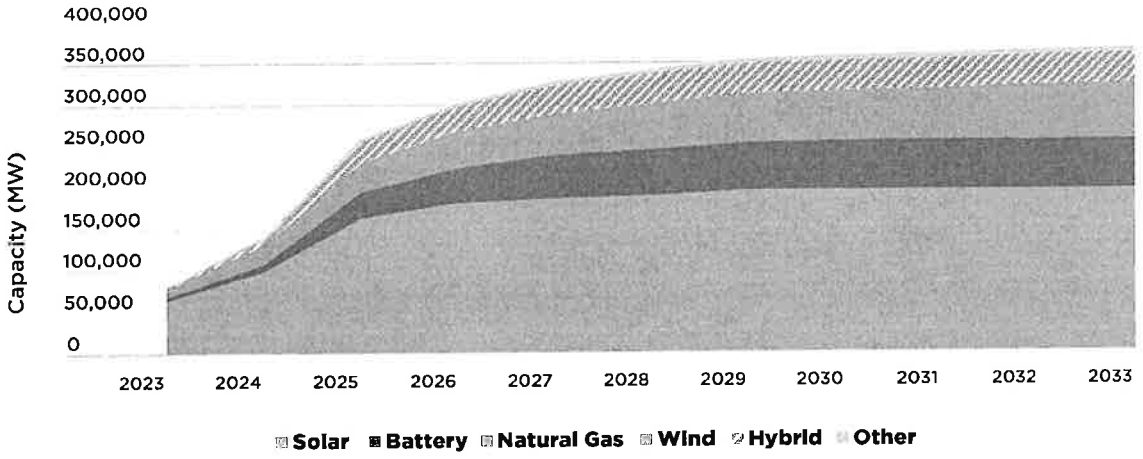
Source: Bloomberg NEF & Business Council for Sustainable Energy (2024), Sustainable Energy in America 2024 Factbook

Power plant retirements have been dominated by the closure of coal-fired capacity in recent years. The decline of coal has been precipitated by increasing environmental regulations and competition from natural gas plants. According to the EIA, operators have closed about 37,000 MW of coal capacity—or 17% of the coal-fired fleet—since the beginning of 2021 primarily due to increased costs of older plants and competition with natural gas and renewables.[147] Coal retirements are expected to slow in 2024 with just 2,300 MW of capacity retirements this year but accelerate again in 2025 with more than 10,000 MW of capacity retirements.[148]

As for the addition of new generation, more than 60,000 MW of new capacity is expected to come online in 2024. More than half of the new capacity (36,000 MW) is expected to be utility-scale solar. Three states—Texas, California, and Florida—will account for more than half of the solar capacity installed in 2024. Meanwhile, 14,000 MW of battery storage is expected in 2024, nearly doubling the capacity operating on the grid at the end of 2023. Wind, natural gas, and nuclear will account for the remaining new capacity anticipated to come online in 2024.[149]

Similar trends exist over longer-term projections. According to forecasts from NERC, solar photovoltaic will be the dominant source of new generation—accounting for more than half of new generation forecasted through 2030. Battery storage, natural gas, wind, and hybrid generation systems (i.e., solar or wind plus storage) are also expected to be key capacity additions during this time frame (see Figure 25).

Figure 245: Planned Generation Capacity Additions (2023–2033)[150]



Source: NERC (2023), Long-Term Reliability Assessment

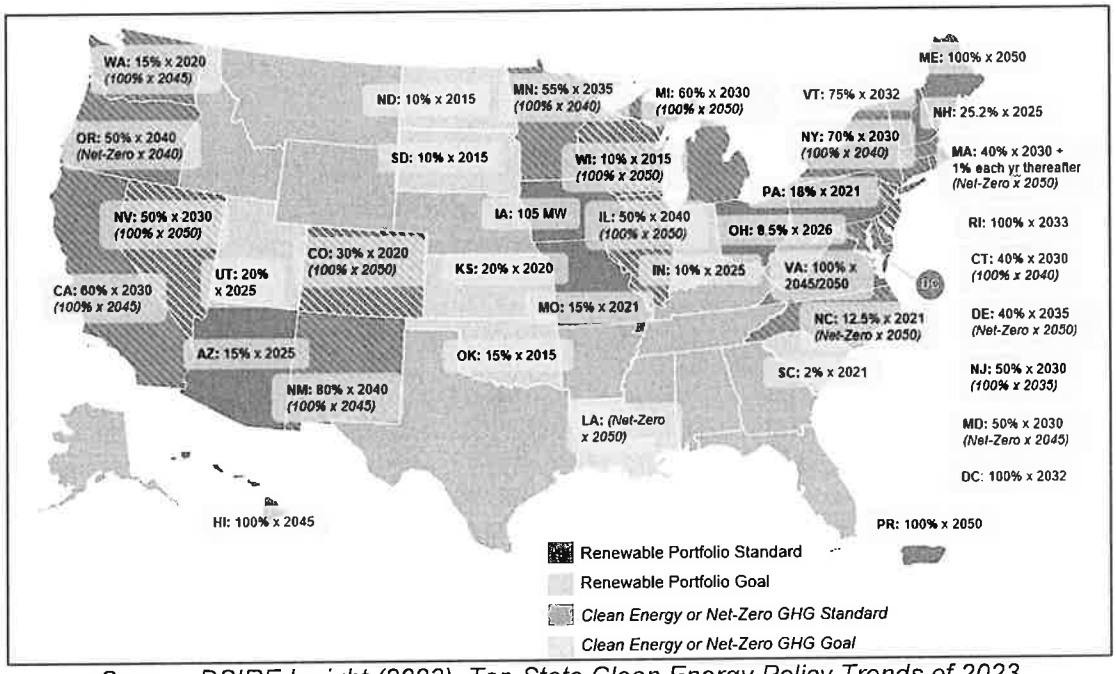
[147] EIA (2024), U.S. Coal-Fired Electricity Generation Decreased in 2022 and 2023
[148] EIA (2024), Retirements of U.S. Electric Generating Capacity to Slow in 2024
[149] EIA (2024), Solar and Battery Storage to Make up 81% of New U.S. Electric-generating Capacity in 2024
[150] Hybrid facilities are wind or solar plus storage.

