How a Clean Energy Transition Could Power Nebraska

Institute for Policy Studies

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Rain and Sunshine and Wind:

How an Energy Transition Could Power Nebraska

A report by
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Executive Summary

Nebraska has the ability to transition out of the dirty fossil fuel industry and into the future of renewables. The state ranks fourth in the country for wind energy potential,[1] yet as of 2020 produced just 24 percent of its net electricity generation through wind.[2] It has the potential to do much more.

By making a just transition to wind energy, Nebraska can become a leader in renewables and ensure a more sustainable future for Nebraskan communities.

The state's reliance on coal for energy has threatened Nebraskans for decades. Fossil-fueled climate change has contributed to disastrous floods and droughts in Nebraska.[3] If the state continues to rely on fossil fuels and emit greenhouse gases, research has shown the state will face extreme high temperatures and decreases in soil moisture.[4]

Additionally, the presence of coal plants has led to adverse health impacts in nearby communities, such as high rates of asthma and even death. These coal plants have been situated in communities predominantly inhabited by people of color, including around the North Omaha coal plant.[5]

Wind energy will lead to a healthier future, both environmentally and economically. Wind doesn't just prevent the pollution that comes with burning fossil fuels — it also prevents the air and water pollution produced when these fuels are mined, drilled, and transported.[6] This means that wind energy development, unlike fossil fuel energy, does not risk exposing groundwater or livestock and communities to toxic pollutants.[7]

The economic benefits of wind energy are also plenty in terms of sustainable employment, wages, land lease payments, and property tax revenues. Consider these national figures:

- In 2019, the coal industry lost nearly 8,000 jobs, while the renewable energy sector added 10,900 jobs.[8]
- The median hourly wage for wind turbine service technicians ($27.03) is much higher than the median for all construction and extraction jobs ($23.37).[9]

1 https://wind-energy-wildlife.unl.edu/wind-speeds
2 https://www.eia.gov/state/print.php?sid=NE
3 https://science2017.globalchange.gov/chapter/8/
4 https://climatechangenebraska.com/2020/07/03/climate-change-and-water-in-nebraska/
5 https://www.unmc.edu/news.cfm?match=26917
6 https://windexchange.energy.gov/small-community-wind-handbook
7 https://windexchange.energy.gov/projects/economic-impacts
8 https://naseo.org/data/sites/1/documents/publications/USEER-2020-US-Energy-Employment-Report.pdf
9 https://www.bls.gov/oes/current/oes_nat.htm. Accessed on 07/30/21.

- Land lease payments for wind energy development ($706 million nationwide in 2019) also provide a source of income for rural communities.[10]
- Annual property tax payments for wind energy facilities average $7,000 per MW of installed capacity.[11]

So how can Nebraska transition away from the fossil fuel industry while ensuring that the needs and livelihoods of Nebraskans are put first? We recommend three tools: Renewable Portfolio Standards (RPS), net metering, and community-owned energy.

Renewable Portfolio Standards (RPS)

Renewable Portfolio Standards are laws or regulations that specifically direct and incentivize utilities to produce a larger share of renewable energy.

Forty-five percent of the growth of renewable energy between 2000 and 2020 is attributable to RPS policies, providing evidence that they are effective in promoting clean energy.[12] This model for renewable energy growth helps to reduce the cost of renewable energy and helps to ensure that the promised growth of renewable energy actually occurs.[13] Nebraska does not currently have a RPS.

Net Metering

Net metering lowers energy bills by allowing communities to sell energy back to the grid and receive credit for their next bill if they produce more renewable energy than they consume.[14] Net metering incentivizes distributed energy, which comes with the advantages of a reduced bill for consumers, lower fossil fuel usage, and more energy cost stability.[15]

While Nebraska does have a net metering policy, it has a very restrictive cap and is not robust enough to provide the full financial benefit to incentivize growth of distributed energy.[16]

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10 https://windexchange.energy.gov/projects/economic-impacts
11 https://windexchange.energy.gov/projects/economic-impacts
12 https://eta-publications.lbl.gov/sites/default/files/rps_status_update-2021_early_release.pdf
13 https://eta-publications.lbl.gov/sites/default/files/rps_status_update-2021_early_release.pdf
14 https://windexchange.energy.gov/small-community-wind-handbook#costs
15 https://www.whatissmartenergy.org/What-Distributed-Generation-and-Net-Metering-Mean-for-You
16 http://update.legislature.ne.gov/?p=29213. Accessed on 11/5/21.

Community-Owned Wind Energy

Wind energy generation co-ops give communities autonomy over their energy and remove corporate ownership of generation capacity from the mix. In practice, this takes the form of households forming a cooperative or community non-profit to own and operate a small wind or solar generation facility that sells electricity to the utility. Members of the co-op then receive net metering benefits on their household utility bills, even though the facility is not necessarily on the property of any of the members.

Benefits of this structure include more secure electricity rates, accessibility for low-income households who may not be able to afford the up-front costs of a distributed generation system on their own property, and locating wind energy in the most advantageous spot.[17]

Nebraska could promote more community-owned energy generation by requiring utilities to purchase power from community-owned facilities in their service territory — and requiring them to provide the same net metering benefits to community-owned distributed generation as they provide to distributed generation owned by individual households or businesses.

Make Nebraska's Public Utilities Work for the Public

Nebraska is in a unique and particularly advantageous position as the only state that is supplied by 100 percent public utilities. All utilities in Nebraska are either governmental entities (such as the Nebraska Public Power District and Omaha Public Power District), or cooperatives owned by the rate paying customers (known as Rural Electric Cooperatives). Their Boards of Directors are either elected by the public or appointed and confirmed by elected officials (as is the case with the Lincoln Electric System). This gives Nebraska residents the ability to hold their utilities accountable to serving the public interest.

This means that public power districts can prioritize Nebraskans' needs over party politics and set 100 percent clean energy goals across the state while bypassing the state Legislature. Putting the community's best interests first will enable Nebraskans to have a voice in choosing to transition to wind energy.

This state with tremendous amounts of wind energy potential must take advantage of the opportunity to reduce the health and economic risks that come from relying on coal for energy. Nebraskans deserve a livable future with less water and air pollution, more sustainable jobs, and democratic control over their energy sources.

17 https://www.nrel.gov/state-local-tribal/community-solar.html. Accessed on 07/21/21.

