

STATE OF IOWA
BEFORE THE IOWA UTILITIES BOARD

IN RE:)
) DOCKET NO. RPU-2018-0003
)
MIDAMERICAN ENERGY COMPANY)
WIND XII PROPOSAL)
)
) DIRECT TESTIMONY
)

DIRECT TESTIMONY
OF
KERRI JOHANSEN

On Behalf of

Environmental Law & Policy Center
Iowa Environmental Council

August 3, 2018

1 **I. INTRODUCTION**

2 **Q. Please state your name, business name and address, and role in this proceeding.**

3 A. My name is Kerri R. Johannsen. I am the Energy Program Director with the Iowa
4 Environmental Council, located at 505 Fifth Ave, Suite 850, in Des Moines, Iowa. I
5 appear here in my capacity as a witness on behalf of the Environmental Law and Policy
6 Center and the Iowa Environmental Council (collectively “Environmental Intervenors”).

7
8 **Q. Please describe your background.**

9 A. I have a Bachelor of Arts degree from Gustavus Adolphus College in St. Peter,
10 Minnesota and a Masters in Public Policy in Science, Technology, and Environmental
11 Policy from the Hubert Humphrey Institute of Public Affairs at the University of
12 Minnesota in Minneapolis, Minnesota. I have been working in the energy policy arena
13 since 2007. I have worked for the Iowa Environmental Council (IEC) since 2016. The
14 Iowa Environmental Council is a 501(c)(3) non-profit, member-based corporation that
15 works to advance public policies that provide a safe, healthy environment and sustainable
16 future for all Iowans. In my capacity at IEC, I have worked primarily on renewable
17 energy and energy efficiency cases before the Iowa Utilities Board (“Board”) and
18 renewable energy and energy efficiency legislation at the Iowa Legislature.

19
20 Between 2007 and 2008 I worked to develop the Energy Title of the 2008 Farm Bill as
21 part of the U.S. Senate Agriculture Committee Staff. From 2008-2010, I was employed
22 by the Iowa Office of Energy Independence first as an emergency management specialist
23 and data analyst and later as administrator of the Iowa Power Fund, evaluating cutting-
24 edge energy projects for state funding. Between 2010 and 2016, I worked as legislative

1 liaison and policy specialist with the Iowa Utilities Board. My work included leadership
2 of the Environmental Plan and Budget dockets, serving as Co-Chair of the Board's
3 environmental team during development and implementation of the Clean Power Plan,
4 and managing all state legislative activities for the Board. I also served as the Board's
5 representative and lead staff during emergencies and natural disasters impacting utility
6 service and infrastructure and recovery from such disasters.

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

9 A. Yes. I provided testimony regarding Interstate Power and Light's Beyond Solar program
10 proposal in Docket Nos. AEP-2017-0060, TF-2017-0289, and RN-2017-0002. In
11 addition, I have drafted or assisted in drafting our organization's comments and joint
12 comments in various dockets before the IUB, including TF-2016-0290, TF-2016-0294,
13 RMU-2016-0019, DRU-2017-0001, and DRU-2017-0002.

14
15 **Q. What is the purpose of your testimony?**

16 A. The purpose of my testimony is to support establishing a longer-term, comprehensive
17 clean energy generation strategy for MidAmerican Energy Company that will maximize
18 and optimize the benefits from both existing and additional renewable energy. In 2016,
19 after years of national leadership in wind development, investing millions of dollars and
20 helping to attract thousands of jobs in the wind industry to Iowa, MidAmerican
21 announced a 100% renewable energy vision for its customers. MidAmerican has
22 announced that Wind XII is the final piece of that vision.

1 However, MidAmerican still operates a significant coal fleet in the state. That has not
2 changed since the 2016 announcement. While other utilities are announcing innovative
3 generation portfolios that rely on a mix of renewables, demand-side resources, and
4 storage to retire risky coal plants and avoid new fossil generation, MidAmerican's current
5 trajectory is toward a static system dominated by wind and coal. This approach exposes
6 its customers to unnecessary fossil fuel risks and creates an inflexible system that does
7 not maximize the benefits from renewable energy. Limiting their renewable energy vision
8 and stalling out after 2020 with so much coal still on the system will also result in
9 MidAmerican and the State of Iowa being less competitive with other, more innovative
10 utilities and states in attracting businesses with clean energy goals and retaining clean
11 energy jobs over the next decades.

12
13 MidAmerican customers have been promised a 100% renewable vision and that is what
14 they expect. It is critical for MidAmerican to adopt a comprehensive, clean energy vision
15 that will protect ratepayers and keep Iowa competitive.

16
17 I outline several steps that MidAmerican should take to ensure it achieves a true one
18 hundred percent clean energy system that is flexible, affordable, and reliable. These
19 include commitments to retire coal capacity, increased investment in solar energy,
20 increased investment in demand-side resources, and undertaking a regular analysis and
21 report to the Board regarding the cost-effectiveness of the continued operation of its coal
22 fleet in Iowa compared to alternatives.

