

STATE OF IOWA
BEFORE THE IOWA UTILITIES BOARD

IN RE:)
)
) DOCKET NO. RPU-2017-0002
INTERSTATE POWER AND LIGHT)
NEW WIND II PROPOSAL)
)
)

PUBLIC DIRECT TESTIMONY
OF
NATHANIEL BAER

On Behalf of

Environmental Law & Policy Center
Iowa Environmental Council

September 29, 2017

1 **Q. What is your name and business address?**

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

5
6 **Q. On whose behalf are you testifying today?**

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

9
10 **Q. Please describe your background.**

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

1 working group for the Iowa Energy Plan, and I am on the board of directors for the
2 regional non-profit organization Wind on the Wires. I have participated regularly in the
3 Iowa energy efficiency stakeholder collaborative convened by the Office of Consumer
4 Advocate since 2009 and the Midcontinent Power Sector Collaborative since September
5 2014.

6
7 **Q. Have you testified with the Iowa Utilities Board before?**

8 A. Yes. I provided testimony in MidAmerican Energy's general rate case, RPU-2013-0004,
9 in MidAmerican's last two requests for wind energy ratemaking principles in Wind X,
10 RPU-2015-0002, and Wind XI, RPU-2016-0001, in Interstate Power & Light's last
11 application for wind energy ratemaking principles, RPU-2016-0005, and in the emissions
12 plan and budget dockets for MidAmerican and Alliant, EPB-2016-0156 and EPB-2016-
13 0150 respectively. In addition, I have drafted or assisted in drafting our organization's
14 comments and joint comments in various dockets before the IUB, including NOI-2006-
15 0004, NOI-2009-0002, NOI-2011-0002, NOI-2011-0003, NOI-2014-0001, NOI-2014-
16 0002, NOI-2015-0001, RMU-2014-0007, RMU-2016-0003, RMU-2016-0006, RMU-
17 2016-0018, RMU-2017-0002, TF-2012-0546, TF-2012-0574, TF-2014-0294, TF-2014-
18 0320, TF-2016-0290, TF-2016-0294, TF-2016-0321, TF-2016-0323, TF-2017-0294,
19 DRU-2017-0001, DRU-2017-0002, SPU-2017-0001, and AEP-2017-0060.

20
21 **Q. What is the purpose of your testimony?**

22 A. The purpose of my testimony is to support and expand upon aspects of the Interstate
23 Power and Light (IPL) proposal to construct 500 megawatts (MW) of new wind

1 generation in Iowa, referred to as the New Wind II Project. I propose changes to two of
2 IPL's proposed ratemaking principles, including a higher size cap and modifications to
3 the treatment of environmental attributes and renewable energy credits. Finally, I urge
4 IPL to move forward with a significant utility-scale solar project in the next twelve
5 months.

6
7 **Q. How does IPL's proposal to add 500 MW of wind fit into Iowa's renewable energy**
8 **future?**

9 A. Iowa has a very significant renewable energy resource potential that is well in excess of
10 current electricity use or generation. A recent NREL report identifies the technical and
11 economic potential for primary sources of renewable energy by state.¹ That report
12 includes a wind technical potential estimate for Iowa of 276 gigawatts (GW) of capacity
13 or 1,045,000 gigawatt-hours (GWh) of generation.² Compared to a technical resource
14 potential of 276 GW, IPL's proposal to add 500 MW (or .5 GW) of wind will use a small
15 fraction of this overall resource.

16
17 Several additional studies illustrate possible near-term installation rates for wind
18 generation in Iowa. In 2008, the U.S. Department of Energy released a comprehensive
19 study on achieving 20% of the U.S. electricity supply with wind energy by year 2030.³
20 To reach the 300,000 MW of wind needed to supply 20% of U.S. electricity, each state
21 would contribute a share of the total. Iowa's share in the study is 19,910 MW of wind by

¹ National Renewable Energy Laboratory, *Estimating Renewable Energy Economic Potential in the United States: Methodology and Initial Results* (2015).