Introduction

This report focuses on Nebraska's potential to transition to predominantly wind energy. While we strongly support solar energy for the state as well, Nebraska ranks thirteenth in the country for solar power potential.[18] On the contrary, Nebraska is ranked fourth for wind energy potential.[19] Hence, wind energy is particularly abundant in the state, so this transition from fossil fuels to locally generated energy will largely be driven by wind power.

Harms of Our Current Energy System in Nebraska

The current energy system in Nebraska that predominantly relies on energy from coal is not sustainable. Data from 2020 indicates that 51% of Nebraska's net electricity generation comes from coal.[20] However, this heavy reliance on fossil fuels brings about serious environmental and social justice issues.

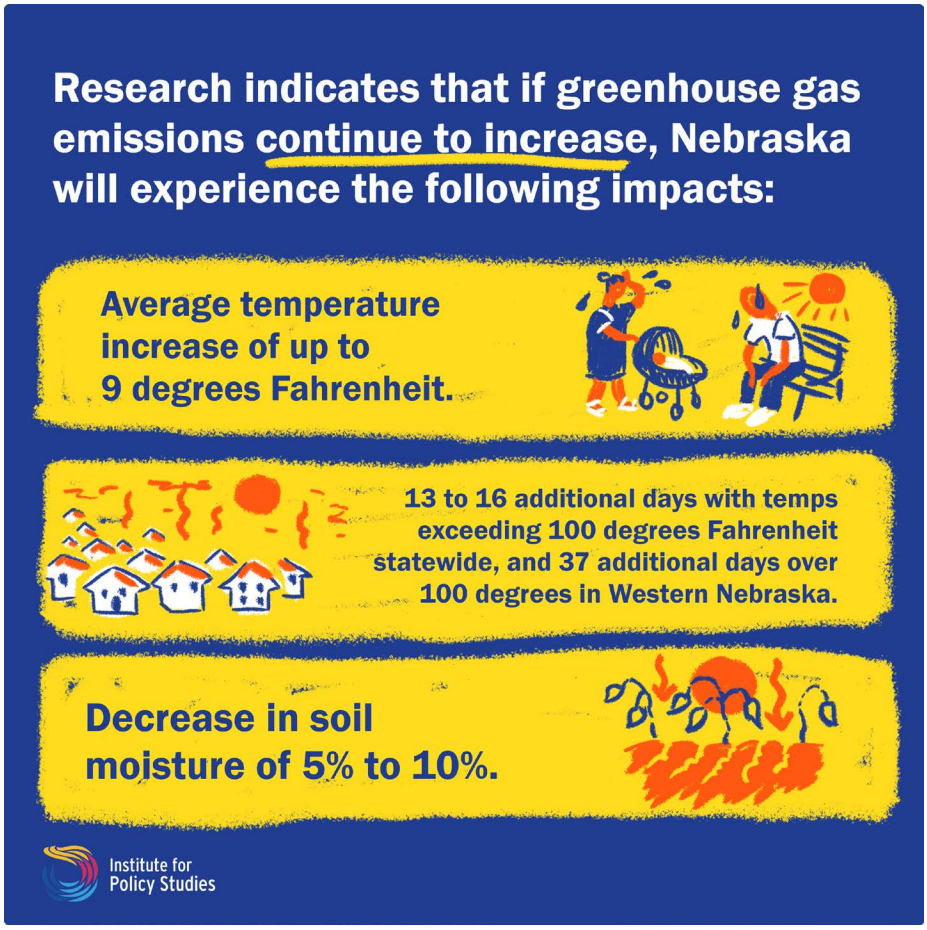
The current price of residential electricity in Nebraska is 10.13 cents/kWh.[21] While these prices are below the national average, which is 13.29 cents/kWh, fossil fuel usage leaves Nebraskans vulnerable to abrupt price increases. One of these increases happened in March 2021 when communities faced unusually low temperatures and rolling blackouts. During this time, the price of wholesale natural gas went from 3 MMBtu up to a range of 175 to 600 MMBtu.[22] For residents of Pender, NE, this meant a monthly heating bill of $900, far higher than the normal $200 to $250 bill.[23]

Nebraska's usage of fossil fuels has and will continue to pose a real threat to communities. Toxic coal power plants are disproportionately placed in neighborhoods where people of color predominantly live, and Omaha is no exception.[24] In 2013, the NAACP named the North Omaha Station as "'the 16th worst environmental justice offender in the nation,'" which is clear from the 18 deaths, 11 heart attacks and 120 asthma attacks it caused on average every year.[25] In fact, Black individuals in America are exposed to fine particulate matter (PM2.5), an air pollutant product of coal plants, 1.54 times more compared to the average of the entire population.[26] Exposure to this pollutant can lead to a multitude of health issues, including "higher prevalence of conditions such as cardiovascular disease mortality and asthma."[27] This is reflected in the stark difference in life expectancy between North Omaha, which is 64.1% Black or African American,[28] and West Omaha, which is 89.4% white.[29] The life expectancy in

18 https://neo.ne.gov/programs/stats/inf/201.htm. Accessed on 07/08/21.
19 https://wind-energy-wildlife.unl.edu/wind-speeds. Accessed on 07/08/21.
20 https://www.eia.gov/state/print.php?sid=NE. Accessed on 07/07/21.
21 https://www.eia.gov/state/print.php?sid=NE. Accessed on 07/07/21.
22 https://omaha.com/news/state-and-regional/small-nebraska-communities-hit-hard-by-high-energy-costs-from-february-cold-snap/article_d62b9400-8736-11eb-b9f6-cb83acd3cb9a.html
23 https://omaha.com/news/state-and-regional/small-nebraska-communities-hit-hard-by-high-energy-costs-from-february-cold-snap/article_d62b9400-8736-11eb-b9f6-cb83acd3cb9a.html
24 https://www.unmc.edu/news.cfm?match=26917
25 https://www.unmc.edu/news.cfm?match=26917
26 https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5844406/
27 https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5844406/
28 https://www.unitedstateszipcodes.org/68111/. Accessed 07/08/21.
29 https://www.unitedstateszipcodes.org/68154/. Accessed 07/08/21.