Drivers Shaping Electricity Supply

Renewable Portfolio Standards and Clean Energy Goals

A host of state and federal policies will impact the development of electricity supply. Renewable portfolio standards (RPS) are a common policy used by states to drive renewable energy adoption. In most cases, RPS policies require utilities to procure a percentage of electricity sales from renewable resources. More recently, a growing number of states have adopted "clean energy" standards or goals. These requirements often focus on a broader set of carbon-free generation resources (see Figure 26).

Figure 25: State Renewable and Clean Energy Standards and Goals (December 2023)



Source: DSIRE Insight (2023), Top State Clean Energy Policy Trends of 2023

Growing numbers of states, utilities, and corporations are establishing clean energy goals such as 100% clean energy commitments. In December 2018, Xcel Energy was the first major utility to announce plans to pursue a 100% clean energy goal by 2045. As of 2023, 24 states have 100% clean energy commitments either through government action or utility action.[151] California, as part of its decarbonization efforts, set the low-carbon fuel standard to limit transportation fuel emissions. Some municipalities in New York and Massachusetts have also proposed outright bans on natural gas systems either in government buildings or as part of the municipalities' permitting processes. Electric utilities in Hawaii have become "postcards from the future" with the rapid expansions of solar energy and ambitious 100% renewables requirements by 2045.[152]

Eighty percent of U.S. customers are currently being served by a utility with a 100% carbon-reduction target.[153] Utilities acknowledge the importance of clean being done in a reliable and cost-effective way

[151] CESA (2024), Table of 100% Clean Energy States - Clean Energy States Alliance (cesa.org)
[152] ScottMadden (2019), EIU Volume 20 – Issue 1 and Issue 2
[153] Smart Electric Power Alliance (2024), Utilities' Path to a Carbon-free Energy System

and have set their goals decades into the future to accommodate. Net-zero will require greater resource investments and changes in resources, including renewables, battery storage, and demand-side alternatives. While carbon emissions have declined, much of the progress to date has been the gradual migration from coal- to gas-fired power generation.[154] New and expected advancements in CCS, battery storage, and hydrogen generation are being watched for their potential benefits to the clean energy infrastructure.[155]

Federal Public Policy, Particularly the Inflation Reduction Act

At the federal level, the most impactful piece of legislation in the energy sector is the 2022 Inflation Reduction Act (IRA). The IRA represents an unprecedented investment of $369 billion to ensure energy security, reduce GHG emissions, and increase energy innovation in the United States. The last significant federal legislation was the Infrastructure Investment and Jobs Act (IIJA) in 2021, which provided $1.2 trillion in funding for transportation and infrastructure investment.[156]

The IRA provides incentives and investments across the entire energy supply chain (i.e., raw materials, manufacturing, deployment, and consumer adoption) for both existing technologies (e.g., new wind, solar, nuclear, and storage) and more nascent technologies (e.g., small modular reactors, hydrogen, carbon capture). Tax incentives from the IRA provide a base credit and a bonus rate. The bonus rate is equal to five times the base amount and is available only when prevailing wage and apprenticeship requirements are met.

The law provides extensive funding for the deployment of clean energy technologies through numerous tax credits and direct appropriations.

One major provision was the extension and modification of the renewable energy investment tax credit (ITC) and production tax credit (PTC). Most notably, the IRA added bonus credits for applications that use domestic content (steel or iron manufactured in the United States), meet low-income community requirements, or have placement in defined energy communities[157]. The law also expanded monetization opportunities by allowing tax credits to be transferred and tax-exempt entities to seek direct pay.

In 2025, the renewable energy ITC and PTC will be replaced by a clean electricity ITC and PTC. The new tax credits expand eligibility to any technology generating electricity without emitting GHG. The clean electricity tax credits remain in place until electric generation GHG emissions are reduced 75% below 2022 levels. Achieving this phase-out trigger may take decades.