1 Many of the benefits MidAmerican claims for Wind XII are unlikely to occur unless
2 coupled with retirement of coal capacity. In addition, MidAmerican's current capacity
3 position presents a unique opportunity to phase out coal in a way that benefits both its
4 customers and its bottom line. Given this opportunity, I propose two ratemaking
5 principles that will ensure realization of the benefits of clean energy deployment.
6

7 **Q: Are you proposing any additional ratemaking proposals in this testimony?**

8 A: Yes. I am proposing two additional ratemaking principles.

9 1) Before MidAmerican is allowed to include any generation asset approved in this
10 docket in rate base, MidAmerican must retire an equivalent amount of coal capacity
11 and remove it from rate base.

12 2) Every-other year, MidAmerican must undertake and submit to the Board an analysis
13 of the costs-effectiveness and risks to customers of continuing to operate its coal
14 generators compared to replacing this capacity with renewables, storage, demand-side
15 management, and other clean resources.
16

17 **Q: Are there examples of other utilities that have undertaken a strategy of replacing
18 coal with clean resources?**

19 A: Where other utilities have undertaken analyses for the purposes of integrated resource
20 plans (IRP), many are finding it is simply less expensive to retire coal early and utilize a
21 cleaner resource mix to meet demand.

1 Consumer's Energy in Michigan filed an integrated resource plan (IRP) in June of 2018
2 that laid out a path to retiring all of the company's coal assets, replacing the capacity with
3 550 MW of wind, 5,000 MW of solar, and significantly increasing energy efficiency and
4 demand response without adding any new fossil generation to their mix.¹

5
6 In 2017, Xcel Energy filed for approval with the Colorado Public Service Commission to
7 retire 660 MW of coal generation early, replacing the capacity with wind, solar, storage,
8 and gas. In their filing, Xcel acknowledged the economic hardships this could create for
9 the coal plant communities. In their replacement plan they have located one large solar
10 and storage facility in that region. Xcel also cited freeing up transmission capacity to
11 enable further renewable development as reasoning for taking this path. A Colorado
12 Executive Order specified that a change like this must be carried out with no increased
13 cost to consumers and, even with that restriction, Xcel is moving forward.²

14
15 Xcel went out for bid to meet its planned resource needs and received bids for solar and
16 wind plus storage that broke historical price records, including a median bid for solar plus
17 storage of \$0.036 per kWh and wind plus storage of \$0.021 cents per kWh. As a whole,

¹ Consumers Energy 2018 Integrated Resource Plan Summary, <https://www.consumersenergy.com/-/media/CE/Documents/sustainability/integrated-resource-plan-summary.ashx?la=en&hash=9F602E19FE385367FA25C66B6779532142CBD374>.

² Xcel Integrated Resource Plan filed with the Colorado Public Service Commission, Testimony of David Eves, <https://www.xcelenergy.com/staticfiles/xcel-responsive/Company/Rates%20&%20Regulations/Resource%20Plans/CO-Supporting-Testimony-David-Eves.pdf>.

1 even accounting for early retirement of the two coal units, Xcel's plan is slated to save
2 Colorado ratepayers a minimum of \$215 million.³

3
4 In 2018, NV Energy, a Berkshire Hathaway subsidiary, submitted an IRP that included
5 1 GW of a combination of new solar and storage as well as an increase in demand
6 response to achieve savings of 1.1% of sales. These investments are proposed to be
7 coupled with early retirement of their two remaining coal units in the state by the end of
8 2021 and 2025.⁴

9
10 In May of 2018 another Berkshire Hathaway subsidiary, PacifiCorp, which has service
11 territory across the West and Northwest United States, proposed an IRP that included a
12 1.1 GW investment in wind coupled with more than 1,400 MW of early coal retirements
13 and increased demand-side management.⁵

14
15 Clearly, this approach is possible as other large utilities – including other Berkshire-
16 owned utilities – are moving in this direction.

³ Xcel Energy 2017 All Source Solicitation 30-Day Report, December 28, 2017, page 8,
<https://www.documentcloud.org/documents/4340162-Xcel-Solicitation-Report.html>.

⁴ Narrative and Supply-Side Plan, Joint Application of Nevada Power Company d/b/a NV Energy and Sierra Pacific Power Company d/b/a NV Energy for approval of their 2019-2038 Triennial Integrated Resource Plan and 2019-2021 Energy Supply Plan, Nevada Public Service Commission Docket No. 18-06003,
http://pucweb1.state.nv.us/PDF/AxImages/DOCKETS_2015_THRU_PRESENT/2018-6/30452.pdf.

