THE INFRASTRUCTURE INVESTMENT AND JOBS ACT, INFLATION REDUCTION ACT OF 2022, AND THE POTENTIAL FOR REMAKING THE ELECTRICAL POWER STRUCTURE OF THE GREAT PLAINS

By: Daniel Volin[*]

I. INTRODUCTION

Your life is built on electricity. You wake up to an alarm, turn on the coffee pot, and take eggs from the refrigerator. Electricity powers your air conditioner, your computer, and your nightlight. It keeps you comfortable in ways you rarely bother to consider.

This is not condemnation—it's a statement of solidarity. I too take my electricity use for granted. I too rarely consider it. But multiply my routine, your routine, everyone's routine across the day, across office buildings and streetlights, across factories and coffee pots, across the American population. The amount of electricity we consume is nearly incomprehensible.

Nearly incomprehensible consumption implies a barely understandable cost. And the cost of electricity is tremendous. The Earth's climate is warming.[1] The warming is primarily being driven by greenhouse gas emissions, including carbon dioxide.[2] A major source of carbon dioxide emissions is electrical power

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[1] *See* Massachusetts v. EPA, 549 U.S. 497, 521 (2007) (stating in part "The harms associated with climate change are serious and well recognized."); INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, CLIMATE CHANGE 2021, THE PHYSICAL SCIENCE BASIS (2021) ("It is unequivocal that human influence has warmed the atmosphere, ocean and land. Widespread and rapid changes in the atmosphere, ocean, cryosphere and biosphere have occurred.").

[2] INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, *supra* note 1, at 5, 7–8. Other chemicals—e.g., methane (CH4) and hydrofluorocarbons—also significantly contribute to global warming. These are known as short-lived climate pollutants (SCLPs) as they have much shorter atmospheric lifespans than carbon dioxide, which can exist in the atmosphere for centuries. *See* "Short-Lived Climate Pollutants (SLCPs)," CLIMATE AND CLEAN AIR COAL., https://www.ccacoalition.org/content/short-lived-climate-pollutants-slcps [https://perma.cc/X5N5-WPBY].

generation, particularly from fossil fuel sources, such as coal and natural gas.[3] To limit global warming, we must change the way we generate electrical power.

New legislation, particularly the renewable energy programs and resources available in the Infrastructure Investment and Jobs Act ("IIJA") and the Inflation Reduction Act ("IRA") of 2022, seeks to reduce the amount of carbon emitted by electrical power generation in the United States.[4] This article looks at how states on the Great Plains—specifically Kansas, Nebraska, North Dakota, and South Dakota—can use the climate and energy provisions in the IIJA and IRA to maximize their renewable energy programs and infrastructure. Specifically, this article argues that these Plains states should use the National Interest Electric Transmission Corridor ("NIETC") provisions in the Energy Policy Act ("EPAct") of 2005 to form an interstate compact, take maximum advantage of their wind power resources, and work to increase the amount of power that is transferable between the Eastern and Western Interconnections of the United States electrical grid.

Part II of this article discusses the history of federal laws regulating power generation and the recent history of NIETCs. Part III examines the existing electrical power generation of the four Plains states: Kansas, Nebraska, North Dakota, and South Dakota. Part IV discusses the renewable energy provisions of the IRA and IIJA and how renewable energy generation in the United States is currently hamstrung due to the lack of population in the western Plains and the limitations of the national grid. Part V discusses how the four Plains states can work together to maximize the benefits of the IRA and IIJA and potentially become the dominant region for clean and renewable power generation for the entire nation.

II. FEDERAL ENERGY REGULATION AND NIETCS

It is important to understand the history of laws and regulations regarding electrical power in the United States before looking at the potential impacts of the IRA and IIJA. This section discusses energy policy since the 1970s—when environmental concerns first began to flourish—and examines the recent history of NIETCs and revisions made to the NIETC statute by the IIJA.

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[3] Coal and natural gas power plants also emit SCLPs—most notably black carbon and methane—when generating power. However, a larger discussion of SLCPs is beyond the scope of this paper other than to say wind-generated energy would also eliminate SLCP emissions from these plants. *See* "Short-lived Climate Pollutants," CENTER FOR CLIMATE AND ENERGY SOLUTIONS, https://www.c2es.org/content/short-lived-climate-pollutants/ [https://perma.cc/UJK8-5KAK].

[4] *See* HOUSE SELECT COMM. ON THE CLIMATE CRISIS, 117TH CONG., SOLVING THE CLIMATE CRISIS 2022: KEY ACCOMPLISHMENTS AND ADDITIONAL OPPORTUNITIES (2022).

A. Energy Policy Since the 1970s

During the oil crisis of the 1970s, Congress reevaluated its approach to energy regulation, which had remained largely unchanged since the New Deal era of the 1930s.[5] As part of that reevaluation, Congress passed the Public Utilities Regulatory Policies Act ("PURPA") in 1978.[6] PURPA's provisions indicated that Congress believed generating electricity from smaller, more dispersed power plants was desirable—particularly during a time of international energy upheaval and crisis—because such plants could more easily use localized, environmentally-sensitive, and renewable fuels.[7] Specifically, Congress envisioned greater use of hydroelectric, solar, wind, and biomass power.[8] Under section 210 of PURPA, utilities that offered to buy cogenerated power or power generated at a smaller scale were required to buy "at a rate which would not exceed the cost to the utility of generating its own electricity or the utility's 'avoided cost.'"[9] Doing so insured that small scale power, including power generated by renewable sources, would be affordable to consumers at the same rates as utility generated power,[10] which at the time was primarily from nonrenewable sources.[11] The goal of section 210's purchase price requirement was twofold: One, to assure independent power producers ("IPP") that they would be able to sell the power they generated via developing new technologies (including renewable technologies); and, two, to provide IPPs with a financial incentive to generate power more efficiently and at a lower cost than traditional utilities.[12]

The Energy Policy Act of 1992 ("EPAct 1992") amended the Federal Power Act and reformed the Public Utility Holding Company Act of 1935 ("PUHCA") to better align the regulations that applied to IPPs—IPPs having substantially grown in number in the 15 years since the passage of PURPA—with those that applied state-regulated utilities.[13] EPAct 1992 provided incentives to support the development of renewable energy at a utility scale. For example, it made permanent the extension of energy investment tax credits for solar and geothermal-powered projects.[14] It also established a new production

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[5] *See*, *e.g.*, Public Utility Holding Company Act of 1935, 15 U.S.C. §§ 79–79z–6 (amended 1958, 1970, 1975) (West) (repealed 2005).
[6] U.S. ENERGY INFO. ADMIN., PUBLIC UTILITY HOLDING COMPANY ACT OF 1935: 1935–1992 31 (1993).
[7] *Id.*
[8] *Id.*
[9] *Id.* at 32.
[10] *Id.*
[11] U.S. ENERGY INFO. ADMIN., JAN. 2023 MONTHLY ENERGY REV. 5 (2023) (showing that renewable energy accounted for 7.64% and 8.08% of U.S. power production in 1975 and 1980, respectively. Of this, more than half was generated by hydroelectric power, with biomass power (i.e., power generated from the burning of wood or other organic material) the only other significant source of renewable power. Geothermal power generated less than 0.01% of U.S. power; wind and solar power were not measured and were labeled "Not Available" on the chart.).
[12] U.S. ENERGY INFO. ADMIN., *supra* note 6, at 31–32.
[13] *Id.* at 62–64.
[14] Energy Policy Act of 1992, Pub. L. No. 102-486, § 1916, 106 Stat. 2776.

tax credit of $0.015 per kilowatt-hour of electricity generated by wind power, directly incentivizing renewable wind energy for the first time.[15] As a complementary function, EPAct 1992 also created a renewable energy production incentive ("REPI") payment of $0.015 per kilowatt-hour for qualified energy producers—including publicly-owned utilities and nonprofit energy co-ops that would otherwise not benefit from production or investment tax credits due to federal tax-exempt status—for renewable energy power generated by solar, wind, biomass, or geothermal sources.[16] By aligning these regulations and credits, the bill created incentives for all utilities, no matter their governing structure, to invest in renewable energy.

The next major update to national energy policy was the Energy Policy Act of 2005 ("EPAct 2005"). EPAct 2005 addressed energy efficiency, renewable energy, hydropower and geothermal energy, and climate change technology.[17] In fact, Title II of the Act is wholly dedicated to renewable energy policy and credits.[18] Additionally, Title IX devotes much of its text to the research and development of renewable energy sources.[19] Out of almost $14.6 billion of allocated funding, EPAct 2005 provided nearly $3.5 billion in subsidies to renewable energy.[20] At the time of its enactment, EPAct 2005 represented the largest commitment of funds to renewable energy in United States history.[21]

Further, Title XII, Subtitle F, of EPAct 2005 repealed PUHCA.[22] Repealing PUHCA removed numerous obstacles to electric utility industry

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[15] *Id.* § 1914.