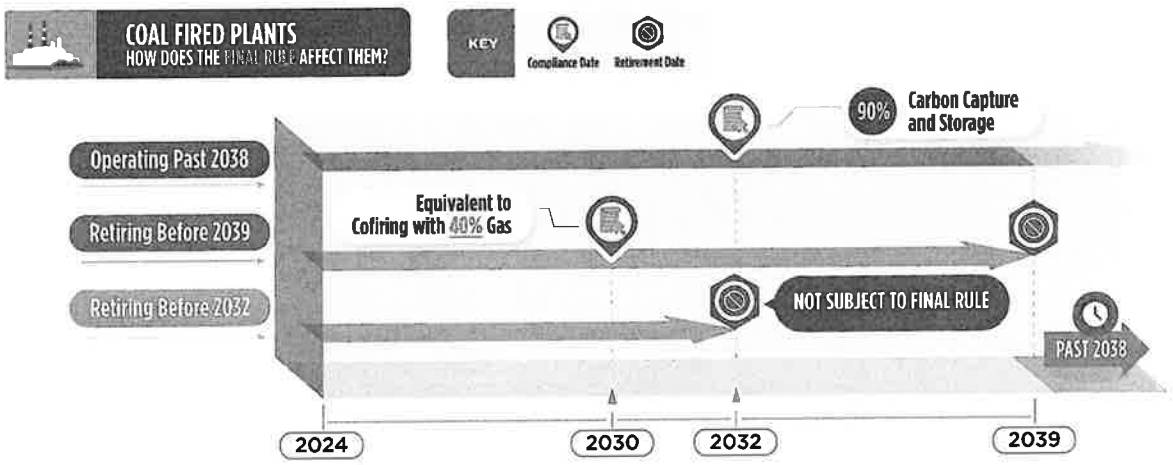
The 45Q, 45V, and 45Z tax credits can greatly impact energy development. The IRA extends the timeline for the carbon sequestration credit (45Q), which provides credit for CO2 capture, utilization, and storage for industrial facilities and power plants. The new hydrogen tax credit (45V) encompasses clean production of hydrogen primarily through natural gas reforming and electrolysis. The clean fuels production credit (45Z) replaces existing incentives for biodiesel, renewable diesel, and alternative fuels.[158]

---

[154] ScottMadden (2019), EIU Volume 20 – Issue 1 and Issue 2
[155] Interviews
[156] U.S. Dept. of Transportation, at https://www.phmsa.dot.gov/legislative-mandates/bipartisan-infrastructure-law-bil-infrastructure-investment-and-jobs-act-iija
[157] IRS (2022), at https://www.irs.gov/credits-and-deductions-under-the-inflation-reduction-act-of-2022
[158] Public Law No. 117-169, at https://www.congress.gov/bill/117th-congress/house-bill/5376/text

In May 2023, EPA proposed a GHG rule for fossil-fired power plants and finalized their rule in April 2024. The new rule applies to new or reconstructed fossil-fired combustion turbines (CTs), existing fossil-fired units, and coal plants modified after May 2023.[159]

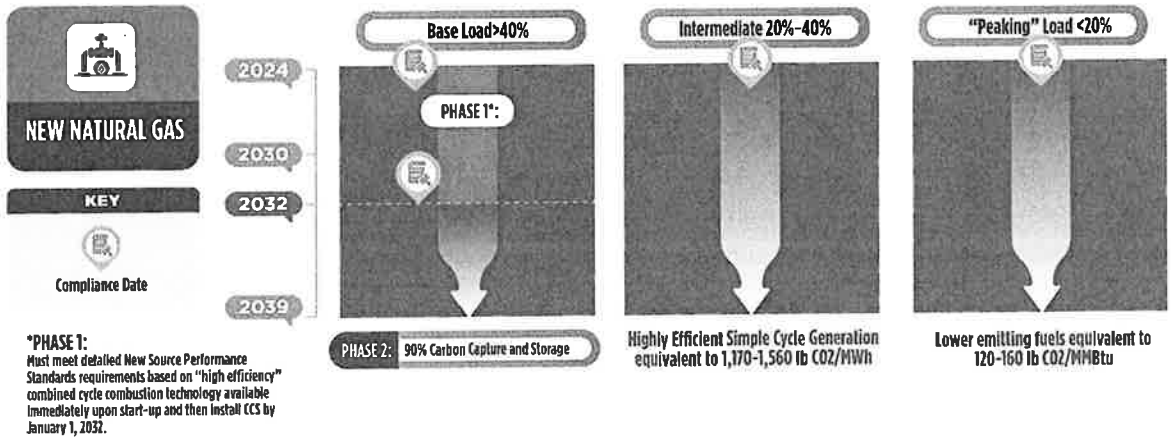
Figure 26: EPA Greenhouse Gas Final Rule – Coal



Source: EPA (2024), Final Carbon Pollution Standards to Reduce Greenhouse Gas Emissions from Power Plants

The rule set a performance standard for existing coal and new baseload CTs based upon a "best system of emissions reduction." Coal plants that will operate after 2038 must implement the equivalent of 90% carbon capture and storage or an 88.4% reduction in annual CO2 emissions. For those retiring before 2039, CO2 emissions must be equivalent to cofiring 40% with natural gas. Plants retiring before 2032 are not subject to the rule. These standards have a deadline of January 1, 2032.

