STATE OF IOWA
BEFORE THE IOWA UTILITIES BOARD

IN RE: APPLICATION OF INTERSTATE POWER AND LIGHT COMPANY FOR A DETERMINATION OF RATEMAKING PRINCIPLES	)	DOCKET NO. RPU-2016-0005

DIRECT TESTIMONY
OF
NATHANIEL BAER (PUBLIC)

On Behalf of

Environmental Law & Policy Center
Iowa Environmental Council

September 16, 2016

Q. What is your name and business address?

A. My name is Nathaniel Baer. My title is Energy Program Director with the Iowa Environmental Council. Our offices are located at 521 East Locust Street, Suite 220, Des Moines, Iowa 50309.

Q. On whose behalf are you testifying today?

A. I am testifying on behalf of the Iowa Environmental Council and Environmental Law & Policy Center.

Q. Please describe your background.

A. I have a bachelor of arts degree from Earlham College in Richmond, Indiana and a law degree from the University of Iowa College of Law in Iowa City, although I am not a practicing attorney. I have worked for the Iowa Environmental Council (IEC) since 2007. The Iowa Environmental Council is a 501(c)(3) non-profit, member-based corporation that works to advance public policies that provide a safe, healthy environment and sustainable future for all Iowans. In my capacity at IEC, I have worked on a wide range of energy policy issues, including renewable energy, transmission, energy efficiency, biofuels, and transportation. This has included work on state and federal legislation and administrative rules both with federal and state agencies, as well as a range of dockets at the Iowa Utilities Board. I have served on stakeholder committees, such as energy research or policy committees, established by the Iowa legislature, Midwestern Governors Association, Iowa Department of Transportation, and the University of Northern Iowa's Center for Energy and Environmental Education. I currently serve on

the Iowa Energy Resources working group for the Iowa Energy Plan and am on the board of directors for the regional non-profit organization Wind on the Wires. I have participated regularly in the Iowa energy efficiency stakeholder collaborative convened by the Office of Consumer Advocate since 2009 and the Midcontinent Power Sector Collaborative since September 2014.

Q. Have you testified with the Iowa Utilities Board before?

A. I provided testimony in MidAmerican Energy's general rate case, RPU-2013-0004, and in MidAmerican's last two requests for wind energy ratemaking principles in Wind X, RPU-2015-0002, and Wind XI, RPU-2016-0001. In addition, I have drafted or assisted in drafting our organization's comments and joint comments in various dockets before the IUB, including NOI-2006-0004, NOI-2009-0002, NOI-2011-0002, NOI-2011-0003, NOI-2014-0001, NOI-2014-0002, NOI-2015-0001, RMU-2014-0007, RMU-2016-0003, RMU-2016-0006, RMU-2016-0018, TF-2012-0546, TF-2012-0574, TF-2014-0294, TF-2014-0320, and TF-2016-0294.

Q. What is the purpose of your testimony?

A. The purpose of my testimony is to support and expand upon aspects of the Interstate Power and Light (IPL) proposal to construct 500 MW of new wind generation in Iowa, referred to as the New Wind Project. I am not providing testimony on ratemaking principles or every aspect of the New Wind Project proposal.

Q. IPL Witnesses Kopp and Lipari emphasize the significance of timing to access the full value of the federal production tax credit. What is your response?

A. In past years, Congress has allowed the federal PTC to expire or lapse and has also extended the PTC for only short periods of time. Given such circumstances, the longer-term extension of the PTC by Congress last December, and the phase out of its value over a longer period of time, is seen as a significant and uncommon legislative action. Although an additional extension of the PTC by a future Congress could be helpful to the wind industry, that extension cannot be expected or relied upon. The window of opportunity to use the full value of the PTC is here this year and may only be here this year. IPL's proposal to take advantage of that full value of the PTC with the New Wind Project is a key consideration.

Q. Witness Kopp discusses the potential for the New Wind Project to help IPL reduce carbon emissions, including compliance with the Clean Power Plan. What is your response?