[16] *Id.* § 1212; *See also Energy Policy Act 1992—Incentives for Renewable Energy*, INT'L ENERGY AGENCY, https://www.iea.org/policies/3841-energy-policy-act-1992-incentives-for-renewable-energy [https://perma.cc/YWJ8-KTKE]; *Renewable Energy Production Incentive (REPI),* INT'L ENERGY AGENCY, https://www.iea.org/policies/5011-renewable-energy-production-incentive-repi [https://perma.cc/PMC2-8FPP]; *Renewable Energy Production Incentives*, ENV'T PROT. AGENCY, https://archive.epa.gov/epawaste/hazard/wastemin/web/html/rpsinc.html [https://perma.cc/E9U7-94TC]. Originally, the REPI provision had a 20-year sunset provision, but the EPAct 2005 reauthorized and extended the eligibility window to qualified facilities first used before Oct. 1, 2016. *See* Energy Policy Act of 2005, Pub. L. No. 109-58, § 242(f), 119 Stat. 594, 651.

[17] ENV'T PROT. AGENCY, *Summary of the Energy Policy Act*, https://www.epa.gov/laws-regulations/summary-energy-policy-act [https://perma.cc/4QCM-ZH2U].

[18] *See* Energy Policy Act of 2005, Pub L. No. 109-58, tit. II, 119 Stat. 594.

[19] *See id*. at tit. IX. (For example, § 902(b) GOALS. "The Secretary shall publish measurable cost and performance-based goals, comparable over time, with each annual budget submission in at least the following areas: (1) Energy efficiency for buildings, energy-consuming industries, and vehicles. (2) Electric energy generation (including distributed generation), transmission, and storage. (3) Renewable energy technologies, including wind power, photovoltaics, solar thermal systems, geothermal energy, hydrogen-fueled systems, biomass-based systems, biofuels, and hydropower." (codified as 42 U.S.C.A. § 16181 (Westlaw through Pub. L. No. 118-13)).

[20] Brad Sherman, Note, *A Time to Act Anew: A Historical Perspective on the Energy Policy Act of 2005 and the Changing Electrical Energy Market*, 31 WM. & MARY ENV'T. L. & POL'Y REV. 211, 238 (2006).

[21] *Id.*

[22] Energy Policy Act of 2005 § 1263.

consolidation.[23] One significant change was that utilities were no longer confined to a single integrated—i.e., geographically contiguous—system.[24] Instead, mergers could take place among geographically diverse or remote companies.[25] For example, a gas distribution company located in Texas could now acquire an electric company in New England—an acquisition that would previously have been prohibited by PUHCA.[26] Perhaps more relevantly, a utility in a state with little access to renewable energy within its own borders could acquire or develop a wind farm in a noncontiguous state that had excellent wind resources. In other words, the availability of clean energy would be increased by allowing utilities to merge beyond their borders and gain access to resources otherwise unavailable due to the interplay of geography and regulations.

B. National Interest Electric Transmission Corridors

EPAct 2005 also created National Interest Electric Transmission Corridors ("NIETC").[27] The coming needs of the national grid were apparent to Congress in the years before EPAct 2005's passage. In 2002, the Department of Energy ("DOE") published a study calling for federal authority over the "construction of transmission facilities . . . needed to address national interest transmission bottlenecks" that were unable to be sited or permitted in a timely fashion.[28] A series of blackouts in the northeastern United States in August 2003 brought more attention to grid reliability problems and the United States and Canada formed a joint task force to investigate the causes of the blackout and reduce the probability of future blackouts.[29] Responding to the task force report and in an effort to improve national power transmission, Congress created NIETCs to serve as a federal "backstop" for transmission siting authority.[30] Under EPAct 2005, if a state refused to approve a transmission project for a year or more, or if the state conditioned its approval of the project on terms that would not reduce transmission congestion or were economically unfeasible, the Federal Electricity Regulatory Council ("FERC") could approve the transmission project on its own.[31] FERC could then approve right-of-way issues for a NIETC permit holder using eminent domain.[32] Ultimately, NIETCs were designed to give federal

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[23] Nidhi Thakar, Note, *The Urge to Merge: A Look at the Repeal of the Public Utility Holding Company Act of 1935*, 12 LEWIS & CLARK L. REV. 903, 905 (2008).
[24] *Id.*
[25] *Id.*
[26] *Id.*
[27] 16 U.S.C.A. § 824p(a)(1) (West 2005) (amended 2021).
[28] U.S. DEP'T. OF ENERGY, NATIONAL TRANSMISSION GRID STUDY 53 (2002)
[29] *See* U.S.-CANADA POWER SYSTEM OUTAGE TASK FORCE, FINAL REPORT ON THE AUGUST 14, 2003 BLACKOUT IN THE UNITED STATES AND CANADA: CAUSES AND RECOMMENDATIONS 1 (2004); Alexandra Klass, *The Electric Grid at a Crossroads: A Regional Approach to Siting Transmission Lines*, 48 U.C. DAVIS L. REV. 1895, 1918 (2015).
[30] *See* 16 U.S.C.A. § 824p(b) (West 2005) (discussing the circumstances in which DOE can designate an NIETC) (amended 2021).
[31] *Id.* § 824p(b)(C)(i)–(ii).
[32] *Id.* § 824p(e)(1).

authority over transmission siting in order to increase the reliability of the national grid.[33]

There was a potential alternative to federal oversight of transmission lines in the NIETC provisions. Under 16 U.S.C.A. § 824p(i), three or more states could, upon Congressional approval, enter into an interstate compact to facilitate the siting of future electric transmission facilities and to carry out the electric energy transmission siting responsibilities for the states.[34] However, the NIETC interstate compact provisions have never been used.[35]

To date, only two NIETCs have ever been designated—and no NIETCs have existed since 2011 when the last of two court cases severely limiting their implementation was decided.[36] In *Piedmont Envtl. Council v. FERC* (4th Cir. 2009), the court found FERC's interpretation of the language of § 216(b)(1)(C)(i), that a state which "withheld approval for more than 1 year after the filing of [a permit] application" included states that issued an "outright denial of an application within one year" to be contrary to the plain meaning of the statute.[37] In essence, the court said a state's denial of an application was the terminal act, meaning the state could no longer be considered to be withholding approval because the state had denied approval.[38] FERC's reading, the court continued, would mean that "Congress has told state commissions that they will lose jurisdiction unless they approve every permit application in a national interest corridor."[39] As a result, the NIETC provisions in EPAct 2005 did not yield any meaningful shift of transmission siting authority to the federal government and away from the states.[40] Furthermore, there have been "no attempts to use federal siting authority under 216(b)" since the *Piedmont* decision.[41]

NIETCs were further limited by *California Wilderness Coalition v. United States DOE* (9th Cir. 2011). In *California Wilderness*, the court vacated the NIETC designations for the Mid-Atlantic Area National Corridor and the Southwest Area National Corridor.[42] The DOE argued that siting decisions were

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[33] Piedmont Env't. Council v. FERC, 558 F.3d 304, 321 (4th Cir. 2009) (Traxler, J., dissenting) (citing 150 CONG. REC. S3732 (daily ed. Apr. 5, 2004) (statement of Sen. Domenici)).
[34] 16 U.S.C.A. § 824p(i) (West 2005) (amended 2021).
[35] AVI ZEVIN, SAM WALSH, JUSTIN GUNDLACH, & ISABEL CAREY, BUILDING A NEW GRID WITHOUT NEW LEGISLATION: A PATH TO REVITALIZING FEDERAL TRANSMISSION AUTHORITIES 65 n.118 (2020).
[36] *Id.* at 28.
[37] *Piedmont Env't Council*, 558 F.3d at 313.
[38] *Id.* at 313–14.
[39] *Id.* at 314.
[40] Klass, *supra* note 29, at 1920.
[41] ZEVIN, *supra* note 35, at 37.
[42] Cal. Wilderness Coal. v. U.S. Dep't of Energy, 631 F.3d 1072, 1079 (9th Cir. 2011). The Mid-Atlantic Area National Corridor included counties in Delaware, Ohio, Maryland, New Jersey, New

subject to the National Environmental Policy Act's ("NEPA") environmental analysis and environmental impact statement requirements, but the designation of a transmission corridor would not trigger the required analysis as it would have no environmental impact.[43] The court disagreed and held that DOE failed to perform an adequate environmental analysis under NEPA and thus broke the law.[44] As a result, future NIETC designations would be subject to NEPA and require the consideration of potential environmental consequences.

Combined, the *Piedmont* and *California Wilderness* decisions effectively prohibited the designation of new NIETCs and invalidated the only two NIETCs formed under EPAct 2005. No NIETCs have been designated or have existed since the *California Wilderness* decision.[45]

C. The Infrastructure Investment and Jobs Act

Enacted in November 2021, the Infrastructure Investment and Jobs Act ("IIJA") sought to change the fate of NIETCs.[46] Among its many provisions, the IIJA amends 16 U.S.C. § 824p, the statute that authorized NIETCs in EPAct 2005.[47] Specifically, section 40105 of the IIJA "explicitly grants FERC permitting jurisdiction in cases when a state *denies* a transmission construction application."[48] The language under the amended § 824p(b) states that FERC may issue permits for the construction or modification of electric transmission facilities in a NIETC if FERC finds that "a State commission or other entity that has authority to approve the siting of the facilities . . . *has denied an application* seeking approval pursuant to applicable law."[49] Furthermore, the IIJA amendments seem to account for the *California Wilderness* decision. For example, the amendments to § 824p(a) allow the Secretary of Energy to consider whether a NIETC designation "maximizes existing rights-of-way; and avoids and minimizes, to the maximum extent practicable, and offsets to the extent appropriate and practicable, sensitive environmental areas and cultural heritage sites . . . ."[50]

Additionally, the IIJA revisions allow for the designation of a NIETC to develop new transmission lines that connect renewable energy to the national

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York, Pennsylvania, Virginia, West Virginia, and Washington DC. The Southwest Area National Corridor spanned seven counties in southern California and three counties in western Arizona. U.S. DEP'T OF ENERGY, *National Electric Transmission Corridor Report and the Ordered National Corridor Designations*, https://web.archive.org/web/20110721032334/http://www.nietc.anl.gov/nationalcorridor/ [https://perma.cc/GXF2-X94R].