² *Id.* at 82.

³ U.S. DOE, *20% Wind Energy by 2030* (2008).

1 2030.⁴ In 2015, the U.S. Department of Energy updated and expanded this study with its
2 *Wind Vision* study.⁵ The *Wind Vision* study includes several scenarios for wind capacity
3 development nationally and in each state in order to reach 20% wind by 2030 and 35%
4 wind by 2050 nationally. Iowa's share of the capacity needed to reach these national
5 goals is between 17,000 MW and 20,000 MW by 2030 and between 37,000 and 46,000
6 MW by 2050 in several main scenarios.⁶

7
8 Iowa ended 2016 with about 6,900 MW of installed wind capacity and significant wind
9 development and construction is underway. Last year the Board approved
10 MidAmerican's 2,000 MW Wind XI project as well as IPL's 500 MW New Wind I
11 project. IPL also executed a 200 MW PPA and several other smaller projects advanced in
12 Iowa, such as the 66 MW Madison Gas & Electric project in Howard County.⁷ These
13 projects should bring Iowa past 9,500 MW of installed wind capacity by 2020. IPL's
14 New Wind Project II should allow Iowa to reach the key benchmark for wind
15 development of 10,000 MW by or soon after 2020.

16
17 **Q. What costs and cost trends are driving renewable energy development?**

18 A. Wind continues to be a low cost source of electricity generation in the Midwest.
19 Renewable energy costs have dropped significantly in recent years, allowing renewable
20 energy to compete with other sources of generation on a cost basis.

⁴ U.S. DOE, 20% Wind, Appendix A Data Tables (2008).

⁵ U.S. DOE, *Wind Vision* (2015) at <http://energy.gov/eere/wind/wind-vision>.

⁶ U.S. DOE, *Wind Vision Study Scenario Viewer*, at http://en.openei.org/apps/wv_viewer/#.

⁷ <https://www.mge.com/environment/green-power/wind/saratoga.htm>.

1 The latest Lazard analysis from December 2016 on the levelized cost of energy (LCOE)
2 from different energy resources provides helpful cost information on renewable energy,
3 including wind and solar. The Lazard analysis also allows for a comparison of
4 renewables to a broader range of possible energy resources.⁸

5
6 The unsubsidized levelized cost of wind, such as without the federal PTC, ranges from
7 \$32/MWh to \$62/MWh. I would expect Iowa to be on the lower end of this levelized cost
8 range – closer to \$32/MWh – given Iowa’s wind resource, the price data for the Interior
9 region for wind from the Department of Energy,⁹ and the regional data in Lazard
10 showing the Midwest with the lowest LCOE for wind among all regions with a range of
11 \$32/MWh to \$51/MWh.

12
13 This low-end range for wind is well below the low-end ranges for other new generation
14 resources. For example, gas combined cycle is \$48/MWh to \$78/MWh and nuclear is
15 \$97/MWh to \$136/MWh. With federal subsidies included, the picture becomes even
16 more favorable for wind with a range of \$14/MWh to \$48/MWh.

17
18 The Lazard analysis also provides a summary of levelized cost declines in recent years
19 for both wind and solar. Between 2009 and 2016, the LCOE for wind dropped 66%, from
20 a low end LCOE of \$101/MWh in 2009 to the low-end cost discussed above, \$32/MWh
21 in 2016. Similarly, utility-scale solar has dropped 85% in the same time frame.

⁸ Lazard, *Lazard’s Levelized Cost of Energy Analysis – Version 10.0* (2016) at <https://www.lazard.com/perspective/levelized-cost-of-energy-analysis-100/>.

⁹ Department of Energy, *2016 Wind Technologies Market Report* (2017) at viii and 58. The Interior region, which includes Iowa, is the lowest cost region for wind in this report.