North Omaha is 76.2, which is almost six years less than the 82.1 year life expectancy in West Omaha.[30]

Further, droughts and floods faced by rural communities can be linked to climate change, which is exacerbated by the extraction and use of fossil fuels.[31]



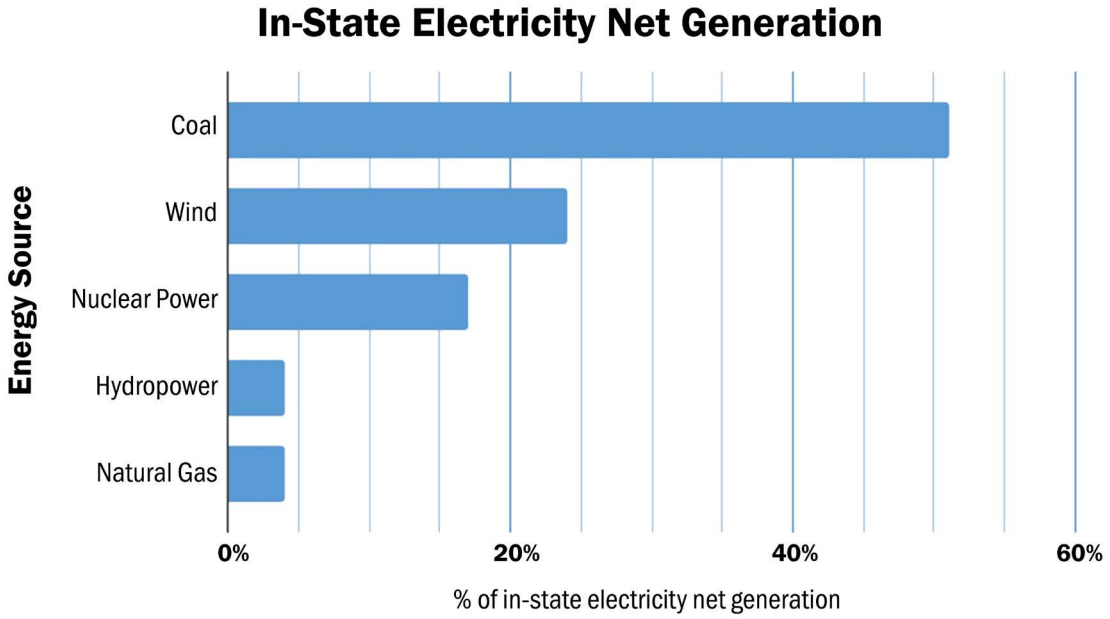
Citations: Avg temp increase[32], Additional 100 temp days[33], Soil moisture decrease[34]

Where Nebraska gets its energy from is especially crucial due to its large energy usage. According to data from 2018, Nebraska has the seventh highest energy consumption on a per capita basis in the country because of the state's industrial sector and intense summers and winters.[35]

30 https://publichealth.unmc.edu/lec/map.html. Accessed 07/08/21.
31 https://science2017.globalchange.gov/chapter/8/
32 https://climatechangenebraska.com/2020/07/03/climate-change-and-water-in-nebraska/
33 https://climatechangenebraska.com/2020/07/03/climate-change-and-water-in-nebraska/
34 https://climatechangenebraska.com/2020/07/03/climate-change-and-water-in-nebraska/
35 https://www.eia.gov/state/print.php?sid=NE. Accessed 07/08/21.

The Benefits of Transitioning to Renewables

Nebraska has great potential for wind energy as it is ranked fourth in the country.[36] However, according to 2020 data, the state only obtained 24% of its net electricity generation from wind.[37] As it is a clean energy source, wind energy causes far lower environmental and social harm than fossil fuels. Wind energy does not cause air or water pollution, and "requires no mining, drilling, or transportation of fuel," reducing risk of environmental harm.[38] This also means that if landowners lease their land for wind energy development, there is far less health and safety risk compared to fossil fuel leasing. Wind energy development does not come with the risk of poisoning groundwater or exposing livestock and communities to pollution.[39] Leasing land for fracking, however, comes with a multitude of risks. These include water contamination, exposure to radioactive materials and air pollution that all may contribute to adverse health effects.[40]



Additionally, economic benefits come along with the implementation of wind energy.

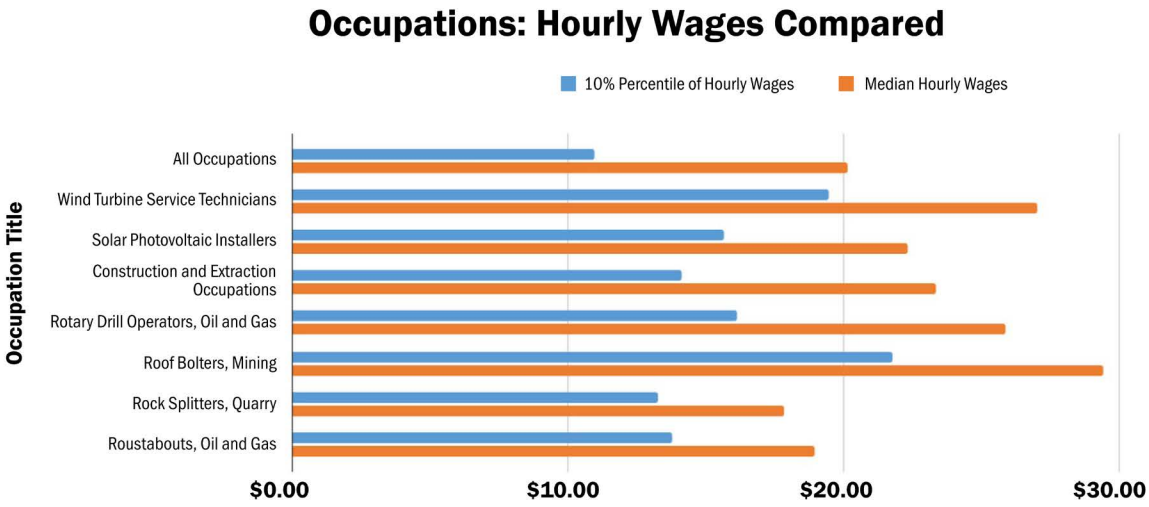
Employment from wind energy is far more sustainable than those from the fossil fuel industry. In 2019, the coal industry lost nearly 8,000 jobs, while the renewable energy sector added 10,900 jobs.[41]