Figure 27: EPA Greenhouse Gas Final Rule – New Fossil-fired Combustion Turbines



Source: EPA (2024), Final Carbon Pollution Standards to Reduce Greenhouse Gas Emissions from Power Plants

[159] U.S. Environmental Protection Agency, Docket No. EPA-HQ-OAR-2023-0072, at https://www.epa.gov/stationary-sources-air-pollution/greenhouse-gas-standards-and-guidelines-fossil-fuel-fired-power

For new or reconstructed fossil-fired units, the rule set the following requirements based on capacity factor:[160]

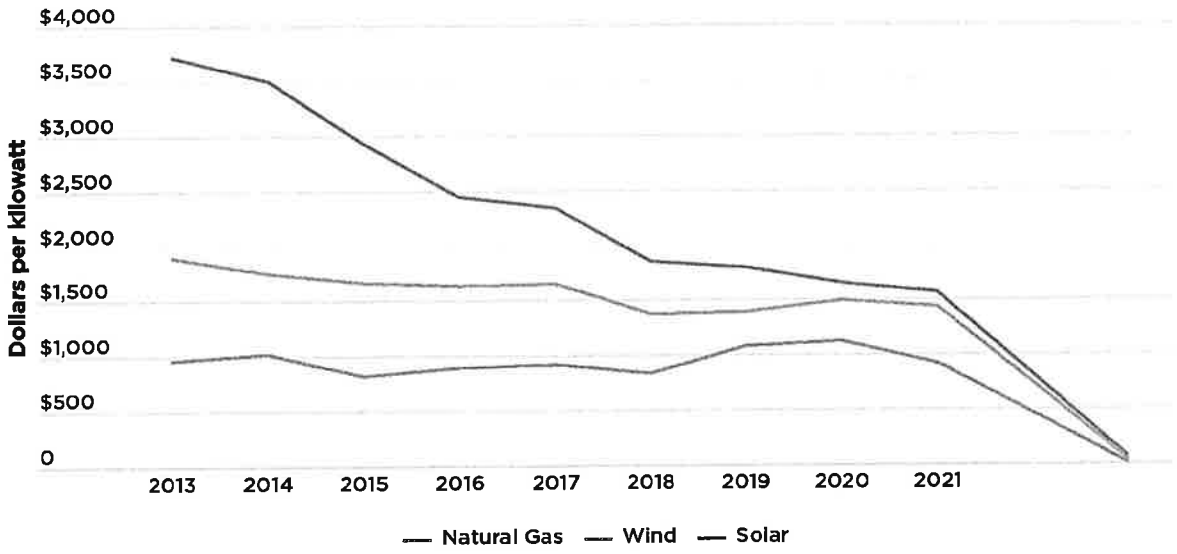
- >40% (baseload) units: Through 2031, units can comply by operating with emissions levels equivalent to a highly efficient combined-cycle unit; beginning 2032, units must achieve equivalent of highly efficient combined cycle with 90% reduction in CO2 emissions through CCS
- 20%-40% (intermediate): Units must achieve "highly efficient operations"
- <20% (peaking): Units can continue to operate with "low-emitting fuels" (natural gas or Nos. 1 or 2 fuel oil)

No standard has been set for existing natural gas plants.[161] This rule is being challenged in the courts and may also face headwinds, depending on the outcome of the November election. As such, the ultimate requirements of the rule and the timeline for implementation remain unclear.

Technology and Fuel Costs

In addition to the tax incentives described above, a major driver in the changing energy mix is the rapid decline in capital costs for new solar and wind generation. The trend is illustrated by the average construction cost incurred by solar, wind, and natural gas. Since 2013, solar construction costs declined nearly 60%, wind declined 25%, and natural gas declined only 5% (see Figure 29).

Figure 28: U.S. Capacity-Weighted Average Construction Cost by Technology (2013-2021)



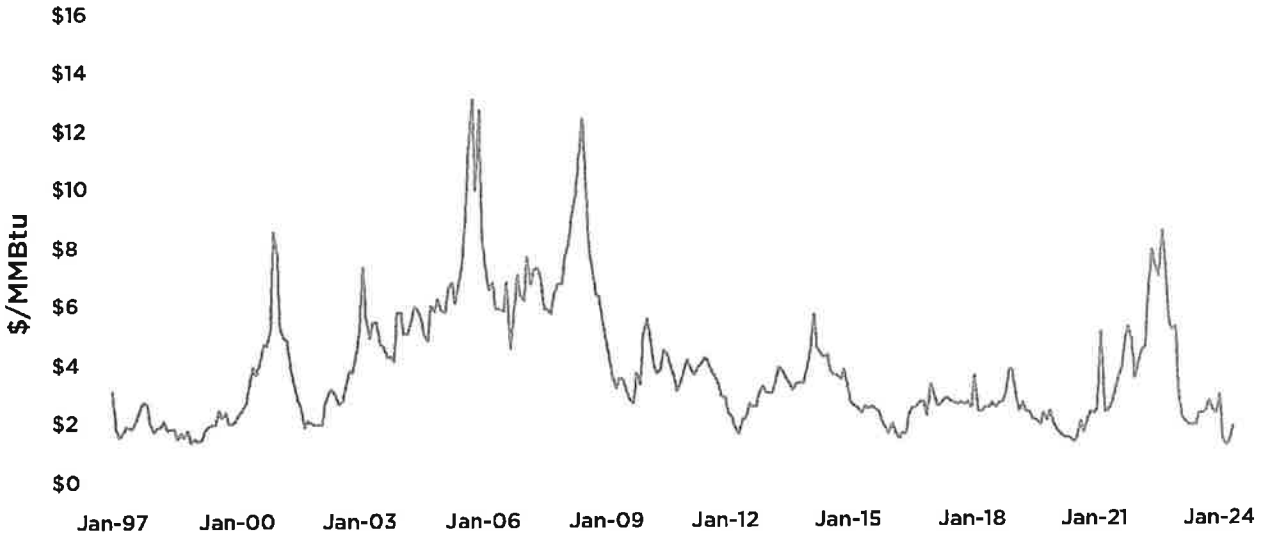
Source: EIA (2024), Electric Generator Construction Costs

