

# Reaping the Wind:

## Will Nebraska Reach Its Renewable Energy Potential?

by Michael S. Degan and David L. Bracht

The view from Highway 275 approaching Norfolk gives testament to the rapid growth of renewable energy production in Nebraska. Hundreds of wind towers dot the horizon as far as the eye can see, generating clean renewable power, while providing welcome tax relief and lease payments to rural Nebraskans. Wind that once turned mechanical water pumps for prairie settlers now supplies electrical power to thousands of homes and businesses. Beyond powering our energy dependent lifestyles, wind farms are energizing rural communities through economic development.

The steady wind that whips across Nebraska each year ranks among the best in the nation. But while Nebraska ranks third in wind energy potential, it does not rank in the top ten for wind energy production.<sup>1</sup> The Cornhusker state lags well behind our neighbors in the “wind belt,” which stretches from North Dakota to Texas.<sup>2</sup> With more than five times the number of wind turbines installed in Nebraska, Iowa ranks second

in renewable energy production, despite having lower wind energy potential. Nebraska has made recent strides to close the gap. Last year, Nebraska led the nation in new wind energy production with a 39 percent increase in capacity.<sup>3</sup> With nearly 2,000 megawatts (MW) of wind generation capacity currently installed, Nebraska now ranks 14th in the nation in wind energy production.<sup>4</sup> By more fully utilizing its abundant natural wind resource, Nebraska has the potential to become a national leader in the production of renewable energy.

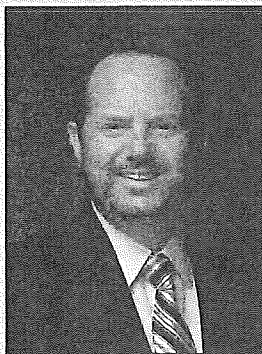
This article will explore the development of renewable energy production in Nebraska, its benefits, and the challenges for realizing its full potential.

### Growth In Renewable Energy

The growth of utility scale renewable energy production over the last 25 years has been driven by two primary factors: (1) federal financial incentives; and (2) state energy policies.



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The federal government utilized tax policy to encourage investment in wind and solar projects. States adopted a “carrot and stick” approach by offering incentives and mandates to both encourage and compel energy producers to adopt renewable technologies.

In 1992, Congress passed the Energy Policy Act, which provided incentives for wind development, including a production tax credit (“PTC”) for each kilowatt hour generated for the first ten years of a project.<sup>5</sup> The PTC allowed developers to lower the cost of wind generated electricity to partially offset the high costs of the new technology. The PTC made wind projects more competitive, and coupled with state policies favoring renewable energy, wind farms began popping up all over the Midwest by the 2000s. The PTC began sunseting in 2016 but is available on a step down basis for projects that begin construction before the end of this year.

The PTC fulfilled its purpose. As a result of the PTC, billions of dollars were invested in wind projects, which in turn, drove significant technological, manufacturing, and operational improvements. These new technologies have driven the cost to produce wind energy down 69 percent since 2009.<sup>6</sup> A modern, properly sited wind farm today is price competitive with traditional generation resources without the PTC. A similar federal incentive for solar projects, known as the solar incentive tax credit (“ITC”), allows owners of solar project to deduct

30 percent of the capital cost of the project in the first year of operation. The ITC steps down to 10 percent for solar projects which come online after 2021.

Thirty-six states have enacted some form of sustainability requirement or renewable portfolio standard (“RPS”), which require energy suppliers to generate a minimum proportion of energy from renewable sources, ranging from 10 percent up to 40 percent.<sup>7</sup> Energy producers must pay penalties if they fail to meet the state requirements, although some states allow producers to cover RPS shortfalls through the purchase or transfer of renewable energy certificates (“RECs”). Additionally, a number of those states provide tax credits or property tax exemptions for renewable energy projects. Fifteen states and the United States Virgin Islands offer a variety of grant programs which can help offset the costs of renewable energy investment.