36 https://wind-energy-wildlife.unl.edu/wind-speeds. Accessed on 07/08/21.
37 https://www.eia.gov/state/print.php?sid=NE. Accessed 07/08/21.
38 https://windexchange.energy.gov/small-community-wind-handbook
39 https://windexchange.energy.gov/projects/economic-impacts
40 https://oxfordre.com/publichealth/view/10.1093/acrefore/9780190632366.001.0001/acrefore-9780190632366-e-44
41 https://naseo.org/data/sites/1/documents/publications/USEER-2020-US-Energy-Employ-

Land lease payments for wind energy development also provide a source of income for rural communities. Rural landowners received $706 million through private land lease payments for wind energy projects in 2019.[42]

Property tax revenue from wind energy projects further helps yield income to communities. Annual property tax payments for wind energy facilities average $7,000 per MW of installed capacity, which can be used to strengthen community infrastructure.[43]

Renewable energy job wages are competitive with fossil fuel wages, as seen in the chart below. The median hourly wage for wind turbine service technicians is $27.03, which is much higher than the median for all construction and extraction jobs, which is $23.37.[44] It is also not much lower than the median for one of the coal industry's highest paying positions as a roof bolter in mining, which pays $29.42.[45] Moreover, a significant benefit of the clean energy sector is the rapid growth it is experiencing. Wind turbine service technicians currently have the second highest ranked growth among all occupations defined by the US Bureau of Labor Statistics, with 68% increase in employment expected between 2020 and 2030.[46]



Moreover, wind energy jobs have wages that are at least comparable with, and in fact at the higher end of, wages for fossil fuel jobs. Wind energy jobs have a median hourly wage that is about 34% higher than the median wage of all occupations.[47] Additionally, these jobs are still accessible to individuals without higher education degrees as most clean energy positions only require a high school diploma at most.[48] The rate of unionization for the clean

ment-Report.pdf

42 https://windexchange.energy.gov/projects/economic-impacts

43 https://windexchange.energy.gov/projects/economic-impacts

44 https://www.bls.gov/oes/current/oes_nat.htm. Accessed on 07/30/21.

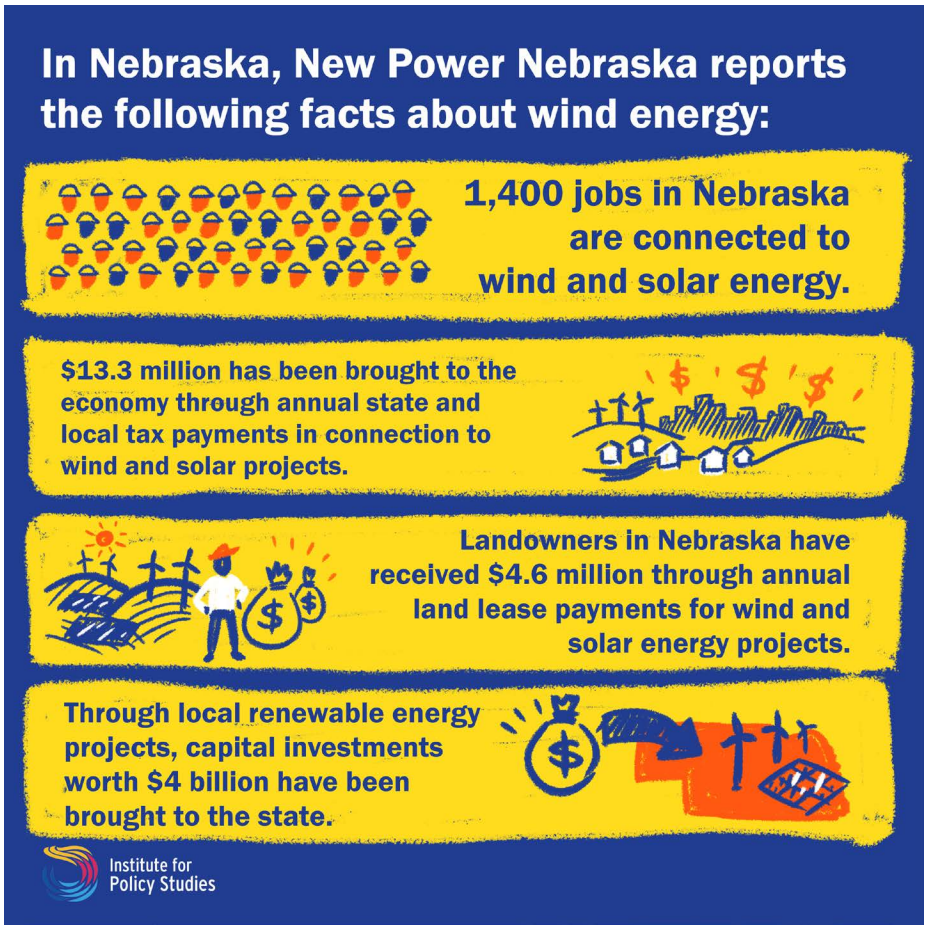
45 https://www.bls.gov/oes/current/oes_nat.htm. Accessed on 07/30/21.

46 https://www.bls.gov/ooh/fastest-growing.htm. Accessed on 10/13/21.

47 https://www.bls.gov/oes/current/oes_nat.htm. Accessed on 07/30/21.

48 https://www.brookings.edu/wp-content/uploads/2019/04/2019.04_metro_Clean-Energy-Jobs_Report_Muro-Tomer-Shivaran-Kane.pdf#page=16

energy sector in 2019 stood at 9%, which is higher than the national average of 6%.[49] This is particularly important as unionization comes with a plethora of benefits. Union workers are paid at a rate that is 11.2% higher than nonunion workers.[50] Unionization also brings non-monetary advantages, such better healthcare and more paid sick days.[51]



Citations: 1,400 jobs[52], $13.3 million in taxes[53], $4.6 million land payments[54], $4 billion capital investments[55]

49 https://e2.org/wp-content/uploads/2020/10/Clean-Jobs-Better-Jobs.-October-2020.-E2-ACORE-CELI.pdf

50 https://www.epi.org/press/union-workers-are-paid-11-2-more-and-have-greater-access-to-health-insurance-and-paid-sick-days-than-their-nonunion-counterparts-policymakers-must-strengthen-workers-ability-to-form-unions/#:~:text=Additionally%2C%2094%25%20of%20workers%20covered,with%2073%25%20of%20nonunion%20 workers.