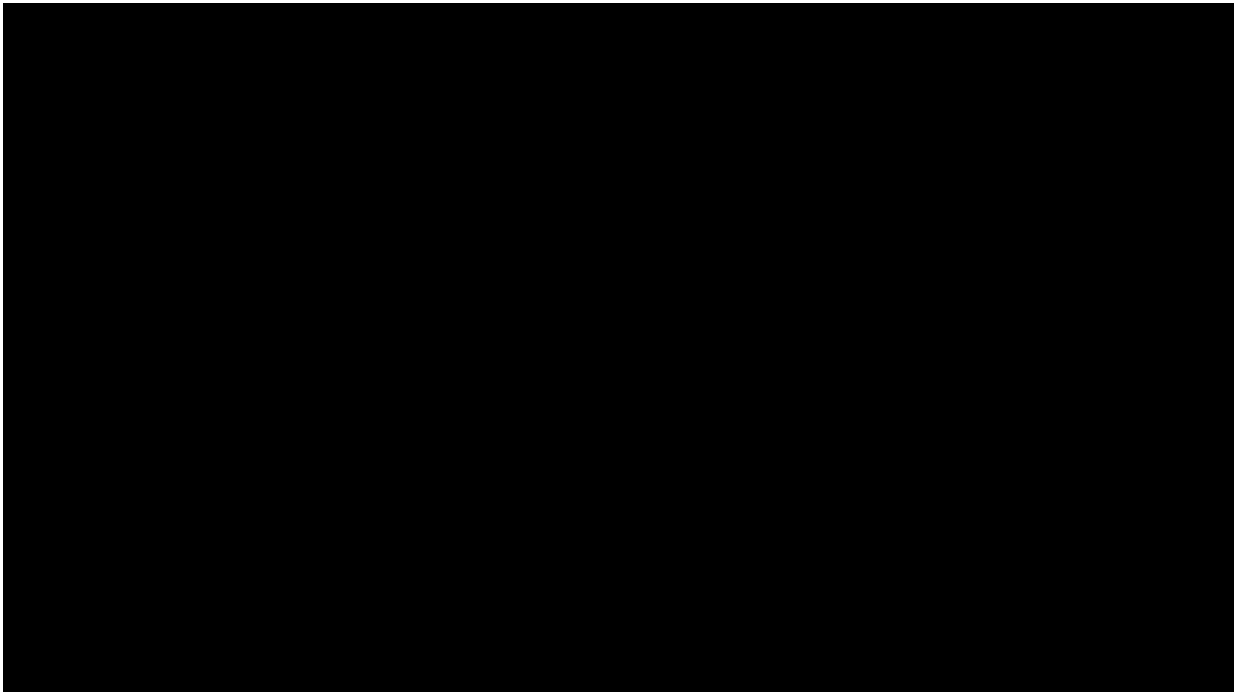
⁵ PacifiCorp 2017 Integrated Resource Plan,
https://www.pacifiCorp.com/content/dam/pacifiCorp/doc/Energy_Sources/Integrated_Resource_Plan/2017%20IRP%20Update/2017_IRP_Update.pdf.

1 **Q: Please explain why your first proposed ratemaking principle is necessary.**

2 A: The first principle – requiring MidAmerican to retire and remove from rate base coal
3 capacity equivalent to new capacity – is necessary to ensure MidAmerican and its
4 customers maximize the potential benefits of this project. MidAmerican Witness
5 Hammer lays out a nine-factor, qualitative analysis in support of Wind XII in his direct
6 testimony. I will go over that analysis in more detail later in my testimony but, in
7 general, many of the benefits that Witness Hammer identifies are based on the
8 assumption that generation from Wind XII will result in less generation from coal.

9
10 MidAmerican’s own analysis demonstrates that this will not necessarily be the case. In
11 fact, in the two of the three scenarios run in PROMOD for Wind XII [REDACTED]
12 [REDACTED]
13 [REDACTED], as illustrated in Table 1 below. Direct Testimony of Thomas B.
14 Specketer, Exhibits TBS-1 Schedules 1-3 PROMOD Confidential. In all three scenarios,
15 MidAmerican’s coal generation is [REDACTED]
16 [REDACTED]

Table 1 - CONFIDENTIAL



1
2

3 Scenario 1 is the reference case result and includes a carbon adder of [REDACTED] starting in
4 [REDACTED] and escalating after that. Scenario 2 removes the CO2 adder and Scenario 3
5 includes low gas prices and no CO2 adder. Direct Testimony of Neil D. Hammer at pages
6 53-54.

7

8 Wind XII is also projected to have little impact on MidAmerican's overall capacity mix,
9 shifting coal from a projected 26% of nameplate capacity in 2020 without Wind XII to
10 24% coal in 2020 with Wind XII. It will have no impact on reducing coal's percent of
11 creditable capacity in 2020 as that value will stay steady at 47% of MidAmerican's
12 overall creditable capacity. Hammer Direct at page 9.