A. I expect wind energy in general to be a major compliance option for the Clean Power Plan (CPP), particularly in places like Iowa with a robust wind resource. The U.S. Energy Information Administration (EIA) recently released an analysis of the Clean Power Plan as part of the 2016 Annual Energy Outlook that provides a good example of the role of renewable energy – and particularly wind energy – in meeting emissions reduction targets under several CPP scenarios.[1] According to this analysis, the region that includes Iowa, the Northern Plains region, "relies on increased wind generation and reduced coal-fired

[1] U.S. Energy Information Administration, *Annual Energy Outlook: Effects of the Clean Power Plan* (June 2016) at https://www.eia.gov/forecasts/aeo/section_issues.cfm#cpp.

generation to meet the CPP targets."[2] In the Northern Plains region, wind and solar move from 14% of the generation mix in 2015 to between 30% and 36% of the generation mix in 2030 in several different CPP scenarios (the scenarios examine different plan options, such as rate and mass).[3]

The New Wind Project will provide significant compliance benefits for IPL, which I discuss in more detail for both rate-based and mass-based plan options below. The Clean Power Plan provides states with significant flexibility in determining compliance pathways, and there are a number of options for meeting the emissions guidelines. As a general matter, however, in a state plan that demonstrates compliance by meeting a lower carbon dioxide emissions rate, or rate-based plan, wind energy can be expected to reduce emissions by offsetting the need for fossil fuel-fired generation and will generate emission rate credits (ERCs) that can be used to demonstrate compliance. In a state plan that demonstrates compliance by meeting a lower total amount of carbon dioxide emissions, or mass-based plan, wind energy can also be expected to reduce emissions by offsetting the need for fossil fuel-fired generation and will reduce the number of allowances needed for compliance.

Q. Why would IPL add wind for the Clean Power Plan given the timing for compliance in the final rule?

A. As Witness Kopp observed, there is currently a court stay on the Clean Power Plan. However, it is reasonable to implement compliance measures for the Clean Power Plan

[2] *Id.*
[3] *Id.* at Table IF1-3.

now. This is particularly true for compliance measures that carry multiple benefits, such as the New Wind Project, and that can be seen as a 'no regrets' option.

Even without the court stay, there would have been some level of uncertainty over a number of details in the state plan for Iowa, like in most other states. In the absence of the court stay, the Clean Power Plan would require an initial submittal by September 2016 and allow states until September 2018 to submit a final state plan. It is likely Iowa would have submitted its state plan in 2018, two years from now, and used the next two years to make decisions about what type of state plan (rate, mass, trading ready, etc.) to submit as well as a number of design options in that state plan. There would be uncertainties with or without the court stay, and the New Wind Project is a reasonable and appropriate action to take to prepare for the Clean Power Plan given the uncertainties presented in either circumstance. With the full value of the federal PTC available now and a limited window of opportunity to build a wind project in 2016 using the full value of the PTC, it makes sense to propose and build this wind project now.

Q. **How will the New Wind Project help IPL comply with a rate-based approach to the Clean Power Plan?**

A. Wind energy produced by the New Wind Project is a major compliance option and helps position IPL to comply with its likely obligation under a rate-based plan. When combined with other compliance options, including the 200 MW Turtle Creek Wind Farm that IPL has recently executed a PPA for and ongoing energy efficiency efforts, the New Wind

Project may allow IPL to comply with its expected 2030 emission reduction target in a rate-based plan.

IPL provided an analysis of the New Wind Project's anticipated role in meeting IPL's potential rate-based compliance obligation under the Clean Power Plan. IPL Response to Environmental Intervenors Data Request 3, filed as Exhibit EI-1 (Confidential). IPL used EPA's 2012 baseline data for IPL's affected fossil fuel generating units as the starting point and then made adjustments based on its ownership share and expected changes in capacity factor for certain units. IPL then projected the ERCs needed for compliance (per unit and in total) for each year of expected CPP compliance from 2022 to 2030. Before adding the 500 MW New Wind Project, the 200 MW Turtle Creek PPA, or any other sources of ERCs, IPL projects needing ERCs in each year of compliance. The emissions targets become more stringent during the compliance period and IPL projects needing more ERCs each year. After adding the 700 MW of wind from the two wind projects, IPL has excess ERCs in the first two years of compliance before needing ERCs each year from 2024 to 2030. In order to comply in those later years, IPL would need to generate additional ERCs from other eligible resources, purchase ERCs in a trading market, or reduce the need for ERCs by running fossil generation less. IPL can also bank its projected excess ERCs in 2022 and 2023 and use them to meet its need for ERCs in the later years. IPL's deficit of ERCs during the full compliance period is [redacted] even with the Turtle Creek wind PPA and the New Wind Project.