51 https://www.epi.org/press/union-workers-are-paid-11-2-more-and-have-greater-access-to-health-insurance-and-paid-sick-days-than-their-nonunion-counterparts-policymakers-must-strengthen-workers-ability-to-form-unions/#:~:text=Additionally%2C%2094%25%20of%20workers%20covered,with%2073%25%20of%20nonunion%20 workers.

52 https://www.newpowernebraska.org/renewables-benefits/. Accessed 07/08/21.

53 https://www.newpowernebraska.org/renewables-benefits/. Accessed 07/08/21.

54 https://www.newpowernebraska.org/renewables-benefits/. Accessed 07/08/21.

55 https://www.newpowernebraska.org/renewables-benefits/. Accessed 07/08/21.

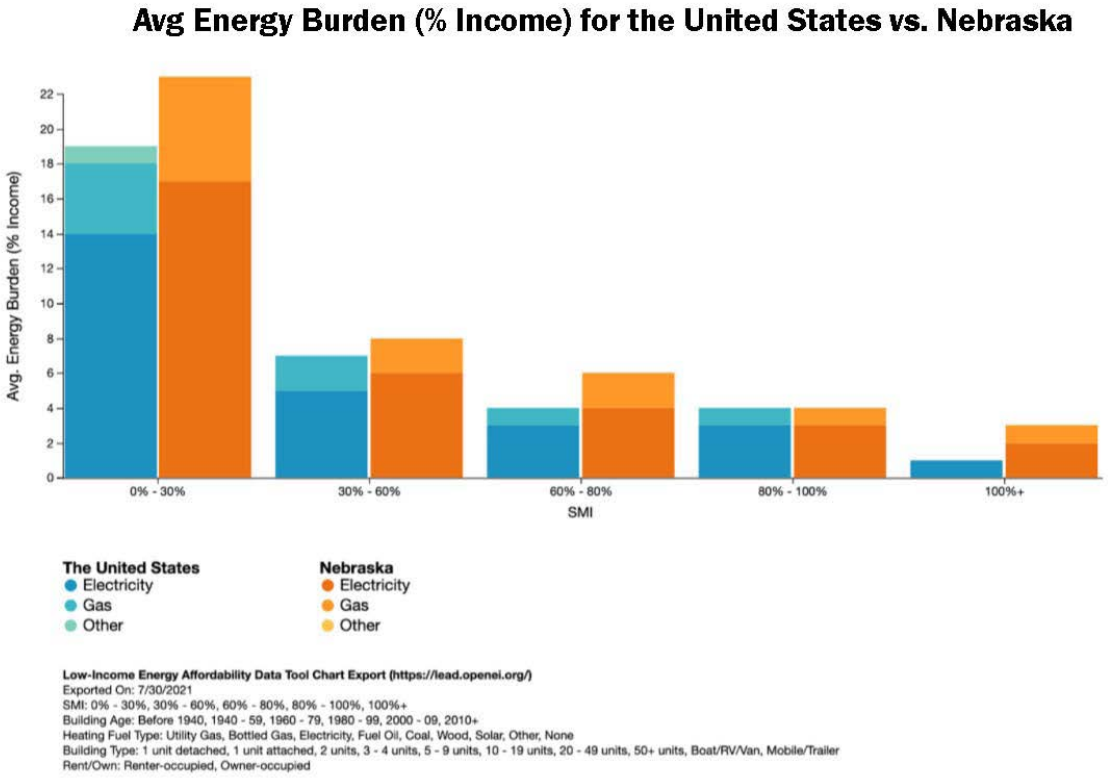
In order to transition the state to wind energy in a just manner, there needs to be an emphasis on ensuring energy is community-based. Wind turbines installed in the state should be community owned and operated to the maximum extent possible. Community-owned wind comes with a multitude of benefits to the local community.:

- Regarding employment, "construction-period employment impacts are 1.1 to 1.3 times higher and operations-period impacts are 1.1 to 2.8 times higher for community wind" as compared to if they were corporate owned wind energy projects.[56]
    - These statistics are derived from empirical evidence based on existing community wind projects. This report analyzed the number of full time equivalent jobs, which equates to 2,080-hour units of labor, per MW (megawatt) of capacity for a sample of four community owned wind projects compared to a hypothetical average for corporate owned projects.[57]
- Because communities are in control of their energy, they can easily predict the cost of energy, which provides price stability and security to households.[58]

Securing sustainable jobs for Nebraskans is an essential portion of wind energy policy. Along with that, policy needs to be put in place to ensure that these jobs are accessible to all, particularly Black, Indigenous and low-income individuals.

Additionally, making wind energy development and usage community owned can help alleviate poverty. Currently, the lowest-income Nebraskans pay 22% of their income for energy, while the state average is 3%.[59] Electricity constitutes 17% of that energy burden, while gas is responsible for 6%.[60] Nebraska has a slightly higher energy burden compared to the rest of the United States, where the lowest-income Americans pay 19% of their income for energy, with 14% of that being electricity, 4% being gas and 1% being other.[61] By lowering energy utility bills through net metering (explained in more detail below) and community-owned wind, Nebraskans will pay a lower share of their income for energy.

56 https://www.nrel.gov/docs/fy09osti/45555.pdf. Accessed 07/08/21.
57 https://www.nrel.gov/docs/fy09osti/45555.pdf. Accessed 07/08/21.
58 https://windexchange.energy.gov/small-community-wind-handbook
59 https://www.energy.gov/eere/slsc/maps/lead-tool. Accessed 07/29/21. State Median Income was used for the income indicator on the LEAD tool.
60 https://www.energy.gov/eere/slsc/maps/lead-tool. Accessed 07/29/21. State Median Income was used for the income indicator on the LEAD tool.
61 https://www.energy.gov/eere/slsc/maps/lead-tool. Accessed 07/29/21. State Median Income was used for the income indicator on the LEAD tool.



Nebraska is an ideal place to transition to wind energy due to the state being served exclusively by publicly owned utilities. For this transition to be just, Nebraska can capitalize on energy democracy and public ownership of utilities. This puts the power of demanding renewable energy back to the people. Nebraska's public utilities are not-for-profit, meaning they are only accountable to their consumers and not a corporation's profit or shareholders.[62] The Board of Directors for Nebraska Public Power District and Omaha Public Power District are elected officials voted on by constituents.[63] For the Lincoln Electric System, the Board receives confirmation from the Lincoln City Council after members are appointed by the Mayor of Lincoln.[64] Nebraska Public Power District has rules for public participation, which includes having open Board of Directors meetings, where the public is allowed to come in and speak.[65] Omaha Public Power District also requires that each regular Board meeting has time allotted for public comments.[66] Lincoln Electric System follows suit with public Board meetings, where constituents can come and provide input.[67]

Additionally, community-owned wind energy contributes to Indigneous energy sovereignty. If Indigenous Nations are able to own their own means of energy production that fulfills all or most of their energy usage and needs, they do not need to rely on outside energy sources as heavily. Further, in relation to Indigenous land rights, owning their own energy production facilities gives far more sovereignty to Nations rather than leasing their land to outside energy developers.