1 **Q. How are changes in wind turbine performance impacting cost?**

2 A. The levelized cost declines from wind are in part due to a trend of significantly improved
3 wind turbine performance. According to the latest comprehensive market report from the
4 Department of Energy, installed wind turbine prices on a per kW basis have dropped up
5 to 50% since 2008, while hub heights, rotor diameters, and average capacity factors have
6 increased.¹⁰ This results in higher energy output from turbines with declining installed
7 costs.

8
9 The DOE report highlights significant improvements in capacity factor in recent years:
10 “The average 2016 capacity factor among projects built in 2014 and 2015 was 42.5%,
11 compared to an average of 32.1% among projects built from 2004-2011 and just 25.4%
12 among projects built from 1998 to 2001.”¹¹ The DOE report notes that capacity factors
13 are highest in the Interior region, which includes Iowa, with average capacity factors in
14 this region in 2016 at 43.7% from turbines installed in 2014 and 2015.¹²

15
16 Increases in capacity factor are expected to continue in future years. The NREL Annual
17 Technology Baseline (ATB), which IPL uses for certain cost and performance parameters
18 for wind, includes future projections for net capacity factor from wind turbines installed
19 in a wide range of wind speeds, called techno-resource groups (TRGs). In the 2016 ATB,
20 there are 10 TRGs, each of which is divided into three subcategories of low, mid and high
21 (for a total of 30 different options). The TRG 5 “mid” option shows a capacity factor of

¹⁰ U.S. Department of Energy, *2016 Wind Technologies Market Report* (2017) at 48.

¹¹ *Id.* at vii. In addition, DOE states that capacity factors are reported as net and take into account losses from curtailment or other reductions in availability. See page 36.

¹² *Id.* at 45.

1 45% in 2014, which increases to 47% in 2023 and 48% in 2030. The higher-performing
2 TRG 3 “low” option shows a capacity factor of 48% in 2014, which increases to 53% in
3 2023 and 55% in 2030. Iowa has wind speeds to support both TRG 3 and TRG 5, as well
4 as other higher-performing TRGs, and these projected improvements to net capacity
5 factor should apply to a range of wind projects in Iowa.

6
7 **Q. How are economic impacts driving renewable energy?**

8 A. Witness Kopp highlights the valuable economic impacts from only a portion of the
9 proposed New Wind II project, including anticipated property tax revenue, land lease
10 payments, and job creation. I would like to expand upon these impacts by summarizing
11 the broader context for wind energy’s economic benefits in Iowa.

12
13 According to data from the American Wind Energy Association (AWEA), wind energy
14 was responsible for between 8,001 and 9,000 direct and indirect jobs in Iowa in 2016.¹³
15 This total jobs number includes a mix of jobs in construction, operations and
16 maintenance, manufacturing, and the wind energy supply chain. A recent report by the
17 Environmental Law & Policy Center identifies at least 75 companies engaged in the wind
18 industry supply chain in Iowa.¹⁴ The ELPC report includes a map showing that these
19 businesses are distributed across Iowa, meaning that communities throughout the state
20 benefit from job and business creation from wind energy in Iowa.

¹³ American Wind Energy Association, *Iowa Wind Energy* (2017), available at <http://awea.files.cms-plus.com/FileDownloads/pdfs/iowa.pdf>.

¹⁴ 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.

1 Finally, a recent report by Navigant Consulting, issued on behalf of AWEA, outlines the
2 significant anticipated near-term economic benefits for Iowa and other states and allows
3 for a comparison of Iowa to other states.¹⁵ Navigant projects the following economic
4 impacts from wind in Iowa by 2020:

- 5 • 11,500 direct and indirect jobs (up from 8,001 to 9,000 in 2016);
- 6 • Third-highest wind employment of all U.S. states;
- 7 • \$120M in total property tax paid in 2020 (most among all states);
- 8 • \$43M in annual land lease payments in 2020 (second-highest of all states); and
- 9 • Second-highest investment and economic impact among states during 2017-2020.