[43] *Cal. Wilderness Coal.*, 631 F.3d at 1098.

[44] *Id.* at 1096–98.

[45] ZEVIN, *supra* note 35, at 28.

[46] Infrastructure Investment and Jobs Act, Pub. L. No. 117–58, 135 Stat. 429 (2021).

[47] *Id.* § 40105.

[48] Divina Li, Note, *Do Grid Operators Dream of Electric Seams?: Coordinating Interregional Transmission Stakeholders to Improve Energy Deliverability*, 13 GEO. WASH. J. ENERGY & ENVTL. L. 82, 91 n.167 (2022) (emphasis in original).

[49] Infrastructure Investment and Jobs Act § 40105 (emphasis added).

[50] 16 U.S.C.A. § 824p(a)(4)(G) (West 2005) (amended 2021).

grids.[51] Specifically, under the amended § 824p(a)(4)(F), the Secretary of Energy may consider whether an NIETC designation "would enhance the ability of facilities that generate or transmit firm or intermittent [e.g., renewable] energy to connect to the electric grid."[52]

In sum, the IIJA seeks to revitalize the long-dormant NIETC provisions of EPAct 2005 by amending the authorizing language of the NIETC to account for the narrow construction of the law in *Piedmont* and to potentially ease administrative law burdens under NEPA as required by *California Wilderness.* Furthermore, it does so with an eye toward the development and integration of renewable energy into the national power supply.

III. CURRENT LEVELS OF ENERGY PRODUCTION IN UNITED STATES AND GREAT PLAINS

To fully understand where renewable energy production has not yet fulfilled its potential—both in the United States as a whole, and in Kansas, Nebraska, and the Dakotas—it is important to look at the current sources of electrical power in the United States and in the proposed areas.

A. The United States: Current Energy Production

At the end of 2021, there were 11,925 utility-scale electric power plants in the United States.[53] Of non-renewable power plants, there were 269 coal plants—down from 589 plants at the end of 2011, a 54% decrease—1,104 petroleum plants, and 2,020 natural gas-powered plants.[54] There were 55 nuclear plants, down from 66 in 2011.[55] Despite their limited number, nuclear power plants accounted for the five largest power plants in the United States by

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[51] RICHARD J. CAMPBELL, IIJA: EFFORTS TO ADDRESS ELECTRIC TRANSMISSION FOR RELIABILITY, RESILIENCE, AND RENEWABLES (Cong. Rsch. Serv.) (Dec. 9, 2021).

[52] 16 U.S.C.A. § 824p(a)(4)(F).

[53] ENERGY INFO. ADMIN., *How Many Power Plants Are There in the United States?*, FREQUENTLY ASKED QUESTIONS (FAQS), https://www.eia.gov/tools/faqs/faq.php?id=65&t=2 [https://perma.cc/Z4CC-ZBCW].

[54] ENERGY INFO. ADMIN., *Table 4.1. Count of Electric Power Industry Power Plants, by Sector, by Predominant Energy Sources within Plant, 2011 through 2021*, ELEC. POWER ANN. https://www.eia.gov/electricity/annual/html/epa_04_01.html [https://perma.cc/FEE4-S8S4] (The numbers in the next two paragraphs account for 10,721 of the utility-scale power plants in the U.S. The remaining 349 plants are classified by the EIA as "hydroelectric pumped storage" (40); "other gases" (37); and "other energy sources" (372)).

[55] *Id.* Nuclear power occupies a unique position in electrical power generation. Despite producing very few, if any, greenhouse gas emissions during the power generation process, the sourcing and refining of radioactive material for nuclear power can be carbon intensive, as can the disposal of spent nuclear materials. However, such issues are beyond the scope of this paper. *See* DEP'T OF ENERGY, *NUCLEAR 101: How Does a Nuclear Reactor Work?, Office of Nuclear Energy* (Aug. 2, 2023), https://www.energy.gov/ne/articles/nuclear-101-how-does-nuclear-reactor-work [https://perma.cc/4Z7U-UWXN].

electric generation in 2021 and eight of the top ten.[56] Natural gas was the predominant source of electrical power in 2021, accounting for 38.4% of all power generation in the United States.[57] Nuclear power generated 18.9% of the nation's electricity.[58]

As for renewable power plants, conventional hydroelectric power accounted for 1,449 plants.[59] There are 6,579 plants classified as "other renewables" by the Energy Information Administration ("EIA").[60] Though not specified by power generation type (e.g., solar, wind, geothermal), those 6,579 plants represent more than a four-fold increase in the number of "other renewable" power plants since 2011.[61] In other words, while the number of actively-generating coal plants has been cut in half in the last decade, renewable power plants have more than quadrupled.

That quadrupling has led to renewable power plants generating more electricity than coal power plants as of the end of 2020.[62] Previous estimates showed that coal plants generated 19.3% of the electricity in the United States in 2020,[63] and renewable sources generated 18.6% of the electricity (wind power 9.2%; hydroelectric power 6.1%; solar power 2.8%; geothermal 0.4%).[64] However, those figures were updated at the end of 2021, with the EIA stating:

> [R]enewable energy sources . . . generated a record 834 billion kilowatt hours ("kWh") of electricity, or about 21% of all the electricity generated in the United States. Only natural gas (1,617 billion kWh) produced more electricity than renewables in the United States in 2020. Renewables surpassed both nuclear (790 billion kWh) and coal (774 billion kWh) for the first time on record. This outcome in 2020 was due mostly to

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[56] Those plants, in order of electric generation, are the Palo Verde, Browns Ferry, Peach Bottom, Oconee, South Texas Project, Byron Generating Station, TalenEnergy Susquehanna, and Vogtle. ENERGY INFO. ADMIN., *Table 2B. Ten Largest Plants by Generation, 2021*, UNITED STATES ELEC. PROFILE 2021 (Nov. 10, 2022), https://www.eia.gov/electricity/state/unitedstates/ [https://perma.cc/BA2R-XGLB].

[57] ENERGY INFO. ADMIN., *Table 5. Electric Power Industry Generation by Primary Energy Source, 1990 Through 2021 United States*, UNITED STATES ELEC. PROFILE 2021 (Nov. 10, 2022), https://www.eia.gov/electricity/state/unitedstates/ [https://perma.cc/BA2R-XGLB].

[58] *Id.*

[59] ENERGY INFO. ADMIN., *supra* note 54. The Grand Coulee Dam has the largest capacity (maximum power output) of any power plant of any type in the U.S. *See* ENERGY INFO. ADMIN., *Table 2A. Ten Largest Plants by Capacity, 2021 United States*, UNITED STATES ELEC. PROFILE 2021, https://www.eia.gov/electricity/state/unitedstates/ [https://perma.cc/BA2R-XGLB].

[60] ENERGY INFO. ADMIN., *supra* note 54.

[61] *Id.*

[62] ENERGY INFO. ADMIN., *Renewables Became the Second-Most Prevalent U.S. Electricity Source in 2020*, TODAY IN ENERGY (Dec. 23, 2021), https://www.eia.gov/todayinenergy/detail.php?id=50622 [https://perma.cc/VXB8-R633].

[63] ENERGY INFO. ADMIN., *supra* note 57.

[64] *Id.*

> significantly less coal use in United States electricity generation and steadily increased use of wind and solar.[65]

Yet despite the rise in renewable energy production, the electric power sector accounted for 25% of the nation's total greenhouse gas emissions in 2021, making it the second largest source of such emissions.[66] Developing clean energy sources and transmitting the power those clean energy sources generate is important for fighting climate change. In particular, as the EPA explains,

> Coal combustion is more carbon-intensive than burning natural gas or petroleum for electric power production. Although coal use accounted for about 59% of CO_2 emissions from the sector, it represented only 23% of the electricity generated in the United States in 2021. Natural gas use accounted for 37% of electricity generation in 2021, and petroleum use accounted for less than 1%. The remaining generation in 2021 came from non-fossil fuel sources, including nuclear and renewable energy sources, which include hydroelectricity, biomass, wind, and solar. Most of these non-fossil sources, such as nuclear, hydroelectric, wind, and solar, are non-emitting.[67]

In other words, 60% of the power generated in the United States accounted for a quarter of the nation's total greenhouse gas emissions. Given the outsize amount of emissions the electrical sector generates, it is worth examining the current power production facilities in the Plains states of our focus before going forward.

B. Kansas: Current Energy Production

Wind accounted for 45.4% of Kansas's electric generation production in 2021.[68] Solar power and hydroelectrical power each accounted for 0.1% of Kansas's power.[69]

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[65] ENERGY INFO. ADMIN., s*upra* note 62.

[66] ENV'T PROT. AGENCY, *Sources of Greenhouse Gas Emissions*, https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions#electricity [https://perma.cc/3PEC-HY33] (discussing how transportation was the largest emitting sector, accounting for 28% of U.S. greenhouse gas emissions).