62 https://www.nppd.com/powering-nebraska/public-power

63 https://www.nppd.com/about-us?locale=en and https://www.oppd.com/about/governance/

64 https://www.les.com/company/board

65 https://www.nppd.com/public-participation-rules

66 https://www.oppd.com/media/197950/guidelines-for-public-participation.pdf

67 https://www.les.com/company/public-power.

How Do We Get There?

Transitioning Nebraska to predominantly wind energy requires multiple components.

Renewable Portfolio Standards (RPS): What Are They?

Renewable portfolio standards provide a mandate for energy companies to ensure they are using renewable energy to fulfill consumer demand. According to the U.S. Environmental Protection Agency, a RPS is a standard that "requires electric utilities and other retail electric providers to supply a specific minimum percentage (or absolute amount) of customer demand with eligible sources of renewable electricity."[68] An RPS is rarely designed the exact same way in one state as it is in another state, which provides an opportunity for states to cater the RPS to their regional needs.[69] Thirty states and the District of Columbia currently have RPS policies enacted.[70]

Renewable Portfolio Standards: What Are The Benefits?

Renewable portfolio standards can be the gateway to incentivize states to transition to wind energy. RPS have shown to be successful in growing the use of renewable energy. Between 2000 and 2020, RPSs accounted for 45% of renewable energy growth.[71] This means that RPSs have contributed the most to generating renewable energy, above all other means of incentivizing it, such as federal tax credits, green power markets, the Public Utilities Regulatory Policies Act of 1978, declining renewable energy costs and other state policies.[72] RPSs work to reduce the cost of renewable energy and help advance renewable energy industries, which explains the key role it plays in expanding clean energy.[73] Enacting an RPS can lower the amount of greenhouse gas emissions that come from the electricity sector, which contributed to 25% of US emissions in 2019.[74]

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68 https://www.epa.gov/sites/production/files/2017-06/documents/guide_action_full.pdf
69 https://eta-publications.lbl.gov/sites/default/files/rps_status_update-2021_early_release.pdf
70 https://eta-publications.lbl.gov/sites/default/files/rps_status_update-2021_early_release.pdf
71 https://eta-publications.lbl.gov/sites/default/files/rps_status_update-2021_early_release.pdf
72 https://eta-publications.lbl.gov/sites/default/files/rps_status_update-2021_early_release.pdf
73 https://eta-publications.lbl.gov/sites/default/files/rps_status_update-2021_early_release.pdf
74 https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions. Accessed on 07/09/21.

Nebraska's neighboring state of Iowa has been a leader in renewable portfolio standards, and this has proven to be beneficial for the environment and economy. Growth of renewable energy in Iowa has resulted in the following benefits:

- The renewable energy sector has brought 5,200 jobs to Iowa.[75]
- Iowa's wind, solar and energy storage plants are projected to save 10 billions gallons of water in 2021.[76]
- Iowa's wind, solar and energy storage plants have circumvented 32.6 million metric tons of carbon dioxide that would have been emitted from fossil fuel plants.[77]
    - This is the same amount of carbon dioxide as 7.1 million cars would emit.[78]
- Renewable energy projects in Iowa have brought $129.5 million to the economy in 2021 through property, state and local taxes.[79]
- Renewable energy in Iowa has the potential to power 3.8 million homes.[80]

Nebraska should follow in the footsteps of its neighbor and enact a renewable portfolio standard as a means of getting on the path to generating energy from renewable sources.

Further, the Legislature should add the following labor standards to follow in accordance with the renewable portfolio standard. Any utility governed by the renewable portfolio standard needs to follow these standards for the construction and operation of their own generation capacity and require these standards in contracts with third party developers building generation capacity for them:

- Providing accessible training for wind energy jobs that are needed to install and operate turbines and other relevant machinery.[81]
- Priority hiring for people of color, low-income communities, formerly incarcerated people, and individuals who formerly worked in the fossil fuel industry.[82]
- Setting a livable wage and including health benefits for employees.[83]
- Working with local communities of color and low-income communities to ensure wind energy policy is more accessible to them, and the residual impact of the fossil fuel industry is mitigated in any way possible.[84]

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75 https://cleanpower.org/facts/state-fact-sheets/. Accessed 10/13/21.
76 https://cleanpower.org/facts/state-fact-sheets/. Accessed 10/13/21.
77 https://cleanpower.org/facts/state-fact-sheets/. Accessed 10/13/21.
78 https://cleanpower.org/facts/state-fact-sheets/. Accessed 10/13/21.
79 https://cleanpower.org/facts/state-fact-sheets/. Accessed 10/13/21.
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81 https://ips-dc.org/wp-content/uploads/2018/08/Basav-report-final-online-1.pdf
82 https://ips-dc.org/wp-content/uploads/2018/08/Basav-report-final-online-1.pdf
83 https://ips-dc.org/wp-content/uploads/2018/08/Basav-report-final-online-1.pdf
84 https://ips-dc.org/wp-content/uploads/2018/08/Basav-report-final-online-1.pdf

Leveraging Public Ownership of Utilities

While involving the Legislature in this process would be ideal, public power districts in the state can make a transition to renewable energy on their own even without being required to do so by the legislature. All of Nebraska's utilities are publicly owned, and the Board of Directors for both Nebraska Public Power District and Omaha Public Power District are elected by their constituents.[85] Because the Board consists of elected officials and are meant to serve their communities, their constituents have the ability to pressure them into setting 100% renewable energy goals with a binding timeline.