IPL did not include or quantify potential ERCs from energy efficiency, but did indicate that it "expects it would request ERCs for energy efficiency actions." IPL Response to Data Request 3, Exhibit EI-1 (Confidential) at 6. IPL's current energy efficiency plan (the 2014-2018 EEP) positions IPL to generate ERCs from any efficiency measures installed during the plan that meet applicable evaluation, measurement and verification requirements (and any other ERC requirements) to establish that those measures are saving electricity in 2022 and in any year after 2022. In addition to the current plan, I expect that IPL's plan would deliver additional savings in the next EEP (2019-2023) and in the subsequent EEPs during compliance, meaning more efficiency measures would be installed that could generate ERCs. This should lead to larger cumulative amounts of ERCs generated each year. Even if not all installed efficiency measures generate ERCs, the scope of ERCs generated from efficiency measures could be significant and either help meet or entirely meet IPL's need for additional ERCs.

IPL's analysis is likely conservative in a few more regards. First, it uses the lowest projected capacity factor of 44% to project ERC generation from the New Wind Project. If the capacity factor is higher – such as the 51% IPL estimates on the high end – IPL's deficit of ERCs would be approximately half of the projected [redacted] Second, the analysis does not account for potential changes in generation and emissions from its affected fossil units during the compliance period. It is possible that additions of renewables and efficiency would allow IPL to run its fossil generation less in future years than the 2012 baseline year, which would reduce the need for ERCs.

Regardless of the compliance option or action, IPL will need to take additional actions, such as building wind energy projects, adding other sources of renewable energy like solar, and/or implementing new energy efficiency programs, to achieve compliance. Given the availability and significant benefit of the PTC today, it makes sense to add enough wind to help IPL comply with the Clean Power Plan in future years.

If IPL wanted to better ensure compliance with the Clean Power Plan, it could expand the size of the New Wind Project or otherwise add more renewables prior to 2022. I will note that many of the EGEAS runs, as discussed by Witness Kitchen, selected 600 MW of wind generation, rather than the 500 MW that IPL proposed in this docket. Some EGEAS runs have selected even higher amounts. IPL is evaluating additional wind sites that may offer the opportunity to expand this wind project or develop additional wind projects in the near future. IPL Response to Environmental Intervenors Data Request 9, filed as Exhibit EI-2 (Confidential). In the event that IPL goes beyond compliance and has excess ERCs, it can trade or sell those ERCs to other utilities and use the revenue from those sales to benefit customers. IPL Responses to Environmental Intervenors Data Request 3, filed as Exhibit EI-1 (Confidential), and Data Request 4, filed as Exhibit EI-3.

Q. How would the New Wind Project help IPL comply with a mass-based approach to the Clean Power Plan?

A. In general, the New Wind Project would help IPL comply in several ways. First, adding wind generation would allow IPL to back down affected fossil generating units and emit less CO2 from those units. By running affected fossil units less while meeting overall

energy needs with added wind, IPL would need fewer allowances and would be in a better position to cover its emissions with allowances under whatever allowance allocation approach the state plan takes. Second, it is possible that the New Wind Project could be directly allocated allowances. For example, the proposed Federal Plan includes a set-aside of allowances for renewable energy projects, in which a pool of allowances are available to be directly allocated to renewable energy projects.[4] This pool of allowances is proposed to grow over time as the allowances otherwise allocated to fossil-fueled units that retire would then go into the renewable energy set-aside pool.[5] If IPL did not need any allowances directly allocated to the New Wind Project to cover its own emissions, it could sell those allowances to other utilities.

What opportunities for trading would be available to IPL under the Clean Power Plan?

The Clean Power Plan provides options for trading across utility service territories and state lines. Utilities that take actions to exceed their compliance obligation will have excess credits that are expected to have value and can be sold to other utilities. If the utility exceeding compliance is in a rate-based state, the excess credit will be an ERC. If the utility exceeding compliance is in a mass-based state, the excess credit will be an allowance.