1 This lack of impact on coal generation is the reason the first proposed ratemaking
2 principle is important. By requiring MidAmerican to retire and remove coal capacity
3 from rate base as it adds other capacity, the Board will increase the likelihood that
4 MidAmerican will indeed reduce coal-fired generation and capacity and achieve the
5 benefits it claims.

6
7 **Q: How does this ratemaking principle relate to Witness Hammer's nine-factor
8 analysis?**

9 **A:** In his analysis of the reasonableness of Wind XII, MidAmerican Witness Hammer used a
10 nine-factor analysis that considered cost, cost robustness, environmental reasonableness,
11 system reliability, economic development, geo-political uncertainty,
12 flexibility/optionality, diversity, and resource availability/stability. Hammer Direct at
13 page 22.

14
15 Many of Witness Hammer's claims about the reasonableness of Wind XII rely on
16 reduced coal generation. Without the first ratemaking principle I have proposed, the
17 following factors will not deliver the claimed benefits because MidAmerican's own
18 analysis, illustrated in Table 1 above, shows [REDACTED]

- 19 • **Cost-Robustness:** This factor measures whether energy costs will be stable over
20 time. Renewables and other carbon-free resources do not carry risks related to
21 fuel price or emissions, while fossil generators carry greater risks that costs will
22 increase over time due to resource prices or regulation. Adding new clean

1 capacity alone does not mitigate this risk, however, as customers continue to be
2 exposed to the risk from operating the remaining coal plants.

- 3 • **Environmental Reasonableness:** The environmental reasonableness of Wind XII
4 is based on wind's low environmental impact, including little or no impacts to air
5 and water and no toxic byproducts. However, simply adding more clean energy
6 capacity will not necessarily mitigate these impacts without taking coal off the
7 system. Witness Specketer's analysis shows that, in the scenarios with [REDACTED]

8 [REDACTED]
9 [REDACTED] Specketer Exhibits TBS-1 Schedules 1-4 PROMOD Confidential at
10 CO2 tab. The plants would also [REDACTED]

11 continue to threaten water resources. Adding cleaner capacity will not change that
12 without coupling that with an assurance that it will replace fossil generation.

- 13 • **Geo-Political Uncertainty:** This factor takes into account risks such as price or
14 regulatory volatility due to political events at home or overseas and events such as
15 terrorist attacks. Price and regulatory volatility risks are lower with renewables
16 and terrorist attacks on more distributed facilities less likely than on central
17 station generators. New clean capacity will not reduce vulnerability to attacks as
18 long as all large power plants are remaining operational. Customer exposure to
19 price and regulatory risk also remains the same without equivalent coal capacity
20 leaving the system. To address geo-political uncertainty, the best path is
21 implementation of a comprehensive clean energy strategy.

- 22 • **Flexibility/Optionality:** Witness Hammer defines this criterion as "the ability of
23 a particular technology to respond to changing conditions." He further states,

1 “Resources dependent on a single fuel have limited flexibility/optionality...”
2 Hammer Direct at page 33. Neither wind nor coal performs particularly well
3 under this factor. This speaks to the need to look at the balance of the generation
4 system as a whole rather than considering each generator on a stand-alone basis.
5 Flexibility/optionality would be best optimized through implementation of a
6 comprehensive clean energy transition strategy.

- 7 • **Diversity:** Witness Hammer claims that Wind XII is adding to the diversity of
8 MidAmerican’s resource mix “by further reducing dependence on coal-fired
9 generation.” Hammer Direct at page 34. This claim is not consistent with the
10 analysis provided by MidAmerican in this case regarding the impact of Wind XII
11 [REDACTED], as illustrated in Table 1 above, and capacity.

- 12 • **Resource availability/stability:** Wind solar, energy efficiency, and storage all
13 have zero fuel cost and are dispersed across a wide area, almost completely
14 eliminating the resource availability/stability risk. Coal carries both availability
15 and stability risk, and new capacity will not reduce those risks without removing
16 coal from the system.

17
18 MidAmerican is justifying the reasonableness of Wind XII using claims based on a
19 reduction in coal generation when, by MidAmerican’s own calculations, [REDACTED]
20 [REDACTED]. Without equivalent coal capacity retirements, there is no guarantee
21 these benefits will materialize.