Despite limited declines in capital costs, natural gas has benefited from declining fuel costs. With advancements in hydraulic fracking and horizontal drilling, the United States has increased natural gas

[160] Capacity factor is the percentage of annual hours a power generating unit operates.
[161] EPA (2024), at https://www.epa.gov/system/files/documents/2024-04/cps-presentation-final-rule-4-24-2024.pdf

production, resulting in lower spot prices. In 2022, the Russian invasion of Ukraine resulted in a spike in natural gas prices; however, prices have since fallen back below $3.00 per million Btu (see Figure 30).

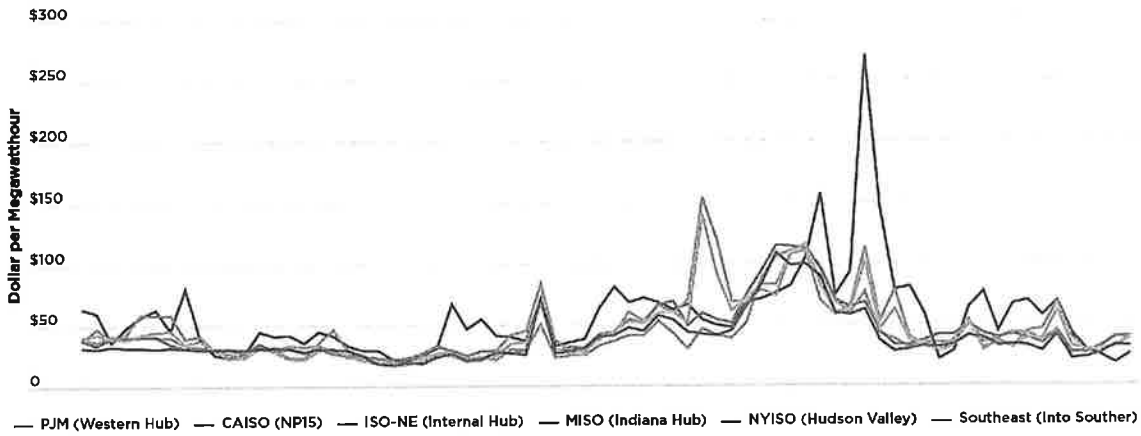
Figure 29: Henry Hub Natural Gas Spot Prices ($/MMBtu) (1997-2024)



Source: EIA (2024), Henry Hub Natural Gas Spot Prices

The price of natural gas is often a key driver of wholesale electricity prices. In deregulated markets, natural gas power plants are often the resource that sets the marginal cost of electricity (e.g., market clearing price). Therefore, changes in natural gas prices often influence wholesale electricity prices. Following the Russian invasion of Ukraine, spiking natural gas prices resulted in a corresponding increase in wholesale electricity prices (see Figure 30).

Figure 30: Monthly On-Peak, Day-Ahead Power Prices in Select Markets (July 2018-June 2024)



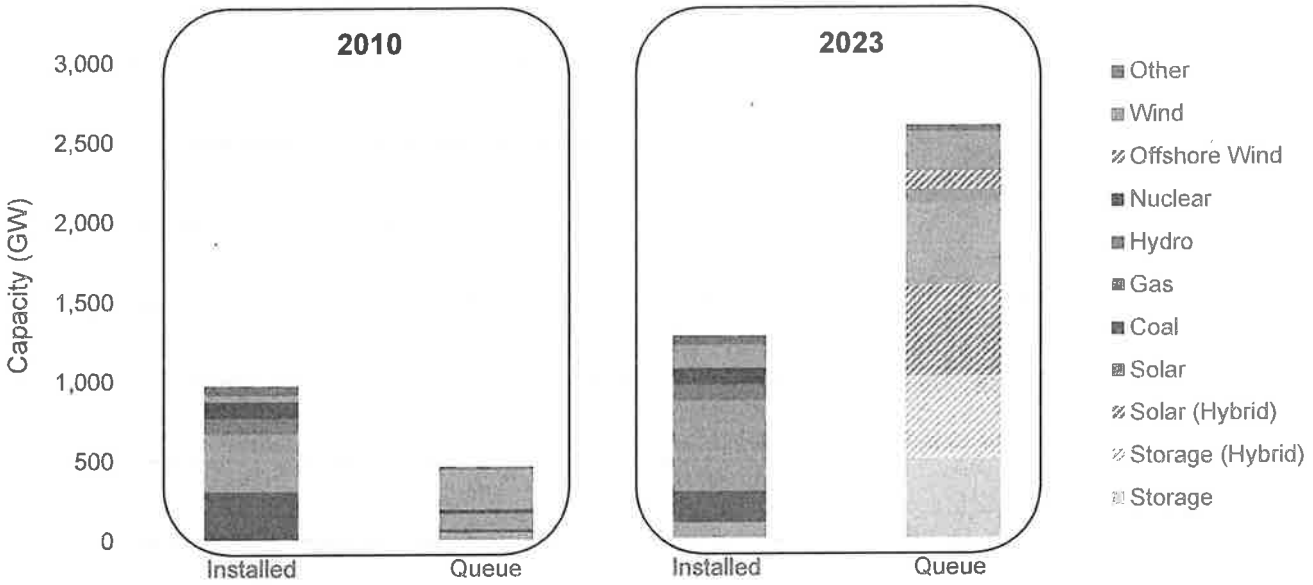
Source: S&P Capital IQ, SNL Day-Ahead Power Prices