[4] Environmental Protection Agency, Federal Plan Requirements for Greenhouse Gas Emissions from Electric Utility Generating Units Constructed on or Before January 8, 2014, 80 Fed. Reg. 65,022-65,025 (October 23, 2015).
[5] *Id*. at 65,026-65,027.

ERCs and allowances are expected to have value during the 2022-2030 compliance period. There are multiple modeling efforts underway to quantify the potential range of values for ERCs and allowances in different potential trading markets. The modeling I have reviewed indicates there are scenarios where the value is low or even zero in the early years of the 2022-2030 time frame, but the value tends to increase as time gets closer to year 2030. It is important to note that compliance continues after 2030 as well, with the expectation of an ongoing compliance obligation and trading market for ERCs and allowances, but most modeling is focused on the 2022-2030 time frame.

Modeling results from the Electric Power Research Institute provide a good example of ERC value, showing a range of ERC prices between $10 and $18 in 2030, depending on different scenarios and assumptions.[6] I have also seen a similar range of ERC prices from other modeling results.[7]

As I noted earlier, if IPL's addition of wind, solar, and energy efficiency positions it to exceed its compliance obligation and trade excess ERCs or excess allowances, the revenue from those sales can provide an additional benefit to IPL's customers.

In addition to the potential added revenue from ERCs or allowances, there is an important timing consideration. Revenue from ERCs or allowances could provide a new source of revenue for IPL wind projects as the revenue from the federal PTC tapers off.

[6] Electric Power Research Institute, *State-Level Modeling of Clean Power Plan Compliance Pathways with EPRI's US-REGEN Model* (February 2016).
[7] This includes modeling by The Nicholas Institute, Bipartisan Policy Center, FACETs, and an MJ Bradley data visualizer tool that produces ERC prices in different scenarios.

Q. You include IPL's projections for rate-based compliance. Have you conducted any additional analysis regarding IPL's compliance under the Clean Power Plan?

A. I have conducted analysis for the state of Iowa as a whole using publicly available spreadsheet tools from MJ Bradley & Associates and Synapse Energy Economics. I have not conducted analysis for a specific utility such as IPL. Because the results of these tools are for the state of Iowa, they are not directly comparable to IPL's projections, but they can provide a useful context to evaluate the IPL projections. At a high level, IPL's results are consistent with the results I have obtained from these publicly available modeling tools, in terms of the approximate quantity of wind needed for compliance under a rate-based plan. For example, using the MJ Bradley tool, accounting for some key input assumptions, I have found that approximately 2,500 MW of new wind energy, along with modest energy efficiency savings, would put the state of Iowa into compliance with the Clean Power Plan by achieving a rate of 1,280 lbs/MWh in 2030. I am not attempting to evaluate the exact accuracy of IPL's numbers, but I believe they are reasonable and conservative projections in the context of other analysis I have seen and my use of these publicly available modeling tools.

Q. Witness Kopp discusses a future where renewable energy plays an increasingly prominent role. Do you agree?

A. Yes. There are a number of drivers that are significantly increasing the role of renewable energy. Witness Kopp discusses some of them in different areas of testimony. I agree with the overall conclusion that we are moving towards an energy mix that is cleaner and

has more renewables. I expand on some of the key drivers below, including the reduced cost of renewable energy, renewable resource potential, private sector renewable energy commitments, and economic benefits.

Iowa has experienced and continues to experience many of these drivers in very positive ways. Although Iowa – and IPL – has seen success with renewable energy to date, there is enormous potential to continue the transition to renewable energy in coming years and to reap the benefits of that transition. The New Wind Project is a positive step toward more renewable energy for IPL and the state of Iowa.

Q. How does IPL's proposal to add 500 MW of wind fit into Iowa's renewable energy future?

A. Iowa has a very significant renewable energy resource potential that is well in excess of current electricity use or generation. A recent NREL report identifies the technical and economic potential for primary sources of renewable energy by state.[8] That report includes NREL's updated wind technical potential estimate for Iowa of 276 gigawatts (GW) of capacity or 1,045,000 gigawatt-hours (GWh) of generation.[9] Compared to a technical resource potential of 276 GW, IPL's proposal to add 500 MW (or .5 GW) of wind will use a small fraction of this overall resource.