10
11 IPL's New Wind II Project is an important project to help Iowa achieve these economic
12 impacts, along with IPL's New Wind and Turtle Creek PPA, MidAmerican's Wind XI
13 project, and other projects in development.

14
15 **Q. How is the public and private sector driving more renewable energy?**

16 A. Private sector companies, cities, educational institutions and other entities have made a
17 variety of renewable energy, carbon reduction, and sustainability commitments in recent
18 years, with increasing numbers of companies involved and more ambitious commitments
19 made each year. While these commitments relate to a range of environmental metrics,
20 many are focused on increasing the use of renewable energy.

¹⁵ Navigant Consulting, *Jobs and Economic Impacts Resulting from U.S. Wind Projects 2017-2020* (2017) available at <https://www.navigant.com/insights/energy/2017/awea-wind-analysis>.

1 The EPA's Green Power Partnership provides a range of rankings and lists related to
2 these commitments with EPA providing a recent update in July 2017.¹⁶ Of Fortune 500
3 companies, for example, 81 have made specific commitments to achieve a percentage of
4 total electricity use with renewable energy, and many of these companies have made
5 100% renewable energy commitments. There are also 880 businesses, cities, colleges,
6 and other entities that have made 100% green power or renewable energy commitments.

7
8 Customers will be best positioned to meet ambitious renewable energy or carbon
9 emissions targets if the utilities serving them take actions to increase renewable energy in
10 the generation mix.

11
12 **Q. What is your response to IPL's fuel diversity given the New Wind II Project?**

13 A. The New Wind II Project provides important fuel diversity benefits given IPL's current
14 portfolio of generation. Compared to the state as a whole and Iowa's other investor-
15 owned utility, MidAmerican Energy, IPL currently has a proportionately low amount of
16 renewable energy on its system. IPL's 2016 generation mix derived less than 8% from
17 wind, including IPL-owned facilities and wind purchases. IPL Response to
18 Environmental Intervenors Data Request 12, Attachment B, filed as Exhibit EI-1. This is
19 well below the percentage of generation from wind as a whole in Iowa of over 36%.¹⁷
20 IPL's 500 MW New Wind Project approved last year, combined with the 200 MW Turtle
21 Creek PPA, will only allow IPL to approach about 20% of its generation mix from wind

¹⁶ EPA, *Green Power Partnership Top Partner Rankings* at <https://www.epa.gov/greenpower/green-power-partnership-top-partner-rankings>.

¹⁷ American Wind Energy Association, *Iowa Wind Energy* (2017) at <http://awea.files.cms-plus.com/FileDownloads/pdfs/iowa.pdf>.

1 by 2020. New Wind II allows IPL to approach 30% wind. This is important progress
2 towards higher amounts of renewable energy, but IPL can and should be doing more to
3 increase the percentage of its mix from zero fuel cost renewables (as I discuss in more
4 detail below).

5
6 By increasing renewables in its mix, IPL will be able to reduce its market purchases,
7 reduce its reliance on imported fossil fuels for its coal and gas generation, and provide a
8 hedge against fuel price increases or other cost increases for fossil generation in future
9 years. IPL generated about 45% of its electricity from its coal and gas units in 2016 and
10 purchased about 47% from the market and from nuclear (21% from nuclear, 26% from
11 the market with significant market purchases coming from the generation of other fossil
12 units). Exhibit EI-1. This means IPL and its customers are highly dependent on – and
13 subject to price fluctuations from – fossil fuel generation costs, market costs, and
14 purchased power costs. In addition, IPL reported in its most recent Annual Electric
15 Report that fuel costs to support its fossil steam generation totaled over \$133.6 million in
16 2016 and fuel costs to support its other power generation totaled over \$36.7 million in
17 2016.¹⁸ Wind has no fuel cost and is an important resource to continue to add given the
18 dominant role that fossil generation currently has in IPL’s portfolio.