Generator Interconnection Queues: A Key Barrier to Power Generation Development

Navigating interconnection queues is a substantial challenge facing new electricity supply. Proposed generation must undergo studies to determine if system upgrades are necessary. Projects applying for interconnection and undergoing the study process are considered in the interconnection queue.

Interconnection queue requests have surged in recent years—both in terms of capacity and number of projects. In 2023, the active capacity in the interconnection queue was more than twice the installed capacity in the United States. The existence of such a large interconnection queue is a new phenomenon. In 2010, the interconnection queue was roughly half of installed capacity (see Figure 31).

Figure 31: Installed Generation Capacity vs. Interconnection Queue Requests (2010 and 2023)



Source: LBNL (2024), Queued Up: 2024 Edition. Characteristics of Power Plants Seeking Transmission Interconnection as of the End of 2023

Proposed generation projects are challenged by low completion rates and increasing wait times. In recent years, roughly 20% of projects entering the interconnection queue achieve commercial operation.[162] Meanwhile, the average wait time spent in interconnection queues has grown from three years to five years.[163] New rules implemented by FERC—most notably FERC Order 2023—are designed to improve the effectiveness of interconnection queues, but reforms will take several years to be fully implemented.

System Reliability Concerns: Impacts of a Transitioning Portfolio

Ensuring the reliability of the electric system is a core responsibility and top priority for regulators, electric utilities, and grid operators. However, multiple trends are posing increased risks to the reliability and resilience of the electric system.

---

[162] LBNL (2024), Queued Up: 2024 Edition. Characteristics of Power Plants Seeking Transmission Interconnection as of the End of 2023
[163] Ibid.

The changing generation mix poses new challenges and reliability concerns to the grid. Energy policy is prompting significant changes in generation resources (from traditional baseload to variable resources, such as wind and solar) and encouraging electrification of end-use appliances and space heating. Longer term, there is hope that long-duration storage and perhaps hydrogen may provide "on demand" clean power, but those technologies are years away from commercial availability. The rapid pace of change poses a challenge to grid planning and resource adequacy. In addition, the growth of weather-dependent resources and storage adds new operational complexities. Key concerns include ensuring both energy sufficiency during all hours (not only at times of peak demand) and essential reliability services (e.g., frequency and voltage) are available at all times. The combination of rising peak demand and the retirement of 83,000 MWs of generation over the next 10 years "creates blackout risks for most of the United States."[164]

The impact of extreme weather events is increasingly important, with the most striking examples being recent winter storms. In February 2021, Winter Storm Uri hit Texas and other south-central U.S. states. More than 4.5 million electric customers lost power, some for as long as four days, and the death toll is estimated at 246 people in Texas alone.[165] As the largest firm load-shedding event (e.g., rotating outages) in U.S. history, the event resulted in an estimated $80 to $130 billion in economic losses in Texas.[166]

In December 2022, Winter Storm Elliott overtook much of the Eastern Interconnection. The extreme cold resulted in more than 1,700 generating units experiencing unplanned outages, derates, or failures to start. At one point, 90,500 MW of generation capacity was unavailable. According to NERC, Winter Storm Elliott was the fifth time in just 11 years that cold weather-related outages jeopardized grid reliability.[167]

During both storms, the performance of natural gas resources was a notable concern. In some cases, natural gas plants experienced operational challenges related to freezing instruments and equipment. In other cases, fuel availability was the problem as production, transportation, and distribution infrastructure was disrupted by freezing conditions and equipment failures.

The winter storms also highlight the growing interdependence between the electric and natural gas sectors. In recent years, the electric industry has become more dependent on natural gas generation. Widespread and extended electric outages can result in natural gas delivery issues, thereby impacting electric generation and home heating.[168]

In summary, the United States is experiencing tremendous load growth from a variety of sources while transitioning the generation mix to include significantly more renewable, intermittent resources. This is happening at a time when extreme weather events are occurring more frequently. NERC, FERC, and several of the regional grid operators have expressed concern about the ongoing reliability of the grid in the face of these challenges.