[8] National Renewable Energy Laboratory, *Estimating Renewable Energy Economic Potential in the United States: Methodology and Initial Results* (2015).
[9] *Id*. at 82.

Several additional studies illustrate possible near-term installation rates for wind generation in Iowa. In 2008, the U.S. Department of Energy released a comprehensive study on achieving 20% of the U.S. electricity supply with wind energy by year 2030.[10] To reach the 300,000 MW of wind needed to supply 20% of U.S. electricity, each state would contribute a share of the total. Iowa's share in the study is 19,910 MW of wind by 2030.[11] Last year, the U.S. Department of Energy updated and expanded this study with its *Wind Vision* study.[12] The *Wind Vision* study includes several scenarios for wind capacity development nationally and in each state in order to reach 20% wind by 2030 and 35% wind by 2050 nationally. Iowa's share of the capacity needed to reach these national goals is between 17,000 MW and 20,000 MW by 2030 and between 37,000 and 46,000 MW by 2050 in several main scenarios.[13]

Iowa ended 2015 with about 6,200 MW of installed wind capacity and is likely to reach 7,000 MW of wind capacity in the next year or so given projects that are under construction or will be in construction soon (including MidAmerican's Wind X project and Alliant's Turtle Creek PPA). The Board recently approved MidAmerican's Wind XI project, which should bring Iowa to approximately 9,000 MW of wind on or before 2020.

IPL's New Wind Project positions Iowa to reach the key benchmark for wind development of 10,000 MW by 2020. Assuming the New Wind Project is built on

[10] U.S. DOE, *20% Wind Energy by 2030* (2008).
[11] U.S. DOE, 20% Wind, Appendix A Data Tables (2008).
[12] U.S. DOE, *Wind Vision* (2015) at http://energy.gov/eere/wind/wind-vision.
[13] U.S. DOE, *Wind Vision Study Scenario Viewer*, at http://en.openei.org/apps/wv_viewer/#.

schedule, Iowa would have approximately 9,500 MW of wind installed by 2020 and only need 500 MW more wind to reach the 2020 benchmark.

Q. What costs and cost trends are driving renewable energy development?

A. Renewable energy costs have dropped significantly in recent years, allowing renewable energy to compete with other sources of generation on a cost basis. For example, the 2016 Annual Energy Outlook states that in a scenario without the Clean Power Plan, "renewable electricity generation increases from 2015 to 2030 in all regions, with the largest increases in the Southeast, California, and the Northern Plains regions" that includes Iowa and "[s]trong renewable electricity generation growth occurs as a result of the combination of extended tax credits, renewable portfolio standards in many regions, and declining construction costs."[14]

The latest Lazard analysis from 2015 on the levelized cost of energy (LCOE) from different energy resources provides helpful cost information on renewable energy, including wind and solar. The Lazard analysis also allows for a comparison of renewables to a broader range of possible energy resources.[15]

The unsubsidized levelized cost of wind, such as without the federal PTC, ranges from 3.2 cents/kWh to 7.7 cents/kWh. I would expect Iowa to be on the lower end of this levelized cost range – closer to 3.2 cents/kWh – given the wind resource, the price data

[14] U.S. EIA, *Annual Energy Outlook: Effects of the Clean Power Plan* (June 2016).
[15] Lazard, *Lazard's Levelized Cost of Energy Analysis – Version 9.0* (2015) at https://www.lazard.com/perspective/levelized-cost-of-energy-analysis-90/.

for the Interior region for wind from the Department of Energy,[16] and the regional data in Lazard showing the Midwest with the lowest LCOE for wind (3.2 cents/kWh to 5.1 cents/kWh).

This low end range for wind is well below the low end ranges for other new generation resources. For example, gas combined cycle is 5.2 cents/kWh to 7.8 cents/kWh and nuclear is 9.7 cents/kWh to 13.6 cents/kWh. With federal subsidies included, the picture becomes even more favorable for wind with a range of 1.4 cents/kWh to 6.3 cents/kWh.