¹⁸ Interstate Power and Light, *Annual Report: Rate Regulated Electric Utilities*, Form IE-1, Iowa Utilities Board Docket No. A-2016-0150.

1 **Q. Is there anything else to consider regarding the diversity impact of the New Wind II**
2 **Project?**

3 A. Yes. Several of the final sites for New Wind II and/or New Wind I will bring wind
4 development to counties in Iowa that have seen little or no wind development to date. IPL
5 Response to Large Energy Group Data Request 1, filed as Exhibit EI-2 (Confidential). In
6 addition to spreading local economic benefits – including property tax revenue, land lease
7 payments, and local jobs – this will improve the diversity of wind generation in Iowa.
8 Specifically, the English Farms project in Poweshiek County will push utility-scale wind
9 development further east and south in Iowa. There is no existing wind development in
10 Poweshiek County and little wind development to the east and south of Poweshiek
11 County (MidAmerican has announced a site for part of its Wind XI project south of
12 Poweshiek County in Mahaska County). In addition, at least part of the Upland Prairie
13 project is being developed in Clay County, which has an excellent wind resource and
14 very little existing wind development. Clay County also has important transmission
15 upgrades from the development of MISO Multi-Value Project (MVP) 3.

16

17 Several sites under consideration also could bring wind development to counties with
18 little development to date. The [REDACTED] wind project would be partially
19 built in [REDACTED] and the [REDACTED] wind project would be entirely based
20 in [REDACTED]. [REDACTED] has an excellent wind resource and significant new
21 transmission upgrades from [REDACTED]

1 Spreading wind development to new counties in Iowa and new regions in Iowa will help
2 IPL and the state as a whole use more wind generation. The intermittency or variability
3 of wind can be mitigated to some extent by spreading out the wind developments
4 geographically. IPL's interest in siting wind projects in counties and areas of the state
5 without existing wind development is another positive aspect of their proposal.

6

7 **Q. What has IPL proposed for the size cap for New Wind II?**

8 A. IPL has proposed a 500 MW size cap in ratemaking principle number five.

9

10 **Q. Do you have concerns with the size cap?**

11 A. Yes. I am concerned that the size cap is too low and IPL is proposing to restrict
12 unnecessarily the size of New Wind II. This would limit the benefits available to
13 customers and the state of Iowa as a whole from a greater amount of wind development.

14

15 **Q. Please elaborate.**

16 A. First, Iowa has significant wind potential remaining for development, as I indicated
17 earlier in my testimony. The wind development in Iowa to date, approximately 7,000
18 MW, is between 2% and 3% of Iowa's technical potential from recent DOE studies. In
19 addition, the majority of Iowa's 99 counties still have little or no utility-scale wind
20 development, including counties with significant wind resources. From this perspective,
21 there is room for significant additional wind development to support a higher size cap.

1 Second, IPL's EGEAS analysis shows that more than 500 MW of wind are selected in the
2 near future. IPL's New Wind II proposal is focused on the EGEAS selection of 500 MW
3 of wind in the single year of 2020. In addition to this, EGEAS selects another 200 MW in
4 2021 for a total of 700 MW in the 2020-2021 time frame in all three reference case or
5 base case runs (a001, b001, c001). (Direct Testimony of Brent Kitchen, Schedule D,
6 pages 1-3.) In addition, in 65 of the 78 sensitivities, EGEAS selects at least 700 MW of
7 wind. (Direct Testimony of Brent Kitchen, Schedule E, pages 3-5.) EGEAS selects more
8 than 700 MW of wind in many of these sensitivities as well, including amounts of
9 between 800 MW and 1500 MW of wind. The EGEAS base case and sensitivity results
10 support IPL's need for at least 700 MW of wind by 2021.

11
12 **Q. Are there any other considerations regarding IPL's EGEAS analysis or projected**
13 **need for wind?**

14 A. Yes. I would note that IPL is using somewhat conservative assumptions for the cost and
15 performance of wind in the EGEAS analysis in this docket.