The primary advantage to bypassing the legislature is avoiding partisan politics that could blockade renewable energy goals. For the Board of Directors, their sole focus is energy — meaning they do not have to take party politics into consideration and should be doing what is in the best interest of the community's energy needs. However, bypassing the legislature means every public utility has the choice whether to transition to renewables, leaving the state with a potential of never reaching 100% clean energy statewide. It also leaves each public utility to set varying targets — ones that are more and less ambitious. For example, LES has set a net zero carbon goal by 2040, while OPPD has set the same goal by 2050.[86] NPPD, on the other hand, is debating whether they should set a net zero carbon goal.[87] While the Institute for Policy Studies does not endorse net zero targets, for reasons that are outside the scope of this report,[88] the existence of these targets demonstrates that these public utilities have the ability to transition to renewable energy on their own without being required to do so by the State Legislature.

Lincoln Electric System, one of Nebraska's publicly owned electric utilities, has started to exemplify this process, starting with providing both net metering and virtual net metering.[89] LES supports customer-owned renewable energy generation by allowing customers to partner with the utility to credit the customer for energy generated, as well as buying any energy sold to the utility.[90] Through net metering, households are able to be more autonomous, while still having LES to fall back on in times of low energy production. This policy is made geographically accessible to customers through virtual net metering — which allows households to purchase solar panels that LES has established.[91] Just like net metering, customers are then provided with credit on their monthly bills for the amount of electricity produced by the solar panels they have invested in.[92] LES also sells renewable energy certificates (RECs) to customers. This option provides an accessible means for electricity consumers to participate in renewable energy initiatives by purchasing RECs to fund renewable energy development if they do not have the financial means to install their own renewable energy generator or buy into a virtual net metering program.[93]

85 https://www.nppd.com/about-us?locale=en and https://www.oppd.com/about/governance/

86 https://www.les.com/les-decarbonization-goal and https://oppdthewire.com/decarbonization-workshops-april-2021-oppd/

87 https://omaha.com/news/state-and-regional/nppd-seeks-public-input-on-decarbonization/article_8c339494-f6d3-11eb-a893-77535056252f.html

88 Interested readers can refer to https://www.foei.org/wp-content/uploads/2021/06/The-Big-Con_EN.pdf

89 https://www.les.com/les-decarbonization-goal

90 https://www.les.com/sites/default/files/net-metering-overview.pdf

91 https://www.les.com/solar-power/enroll-les-virtual-net-metering

92 https://www.les.com/solar-power/enroll-les-virtual-net-metering

93 https://www.les.com/sustainability/renewable-energy-certificates

Net Metering: What Is It?

Net metering is a policy that "allows the electric meters of small wind turbine project owners to turn backward when the project produces more energy than the customer uses."[94] This means that when households generate more electricity than they consume, they can sell it back to the grid and receive credit for their next bill. This credit varies based on the specific policy, ranging from retail price to less than retail price to zero.[95] Electricity users, including small businesses and nonprofits, who participate in net metering only pay for any electricity they use from the utility grid.[96] Again, based on the specific policy, this rollover credit can potentially keep rolling over until it is used or it may have an expiration date.[97]

Net Metering: What Are The Benefits?

Net metering works to incentivize wind energy generation as it ultimately saves money for communities who are generating their own renewable energy by allowing them to reduce their bills. On a broader scale, this also aids utilities in instances where there is high demand for energy by reducing the stress on utilities to produce and distribute more.[98]

Net metering incentivizes all distributed energy. Distributed generation comes with advantages over traditional generation structures:

- "Lower electric bills
- Reduced carbon footprint
- Reduced exposure to future electricity price increases
- Possible increased property value."[99]

Besides the economic benefits that come from distributed generation, there is a political incentive. Switching to distributed generation means shifting away from a centralized structure where those in power control energy. Instead, local communities will hold the power, and the people have more control over their own energy structure.

Distributed generation also provides numerous benefits to households who do not own distributed generation capacity:

Because there are fewer households using the traditional electric grid, there is less peak load on the grid. (The demand for electricity varies by time of day and by time of year, and the periods of highest demand are known as "peak loads.") Since electricity typically costs more per unit during peak load periods, increased penetration of distributed energy reduces the costs incurred by utilities to acquire expensive electricity during peak loads. This means a reduction in price increases for consumers.[100]

94 https://windexchange.energy.gov/small-community-wind-handbook#costs
95 https://www.nrel.gov/state-local-tribal/basics-net-metering.html. Accessed 07/21/21.
96 https://www.nrel.gov/state-local-tribal/basics-net-metering.html. Accessed 07/21/21.
97 https://www.nrel.gov/state-local-tribal/basics-net-metering.html. Accessed 07/21/21.
98 https://www.seia.org/initiatives/net-metering
99 https://www.whatissmartenergy.org/What-Distributed-Generation-and-Net-Metering-Mean-for-You
100 https://www.whatissmartenergy.org/What-Distributed-Generation-and-Net-Metering-Mean-for-You

By having households develop their own distributed energy generation, traditional utility companies do not need to build as many new power plants. Consequent savings on capital costs for utilities benefit all ratepayers in the form of lower rate increases. .[101]

Distributed energy does not come with the same transmission and distribution issues as traditional energy sources where energy can be lost in the process of reaching the consumer.[102] When this happens, all consumers often bear the brunt of the cost of lost electricity.[103]

Community-Owned Wind Energy: What Is It?

Further, making wind energy community-owned through wind energy co-ops will provide an ideal situation for Nebraksans to be in control of their own utilities. Community-owned wind energy removes the corporate hand from energy production and puts it in the hands of the people. Households who are participating in their community's wind project, despite the turbines not being on their property, usually "receive a monthly bill credit for electricity generated by their share" of the energy system." [104]

Community-Owned Wind Energy: What Are The Benefits?