[67] *Id.*

[68] ENERGY INFO. ADMIN., *Table 5. Electric Power Industry Generation by Primary Energy Source, 1990 Through 2021 Kansas*, KAN. ELEC. PROFILE 2021 (Nov. 10, 2022), https://www.eia.gov/electricity/state/kansas/ [https://perma.cc/T5KX-VRCV]. Please see Appendix 1 for a table of Kansas power generation.

[69] *Id.*

Nonrenewable sources accounted for the remainder of Kansas's power production.[70] Coal power plants made up the bulk of the remainder, generating 34.3% of Kansas's power.[71] Natural gas generates another 4.7% of Kansas's power.[72] The Wolf Creek Nuclear Facility, the only nuclear power plant in the state and the state's largest single power plant, generates 15.1% of Kansas's power.[73]

C. Nebraska: Current Energy Production

Coal accounted for 49.9% of Nebraska's power generation in 2021, making it the primary source of power for the state.[74] Natural gas generated another 3.1% of the state's power.[75] The Cooper Nuclear Station, Nebraska's only nuclear power plant, generated 18.1% of the state's power.[76]

Of the four states examined, Nebraska generates the smallest percentage of its power from renewable sources. Yet, the state still generates over a quarter (25.3%) of its energy from wind power.[77] In other words, even as the smallest generator of renewable power, Nebraska outpaces the 2020 national rate of 21% renewable power generation,[78] and generates nearly three times the power from wind than the national rate of 9.2%.[79] Hydroelectric power accounted for another 3.0% of Nebraska's power.[80]

D. North Dakota: Current Energy Production

North Dakota is the largest consumer of coal power of the states examined. Coal accounts for 56.7% of the power generated in the state.[81] Perhaps surprisingly, given the large place oil and gas fracking play in North Dakota's economy, natural gas plants only account for 3.7% of North Dakota's power.[82]

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[70] *See id.*
[71] *Id.*
[72] *Id.*
[73] ENERGY INFO. ADMIN., *Table 2B. Ten Largest Plants by Generation, 2021 Kansas*, KAN. ELEC. PROFILE 2021 (Nov. 10, 2022), https://www.eia.gov/electricity/state/kansas/ [https://perma.cc/T5KX-VRCV]; ENERGY INFO. ADMIN., *supra* note 68.
[74] ENERGY INFO. ADMIN., *Table 5. Electric Power Industry Generation by Primary Energy Source, 1990 Through 2021 Nebraska*, NEB. ELEC. PROFILE 2021 (Nov. 10, 2022), https://www.eia.gov/electricity/state/nebraska/ [https://perma.cc/STT8-W3VL]. Please see Appendix 1 for a table of Nebraska power generation.
[75] *Id.*
[76] ENERGY INFO. ADMIN., *Table 2B. Ten Largest Plants by Generation, 2021 Nebraska*, NEB. ELEC. PROFILE 2021 (Nov. 10, 2022), https://www.eia.gov/electricity/state/nebraska/ [https://perma.cc/STT8-W3VL]; ENERGY INFO. ADMIN., *supra* note 74.
[77] ENERGY INFO. ADMIN., *supra* note 74.
[78] ENERGY INFO. ADMIN., *supra* note 62.
[79] ENERGY INFO. ADMIN., *supra* note 57.
[80] ENERGY INFO. ADMIN., *supra* note 74.
[81] ENERGY INFO. ADMIN., *Table 5. Electric Power Industry Generation by Primary Energy Source, 1990 Through 2021 North Dakota*, N.D. ELEC. PROFILE 2021 (Nov. 10, 2022), https://www.eia.gov/electricity/state/northdakota/ [https://perma.cc/5QJH-GBTY]. Please see Appendix 1 for a table of North Dakota power generation.
[82] *Id.*

Renewable sources of power, especially wind and hydroelectric power, make up the remainder of North Dakota's power generation. Wind accounts for 34.7% of the state's power supply.[83] Hydroelectric power, nearly entirely provided by the Garrison Dam and Power Plant, accounts for another 4.6% of the state's power.[84]

Curiously, although North Dakota has approximately 100,000 fewer people than South Dakota, it generates nearly three times the power of South Dakota. North Dakota also generates approximately 20% more power than Nebraska, despite having a million fewer people.[85]

E. South Dakota: Current Energy Production

Of the four states examined, South Dakota generates the highest percentage of its power from renewable sources and generates the least amount of power. Over 80% of South Dakota's power is generated by wind or hydroelectric sources.[86] Hydroelectric power—primarily from the Oahe, Big Bend, and Fort Randall dams on the Missouri River[87]—generates 28.8% of the state's power.[88] Wind power accounts for 53.8% of the total power generated in the state.[89]

Coal (9.5%) and natural gas (7.6%) power plants account for most of the remaining power generated, along with small amounts of solar, wood, and petroleum power.[90]

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[83] *Id.*

[84] ENERGY INFO. ADMIN., *Table 2B. Ten Largest Plants by Generation, 2021 North Dakota*, N.D. ELEC. PROFILE 2021 (Nov. 10, 2022), https://www.eia.gov/electricity/state/northdakota/ [https://perma.cc/5QJH-GBTY]; ENERGY INFO. ADMIN., *supra* note 81.

[85] Though outside this article's scope, it would be interesting to discover *why* North Dakota generates so much more power than its similarly situated neighbors. Possible explanations I've considered include: North Dakota is colder than the other Plains states, so citizens need more power to heat their homes; the state's fracking and oil extraction industry requires large amounts of electricity; North Dakota is exporting power to other states; and the federal military bases in North Dakota—many of which guard a significant part of the U.S. nuclear weapons arsenal— require a great deal of electrical power. Adam Willis, *For North Dakotans Living Next to Nuclear Missiles, the Specter of a World-Altering War is an Afterthought*, THE FORUM (March 25, 2022, 4:21 AM), https://www.inforum.com/news/north-dakota/for-north-dakotans-living-next-to-nuclear-missiles-the-specter-of-a-world-altering-war-is-an-afterthought [https://perma.cc/VK99-YHU8].

[86] ENERGY INFO. ADMIN., *Table 5. Electric Power Industry Generation by Primary Energy Source, 1990 Through 2021 South Dakota*, S.D. ELEC. PROFILE 2021 (Nov. 10, 2022), https://www.eia.gov/electricity/state/southdakota/ [https://perma.cc/68UB-5RPU]. Please see Appendix 1 for a table of South Dakota power generation.

[87] CONSUMER ENERGY ALL., *South Dakota Hydro*, https://consumerenergyalliance.org/the-power-of-water/south-dakota/south-dakota-hydro/ [https://perma.cc/7E2F-N44A].

[88] ENERGY INFO. ADMIN., *supra* note 86.

[89] *Id.*

[90] *Id.*

Although there are some disparities in overall power production, all four of these states generate far more wind power than the national rate of 9.2%.[91] However, despite this comparative overproduction, the wind power potential of the Plains states still has yet to be fully realized due to geographic issues and the structure of the national grid.

IV. THE INFLATION REDUCTION ACT: RENEWABLE ENERGY AND TRANSMISSION PROVISIONS

The Inflation Reduction Act ("IRA") was signed into law by President Biden on August 16, 2022.[92] As a piece of legislation, it has multiple goals including reducing the federal budget deficit, increasing health care access, and regulating prescription drug pricing.[93] However, the IRA's energy industry regulations to address climate change have the potential to be one of the bill's most significant impacts.[94] As many of its provisions are designed to reduce carbon emissions, the IRA has likely ushered in a new era of power regulation and generation.

A. Renewable Energy Provisions

In order to reduce carbon emissions, the IRA contains tax credits for clean sources of electricity and energy storage.[95] Accompanying those tax credits is as much as forty billion dollars to guarantee loans for eligible projects under § 1703 of the EPAct 2005 (codified at 42 U.S.C. § 16513).[96] As amended, § 16513 may only be used for projects that "avoid, reduce, utilize, or sequester air pollutants or anthropogenic emissions of greenhouse gases; and employ new or significantly improved technologies."[97] Renewable energy systems, such as wind or solar, are specifically deemed as eligible for loan guarantees in the statute.[98] To further develop and produce United States-manufactured renewable energy components, the IRA establishes a ten billion dollar investment tax credit to build clean technology manufacturing facilities.[99]

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[91] ENERGY INFO. ADMIN., *supra* note 57.
[92] Inflation Reduction Act of 2022, Pub. L. No. 117-169, 136 Stat. 1818.
[93] Bella Isaacs-Thomas, *What the Inflation Reduction Act Does for Green Energy*, PBS NEWSHOUR (Aug. 17, 2022, 10:57 AM), https://www.pbs.org/newshour/science/what-the-inflation-reduction-act-does-for-green-energy [https://perma.cc/68PB-S3KR].
[94] *Id.*
[95] Press Release, Senate Democrats, Schumer Statement on Agreement With Sen. Manchin to Add Climate Provisions to the FY2022 Budget Reconciliation Legis. & Vote in Senate Next Wk., Summary of the Energy Sec. & Climate Change Invs. in the Inflation Reduction Act of 2022 (July 27, 2022), https://www.democrats.senate.gov/imo/media/doc/summary_of_the_energy_security_and_climate_change_investments_in_the_inflation_reduction_act_of_2022.pdf [https://perma.cc/U8YP-YR4N].
[96] Inflation Reduction Act of 2022, Pub. L. No. 117-169, § 50141, 136 Stat. 1818, 2042–44 (codified at 42 U.S.C.A § 16513).
[97] 42 U.S.C.A. § 16513 (West).
[98] *Id.*
[99] Inflation Reduction Act of 2022, Pub. L. No. 117-169, § 13501(e)(2), 136 Stat 1818, 1969–71 (codified at 26 U.S.C.A. § 48C).