The combination of state and federal incentives have driven renewable energy investment in the United States to new highs. Last year, a record \$64.2 billion was invested in new wind and solar projects nationwide.<sup>8</sup>

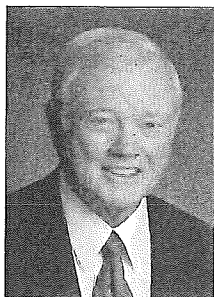
## Renewable Energy in Nebraska

Nebraska is the only state in the nation whose electricity needs are supplied entirely by public power utilities, which include public power districts, municipalities, and rural electric cooperatives.<sup>9</sup> Nebraska’s public power utilities have supplied reliable, low cost energy for over 75 years from a mix of generation sources, including coal, natural gas, nuclear, and renewables (wind, solar, and hydroelectric). Nebraska public power utilities are subject to limited oversight by the Nebraska Power Review Board, but the Board does not have the power to set mandates or regulate the operation of public power utilities. Each public utility in Nebraska is governed by its own board, which establishes policies and goals. Nebraska public power utilities began investing in wind generation in the late 1990s.<sup>10</sup> But as of 2018, the majority of electricity generated in Nebraska (63 percent) was produced from coal-fired plants.<sup>11</sup> That is changing as Nebraska public utilities continue to invest in renewable power.

Yet, Nebraska’s potential wind and solar production capacity far exceeds the state’s aggregate energy demand. In order to take advantage of the state’s potential for renewable energy production, Nebraska must look elsewhere for demand. Fortunately, Nebraska’s major public power utilities joined the Southwest Power Pool (“SPP”) in 2008. SPP is a regional transmission organization serving members in 14 states. By joining SPP, Nebraska public utilities opened access to a regional marketplace for the purchase and sale of electricity. Access to SPP’s broader market encourages private development of renewables.

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## REAPING THE WIND

Most renewable energy projects in the United States are driven by private developers who can take advantage of tax incentives like the PTC. But for years, a number of legal impediments made it difficult for private developers to build projects in Nebraska. As a result, few renewable projects were built. With the passage of LB 1048 in 2010 and LB 824 in 2016, private developers were cleared to build wind facilities in Nebraska, sell power into SPP, and trade RECs on a national basis. These changes led to a renewable energy boom. Over \$3.5 billion has been invested in Nebraska renewable energy projects, creating 3,000 jobs, millions of dollars in additional revenue to farms in the form of lease payments, and millions of dollars in local tax revenue.<sup>12</sup> Nebraska wind farms produce enough energy to power more than half a million homes.

As recently as 2012, Nebraska had less than 500 MW of installed wind capacity, ranking the state 23rd in terms of production. Last year, Nebraska's installed capacity rose to nearly 2,000 MW, a four-fold increase. With another 1,428 megawatts of wind under construction, or scheduled to soon commence construction, Nebraska is on course to again double wind capacity once the projects are completed.<sup>13</sup>

**Table 1.**  
**Comparison of Installed Wind Energy Capacity (2018)**

	Installed Capacity <sup>14</sup>	Production Rank	Potential Capacity
Nebraska	1,972 MW	15th	465,474 MW
Iowa	8,957 MW	3rd	279,568 MW
Kansas	5,653 MW	5th	506,182 MW

Demand for efficient, high capacity factor wind farms remains high, as operational costs continue to plummet. A recent study demonstrated that the average levelized cost of energy ("LCOE") for modern wind projects is below the LCOE for traditional fossil and nuclear facilities.<sup>15</sup> Additionally, corporate sustainability commitments have driven additional demand for green power. Major corporations like Google, Intel, Apple, Wal-Mart and Unilever have made substantial long-term renewable power commitments that continue to drive wind farm development.<sup>16</sup> Because the RECs produced from wind farms are transferable, corporations can invest in wind farms located in Nebraska, even if they do not own or operate facilities within the state.