1 **Q: Why is your second proposed ratemaking principle, requiring regular analysis of**
2 **MidAmerican's generating fleet, necessary?**

3 A: Although Wind XII is only one component of their overall generating fleet,
4 MidAmerican has characterized this project as the completion of its 100% renewable
5 vision. This is troubling as MidAmerican ratepayers continue to bear the costs and risk of
6 significant coal capacity. MidAmerican owns and operates 5 coal units in Iowa with
7 3,740 MW of nameplate capacity according to data provided in the Energy Information
8 Administration's summary of 2016 Form 860 filings. Excerpt of 2016 Form EIA-860
9 Data – Schedule 3, Generator Data attached as E.I. Johannsen Direct Exhibit 1.
10 MidAmerican is also a majority owner of the Ottumwa Generating Station, which is
11 operated by minority owner Interstate Power and Light (IPL) and has an additional 726
12 MW of nameplate capacity. Altogether, this is 4,466 MW of coal. *Id.*

13
14 Discovery requests by the Environmental Intervenors revealed that MidAmerican has not
15 done a thorough analysis of adding solar or storage to their generation mix. *See*
16 MidAmerican's Response to Environmental Intervenors Second Set of Data Requests,
17 DR 3 attached as E.I. Johannsen Direct Exhibit 2; DR 3 Confidential Attachment EI-3a
18 and 3c, attached as E.I. Johannsen Direct Exhibit 3. MidAmerican has also made the
19 decision to disinvest in energy efficiency. The result is an incomplete clean energy vision
20 that leads to a relatively inflexible future fleet dominated by coal and wind. Coal is not a
21 flexible resource and can follow load to some extent but cannot be ramped up and down
22 easily. It is not entirely incompatible with wind, but certainly not the best choice as a

1 compliment for a flexible, reliable system and should not be the only choice given the
2 risks it carries.

3 Other utilities around the U.S. are investing in comprehensive clean energy transition
4 plans that rely upon a mix of renewables, demand-side resources including storage to
5 move away from coal and avoid building new fossil generation. These resources are
6 complementary and can be built to optimize their value to the grid, making them more
7 easily dispatchable. Their full integration is the future of electricity generation in the
8 United States. MidAmerican has been a leader in deployment of renewables and their
9 investments have attracted large energy users like Google, Microsoft, Facebook, and
10 Apple to the state. However, with its disinvestment in efficiency and its current
11 renewable energy vision stalling out in 2020 with thousands of megawatts of coal still on
12 the system for the foreseeable future, it will not take long for MidAmerican to fall behind
13 its competitors in other states that are implementing true comprehensive clean energy
14 transitions. This will make Iowa less economically attractive and competitive to
15 companies with clean energy objectives.

16
17 MidAmerican's chosen trajectory places its customers and Iowa's economy at risk. It is
18 important that MidAmerican and the Board recognize the risks inherent in this strategy
19 and regularly analyze the costs of and alternatives to continued operation of its coal fleet
20 in Iowa.

21
22 **Q: Will coal plant retirements cause capacity issues?**

1 A: MidAmerican is in an extraordinary position, projecting a 25.4% capacity reserve margin
2 in the 2020-2021 Planning Year while projecting a MISO planning reserve requirement
3 of only 7.8%. This surplus is projected to shrink over time with projected load growth,
4 but excess capacity is projected to continue up through the 2032-33 Planning Year when
5 the Quad Cities Nuclear Station is retired. This extended time horizon and large capacity
6 reserve presents MidAmerican with the opportunity to begin a transition to an energy
7 portfolio that truly provides 100% clean energy that is a good value to MidAmerican
8 customers, similar to what other utilities across the country are doing. MidAmerican and
9 the Board should not squander this opportunity to put in place a long-term strategy to
10 eliminate customer risks related to environmental regulation and fuel costs over time by
11 replacing coal with additional wind, solar, energy efficiency, demand response, and other
12 diverse resources to create a flexible, complementary system. A failure by MidAmerican
13 to implement a comprehensive, long-term, clean energy vision would expose their
14 customers to a comparatively much larger risk over time. There is no reason Iowa
15 customers should continue to hold the unnecessary risk in the current low-cost clean
16 energy climate while MidAmerican has excess capacity and time to plan. While
17 additional wind energy is part of a comprehensive solution, it should be approved within
18 that context and a requirement that MidAmerican initiate the planning necessary for a
19 comprehensive, long-term, clean energy vision.

20
21 **Q: Does the Board have the ability to approve the proposed ratemaking principles?**

22 A: Iowa Code Section 476.53 provides the Board with flexibility in adopting ratemaking
23 principles. Iowa Code Section 476.53(3)(b) states that “In determining the applicable

1 ratemaking principles, the Board shall not be limited to traditional ratemaking
2 principles.” In addition, the legislative intent in providing for advance ratemaking
3 includes “to facilitate the transition to a carbon constrained environment.” The Board
4 should use this opportunity to require MidAmerican to conduct long-term, innovative,
5 and forward-looking planning consistent with this legislative intent.