Examples of manufacturing facilities that would qualify for the tax credit include electric vehicles, wind turbines, and solar panels.[100] The list does not appear to be exhaustive and presumably other renewable energy component parts (e.g., heat pumps, geothermal power materials) could also qualify.[101]

The provisions for clean energy and climate change in the IRA would, if fully enacted and realized over the lifespan of the bill, put the United States on a path to reduce its emissions by approximately forty percent by the year 2030.[102] Furthermore, the financial incentives to fight climate change and smooth out the clean energy transition represent the largest single investment in the matter in United States history.[103]

The incentives go beyond the purely financial, however. Specifically, the ten-year time frame of the IRA provides much needed policy stability and incentive predictability for private sector investors.[104] There are, broadly speaking, two major types of clean energy tax credits: investment tax credits ("ITC") and production tax credits ("PTC").[105] ITCs are generally granted for installing new clean power generation facilities.[106] PTCs are granted for producing clean energy.[107] Prior Congressional efforts to incentivize clean energy production and infrastructure had generally expired after a few years or been subject to continual congressional meddling.[108] This led to a stop-and-start progression of renewable energy projects and timelines. The chart below shows how much wind generating capacity was added to the United States grid annually from 2004-2020 and demonstrates the year-to-year variances.[109]

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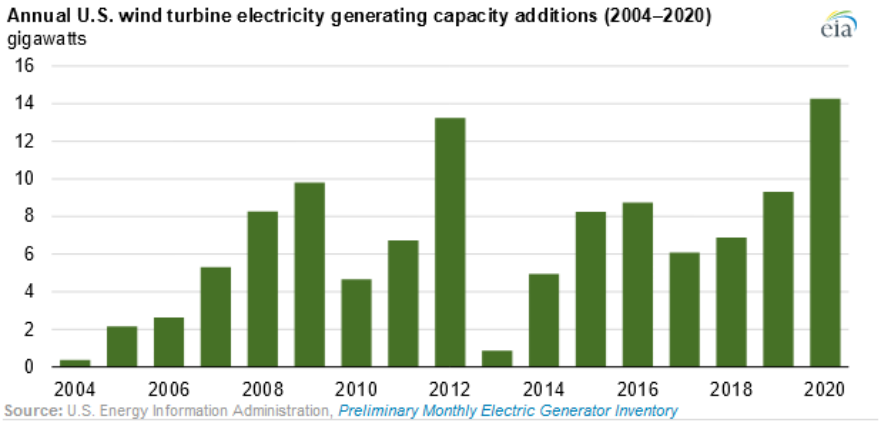
[100] *Id.* § 13501(b)(1)(I)(VII).
[101] *See* § 48C(1)(A)(ii)(IV) ("any other industrial technology designed to reduce greenhouse gas emissions, as determined by the Secretary . . . .").
[102] Senate Democrats, *supra* note 95.
[103] *Id.*
[104] Ryan Cooper, *The Inflation Reduction Act's Quiet Revolution on Public Power,* THE AMERICAN PROSPECT (Aug. 18, 2022), https://prospect.org/environment/inflation-reduction-acts-quiet-revolution-on-public-power/ [https://perma.cc/RT4J-D76Y].
[105] *Id.*
[106] *Id.*
[107] *Id.*
[108] *Id.*
[109] Richard Bowers & Owen Comstock, *The United States installed more wind turbine capacity in 2020 than in any other year*, U.S. ENERGY INFO. ADMIN., (Mar. 3, 2021), https://www.eia.gov/todayinenergy/detail [https://perma.cc/G7SL-H74Y]. Of note, in 2004—the year before EPAct of 2005—less than a gigawatt of wind energy generation was added to the grid. Only one year since then (2013) has failed to surpass at least two gigawatts of additional wind power.

Figure 4-1: Annual United States Wind Turbine Generating Capacity Additions (2004-2020)



Though the United States installed more wind power capacity in 2019 and 2020 than in any previous two years combined, 2020's surge in capacity was likely driven by the looming expiration of the PTC for wind farms at the end of the year.[110] Though it is hard to tie a direct correlation between private wind power investment and federal tax credits, the ten-year time frame of the IRA creates policy stability for renewable energy credits, which in turn should increase financial predictability for private investors (e.g., independent power producers, public utilities) who seek to invest in renewable energy.[111]

Prior to the IRA, tax-exempt power producers (e.g., public power utilities) could not directly benefit from either ITC or PTC tax incentives because they paid no taxes.[112] However, the IRA transformed the ITC and PTC from tax credits into direct payments.[113] Now public power utilities, and generally all utilities, receive a direct cash payment equal to the ITC or PTC credit.[114] This qualifies tax-exempt power utilities for payment on equal terms to their private counterparts and should accelerate and smooth the further development of renewable energy in the United States.[115]

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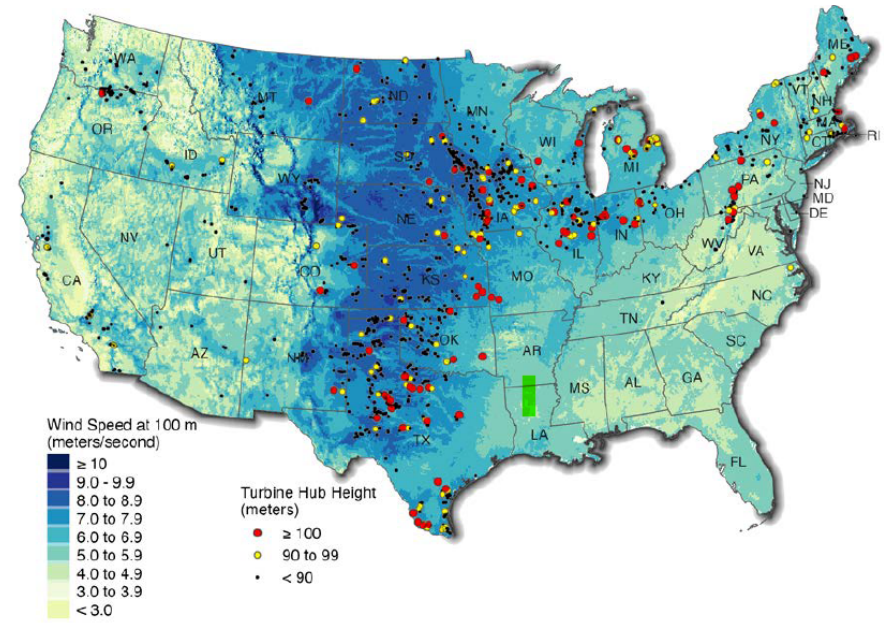
[110] *Id.* In December 2020, Congress extended the credit through 2021.
[111] Cooper, *supra* note 104.
[112] *Direct Pay Tax Credits,* AMERICAN PUBLIC POWER ASSOCIATION (Jan. 2023), https://www.publicpower.org/system/files/documents/23%202023%20Issue%20Briefs_Direct%20Pay_FINAL.pdf [https://perma.cc/F8PT-BDT8].
[113] Cooper, *supra* note 104.
[114] *Id.*
[115] *Id.*

B. Where the West Wind Blows

Increasing the production of renewable energy does little good if the power cannot be transported to areas that need it. This is where the heart of the issue lies for the Great Plains states: the areas where they generate the most power, and where the greatest potential for future renewable power generation lies, are sparsely populated. The wind speed map below illustrates the point:

Figure 4-2: United States Windspeeds at 100 Meters Altitude[116]



Sources: ACP, U.S. Wind Turbine Database, AWS Truepower, Berkeley Lab

This map shows windspeed at 100 meters of altitude (approximately 330 feet) in meters per second, and the locations of wind turbines, sorted by hub height, throughout the United States[117] For reference, a wind speed of 9.0

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[116] U.S. OFF. ENERGY EFFICIENCY & RENEWABLE ENERGY, DEP'T. ENERGY, LOCATION OF TALL TOWER TURBINE INSTALLATIONS, LAND-BASED WIND MARKET REPORT: 2023 EDITION 32 (Aug. 2023).

[117] Liz Hartman, *Wind Turbines: The Bigger, the Better*, U.S. OFF. ENERGY EFFICIENCY & RENEWABLE ENERGY, DEP'T. ENERGY, (Aug. 24, 2023), https://www.energy.gov/eere/articles/wind-turbines-biggerbetter#:~:text=Larger%20rotor%20diameters%20allow%20wind,areas%20with%20relatively%20less%20wind [https://perma.cc/KEK7-LN6U]. The hub is the center point around which the blades spin—in other words, it is the middle point of the turbine's rotor. The average height of a land-based wind turbine hub in the U.S. was 94 meters in 2021. The rotor

meters per second, the lowest measure of the above map's dark blue color that covers most Great Plains, is a little over twenty miles per hour.[118] The cut-in speed for a wind turbine—the speed at which the blades begin rotating and generating power—is typically between six to nine miles per hour.[119] As wind speeds increase, the power generated increases until the turbine reaches its rated speed—the point at which the turbine produces its maximum power.[120] In 2022, the average capacity of newly installed turbines was 3.2 megawatts.[121] As the map shows, the highest average wind speeds in the United States are located in the western Great Plains. In other words, the western Great Plains is where an average wind turbine installed in 2021 would be most likely to reach its maximum power ratings most frequently and generate the largest and, presumably, steadiest amount of energy. Yet despite the high wind speeds and the potential for additional power generation, the number of turbines in the Plains states lags behind the number of turbines in neighboring states to the east and south.