This Lazard analysis also provides a summary of cost declines in recent years for both wind and solar. Between 2009 and 2015, the LCOE for wind dropped 61%, from a low end range of 10.1 cents/kWh in 2009 to the low-end cost discussed above, 3.2 cents/kWh, in 2015. Similarly, utility-scale solar has dropped 82% in the same time frame.

As the Lazard and DOE studies indicate, IPL has an opportunity to add a low cost generating resource that is favorable on a cost basis to other sources of generation and do so while taking advantage of the full value of the federal PTC to provide additional benefits to customers.

Q. How is the private sector driving more renewable energy?

A. Private sector companies have made a variety of renewable energy, carbon reduction, and sustainability pledges in recent years, with increasing numbers of companies involved

[16] Department of Energy, *2014 Wind Technologies Market Report* (August 2015) at viii and 50. The Interior region, which includes Iowa, is the lowest cost region for wind in this report.

and more ambitious pledges made each year. While these pledges include commitments to improve a variety of environmental metrics, many are focused on increasing use of renewable energy.

For example, 78 Fortunate 500 companies have joined EPA's Green Power Partnership and are using renewable energy in some way to meet at least of portion of annual electricity needs.[17] At least 40 Fortune 500 companies have gone further and established specific renewable energy targets.[18] Of these, a number have set the aggressive target to meet 100% of their electricity needs with renewable energy, including: Walmart, Apple, Amazon, Proctor and Gamble, Biogen, Microsoft, Nike, HP, Google, Starbucks, Voya Financial (formerly ING Group), Unilever, Goldman Sachs, Johnson & Johnson, and Salesforce.[19] While the projected dates for reaching these commitments vary, many are in

[17] EPA, *Green Power Partnership Fortune 500 Partners List* (April 25, 2016) at https://www.epa.gov/greenpower/green-power-partnership-fortune-500r-partners-list.

[18] These companies include Wal-Mart, Chevron, Apple, General Motors Company, General Electric Company, Hewlett-Packard, Verizon Communications, AT&T, Proctor & Gamble, Johnson & Johnson, Caterpillar, Dow Chemical Company, Intel Corporation, Google, Cisco Systems, DuPont, Hess Corporation, Sprint Nextel, News Corporation, McDonald's, Macy's, Raytheon Company, EMC Corporation, Kohl's, eBay, PG&E, Baxter International, J.C. Penney, Waste Management, Starbucks, HJ Heinz Company, Sempra Energy, DTE Energy, Caesars Entertainment, Motorola Solutions, Becton Dickinson, Campbell Soup Company, Coca-Cola Enterprises, Enbridge Energy Partners, Allergan, Inc., CA Technologies, Facebook. Calvert Investments, Ceres, David Gardiner & Associates and World Wildlife Fund, Power Forward 2.0 How American Companies Are Setting Clean Energy Targets and Capturing Greater Business Value, Supplement: Fortune 500 Targets (June 19, 2014) at 1- 19. Available at https://www.ceres.org/resources/reports/power-forward-supplement-climate-and-energy-targets-set-by-fortune-500-companies.

[19] See, RE100, available at http://there100.org/companies. See also, Brief of Amici Curiae Amazon.com Inc., Apple Inc., Google Inc., and Microsoft Corp.in Support of Respondents, *State of West Virginia, et al., v. United States Environmental Protection Agency, et al.*, D.C. Cir., No. 15-1363 (April 1, 2016) at 4-8, available at https://www.edf.org/sites/default/files/content/2016.04.01_major_tech_companies_amicus_brief_for_epa.pdf.

the near future and some companies are already meeting the 100% target with current operations. The number of companies setting these targets continues to grow.

An even larger number of companies are using an internal carbon price today and have identified carbon reduction or greenhouse gas reduction goals, with increased use of renewable energy identified as a key strategy to meet those goals. For example, a Climate Disclosure Project analysis of nearly 2,000 global corporations found almost half are either using an internal carbon price today or plan to in the next two years.[20] While 27% had set an emissions reduction target in 2010, 44% had set a target in 2015.[21] Over one-third (36%) of companies are using renewable energy to reduce emissions and meet such targets.[22]

Customers will not be able to meet ambitious renewable energy or carbon emissions targets without the utilities serving them taking similarly ambitious actions to change their generation mix to include more renewable and carbon-free sources of energy.