6
7 **Q: Iowa Code requires that a generation option be reasonable compared to other**
8 **feasible alternatives. Do you believe MidAmerican has adequately considered all**
9 **feasible alternatives?**

10 A: No. MidAmerican should consider energy efficiency and demand response as potential
11 resources in its comparison.

12
13 **Q: How are energy efficiency and demand response included in MidAmerican’s**
14 **modeling and projections?**

15 A: MidAmerican states that:

16 In the energy forecasting models, there are no explicit variables of energy
17 efficiency savings. Energy efficiency savings are implicit in the historical
18 data. This results in energy efficiency savings continuing at its historical
19 rate in the forecast period.

20
21 The impacts of energy efficiency programs on peak demand are included
22 in the peak demand forecast through a variable representing cumulative
23 MW energy efficiency savings in the peak demand forecast model. This
24 variable contains the energy efficiency savings that include savings from
25 MidAmerican programs plus estimated future savings from state and
26 federal standards. The savings are accumulated into this one variable
27 referred to as “conservation MWs”...

28
29 *See E.I. Johannsen Direct Exhibit 2 at DR 5c. This methodology is not consistent with*
30 *the 2019-2023 energy efficiency and demand response plan MidAmerican has filed in*

1 EEP-2018-0002, which cuts projected demand response savings by 12% and electric
2 efficiency savings by 44% compared to their previous 5-year plan. The result is that
3 MidAmerican is likely underestimating its future energy and capacity needs, and there
4 will be a gap between its projections and reality. MidAmerican will have to procure
5 energy and capacity to fill this gap in the future. MidAmerican should compare these
6 same resources – efficiency and demand response – as options to fill the gap.

7
8 **Q: How do energy efficiency and demand response compare as resources?**

9 A: Energy efficiency and demand response compare favorably to wind as a resource. They
10 can be low-cost, long-term supply options with zero fuel cost risk while providing for
11 increased diversity of resources, supporting community and economic development, and
12 helping mitigate environmental compliance risk. Investments in efficiency and demand
13 response at this point would fit very well into a long-term capacity plan for MidAmerican
14 to move to 100% renewable energy. As discussed above, other utilities that are moving
15 toward a clean energy system are increasing, not decreasing, investments in demand-side
16 management.

17
18 The enactment of SF 2311 limits the ability of the Board to require significant energy
19 efficiency investments under the traditional program funding method. However, the
20 findings in the Assessment of Potential submitted by MidAmerican in Docket No. EEP-
21 2018-0002 remain legitimate. Demand response, if done correctly, can be an important,
22 flexible and dispatchable resource to balance a renewable energy mix. The new plans
23 filed by MidAmerican in the energy efficiency docket on July 9, 2018, propose demand

1 response programs projected to save 312.8 MW of demand in 2019 ramping up to 326.2
2 MW in 2023. The Assessment of Potential found that even in the most conservative
3 scenario, MidAmerican has the potential to reduce demand by 919 MW. Assessment of
4 Iowa's Energy Efficiency Potential, Volume 2 at p.105 attached as E.I. Johannsen Direct
5 Exhibit 4. The testimony of MidAmerican Witness Hammer shows that MidAmerican is
6 depending upon only 302 MW of capacity from interruptible customers. Hammer Direct
7 at page 15. That means there are nearly 600 MW of demand response capacity potentially
8 economically available for MidAmerican to utilize to retain reliability in a full transition
9 away from coal to a cleaner and more flexible system.

10
11 The Assessment of Potential also projected that programs that save energy, as opposed to
12 those specific to reducing demand, will grow to actually have a larger impact on demand
13 reduction at the end of the ten-year period than the demand-specific programs.

14 Assessment of Iowa's Energy Efficiency Potential, Volume 1 at p. 100 attached as E.I.
15 Johannsen Direct Exhibit 4. In terms of energy savings, the study projects achievable
16 electric savings, the most conservative of the types of potential it projects, of 2,993
17 GWhs over the 10-year study period or roughly 299.3 GWhs per year. E.I. Johannsen
18 Direct Exhibit 4, Assessment of Potential, Vol. 2 at p. 101. MidAmerican's proposed
19 efficiency plan is projected to save 164.4 GWh in 2019 ramping up to 198.0 GWh in
20 2023. MidAmerican Application for Approval of Energy Efficiency Plan in Docket No.
21 EEP-2018-0002, Exhibit 1 at page 9, attached as E.I. Johannsen Direct Exhibit 5. At the
22 beginning of the plan, MidAmerican is capturing only 54.9% of the achievable potential
23 and at the end around 66%. This gap in investment in energy efficiency resources will

1 result in increased electricity demand over time. Investing in energy efficiency as a
2 resource can ensure access to lower-cost, flexible energy resources to make up this
3 difference.

4 The levelized cost of energy efficiency is very competitive for customers at just \$0.026
5 per kWh.⁶ The National Renewable Energy Lab’s 2018 Annual Technology Baseline
6 analysis found a range of \$0.033 to \$0.045 per kWh for wind generation.⁷ There is a clear
7 price difference. In addition, energy efficiency provides the benefit, as discussed above,
8 of increasing the diversity of MidAmerican’s energy mix into the future and is a critical
9 building block for a reasonably priced and truly 100% renewable vision.