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diameter averaged 127.5 meters in 2021, meaning the average wind turbine in the U.S. reached a zenith of 157.75 meters and a nadir of 30.25 meters.

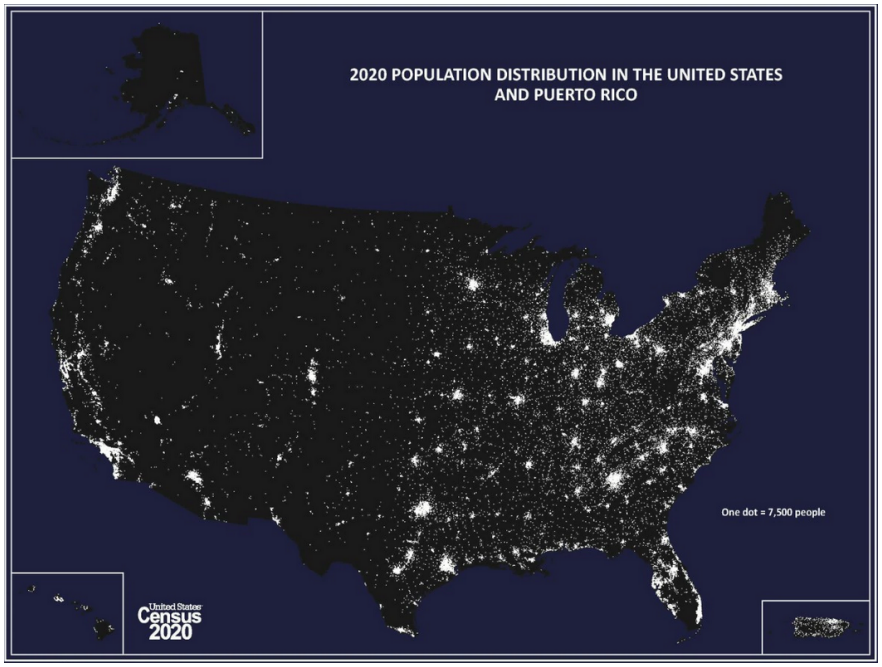
[118] 1 meter = 3.28 feet. 5280 feet per mile/3.28 feet = 1,609.75 meters per mile. 9.0 meters per second x 60 seconds/minute = 540 meters/minute. 540 x 60 minutes/hour = 32,400 meters/hour. 32,400/1609.75 meters per mile = 20.13 miles per hour.

[119] *How Do Wind Turbines Survive Severe Storms*, OFF. ENERGY EFFICIENCY & RENEWABLE ENERGY, DEP'T. ENERGY, (June 20, 2017), https://www.energy.gov/eere/articles/how-do-wind-turbines-survive-severe-storms [https://perma.cc/VP2Z-TZ5M].

[120] *Id.*

[121] Hartman, *supra* note 117.

Figure 4-3: 2020 Population Distribution in the US and Puerto Rico[122]



Comparing the wind speed map with a map of United States population density may explain this lag. There simply is not a significant enough population to create demand for power in the local areas where wind speed is the highest. Denver and the cities of Colorado's Front Range sit at the far western edge of the Plains; Dallas, Houston, and the Austin-San Antonio area lie to the southeast. Tracing a line north-northeast from Dallas, strikes upon Tulsa, Kansas City, Des Moines, and ultimately Minneapolis/Saint Paul to establish the rough eastern boundary of the Great Plains.[123] But between those three boundaries—where the highest wind speeds in the country exist—the population is sparse, the land is empty, and there are few metropolitan areas of significant size. Thus, it is apparent that renewable energy power facilities have likely not been developed to their full potential in the Great Plains states because the local population cannot create enough demand to support them.

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[122] *2020 Population Distribution in the United States and Puerto Rico*, UNITED STATES CENSUS BUREAU (Oct. 1, 2021), https://www.census.gov/library/visualizations/2021/geo/population-distribution-2020.html [https://perma.cc/2Q6W-ZZU2].

[123] If you want to move the boundary a hundred and fifty or so miles west and establish the line as running through Oklahoma City, Wichita, and Omaha before reaching the Twin Cities, I won't stop you. To-may-toe, to-mah-toe.

However, that is not the only reason for the lack of energy development. The shape of energy distribution in the United States is itself a reason—and one the IIJA and the IRA seek to address.

C. Transmission Provisions in the IRA and the IIJA

Provisions in the IRA address power transmission and its role in furthering renewable energy production in the United States. Section 50151 of the IRA, Transmission Facility Financing, appropriates two billion dollars in direct loan authority for the construction or modification of electric transmission facilities to non-federal (i.e., state or private) borrowers that develop and expand the national grid.[124] For a transmission project to be eligible for a direct loan, it would need to be located within a NIETC, as established by § 842p.[125] As stated above, NIETCs are designated by the DOE and may include any geographic area that is expected to experience energy transmission capacity constraints or congestion that adversely affects consumers.[126] To determine whether a NIETC designation is appropriate, the DOE may consider whether the designation would enhance the ability of facilities that generate energy, even intermittent energy, to connect to the national grid.[127] Specifically, the DOE may designate a NIETC if doing so promotes the use of intermittent energy such as wind or solar power.[128] Once the NIETC designation is complete, eligible utilities and power companies may apply for direct loans under the Transmission Facility Financing program.[129]

The similarly-named Transmission Facilitation Program was established by the IIJA and is "a revolving fund program that will provide Federal support to overcome the financial hurdles in the development of large-scale new transmission lines."[130] Two and a half billion dollars are allocated to the DOE to fund the program.[131] Importantly, the program is designed for revolving fund loans, which are "pools of capital from which loans can be made for clean energy projects—as loans are repaid, the capital is then reloaned for another project."[132] Provided that such loans are rarely defaulted on, a revolving loan fund can be considered an "evergreen" source of capital that can be "recycled over and over again to fund projects well into the future."[133] In essence, the allocated $2.5

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[124] Inflation Reduction Act of 2022, Pub. L. No. 117-169, 136 Stat. 1818 (Codified at 42 U.S.C. § 18715).
[125] *Id.*; *See also* ASHLEY J. LAWSON, CONG. RSCH. SERV. IN11981, ELECTRICITY TRANSMISSION PROVISIONS IN THE INFLATION REDUCTION ACT OF 2022 1 (Aug. 23, 2022).
[126] 16 U.S.C.S. § 824p(a)(2) (LEXIS through Pub. L. No. 118-13).
[127] *Id.* § 824p(a)(4)(F).
[128] LAWSON, *supra* note 125.
[129] *Id.* ("Absent an NIETC designation, the appropriations this section would provide may not be accessible to industry participants.")
[130] GRID DEPLOYMENT OFF*, U.S. Dep't of Energy: Building a Better Grid*., https://www.energy.gov/gdo/transmission-facilitation-program [https://perma.cc/2TBT-JABZ].
[131] 42 U.S.C.S. § 18713(d)(2) (LEXIS through Pub. L. No. 118-14).
[132] OFF. STATE AND CMTY. ENERGY PROGRAMS, *Revolving Loan Funds*, https://www.energy.gov/scep/slsc/revolving-loan-funds [https://perma.cc/95TJ-HNLB].
[133] *Id.*

billion can be loaned out multiple times as loans are repaid and the $2.5 billion is recapitalized again. Lastly, the Transmission Facilitation Program also prioritizes projects located within NIETCs. Under 42 U.S.C.S. § 18713(h), the Secretary of Energy[134] may participate in "public-private partnerships within an NIETC and necessary to accommodate an increase in electricity demand across more than one state or transmission planning region."[135]

In sum, between the IIJA and the IRA, there is now $4.5 billion available in either direct or revolving loan funds for energy transmission projects. Furthermore, both funding bills include provisions prioritizing projects located within NIETC designated areas. However, despite its importance to unlocking the IRA's federal direct loan capacity for transmission projects—and despite the IIJA's revisions to the NIETC statutory provisions—there were no currently existing NIETCs when the IRA was passed at the end of August 2022.[136]

D. Interconnections and Interconnectivity

Why do the IIJA and the IRA allocate so much money to address transmission and the national grid? Because the national grid itself is currently a barrier to the greater distribution of renewable energy.[137] There are three almost entirely self-contained power grids that make up the United States power distribution network[138]: the Eastern Interconnection, reaching from the Atlantic Coast to the "foot of the Rockies;" the Western Interconnection, beginning on the Pacific Coast and reaching "over the Rockies to the Great Plains;" and the Texas Interconnection, covering most of Texas.[139] However, there are only seven points at which the Eastern and Western Interconnections are linked, and those links only have the capacity to move 1,320 megawatts between the interconnections.[140] Yet the Eastern Interconnection has the capacity to generate 700,000 megawatts and the Western Interconnection can generate 250,000