While Nebraska has seen limited investment in utility scale solar projects to date, that should soon change. Two planned solar projects have been announced this year, a 423 MW facility to be built in Pierce County and a 230 MW facility to be built east of Lincoln, Nebraska.<sup>17</sup> As the cost of solar technology continues to fall and battery storage continues to improve, Nebraska can expect to see additional investment in utility scale solar projects. Much more is possible – between wind and

solar, Nebraska has barely scratched the surface of its renewable energy potential.

Critics of renewable energy technologies like wind and solar often point out that they are not "on-demand" resources. Wind turbines generate power only when the wind blows; solar arrays operate only when the sun is shining. But improved technology combined with Nebraska's excellent wind resource has enabled Nebraska wind farms to realize some of the highest capacity factors in the nation.<sup>18</sup> The growth and geographic spread of wind farms within the SPP footprint helps to shore up the availability of wind produced energy. If the wind is not blowing in Nebraska on any given day, it's probably blowing in Oklahoma, Kansas, or North Dakota.

Wind energy is clean, reliable, cost effective and here to stay. Last year, nearly 23 percent of all energy produced in the SPP was generated by wind turbines.<sup>19</sup> On a particularly blustery April day earlier this year, SPP set a new record for wind production. A total of 14,063 MW of electricity was generated from wind farms, which amounted to more than 66 percent of SPP's total load for the entire region.<sup>20</sup> SPP has proven that the variability of wind can be effectively and reliably managed.

## Nebraska Benefits From Wind Energy

Wind farms provide substantial economic benefits, and because they are typically sited outside of urban areas, wind farms have been a boon to rural Nebraska. Each year, wind farms pay millions of dollars in taxes to state and local governments, funds which can be used for schools, roads and infrastructure, or property tax relief. Additionally, wind farms inject millions of dollars into local communities through annual lease payments to landowners, which provide an additional source of revenue for rural Nebraskans. Wind farms bring thousands of jobs to Nebraska. While some are temporary construction jobs, an average wind farms requires 10-12 permanent technicians to operate and maintain the facility. These are high paying positions requiring skilled workers to live and work in rural Nebraska. The best part is the upward potential of these economic benefits is almost unlimited. The more wind farms that are built in Nebraska, the more Nebraskans stand to gain.

**Table 2.**  
**Nebraska Economic Benefits<sup>21</sup>**

Total capital investment (through 2018)	\$ 3.5 billion
Annual state and local tax revenues	\$ 8.5 million
Annual landowner lease payments (estimated)	\$ 5 – 10 million
Jobs created in 2018 (including construction jobs)	3,000 – 4,000



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Wind energy is environmentally friendly. Wind energy production does not require water, fuel, or transportation of inputs or outputs or result in any emissions. Wind farms are sited in a manner to avoid disturbing fragile ecosystems or endangering at-risk species. Wind energy is farm friendly. Wind towers and access roads are constructed in a manner to minimize the amount of land that must be taken out of agricultural production. Wind towers are also sited in a manner to minimize interference with center pivot irrigation. Lastly, wind energy provides security. Wind energy secures reliable, low cost energy for Nebraska and the nation. The cost of fuel for wind energy will never go up and the supply of wind will never be affected by tariffs or foreign wars.

Nebraska's renewable energy production capacity provides ancillary benefits. A number of marquee data center operators are building facilities in Nebraska, largely due to the abundance of low-cost renewable energy. Data centers consume large amounts of electricity and have high demand requirements. Expanding the state's green power base will help Nebraska attract more technology companies like Google and Facebook to locate facilities within the state.

### Challenges to Future Growth of Wind Energy in Nebraska

Competition from other states presents a significant challenge to the continued growth of renewable energy production in Nebraska. Many of our neighbors in the wind belt offer state level incentives that Nebraska does not offer. State incentives are important because they lower the cost of locating a facility. Nebraska does not have an RPS mandate, although Nebraska's large public utilities have voluntarily adopted renewable energy goals.