10
11 **Q: What has changed to justify consideration of efficiency and demand response as**
12 **resources?**

13 A: Iowa Code Section 476.53(c)(1) requires that as part of a ratemaking proceeding, the
14 Board must make a finding that the company as an approved efficiency plan in place.
15 Iowa Code Section 476.53(c)(2) requires a demonstration that the utility “has considered
16 other sources for long-term electric supply and that the facility or lease is reasonable
17 when compared to other feasible alternative sources of supply.” Evaluating efficiency
18 programs in proceedings that allowed for maximizing the resource met this objective, and
19 therefore, simply relying on the pre-requisite in 476.53(c)(1) was appropriate to meet the
20 requirements of (c)(2). However, the passage of SF 2311 and imposition of arbitrary caps

⁶ Ackerman, Frank, et al, Synapse Energy Consulting, *Estimating the Cost of Saved Energy*, December 2016, <http://www.synapse-energy.com/sites/default/files/COSE-EIA-861-Database-66-017.pdf>.

⁷ <https://www.nrel.gov/news/press/2017/nrel-updates-baseline-cost-and-performance-data-for-electricity-generation-technologies.html>.

1 on efficiency and demand response investments have limited investment in cost-effective
2 resources. To meet the requirements of the advanced ratemaking principles statute,
3 utilities must now compare energy efficiency with other generation resources directly
4 within an advance ratemaking docket.

5
6 **Q: Is there evidence that this generation investment should be solar rather than wind?**

7 A: Yes. MidAmerican should consider solar for this project instead of wind and, at the very
8 least, begin detailed and serious analysis and consideration of solar investments in Iowa
9 in the very near future.

10
11 **Q: How does solar fit into a long-term plan for a 100% renewable resource mix?**

12 A: As stated earlier, MidAmerican has a number of years to plan for a transition to 100%
13 clean energy. Solar can and should be an integral part of that plan for several reasons.

14
15 First, MISO provides a much larger capacity credit for solar than for wind. As
16 MidAmerican Witness Hammer notes, wind currently receives approximately a 15.5%
17 capacity accreditation from MISO. Hammer Direct at 7. MISO provides a 50% capacity
18 credit for solar, which is more than three times the capacity credit for wind.⁸ This
19 capacity credit accounts for solar availability during summer peak times, among other
20 factors. As Witness Hammer states, “Solar generation is more likely than wind to be

⁸ 2018 OMS MISO Survey Results, June 2018, slide 12,
<https://cdn.misoenergy.org/20180608%20OMS%20MISO%202018%20Executive%20Summary%20218787.pdf>.

1 available at amounts near its maximum capability during the summer on-peak period.”

2 Hammer Direct at 29.

3 By adding solar, MidAmerican can better address its future capacity obligations,
4 including those with MISO, while transitioning to 100 percent renewable energy. For
5 example, if MidAmerican added 1 GW of solar and received a 500 MW capacity
6 accreditation, it could retire 500 MW of accreditable capacity of coal (which is close to
7 nameplate capacity – see Hammer page 9). Conversely, 1 GW of wind would be about
8 155 MW of accreditable capacity.

9
10 Secondly, MidAmerican is a summer-peaking utility. It has higher sales of energy in
11 summer months and has system peaks, coincident peaks, and many class peaks on hours
12 during the day in summer months. Solar is well suited to providing energy and capacity
13 during these times of higher load. MidAmerican witness Hammer states, “Solar
14 generation is more likely than wind to be available at amounts near its maximum
15 capability during the summer on-peak period.” Hammer Direct at 29. Hammer also
16 states:

17 As was true in prior renewables ratemaking principle proceedings, wind
18 generation is more energy-focused, with a limited contribution to
19 meeting system peak capacity requirements. With its intermittency,
20 solar is similarly situated, but provides its energy during daytime on-
21 peak periods.

22
23 Hammer Direct at 37.

24
25 An analysis of MidAmerican’s load data demonstrates that solar would be a good fit with
26 its current load profile, in terms of both serving peak demand and providing capacity at

1 times when it is needed. Over the past five years, the top twenty MidAmerican loads
2 occurred during the months of June, July, August and September between the hours of 11
3 am and 7 pm. Many of the peaks were in the late afternoon hours between 2 pm and 5
4 pm. *See* MidAmerican Response to Environmental Intervenors Second Set of Data
5 Requests, DR 4 Confidential Attachment E-4, attached as E.I. Johannsen Direct Exhibit
6 6. Solar PV can generally be expected to generate energy during these times of high
7 load.