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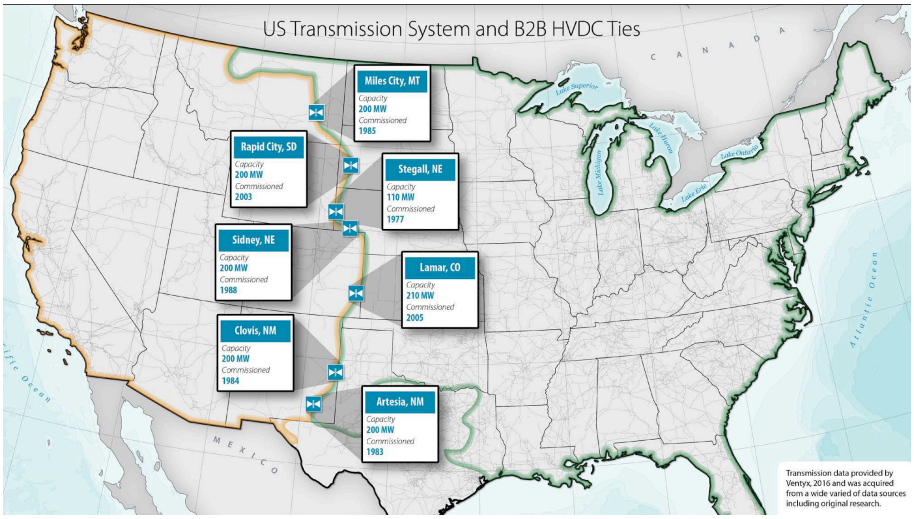
[134] 42 U.S.C.S. § 18713(h) (LEXIS through Pub. L. No. 118-13).
[135] GRID DEPLOYMENT OFF., *supra* note 130.
[136] LAWSON, *supra* note 125.
[137] *See* Ethan Howland, *Transmission Development Key to Inflation Reduction Act's Climate Potential: Report*, UTILITY DIVE (Sept. 26, 2022), https://www.utilitydive.com/news/transmission-ira-inflation-reduction-act-emissions-report-REPEAT/632629/ [https://perma.cc/LG2G-MPL9].
[138] David C. Wagman, *It's Time to Tie the U.S. Electric Grid Together, Says NREL Study*, IEEE SPECTRUM (Aug. 8, 2018), https://spectrum.ieee.org/after-almost-100-years-of-talk-time-might-be-right-to-strengthen-the-interconnect [https://perma.cc/ZVV3-EK77].
[139] OFF. OF ELEC., *Learn More About Interconnections*, https://www.energy.gov/oe/learn-more-about-interconnections [https://perma.cc/FCE9-7TSX].
[140] AARON BLOOM, JOSH NOVACHECK, GREG BRINKMAN, JAMES MCCALLEY, ARMANDO L. FIGUEROA-ACEVEDO, ALI JAHANHANI-ARDAKANI, HUSSAM NOSAIR, ABHINAV VENKATRAMAN, JAY CASPARY, DALE OSBORN, AND JESSICA LAU, THE VALUE OF INCREASED HVDC CAPACITY BETWEEN THE EASTERN AND WESTERN U.S. GRIDS: THE INTERCONNECTIONS SEAM STUDY 1 (Nat'l Renewable Energy Lab'y Oct. 2020).

megawatts.[141] Back-of-the-envelope math shows that only about 1.5% of the 950,000 megawatts generated by the United States power supply is available to transfer between grids. The linking facilities are located at "the western edge of the American prairie, just east of the Rocky Mountains."[142] Phrased differently, the seam that holds together the American electrical grid crosses "sparsely populated rangelands in the middle of the country."[143]

Figure 4-4: Linkage Points Between the Eastern and Western Interconnections[144]



The nature of the problem of wind energy generated in the Great Plains states is currently twofold. One, no one lives there to demand energy. Two, the energy that is capable of being produced there is not capable of being transmitted to population centers to the east and west due to distance and a lack of interconnectivity between the power grids. The wind power potential of the Great Plains states lies dormant because of a historical lack of need, an old infrastructure developed around that lack of need, and geographical inconvenience. The most wind-rich portions of the United States are in the borderlands of the national power grid—if the Plains states can successfully develop and export those wind resources, they can lead the way in renewable wind power generation in the United States.

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[141] *Id.*
[142] *Id.*
[143] Wagman, *supra* note 138.
[144] BLOOM, *supra* note 140.

V. THE ROLE OF THE STATES

What, then, do Kansas, Nebraska, North Dakota, and South Dakota need to do to take advantage of financing available under the IIJA and the IRA? What steps can they take in the near future to work toward a goal of integrated wind power generation in the Plains?

Under § 824p, the Secretary of Energy must, at least every three years, issue a report relating to electric energy transmission capacity constraints and congestion.[145] Upon doing so, the Secretary may designate as a NIETC "any geographic areas that is experiencing electric energy transmission capacity constraints or congestion that adversely affects consumers; or is expected to experience such energy transmission capacity constraints or congestion."[146] In designating a NIETC, the Secretary may consider whether a NIETC would enhance the ability to connect renewable energy to the grid.[147]

However, the Plains states should not wait for the study to be completed to prepare for a NIETC designation. The states should consider forming an interstate compact, as allowed under the Constitution and § 824p.[148] Under § 824p, interstate compacts can be formed among three or more contiguous states to establish regional transmission siting agencies to facilitate the siting of future transmission facilities and also to carry out the transmission siting responsibilities.[149] Such a compact between the four states would require Congressional approval, but, once established, would allow the states to work in concert to develop the necessary transmission lines to export power from the rural plains to more populus urban centers.[150] Doing so in advance of a NIETC designation would presumably result in quicker, more efficient action once a NIETC was granted.

Additionally, under § 824p(i)(4), an interstate compact overrides the siting authority of FERC at first pass.[151] FERC has no authority to "issue a permit for the construction or modification of an electric transmission facility within a State

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[145] 16 U.S.C.A. § 824p(a)(1)–(2) (Westlaw through Pub. L. No. 118-13).
[146] *Id.* § 824p(a)(2) (Westlaw).
[147] *Id.* § 824p(a)(4)(F) (Westlaw).
[148] U.S. CONST. art. I, § 10, cl. 3. ("No State shall, without the Consent of Congress, … enter into Any Agreement or Compact with another State...."); 16 U.S.C.A. § 824p(i)(1)(LEXIS through Pub. L. No. 118-13).
[149] 16 U.S.C.A. § 824p(i)(1) (LEXIS through Pub. L. No. 118-13).
[150] *Id.* To be clear, Kansas, Nebraska, North Dakota and South Dakota are all part of the Southwest Power Pool, a regional transmission organization ("RTO"), a FERC-mandated nonprofit designed to "ensure reliable supplies of power, adequate transmission infrastructure and competitive wholesale electricity prices" on behalf of its members. RTOs are designed to promote reliability and efficiency, and as such have some overlap with the priorities of a NIETC, however, the two programs are fairly distinct. *About Us*, *SW.* POWER POOL, https://spp.org/about-us/ [https://perma.cc/HR5Y-QTHT].
[151] *Id.* § 824p(i)(1)(4)(LEXIS).

that is a party to a compact." The only exception is if the Secretary of Energy determines that the "members of the compact are in disagreement," and then only if the disagreement lasts for more than a year.[152] In essence, this provision would grant the Plains states more localized control of the siting decisions, a function that may be important when dealing with far-flung rural communities that are stereotypically more hostile to federal actions. However, working together to establish such a locally controlled agency may take considerable time; it would be best for the Plains states to begin laying the groundwork sooner rather than later.

The designation as a NIETC would allow infrastructure owners and developers—including publicly-owned utilities—that operate in the four states to access the two billion dollars in federal direct loans under the Transmission Facility Financing provisions in the IRA.[153] At present there are no other NIETCs in the United States. Becoming the sole NIETC in the United States would give the Plains states exclusive access to the direct loan funds, de facto prioritization in transmission line upgrades, and a two-billion-dollar line of credit to begin the upgrades.[154] It would also grant access to the $2.5 billion in revolving loans under the Transmission Facilitation Program in the IIJA. Though there are more ways to access the Transmission Facilitation Program funds than NIETCs, operating within a NIETC qualifies public-private partnerships to apply for the funds—an opportunity that may be more difficult to obtain due to greater nationwide competition for funds if the NIETC did not exist.[155]

The funds from the NIETC loan programs in the IIJA and IRA should enable—and in fact, are *designed* to enable—the states to upgrade their transmission facilities at relevant areas. While a variety of stakeholders (the federal government, states outside the scope of this article, utility companies) will have to act to upgrade the linkages between the Eastern and Western Interconnections, the Plains states, by prioritizing their own intra- and interstate transmissions, can take better advantage of their renewable power resources and expand on existing efforts already underway in the region.

Doing so can spur outside, nongovernmental investment in internal power measures. Specifically, electrical utilities will have reason to access the approximately thirty billion dollars in targeted grant and loan programs set aside in the IRA "to accelerate the transition to clean electricity."[156] Knowing the energy produced can be efficiently transmitted to more and previously

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[152] *Id.*

[153] *Transmission Funding Opportunities*, AMERICANS FOR A CLEAN ENERGY GRID, https://www.cleanenergygrid.org/portfolio/transmission-funding-ira-iija-bil/ [https://perma.cc/5WXE-883E].