	State Mandate	Tax Credit	Tax Exemption
Nebraska	No	No	Rebate
Iowa	Yes	Yes	Yes
Kansas	No	Yes	Yes
North Dakota	Yes	Yes	Yes
South Dakota	Yes	Yes	Yes

While Nebraska does not provide tax credits or tax exemptions per se, Nebraska has taken steps to make Nebraska more attractive to developers. The primary incentives Nebraska offers to encourage wind energy development are the nameplate capacity tax and the Nebraska Advantage Act. The nameplate capacity tax was adopted by the Unicameral in 2010, and replaces property tax assessments for wind farms with a

flat tax assessment of \$3,518 per megawatt of capacity.<sup>23</sup> In 2013, the Nebraska Advantage Act was amended to include renewable energy projects that invest at least \$20 million in the state.<sup>24</sup> The Advantage Act allows renewable energy developers to recoup sales and use taxes on qualifying equipment placed into service in Nebraska through a rebate. The Advantage Tax does not exempt wind farms from sales and use tax; the taxes must be paid when the equipment is placed in service. Taxes paid on qualifying investment may be refunded after the project qualifies under the Advantage Act.

The Nebraska Advantage Act will expire next year if the Unicameral does not act. Wind power advocates worry that Nebraska will become less attractive to developers if the Nebraska Advantage Act is allowed to expire. They believe it is imperative for the Unicameral to act next session to prevent the loss of a key incentive for continued investment in to wind energy production. Advocates advise Nebraska should act promptly to eliminate any uncertainty regarding the cost of locating facilities in Nebraska, as developers have limited time and resources and will not invest where costs are uncertain.

### Recent Legislative Activity

During the 2019 Legislative Session, LB 720 was introduced to establish the ImagiNE Nebraska Act as a replacement for the Nebraska Advantage Act. LB 720 was advanced from committee and passed through the first two rounds of debate. It did not reach final passage before the end of the session, but LB 720 remains available for debate during the legislative session beginning in January 2020. Under the current amended version of LB 720, developers may apply for sales tax rebates on the inputs for private renewable electric production and electric storage projects (including wind projects) costing in excess of \$50 million and providing salaries to employee in excess of \$47,000 (150 percent of the 90-county wage rate).<sup>25</sup>


LB 720 stalled largely due to an impasse on broader property tax relief. The bill was opposed by some rural senators on the grounds that the Advantage Act favors urban areas of Nebraska, even though nearly all of the \$3.5 billion invested in Nebraska wind farms has been invested in rural Nebraska. Proponents of the sales tax rebate believe that extending the sales tax rebates under the Advantage Act, whether as part of LB 720 or a standalone bill, is crucial to keeping Nebraska competitive. Without it, developers will simply build in South Dakota, Kansas, or elsewhere.

An alternative to extending the Advantage Act would be to exempt wind farms from sales and use taxes, as is the case for most other manufacturing equipment. LB 456, introduced last session, would do just that. Rather than requiring developers to pay sales and use tax and later recoup the tax through rebates, LB 456 would exempt the equipment altogether by adding machinery for producing electricity from renewable sources to

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the list of other manufacturing equipment currently exempted from sales and use taxes.<sup>26</sup> In fact, equipment and machinery used for producing electricity from non-renewable sources is already exempt.<sup>27</sup> Proponents of LB 456 believe converting the rebate into a true exemption would streamline the process, reduce state administrative expenses, and make the incentive more attractive to developers at no additional cost to taxpayers.

## Conclusion

Nebraska is no stranger to renewable energy. Nebraska parlayed its position as a leading corn producer to become the nation's second largest producer of ethanol. The policy changes made by the Unicameral over the last decade ushered in an investment boom, and many hope to see that boom continue through the renewal or adoption of policies to encourage developers to come to Nebraska. 