Community-owned wind leverages community autonomy and allows more households to take advantage of clean energy. This structure allows households with inadequate property conditions for wind energy, households who do not own property, and households who are financially unable to install their own wind turbines to take part in the community's wind project.[105]

Community ownership of wind energy comes with various benefits:

- Households will have more secure electricity rates.[106]
- Accessibility for more electricity consumers, including low-income households who would otherwise be unable to afford their own wind turbines.[107]
- Wind energy projects can be located in the most beneficial spot.[108]

By not allowing corporations to own and operate the wind turbines, profit will circulate locally to Nebraska communities, and households will have autonomy over their property and energy. Local residents are able to control the details of the project that will best fit their communities,

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101 https://www.whatissmartenergy.org/What-Distributed-Generation-and-Net-Metering-Mean-for-You
102 https://www.whatissmartenergy.org/What-Distributed-Generation-and-Net-Metering-Mean-for-You
103 https://www.whatissmartenergy.org/What-Distributed-Generation-and-Net-Metering-Mean-for-You
104 https://www.nrel.gov/state-local-tribal/community-solar.html. Accessed on 07/21/21.
105 https://www.nrel.gov/state-local-tribal/community-solar.html. Accessed on 07/21/21.
106 https://www.nrel.gov/state-local-tribal/community-solar.html. Accessed on 07/21/21.
107 https://www.nrel.gov/state-local-tribal/community-solar.html. Accessed on 07/21/21.
108 https://www.nrel.gov/state-local-tribal/community-solar.html. Accessed on 07/21/21.

such as sizing, exact location and establishing guidelines.[109] Additionally, because local residents can be involved in the process of establishing wind energy when it is community owned, the transition is much more likely to gain local support than when it is not community owned.[110]

Community-owned wind energy can also be designed in such a way to ensure low and moderate-income (LMI) consumers can take part. This goal can be achieved in a multitude of ways:

Low to moderate-income carveout

- This structure involves having a requirement for how many consumers in a project must be LMI.[111] Advantages of this structure are a diverse consumer mix and being able to ensure a certain number of LMI households are able to participate.[112] Disadvantages include utilities only working to meet the minimum requirement and other non-LMI consumers having to pay for the extra cost of supporting LMI households.[113]
- Low to moderate-income only programs. These kinds of programs are exclusively for LMI households in an effort to decrease energy burdens for LMI communities.[114] Advantages are reaching more LMI consumers and incentivizing their involvement in a more direct fashion.[115] Disadvantages of this structure are excluding other potential consumers who want to take part in a particular community project and potentially high financial burdens — for both LMI subscribers and third party developers.[116] However, this financial risk can be offset if there is state funding for LMI customers to support their bill payments and state loan guarantees for the developers. For LMI customers, funding can either take the form of free subscriptions or a reduced cost.[117] For third party developers, a loan loss reserve mechanism can be enacted to ensure the loss can be covered in cases where LMI customers default on their payments.[118]

109 https://www.nrel.gov/docs/fy13osti/56386.pdf
110 https://www.nrel.gov/docs/fy13osti/56386.pdf
111 https://www.nrel.gov/docs/fy19osti/71652.pdf. Page 5.
112 https://www.nrel.gov/docs/fy19osti/71652.pdf. Page 5.
113 https://www.nrel.gov/docs/fy19osti/71652.pdf. Page 5.
114 https://www.nrel.gov/docs/fy19osti/71652.pdf. Page 5.
115 https://www.nrel.gov/docs/fy19osti/71652.pdf. Page 6.
116 https://www.nrel.gov/docs/fy19osti/71652.pdf. Page 6.
117 https://www.nrel.gov/docs/fy19osti/71652.pdf. Page 21.
118 https://www.nrel.gov/docs/fy19osti/71652.pdf. Page 15.

Anchor tenant

- This type of program works to include LMI households by having a singular anchor tenant that consumes most of the project's energy.[119] Examples of anchor tenants might be a local public school, public library, house of worship or hospital. The advantages of this program is obtaining a higher sense of financial security and potentially getting space from the anchor tenant to host the project.[120] Disadvantages, on the other hand, are a lower number of LMI households in each project due to large anchor tenants and on the anchor tenant's end, they have less security in their finances due to situations in which LMI subscribers may default on their bills or quit their subscriptions.[121]

To define who is considered LMI, projects can qualify households based on their income, their location (i.e. if they are located in an area experiencing environmental racism), whether they have participated in another LMI energy program before or whether they are beneficiaries of a LMI housing program.[122] Any of these structures, or any other incentivizing structures, can help include LMI households in wind energy production who otherwise would be unable to participate.

Colorado provides a useful case study. Colorado enacted an LMI carveout for their 2010 Colorado Community Solar Gardens Act.[123] This translated into a requirement of 5% per-project for investor-owned utilities to set aside for LMI subscribers.[124] However, in 2015, the Colorado Energy Office found that this was not an efficient manner to increase LMI participation.[125] Because the 5% carveout was based on a per-project basis, project developers faced issues with obtaining resources to keep up the carveout.[126] This led to a less than ideal financial situation in which non-LMI consumers had high costs because the project costs increased and the project revenues decreased.[127] Due to these barriers to successful LMI integration, the carveout was switched from project-based to portfolio-based in 2016.[128] This meant a requirement of the energy company to reserve 4 MW of community solar energy for LMI subscribers every year.[129] With this requirement, incentives were also put in place for each 0.5 MW of solar power reserved for LMI customers beyond the required 4 MW.[130] Colorado was able to adapt LMI policies to what was feasible for the state.

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119 https://www.nrel.gov/docs/fy19osti/71652.pdf. Page 7.
120 https://www.nrel.gov/docs/fy19osti/71652.pdf. Page 7.
121 https://www.nrel.gov/docs/fy19osti/71652.pdf. Page 7.
122 https://www.nrel.gov/docs/fy19osti/71652.pdf. Page 10.
123 https://www.nrel.gov/docs/fy19osti/71652.pdf. Page 6.
124 https://www.nrel.gov/docs/fy19osti/71652.pdf. Page 6.
125 https://www.nrel.gov/docs/fy19osti/71652.pdf. Page 6.
126 https://www.nrel.gov/docs/fy19osti/71652.pdf. Page 6.
127 https://www.nrel.gov/docs/fy19osti/71652.pdf. Page 6.
128 https://www.nrel.gov/docs/fy19osti/71652.pdf. Page 6.
129 https://www.nrel.gov/docs/fy19osti/71652.pdf. Page 6.
130 https://www.nrel.gov/docs/fy19osti/71652.pdf. Page 6.

Conclusion and Next Steps

Given the social, environmental and economic benefits that come from transitioning to wind energy, Nebraska should make this transition without delay. There are numerous benefits to Nebraska from making this switch, such as more democratic control over the energy system, eliminating greenhouse gas emissions, eliminating toxic air and water pollution from fossil fuels, and creating lots of good jobs in a fast-growing industry. Through enacting a renewable portfolio standard, enforcing net metering and making wind energy community owned, Nebraska's energy structure will be more sustainable for the environment and the economy. Regarding next steps, researchers should further evaluate wind energy expansion possibilities in other rural regions of the United States.

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