Q. How are economic impacts driving renewable energy?

A. Witness Kopp highlights the valuable economic impacts of the New Wind Project, including anticipated property tax revenue, land lease payments, and job creation. In addition to Witness Kopp's discussion of these benefits, I would like to expand upon them by summarizing the broader context for wind energy's economic benefits in Iowa

[20] Climate Disclosure Project, *Climate Change Report 2015: The mainstreaming of low carbon on Wall Street* (November 2015) at 30.
[21] *Id*. at 28.
[22] *Id*. at 30.

and addressing how the New Wind Project can expand these benefits to new communities in Iowa.

According to data from the American Wind Energy Association, wind energy was responsible for between 6,001 and 7,000 direct and indirect jobs in Iowa in 2015.[23] This total jobs number includes a mix of jobs in construction, operations and maintenance, manufacturing, and the wind energy supply chain. A recent report by the Environmental Law & Policy Center identifies 75 companies engaged in the wind industry supply chain in Iowa.[24] The ELPC report includes a map showing that these businesses are distributed across Iowa, meaning that communities throughout the state benefit from job and business creation from wind energy in Iowa.

Wind turbines are also becoming significant sources of local property tax revenue in the counties that host wind farms. Witness Kopp projects future revenues to counties in property taxes from the New Wind Project. Franklin County, where IPL already has wind assets, provides a good example of the benefit already provided by wind-related property tax revenue. The existing wind projects in Franklin County contribute significantly to the county budget. For tax year 2015, IPL's Whispering Willow Wind Farm will generate $2,250,717 in gross property tax revenue and the Franklin County Wind LLC project will generate $398,889 in

[23] American Wind Energy Association, *Iowa Wind Energy* (2016), available at http://awea.files.cms-plus.com/FileDownloads/pdfs/Iowa.pdf.

[24] Environmental Law & Policy Center, *Iowa Wind Power & Solar Energy Supply Chain Businesses* (2015) at http://elpc.org/tag/iowa-clean-energy-supply-chain-report. Note that this report was published before more recent information from AWEA, so the ELPC job numbers are lower than the AWEA information I am using in this testimony.

gross property tax revenue.[25] These revenues will be paid in the 2016-2017 fiscal year. Because Franklin County Wind became operational in 2012 and given the phase-in of property tax assessments, it is not generating as much in revenue on a per-turbine basis as Whispering Willows Wind, but revenues will grow in the coming years. The kind of growth in revenue is evident from the Whispering Willows project, which provided $1,023,683 in gross revenue in tax year 2012 and grew annually to $2,250,717 for tax year 2015.[26] During the four years between 2012 and 2015, total gross property tax revenue totals $7.2M for Franklin County for both wind projects. Again, these revenues will continue to grow in future years until both wind projects reach the full valuation (projected to be 2016 for Whispering Willows and 2019 for Franklin County Wind LLC).

Franklin County's budget for the 2016-2017 fiscal year includes total revenues of $18,380,755. The gross property tax revenue from both wind projects already accounts for over 14% of total revenues.[27]

Q. Is there anything else to consider regarding the economic impact of the New Wind Project?

[25] Data compiled by the Iowa Environmental Council from public records on property taxes from the Whispering Willows Wind Farm and Franklin County Wind LLC projects from the public access tool Beacon, available at https://beacon.schneidercorp.com/Application.aspx?AppID=150&LayerID=1872&PageTypeID=2&PageID=977.
[26] *Id*.
[27] Iowa Department of Management, Franklin County Budget 2017, available at https://www.iowaonline.state.ia.us/localbudgets/default.aspx?cmd=gotopublicsite.

A. Yes. The New Wind Project may bring the many economic benefits of wind energy to new counties in Iowa. I have reviewed the list of potential sites outside of Franklin County for part of the New Wind Project and compared this list to a county by county map of existing wind turbines in Iowa, which was updated by Tom Wind, Wind Utility Consulting, in August 2015 and is attached as Exhibit EI-4. Of the [redacted] counties with sites under consideration by IPL for the New Wind Project, [redacted] have few or no existing wind turbines as of August 2015. [redacted] more counties have minimal wind development. Depending on which sites are ultimately selected, the New Wind Project could bring wind energy to one or more of approximately [redacted] counties that have either no wind turbines or only minimal wind development.