---

[164] Utility Dive (2024), NERC Wary of 100 GW in Possible Plant Retirements and Other Takeaways from CEO Jim Robb
[165] Texas Tribune (2022), at https://www.texastribune.org/2022/01/02/texas-winter-storm-final-death-toll-246/
[166] FERC and NERC (2023), Inquiry into Bulk-Power System Operations During Winter Storm Elliott
[167] Ibid.
[168] NERC (2023), 2023 ERO Reliability Risk Priorities Report

APPENDIX G: GLOSSARY OF ACRONYMS

AI – artificial intelligence
BCF – billion cubic feet
BTU – British thermal units
CAGR – compound annual growth rate
CAISO – California Independent System Operator
CCS – carbon capture and sequestration (or storage)
CI – carbon intensity
CO2 – carbon dioxide
CT – combustion turbine
DOE – Department of Energy
EIA – Energy Information Administration
ELCC – effective load-carrying capability
EPRI – Electric Power Research Institute
ERCOT – Electric Reliability Council of Texas
FERC – Federal Energy Regulatory Commission
GHG – greenhouse gas
IOU – investor-owned utility
IRA – Inflation Reduction Act of 2022
IRP – integrated resource plan
ISO – independent system operator
ISO-NE – ISO New England
ITC – investment tax credit
kV – kilovolt
kW – kilowatt
kWh – kilowatt-hour
LCFS – Low-Carbon Fuel Standard
LES – Lincoln Electric System
MISO – Midcontinent Independent System Operator
MMBtu – million British thermal units
MW – megawatt
MWh – megawatt-hour
NDEE – Nebraska Department of Environment and Energy

NERC – North American Electric Reliability Corporation

NPA – Nebraska Power Association

NPPD – Nebraska Public Power District

NREL – National Renewable Energy Laboratory

NYISO – New York Independent System Operator

OPPD – Omaha Public Power District

PEV – plug-in electric vehicles

PJM – PJM Interconnection LLC

PRB – Nebraska Power Review Board

PTC – production tax credit

RNG – renewable natural gas

RPS – renewable portfolio standards

RTO – regional transmission organization

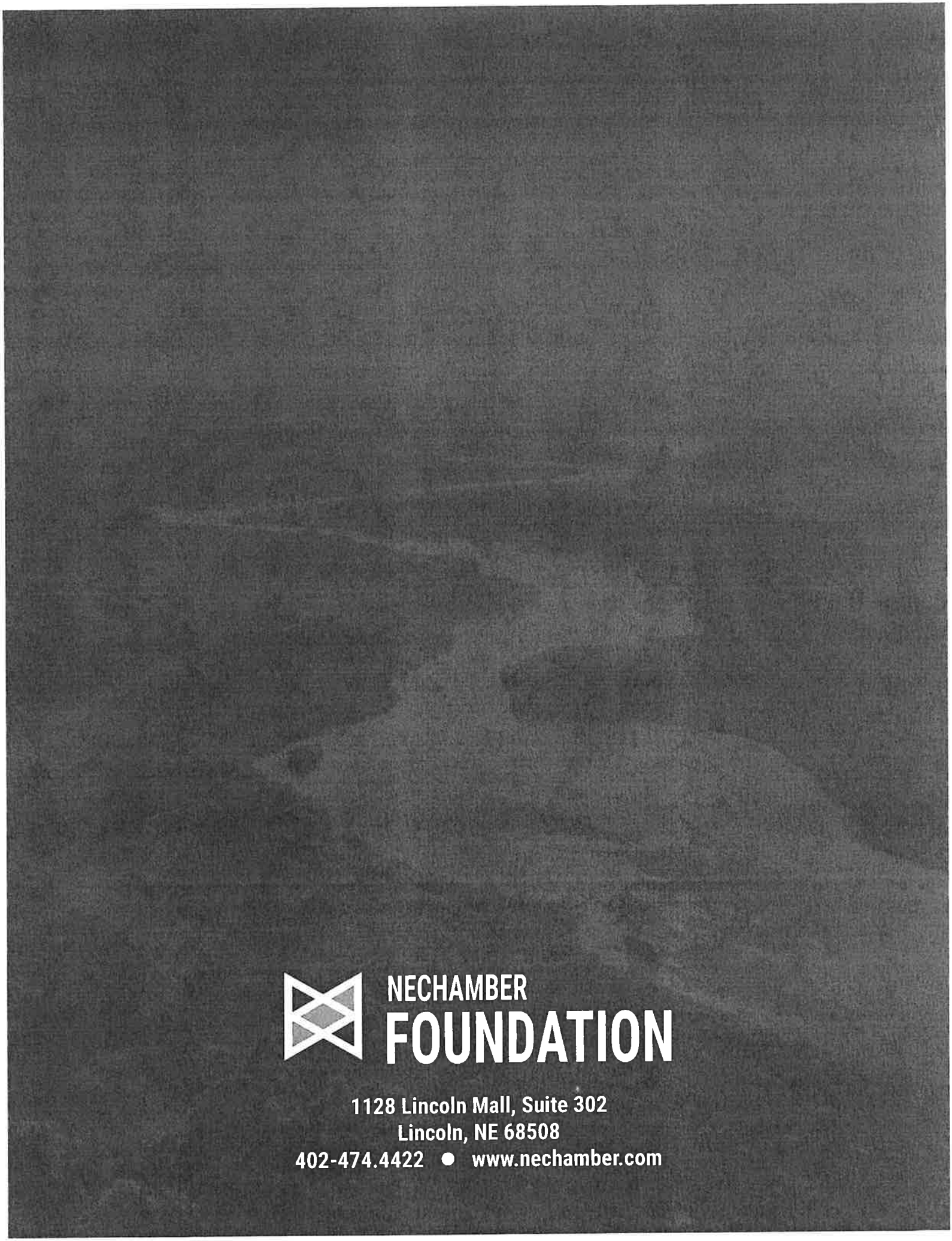
SAF – sustainable aviation fuel

SAIDI – system average interruption duration index

SAIFI – system average interruption frequency index

SPP – Southwest Power Pool

V – volt



NECHAMBER
FOUNDATION

1128 Lincoln Mall, Suite 302
Lincoln, NE 68508
402-474.4422 • www.nechamber.com

APPENDIX NO. 11

Relevant Statutes. Chapter 77, Article 6. 77-6201; 77-6203

77-6201. Legislative findings and declarations.