8
9 Additionally, MidAmerican's filing in EEP-2018-0002 lists monthly sales during 2017
10 and shows that the highest month for kWh sales is August. Four of the top five months
11 are June, July, August, and September (January is the other month in the top 5). Solar
12 would complement this seasonal pattern of sales and help meet high demand in the
13 months of June, July, August, and September. *See* EEP-2018-0002, Exhibit 12,
14 Additional Requirements for Electric Utilities (2 of 4) at Table 1, Sales Summary
15 attached as E.I. Johannsen Direct Exhibit 7.

16
17 MidAmerican's system coincident peaks during the months of May, June, July, August
18 and September occur between the hours of 2 pm and 5 pm. Again, these all occur during
19 times when solar PV would be producing energy. *See* EEP-2018-0002, Exhibit 12,
20 Additional Requirements for Electric Utilities (2 of 4) at Table 3 attached as E.I.
21 Johannsen Direct Exhibit 8.

22

1 A typical solar production curve does not show generation peaking in late afternoon, but
2 the siting and orientation of a solar PV system can maximize output during afternoon
3 hours to even better match up with these periods of high demand on the MidAmerican
4 system.

5 MidAmerican witness Hammer also states that

6 ...wind and solar resources, if dispatchable, are dispersed resources that
7 provide additional grid operational flexibility. In addition, with the low
8 variable costs of these resources, they remain flexible to possible coupling
9 with storage systems to augment their value by better managing the timing
10 of utilization of the energy produced and to better manage transmission
11 line capability.

12
13 Hammer Direct at page 33. This flexibility is something that is not inherent in
14 MidAmerican's current plan, but something for the company to work toward. Getting
15 serious about a solar proposal would be one way for MidAmerican to truly begin a move
16 toward a more flexible system.

17
18 **Q: Are there any other reasons why it is timely for MidAmerican to move forward with**
19 **a solar investment?**

20 A: Yes. The Federal Solar Investment Tax Credit is currently available to cover 30% of the
21 cost of a commercial solar generation system. This percent begins phasing down in 2020,
22 reaching only 10% by 2022 and remaining at that level into the future.⁹ MidAmerican
23 should be undertaking analysis and planning to allow it to take advantage of the full

⁹ U.S. Department of Energy Business Energy Investment Tax Credit website,
<https://www.energy.gov/savings/business-energy-investment-tax-credit-itc>.

1 credit for the benefit of its Iowa customers, similar to how it has utilized the wind PTC to
2 keep electricity prices low.

3

4 **Q: What do you recommend regarding MidAmerican's Wind XII Project proposal?**

5 A: I support the addition of more wind in Iowa as a general matter. At this stage in the
6 development of MidAmerican's system, more needs to be done to ensure the benefits of
7 renewable energy additions are fully obtained. Other utilities across the U.S. are seeing
8 this least-risk path of undertaking a comprehensive clean energy transition and taking it.
9 MidAmerican needs to reduce risks to customers from operating its fleet of coal plants
10 and needs to improve the flexibility of its system to maximize the benefits from
11 renewable energy. MidAmerican has a window of excess capacity now and should be
12 using it to plan in a way that mitigates customer impacts and moves the company forward
13 utilizing a comprehensive clean energy strategy.

14

15 To accomplish these goals, I recommend two additions to the ratemaking principles: 1)
16 Before MidAmerican is allowed to include Wind XII in rate base, the company must
17 retire a corresponding amount of coal capacity and remove it from rate base. This
18 principle would make it more likely that MidAmerican and its customers would realize
19 the benefits laid out in its analysis of Wind XII. 2) Require that MidAmerican undertake
20 an analysis every-other year regarding the cost-effectiveness of continuing to operate its
21 coal units compared to replacing that capacity with clean, flexible resources such as
22 wind, solar, energy efficiency, demand response, and storage. It is critical that
23 MidAmerican perform this type of analysis now and on a regular basis as it is otherwise

1 exposing customers to unknown and unnecessary risk and wasting an opportunity to
2 make decisions that provide for long-term benefits.

3
4 Finally, I encourage the Board to require MidAmerican to consider energy efficiency and
5 demand response in its analysis of alternatives in this docket and for all utility capacity
6 proposals going forward. I also encourage the Board to require MidAmerican to begin
7 serious consideration of a large-scale investment in solar, including availability of the
8 30% federal tax credit, issuance of an RFP, and exploration of potential sites.

9

10 **Q: Does this conclude your testimony?**

11 **A: Yes.**

AFFADAVIT OF
KERRI R. JOHANNSEN

STATE OF IOWA)
COUNTY OF)
POLK

ss.

I, Kerri R. Johannsen, being first duly sworn on oath, state that I am the same Kerri R. Johannsen 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/ Kerri R. Johannsen
Kerri Johannsen

State of Iowa
County of Polk
Subscribed and sworn before me the 3rd day of August, 2018
By Kerri R. Johannsen

/s/ Adam G. Lewis
Notary Public in and for the State of Iowa