## Endnotes

- <sup>1</sup> New Power Nebraska, <https://www.newpowernebraska.org/wind-facts/>.
- <sup>2</sup> Nicholas Bergin, *Turbines Propel Nebraska Past A Wind-Energy Milestone*, Lincoln Journal Star (May 3, 2017), [https://journalstar.com/news/state-and-regional/nebraska/turbines-propel-nebraska-past-a-wind-energy-milestone/article\\_abefc4fc-6408-5102-9a5f-bcdc93e97531.html](https://journalstar.com/news/state-and-regional/nebraska/turbines-propel-nebraska-past-a-wind-energy-milestone/article_abefc4fc-6408-5102-9a5f-bcdc93e97531.html).
- <sup>3</sup> Matt Olberding, *Nebraska Led Nation In Wind Energy Growth*, Lincoln Journal Star (April 9, 2019).
- <sup>4</sup> American Wind Energy Association (AWEA), <https://www.awea.org/resources/fact-sheets/state-facts-sheets>.
- <sup>5</sup> PL 102-486 (Oct. 24, 1992); 106 Stat. 2776. A solar investment tax credit ("ITC") is available for qualifying solar projects, which allows the owner to deduct 30 percent of the capital cost of the project.
- <sup>6</sup> *Levelized Cost of Energy and Levelized Cost of Storage*, Lazard Consulting (November 8, 2018), <https://www.lazard.com/perspective/levelized-cost-of-energy-and-levelized-cost-of-storage-2018>.
- <sup>7</sup> <https://www.dsireusa.org>.
- <sup>8</sup> *Report says U.S. Clean Energy Hit Record in 2018*, Institute for Energy Economics and Financial Analysis (January 17, 2018), <http://ieefa.org/report-says-u-s-clean-energy-investment-hit-record-64-2-billion-in-2018>.
- <sup>9</sup> *Public Power In Nebraska*, Legislative Research Office (January 2018); "Winds of Change: How Nebraska Law Has Stalled The Development of Wind Energy," 47 Creighton L. Rev. 477 (2014).
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- <sup>11</sup> U.S. Energy Information Administration, <https://www.eia.gov/state/?sid=NE>.
- <sup>12</sup> Power of Nebraska Wind, New Power Nebraska, <https://www.newpowernebraska.org/wind-facts/>.
- <sup>13</sup> <https://cleantechnica.com/2018/10/31/7-us-states-set-to-double-their-wind-capacity/>.

- <sup>14</sup> AWEA, <https://www.awea.org/resources/fact-sheets/state-facts-sheets>.
- <sup>15</sup> <https://www.lazard.com/perspective/levelized-cost-of-energy-and-levelized-cost-of-storage-2018/>.
- <sup>16</sup> Wind Vision: A New Era for Wind Power in the United States, U.S. Department of Energy (2014).
- <sup>17</sup> Matt Olberding, Solar Project Planned East of Lincoln, (July 23, 2019), [https://journalstar.com/business/local/state-s-largest-solar-project-planned-east-of-lincoln/article\\_e9bdeb72-944e-5cda-96e4-3b022d54a0e1.html](https://journalstar.com/business/local/state-s-largest-solar-project-planned-east-of-lincoln/article_e9bdeb72-944e-5cda-96e4-3b022d54a0e1.html).
- <sup>18</sup> Nebraska Potential Wind Capacity, NREL, <https://windexchange.energy.gov/maps-data/82>.
- <sup>19</sup> SPP Fast Facts (<https://www.spp.org/about-us/fast-facts>).
- <sup>20</sup> Wind Breaks New Record In Southwest Power Pool, AWEA Blog (April 26, 2019), <https://www.aweablog.org/wind-breaks-new-record-southwest-power-pool>.
- <sup>21</sup> AWEA, <https://www.awea.org/resources/fact-sheets/state-facts-sheets>; New Power Nebraska, <https://www.newpowernebraska.org/wind-facts/>.
- <sup>22</sup> AWEA, <https://www.awea.org/resources/fact-sheets/state-facts-sheets>.
- <sup>23</sup> 2010 LB 1048.
- <sup>24</sup> 2013 LB 104.
- <sup>25</sup> 2019 LB 720, § 32 (1)(c) (as amended by ER136).
- <sup>26</sup> 2019 LB 456; Neb. Rev. Stat. § 77-2701.47(1).
- <sup>27</sup> Neb. Rev. Stat. § 77-2701.47(1)(g).

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