16
17 First, IPL assumes a static capacity factor of 44% for wind, regardless of the year. Wind
18 capacity factors are expected to increase gradually in future years from improvements in
19 technology, as I noted previously in my testimony. By holding capacity factor steady at
20 44%, IPL is likely understating the energy output from wind in future years.

21
22 Second, IPL selected midpoint cost assumptions for wind from the 2016 NREL Annual
23 Technology Baseline. As I discussed earlier in my testimony, the NREL Annual

1 Technology Baseline provides 10 separate TRGs for land-based wind and each has 3
2 separate subcategories of low, mid and high. TRG 1 would be the best performing TRG,
3 and TRG 10 would be the lowest performing TRG. In addition to the projections and
4 capacity factors that I discussed previously, the NREL ATB has cost projections for
5 future years. IPL used TRG 5 and the “mid” subcategory. Iowa’s wind resource supports
6 higher TRGs, including TRGs 1-4, which generally have lower CAPEX costs for the
7 “mid” option than TRG 5. For all TRGs, the “low” option also has lower costs and
8 greater cost declines in future years. The selection of TRG 5 and the “mid” option as the
9 starting point to inform EGEAS modeling is relatively conservative.

10
11 Third, IPL completed the EGEAS analysis in late June, about two months before NREL
12 released its annual update to the Annual Technology Baseline. IPL Response to NextEra
13 Data Request 22, filed as Exhibit EI-3. The 2017 ATB generally shows lower wind costs
14 in future years compared to the 2016 ATB.¹⁹ For example, TRG 5 “mid” in the 2017
15 ATB shows a CAPEX of \$1462/kW in 2025 (in 2015 dollars), while TRG 5 “mid” in the
16 2016 ATB shows a CAPEX of \$1644/kW in 2025 (in 2014 dollars).²⁰ It is possible that
17 EGEAS would select higher levels of wind in future years with a downward adjustment
18 in wind costs using the 2017 NREL ATB.

¹⁹ NREL, *Annual Technology Baseline 2017*, available at <https://atb.nrel.gov/electricity/data.html>.

²⁰ NREL made adjustments to its TRGs for land-based wind between 2016 and 2017, so comparisons for TRG 5 in the 2016 ATB could be appropriate for both TRG 4 and TRG 5 in the 2017 ATB. TRG 4 “mid” in the 2017 ATB shows similar but even greater cost declines as TRG 5 “mid.”

1 I note that IPL did conduct several sensitivities with lower wind costs, and these resulted
2 in EGEAS selecting more wind - between 900 MW and 1500 MW of wind. This
3 indicates the kind of impact lower costs can have on the selection of wind in EGEAS.

4
5 **Q. What do you recommend regarding the size cap?**

6 A. IPL should increase the size cap to at least 700 MW. This would capture the near-term
7 wind selections in EGEAS in the three base or reference cases and 65 of 78 sensitivities.
8 Because all three EGEAS base cases select 700 MW of wind by 2021 and most
9 sensitivities select at least 700 MW of wind, IPL should increase the size cap now rather
10 than come back for another advanced ratemaking principle docket in the next year or two
11 for the remainder of the wind selected. In addition, IPL should also attempt to secure
12 100% of the PTC for as much wind as possible, and its chances of doing so are much
13 better now than in future years.

14
15 **Q. Will IPL be able to meet a higher size cap?**

16 A. IPL appears to be well positioned to do so. IPL has identified █ wind projects totaling
17 █ MW to fulfill both New Wind I (approved at 500 MW) and New Wind II
18 (proposed at 500 MW). Exhibit EI-2 (Confidential). IPL has a number of options on
19 individual wind projects and sites to get to a total of 1,200 MW with a higher size cap for
20 the combined capacity of New Wind I and New Wind II, rather than 1,000 MW as the
21 combined size cap. █

22 █
23 █ IPL Response to OCA Data Request 2, Confidential Attachment A at

1 page 12, filed as Exhibit EI-4 (Confidential). IPL has indicated it plans to obtain another
2 type of GE turbine for the balance of the fleet if more turbines are needed beyond the
3 initial GE turbine it plans to use, and that it will continue to evaluate improved models of
4 GE turbines. IPL Response to EI Data Request 11 and IPL Response to OCA Data
5 Request 17, filed as Exhibits EI-5 and EI-6 (Confidential).