[154] LAWSON, *supra* note 125.

[155] There are two other avenues to access funds via the Transmission Facilitation Program. The first is via electrical capacity contracts in which DOE would serve as an "anchor tenant" for up to 40 years and purchase up to 50% of the total proposed transmission capacity. The second is loans issued by the DOE to eligible entities for the costs of carrying out a project. *See* 42 U.S.C.A. § 18713 *et seq.* (Westlaw through Pub. L. No. 118-13;); GRID DEPLOYMENT OFF., *supra* note 130.

[156] Senate Democrats, *supra* note 95.

inaccessible markets gives outside utility companies a reason to invest. Indeed, this investment is already happening: a 385-mile high-voltage transmission line from North Dakota to Montana was announced in January 2023.[157] Permitting still needs to occur, but, if completed, the project would "more than double the transfer capacity" between the Eastern and Western Interconnections.[158]

Furthermore, under EPAct 2005, utilities no longer have to operate in a geographically contiguous area, which, assuming the links between the interconnections continue to be improved, opens up the high prairie to power producers from the Western Interconnection for investment in renewable wind energy farms.[159] In other words, the abandonment of geographical continuity requirements—with the potential addition of greater transmission lines along the "seam" of the Eastern and Western Interconnections—means that the physical market served by wind power in the Plains states can functionally double. Wind power producers would no longer be hamstrung by the limits of transmitting power between the Eastern and Western Interconnection. For example, a Utah-based utility seeking to increase its power supply could invest in a wind farm in western Nebraska and transmit renewably generated electricity over an improved grid to Salt Lake City. Doing so would grant this hypothetical utility access to otherwise inaccessible clean energy and provide the Plains states with economic opportunity and investment they would otherwise lack due to the current limits of the grid.

Yet it is very difficult to say what would come to pass from a NIETC formed via interstate compact. Or if an interstate compact would ultimately be an aid or hinderance to furthering the development of wind power in the Plains states. Or if state-level control would prove more contentious and less efficient than federal oversight and control of a NIETC. The fact remains there have been no NIETCs since the *California Wilderness* decision.[160] Nor has there ever been an interstate compact formed under § 824p for the siting interstate transmission lines in a NIETC.[161]

In short, there are many unknowns. But two things are certain. One, the language is in the statute for a reason—to encourage the development of the national grid. Two, the evolution of the nation's power supply is only beginning. In August 2023, the DOE estimated that wind-generated electricity in the United States is expected to at least double (possibly triple) its share of the national

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[157] Ethan Howland, *Allete, Grid United Plan $2.5B Transmission Line Linking Western, Eastern Interconnections*, UTILITY DIVE (Jan. 31, 2023), https://www.utilitydive.com/news/allete-grid-united-transmission-line-dakota-montana/641590/ [https://perma.cc/2D8P-2GFK].
[158] *Id.*
[159] *See* Thakar, *supra* note 23 ("[B]y encouraging investment…growth within the utility sector that was restricted by PUHCA will now be feasible.").
[160] ZEVIN, *supra* note 35.
[161] *Id.*

power supply by 2030.[162] That same month, the Biden Administration announced up to $300 million in grants to "accelerate and strengthen electric transmission siting and permitting processes," and is specifically designed to "overcome state and local challenges to expanding transmission capacity."[163] The opportunity that has clearly presented itself since the passage of the IRA is continuing to present itself now. The Plains states, having an abundance of potential wind power, can benefit enormously from a stronger, more distributive national grid and should take action now, as the iron is hot, to accelerate the grid's development within their borders and take maximum advantage of their natural resources.

VI. CONCLUSION

Wind shaped the Great Plains, and wind can continue to shape them. By aligning their interests, Kansas, Nebraska, North Dakota, and South Dakota have an opportunity to reshape their own state economies by increasing their interstate power transmission capabilities. If successful, power will move from the sparsely-populated rural plains, where it can be harnessed but not used, to densely populated cities throughout the country and the electrical energy generation profile of the United States itself will be reshaped.

It is easy to take electricity for granted. (Coffee pots, air conditioners, and nightlights, remember?) But climate change is already here.[164] And current methods of electrical power generation in the United States release a significant amount of greenhouse gases.[165] Reducing emissions related to electrical power generation is very possible and, for the Plains states, may present opportunities unavailable to other states. The potential for wind power in Kansas, Nebraska, and the Dakotas is greater than anywhere else in the country—yet that potential is notably undeveloped. By working in concert and creating a NIETC, the Plains states can establish a cohesive framework for wind power that alleviates grid interconnection problems, generates economic growth, invites a new, permanent industry, and creates a sustainable economic future powered by renewable, carbon-free electricity.

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[162] U.S. DEP'T OF ENERGY, OFF. OF POL'Y, INVESTING IN AMERICAN ENERGY 7 (Aug. 2023), https://www.energy.gov/sites/default/files/2023-08/DOE%20OP%20Economy%20Wide%20Report_0.pdf [https://perma.cc/TTJ3-MPWX].

[163] Press Release, DEP'T. OF ENERGY, Biden-Harris Administration Announces $300 Million to Speed Up Transmission Permitting Across America as Part of Investing in America Agenda, (Aug. 29, 2023), https://www.energy.gov/articles/biden-harris-administration-announces-300-million-speed-transmission-permitting-across [https://perma.cc/L78C-77R2].

[164] *See* Massachusetts v. Env't. Prot. Agency, 549 U.S. 497 (2007); INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, *supra* note 1.

[165] ENV'T PROT. AGENCY, *supra* note 66.

APPENDIX I

Table 1: United States Power Generation By Source

U.S. electric power generation by power source (megawatt hours)[166]	Year 2021	Percent share 2021
Electric utilities	**2,210,187,303**	**53.8**
IPP, commercial and industrial	**1,898,115,532**	**46.2**
Total electric industry	**4,108,302,835**	**100.0**
Battery	**-263,661**	**0.0**
Coal	**897,885,278**	**21.9**
Geothermal	**15,974,767**	**0.4**
Hydroelectric	**251,584,842**	**6.1**
Natural gas	**1,579,360,958**	**38.4**
Nuclear	**778,187,988**	**18.9**
Other	**12,403,727**	**0.3**
Other biomass	**17,789,553**	**0.4**
Other gas	**11,397,237**	**0.3**
Petroleum	**19,176,133**	**0.5**
Pumped storage	**-5,111,684**	**-0.1**
Solar	**115,258,248**	**2.8**
Wind	**378,196,775**	**9.2**
Wood	**36,462,673**	**0.9**

[166] ENERGY INFO. ADMIN., *supra* note 57.

Table 2: Kansas Electric Power Generation By Power Source

Kansas electric power generation by power source (megawatt hours)[167]	Year 2021	Percent share 2021
Electric utilities	32,725,615	57.8
IPP, commercial and industrial	23,905,089	42.2
Total electric industry	56,630,703	100.0
Coal	19,396,169	34.3
Hydroelectric	29,947	0.1
Natural gas	2,662,209	4.7
Nuclear	8,574,732	15.1
Other	4,978	0.0
Other biomass	58,715	0.1
Petroleum	149,201	0.3
Solar	61,058	0.1
Wind	25,693,695	45.4

Table 3: Nebraska Electric Power Generation By Source

Nebraska electric power generation by power source (megawatt hours)[168]	Year 2021	Percent share 2021
Electric utilities	28,007,956	73.9
IPP, commercial and industrial	9,902,942	26.1
Total electric industry	37,910,898	100.0
Coal	18,933,617	49.9
Hydroelectric	1,123,156	3.0
Natural gas	1,173,365	3.1
Nuclear	6,880,622	18.1
Other	0	0.0
Other biomass	92,473	0.2
Petroleum	55,130	0.1
Solar	60,523	0.2
Wind	9,592,039	25.3
Wood	0	0.0

[167] ENERGY INFO. ADMIN., *supra* note 68.
[168] ENERGY INFO. ADMIN., *supra* note 74.

Table 4: North Dakota Electric Power Generation By Source

North Dakota electric power generation by power source (megawatt hours)[169]	Year 2021	Percent share 2021
Electric utilities	33,386,251	77.6
IPP, commercial and industrial	9,646,127	22.4
Total electric industry	43,032,378	100.0
Coal	24,402,791	56.7
Hydroelectric	1,989,053	4.6
Natural gas	1,577,728	3.7
Other	54,454	0.1
Other biomass	1,764	0.0
Other gas	38,290	0.1
Petroleum	33,095	0.1
Wind	14,935,203	34.7

Table 5: South Dakota Electric Power Generation By Source

South Dakota electric power generation by power source (megawatt hours)[170]	Year 2021	Percent share 2021
Electric utilities	9,421,943	54.4
IPP, commercial and industrial	7,900,466	45.6
Total electric industry	17,322,409	100.0
Battery	0	0.0
Coal	1,638,390	9.5
Hydroelectric	4,982,552	28.8
Natural gas	1,311,854	7.6
Other	0	0.0
Other biomass	1,119	0.0
Petroleum	38,192	0.2
Solar	2,007	0.0
Wind	9,326,617	53.8
Wood	21,677	0.1

[169] ENERGY INFO. ADMIN., *supra* note 81.
[170] ENERGY INFO. ADMIN., *supra* note 86.