The New Wind Project can help spread the economic benefits of wind energy to more parts of Iowa. It can provide new property tax revenue to counties with no such revenue from wind turbines and provide landowner lease payments to landowners in counties that have not had that option to date. The New Wind Project can boost local economic activity with temporary construction jobs and some permanent operations jobs.

In addition to economic benefits, spreading wind development to more geographic areas of Iowa without wind installed can help make the overall wind resource in Iowa more beneficial. The intermittency or variability of wind can be mitigated to some extent by spreading out the wind developments geographically.

Q. **What is your response to IPL's fuel diversity given the New Wind Project?**

A. The New Wind Project provides several important benefits given IPL's current portfolio of generation. Compared to the state as a whole and Iowa's other investor-owned utility, MidAmerican Energy, IPL currently has a proportionately low amount of renewable energy on its system. IPL's 2015 generation mix derived less than 10% from wind,[28] which is well below the percentage of generation from wind whole in Iowa of over 31%.[29] The New Wind Project, combined with the Turtle Creek PPA, allows IPL to reach or exceed 20% of its generation mix from wind by 2020.

By increasing renewables in its mix, IPL will be able to reduce its market purchases, reduce its reliance on imported fossil fuels for its coal and gas generation, and provide a hedge against fuel price increases or other cost increases for fossil generation in future years. IPL generated nearly half of its electricity from its coal and gas units in 2015 and purchased about 44% from the market and nuclear (22% from each, with many market purchases likely coming from the generation of other fossil units). This means IPL and its customers are highly dependent on – and subject to price fluctuations from – fossil fuel generation costs and market costs. IPL reported in its most recent Annual Electric Report that fuel costs to support fossil steam generation totaled over $147 million in 2015 and fuel costs to support other power generation totaled over $38 million.[30] Wind has no fuel cost and is an important resource to continue to add given the dominant role that fossil generation has in IPL's portfolio.

[28] Based on IPL's reported 2015 generation mix, Alliant Energy, *Corporate Sustainability Report* (2016) at 29.
[29] American Wind Energy Association, *Iowa Wind Energy* (2016) at http://awea.files.cms-plus.com/FileDownloads/pdfs/Iowa.pdf.
[30] Interstate Power and Light, *Annual Report: Rate Regulated Electric Utilities*, Form IE-1, Iowa Utilities Board Docket No. A-2015-0150.

Q. What are your recommendation regarding IPL's New Wind Project proposal?

A. I support the timely approval and construction of the New Wind Project. IPL has not added new wind resources to its portfolio, whether through a PPA or direct ownership, in a number of years, so I welcome the proposed addition of 500 MW of new wind to the IPL portfolio (as well as the new Turtle Creek PPA). Given the limited window available for benefiting from the full value of the federal PTC, it is especially important for IPL to move forward with this project now. The New Wind Project provides substantial economic and environmental benefits to IPL's customers and to the state of Iowa as a whole, including compliance with the Clean Power Plan, use of the federal PTC at its full value, reduced use of imported coal and other non-renewable fuels, job creation and economic development, and the addition of a low cost generating resource. I support the New Wind Project and hope to see additional renewable energy proposals from IPL and other utilities in Iowa in the near future.

Q. Does this conclude your testimony?

A. Yes.

AFFIDAVIT OF
NATHANIEL BAER

STATE OF IOWA)
) ss.
COUNTY OF BLACKHAWK)

I, Nathaniel Baer, being first duly sworn, depose and state that the statements contained in the foregoing prepared direct testimony are true and correct to the best of my knowledge, information and belief, and that such prepared direct testimony constitutes my own statement in this proceeding.

Further affiant sayeth not.

/s/ Nathaniel Baer

Nathaniel Baer

Subscribed and sworn to before me,
a Notary Public in and for said County and
State, this 16 day of September, 2016.

/s/ Barb Garbes

Notary Public