6
7 Finally, if for some reason IPL is unable to meet a larger size cap in conjunction with the
8 other ratemaking principles, IPL does not have to build to the full amount of the cap. It
9 would be better to provide the flexibility of a higher size cap at the outset in this docket
10 than to approve a lower size cap and have IPL come back for another advanced
11 ratemaking principles docket for the additional wind.

12
13 **Q. What has IPL proposed for treatment of environmental attributes and renewable**
14 **energy credits?**

15 A. In ratemaking principle eight, IPL has proposed to provide customers with the full value
16 of renewable energy credits, carbon credits, and emissions allowances (beyond those
17 needed for IPL's compliance purposes) and to maximize the value of environmental
18 attributes using commercially reasonable efforts.

19
20 **Q. Do you have concerns with this ratemaking principle proposal?**

21 A. Yes.

1 **Q. What do you recommend?**

2 A. I support an alternative approach where renewable energy credits (RECs) are retired on
3 an annual basis on behalf of customers.

4
5 The Board has undertaken a rulemaking this year to establish the Iowa Renewable
6 Energy Verification Program, which will allow a utility to request verification of the
7 percentage of retail load met by renewables each year. While the rulemaking is not
8 complete, a number of parties to the rulemaking docket support retiring RECs on an
9 annual basis. The latest draft of the rule issued by the Board for comment also provides
10 for the annual retirement of RECs. MidAmerican Energy has adopted this approach to the
11 treatment of renewable energy credits as well.

12
13 Retiring RECs on an annual basis allows customers to make credible claims regarding the
14 percentage of energy supplied by renewable energy. As I discussed earlier in my
15 testimony, a large and increasing number of corporations, cities, colleges and
16 universities, and other types of customers are adopting sustainability, carbon reduction,
17 and/or renewable energy commitments or targets. Tracking, achieving, and appropriately
18 communicating about the progress towards these targets is important. When RECs are
19 retired on behalf of customers, those customers retain the benefits of the renewable
20 energy attributes and the associated claims. Ensuring that the RECs are retired annually
21 addresses potential uncertainty and double-counting issues. Given these considerations, I
22 support modifying the ratemaking principle so that RECs and environmental attributes
23 are retired annually on behalf of customers.

1 **Q. Do you have any other concerns with IPL’s proposal?**

2 A. Yes. While I applaud and support IPL’s proposal to add more wind generation to its
3 portfolio, I am concerned that IPL has not proposed solar resource additions despite the
4 EGEAS selection of significant solar resources in future years.

5
6 IPL’s EGEAS analysis indicates that solar is selected in 50 MW increments in a number
7 of years in the planning horizon. In the three base or reference cases, EGEAS selects 400
8 MW in two cases and 700 MW in one case during the planning horizon. (Direct
9 Testimony of Brent Kitchen, Schedule D, pages 1-3.) In all three of these cases, EGEAS
10 selects 100 MW of solar in the 2022-2023 time frame. Of the 78 sensitivities, EGEAS
11 selects at least 400 MW of solar in 73, including most sensitivities with higher projected
12 solar costs. EGEAS selects significantly more solar than 400 MW in many of the
13 sensitivities. (Direct Testimony of Brent Kitchen, Schedule E, pages 3-5.)