The Legislature finds and declares:

(1) The purpose of the nameplate capacity tax levied under section 77-6203 is to replace property taxes currently imposed on renewable energy infrastructure and depreciated over a short period of time in a way that causes local budgeting challenges and increases upfront costs for renewable energy developers;

(2) The nameplate capacity tax should be competitive with taxes imposed directly and indirectly on renewable energy generation and development in other states;

(3) The nameplate capacity tax should be fair and nondiscriminatory when compared with other taxes imposed on other industries in the state; and

(4) The nameplate capacity tax should not be singled out as a source of General Fund revenue during times of economic hardship.

Source: Laws 2010, LB1048, § 12; Laws 2015, LB424, § 4.

77-6203. Nameplate capacity tax; annual payment; exemptions; Department of Revenue; duties; owner; file report; interest; penalties.

(1) The owner of a renewable energy generation facility annually shall pay a nameplate capacity tax equal to the total nameplate capacity of the commissioned renewable energy generation facility multiplied by a tax rate of three thousand five hundred eighteen dollars per megawatt.

(2) No tax shall be imposed on a renewable energy generation facility:

(a) Owned or operated by the federal government, the State of Nebraska, a public power district, a public power and irrigation district, an individual municipality, a registered group of municipalities, an electric membership association, or a cooperative; or

(b) That is a customer-generator as defined in section 70-2002.

(3) No tax levied pursuant to this section shall be construed to constitute restricted funds as defined in section 13-518 for the first five years after the renewable energy generation facility is commissioned.

(4) The presence of one or more renewable energy generation facilities or supporting infrastructure shall not be a factor in the assessment, determination of actual value, or classification under section 77-201 of the real property underlying or adjacent to such facilities or infrastructure.

(5)(a) The Department of Revenue shall collect the tax due under this section.

(b) The tax shall be imposed beginning the first calendar year the renewable energy generation facility is commissioned. A renewable energy generation facility that uses wind as the fuel source which was commissioned prior to July 15, 2010, shall be subject to the tax levied pursuant to sections 77-6201 to 77-6204 on and after January 1, 2010. The amount of property tax on depreciable tangible personal property previously paid on a renewable energy generation facility that uses wind as the fuel source which was commissioned prior to July 15, 2010, which is greater than the amount that would have been paid pursuant to sections 77-6201 to 77-6204 from the date of commissioning until January 1, 2010, shall be credited against any tax due under Chapter 77, and any amount so credited that is unused in any tax year shall be carried over to subsequent tax years until fully utilized.

(c)(i) The tax for the first calendar year shall be prorated based upon the number of days remaining in the calendar year after the renewable energy generation facility is commissioned.

(ii) In the first year in which a renewable energy generation facility is taxed or in any year in which additional commissioned nameplate capacity is added to a renewable energy generation facility, the taxes on the initial or additional nameplate capacity shall be prorated for the number of days remaining in the calendar year.

(iii) When a renewable energy generation facility is decommissioned or made nonoperational by a change in law during a tax year, the taxes shall be prorated for the number of days during which the renewable energy generation facility was not decommissioned or was operational.

(iv) When the capacity of a renewable energy generation facility to produce electricity is reduced but the renewable energy generation facility is not decommissioned, the nameplate capacity of the renewable energy generation facility is deemed to be unchanged.

(6)(a) On March 1 of each year, the owner of a renewable energy generation facility shall file with the Department of Revenue a report on the nameplate capacity of the facility for the previous year from January 1 through December 31. All taxes shall be due on April 1 and shall be delinquent if not paid on a quarterly basis on April 1 and each quarter thereafter. Delinquent quarterly payments shall draw interest at the rate provided for in section 45-104.02, as such rate may from time to time be adjusted.

(b) The owner of a renewable energy generation facility is liable for the taxes under this section with respect to the facility, whether or not the owner of the facility is the owner of the land on which the facility is situated.

(7) Failure to file a report required by subsection (6) of this section, filing such report late, failure to pay taxes due, or underpayment of such taxes shall result in a penalty of five percent of the amount due being imposed for each quarter the report is overdue or the payment is delinquent, except that the penalty shall not exceed ten thousand dollars.

(8) The Department of Revenue shall enforce the provisions of this section. The department may adopt and promulgate rules and regulations necessary for the implementation and enforcement of this section.

(9) The Department of Revenue shall separately identify the proceeds from the tax imposed by this section and shall pay all such proceeds over to the county treasurer of the county where the renewable energy generation facility is located within thirty days after receipt of such proceeds.

Source: Laws 2010, LB1048, § 14; Laws 2011, LB360, § 4; Laws 2015, LB424, § 6; Laws 2016, LB824, § 14; Laws 2019, LB512, § 29.

Annotations

The nameplate capacity tax is an excise tax, not a property tax. Banks v. Heineman, 286 Neb. 390, 837 N.W.2d 70 (2013).