14
15 Like wind, IPL is using mid-point cost estimates for solar and, like wind, IPL used the
16 NREL 2016 ATB for its future cost assumptions for solar rather than the more recent
17 NREL 2017 ATB. The 2017 ATB forecasts lower solar costs in future years more than
18 the 2016 ATB. For example, the 2016 ATB “mid” CAPEX solar cost in 2025 is \$1,104
19 (in 2014 dollars) while the 2017 ATB “mid” CAPEX solar cost in 2025 is \$984 (in 2015
20 dollars).²¹ With these updated and lower solar costs, EGEAS may select even more solar
21 in the planning horizon, including in the near-term, than what EGEAS selected with the
22 2016 ATB inputs.

²¹ NREL, *Annual Technology Baseline 2017*; NREL, *Annual Technology Baseline 2016*.

1 Conversely, if solar costs increase more than anticipated, EGEAS still selects significant
2 amounts of solar. In the six sensitivities IPL included with higher solar costs, EGEAS
3 selected a low of 350 MW, a high of 700 MW, and 400 MW in the remaining four
4 sensitivities. (Direct Testimony of Brent Kitchen, Schedule E, pages 3-5.)

5
6 However, IPL has not begun to prepare adequately for the acquisition and deployment of
7 solar at this scale. IPL indicated that it has not taken specific steps to investigate the
8 addition of 100 MW of solar and, for example, has not issued an RFP, evaluated the
9 timing of obtaining the full 30% federal ITC, or explored potential sites suitable for a 100
10 MW solar project. IPL Response to Environmental Intervenors Data Request 13, filed as
11 Exhibit EI-7.

12
13 Although smaller utility-scale projects are now being developed in Iowa, including IPL's
14 Dubuque solar sites and projects by consumer-owned utilities like CIPCO, Farmers
15 Electric Cooperative, and Cedar Falls Utilities, no Iowa utility has constructed a solar
16 project at the scale of 100 MW.²² It would be reasonable to anticipate the first project in
17 Iowa of this scale to take additional time to complete from initial planning, regulatory
18 approval at the state and local level, and final construction. To ensure that the project is
19 operational by 2022 and is able to obtain the full 30% federal ITC, IPL should begin the
20 process now, including a proposal for ratemaking principles in this docket or in a separate
21 docket in the next twelve months.

²² Several solar PV projects of this scale are in the MISO Interconnection Queue, including a 50 MW active project in Linn County, a 100 MW active project in Webster County, and a 250 MW active project in Palo Alto County. MISO Queue Projects Complete List available at <https://www.misoenergy.org/Planning/GeneratorInterconnection/Pages/InterconnectionQueue.aspx>.

1 **Q. What do you recommend regarding IPL's New Wind II Project proposal?**

2 A. I support the timely approval and construction of the New Wind II Project. Iowa has
3 benefitted significantly from renewable energy development with a wide range of
4 economic and environmental benefits shared by Iowans across the state. Given the low
5 cost of wind energy, improved performance, and benefits from the federal PTC, New
6 Wind II is a positive and important step forward for Alliant and the state of Iowa.

7

8 In addition, I recommend two changes to ratemaking principles: 1) Increase the size cap
9 to at least 700 MW of wind; 2) Modify the treatment of environmental attributes so that
10 they are retired annually on behalf of customers.

11

12 Finally, I encourage the Board to require IPL to propose a sizeable solar PV project
13 commensurate with the results of the EGEAS analysis filed in this docket – at least 100
14 MW – within the next twelve months.

15

16 **Q. Does this conclude your testimony?**

17 A. Yes.

AFFIDAVIT OF
NATHANIEL BAER

STATE OF IOWA)
) ss.
COUNTY OF BLACKHAWK)

I, Nathaniel Baer, being first duly sworn on oath, state that I am the same Nathaniel Baer identified in the testimony being filed with this affidavit, that I have caused the testimony to be prepared and am familiar with its contents, and that the testimony is true and correct to the best of my knowledge and belief as of the date of this affidavit.

/s/ Nathaniel Baer

Nathaniel Baer

Subscribed and sworn to me the
29th day of September 2017.

/s/ Kim Heilskov

Notary Public in and for the State of Iowa