IOWA UTILITIES BOARD
Policy Development Section

Docket No.: NOI-2014-0001
Memo Date: October 5, 2015

TO: The Board

FROM: Brenda Biddle
Leslie Cleveland
Barb Oswalt

SUBJECT: Recommendations Regarding Net Metering

I. Background

On January 7, 2014, the Board began an inquiry into distributed generation (DG), inviting interested parties to comment on broad general questions related to DG. Initial comments were received from over 170 interested parties, including utilities, utility associations, environmental groups, renewable energy advocates, energy-related organizations, businesses, and individuals. Because of the breadth of topics identified by participants in the initial comments, the Board issued an order on May 12, 2014, focusing the inquiry on the topics of net metering;[1] interconnection of DG (including safety and reliability); and customer awareness/protection. The Board requested the parties respond to specific questions outlined in the order with responses due on June 24, 2014.

After reviewing the comments, the Board issued an order on September 19, 2014, which contained additional questions regarding net metering and interconnection and asked the participants to reply to each other's comments; the responses to the Board's questions and reply comments were due on October 24, 2014.

On April 30, 2015, the Board issued an order soliciting additional comments related to the issue of net metering. Initial responses and comments were due on or before June 15, 2015, and reply comments were due on or before July 15, 2015. Appendix A lists the 22 participants that filed written comments in response to the Board's April 30, 2015, order and provides acronyms used to identify participants where applicable. Appendix B is a summary of the participants' comments.

[1] Avoided cost issues are the subject of a separate proceeding in Docket No. INU-2014-0001.

II. Legal Standards

A summary of the net-metering statutes and Board rules is provided below.

Alternate Energy Production (AEP) Net-Metering Policy
Iowa's AEP statute[2] does not explicitly authorize the Board to mandate net metering; however, this authority is implicit through the Board's enforcement of the Public Utilities Regulatory Policy Act of 1978 (PURPA) and the AEP statute. Using this authority, the Board has required rate-regulated utilities to offer net metering to AEP facilities. The definition of AEP facilities included in Rule 199 IAC 15.1 identifies the types of generation that are eligible for net metering. These include: 1) an electric production facility which derives 75 percent or more of its energy input from solar energy, wind, waste management, resource recovery, refuse-derived fuel, agricultural crops or residues, or wood burning; and (2) a hydroelectric facility at a dam.

Rule 199 IAC 15.11(5) states:

> *Net metering.* Each utility shall offer to operate in parallel through net metering (with a single meter monitoring only the net amount of electricity sold or purchased) with an AEP facility, provided that the facility complies with any applicable standards established in accordance with these rules.

This rule describes net-metering service as "a single meter monitoring only the net amount of electricity sold or purchased." The AEP customer draws electricity from and provides excess electricity back to the utility over the same meter making the meter run both forwards and backwards, thus netting one against the other. This "netting" of AEP kWh production against retail kWh usage is economically equivalent to the AEP customer selling electricity back to the utility at the utility's retail rate. However, net metering does not involve separate purchase and sale transactions – net metering is essentially a metering arrangement that nets kWh against kWh. Also, since net metering involves a single meter, it does not allow for the netting of an AEP facility's kWh production against retail kWh usage from multiple separate meters.

The Board adopted the net-metering subrule in 1984 as part of its AEP rules (Docket No. RMU-83-30). In describing the applicability of its AEP rules, the Board drew a clear distinction between renewable AEP facilities and non-renewable PURPA qualifying facilities (QFs) (or cogeneration), explaining why the rules (including net metering) would apply only to AEP facilities. Initially, the net-metering subrule applied to all electric utilities. However, in the court challenge of the AEP statute, the Iowa Supreme Court ruled in 1987 that the

[2] Iowa Code §§ 476.41 - 476.45 was enacted in 1983. The statute's stated purpose was to encourage AEP development by requiring utilities to purchase electricity from AEP facilities at special incentive rates that would be just and reasonable for utility ratepayers.

Board's AEP requirements (including net metering) could not be applied to non-rate-regulated utilities (i.e., municipal utilities and rural electric cooperatives).

In 1999, in a renewed court challenge by MidAmerican Energy Company (MidAmerican), the Polk County District Court stayed the Board's net-metering rule based on federal preemption. Separately, the Federal Energy Regulatory Commission (FERC) declined to rule that federal law preempted the net-metering rule (FERC Docket No. EL99-3). To resolve the litigation and the conflicting results, MidAmerican proposed a settlement net-metering tariff (settlement tariff) supported by the Office of Consumer Advocate (OCA), a division of the Iowa Department of Justice (Docket No. TF-01-293). The main features of the MidAmerican settlement tariff were: 1) limiting net metering to 500 kW of capacity per AEP facility; and 2) carrying forward any net excess generation for net metering to future months, rather than purchasing it from the AEP facility. The Board approved the settlement tariff with modifications. Later, the Board approved a similar net-metering tariff for Interstate Power and Light (IPL) (Docket Nos. TF-03-180 and TF-03-181).

The Energy Policy Act of 2005 required state commissions to consider implementing five additional ratemaking standards under PURPA Section 211, one of which related to net metering. In the order[3] issued on August 8, 2006, the Board explained that it had considered and adopted, in prior state actions, a net-metering standard for Iowa's rate-regulated electric utilities, having previously made specific policy determinations in various dockets that were consistent with the description of net metering under the PURPA Standard. The Board had defined "eligible on-site generating facilities" as being limited to AEP facilities; and for MidAmerican and IPL, the Board had further limited the definition to a 500 kW cap per AEP facility and had added a requirement to carry-forward net excess generation for net metering to future months consistent with the PURPA Standard.

III. Analysis

The April 30, 2015, Board order asked participants to comment on a proposed DG-related policy goal, specific net-metering issues, and proposed options going forward. Rather than address the questions sequentially, questions are grouped together by topic to provide a logical flow to the information.

The outline for the rest of the memo is as follows.

Policy Goal (Question 1)
Potential Pilot Projects (Question 6)
    Potential Pilot Project Topics
        Excess Net-Metering Credits (Question 2)

[3] Docket No. PURPA Standard 11 199 IAC 15.11(5), "Order Regarding PURPA Standard 11," p. 5, August 8, 2006.

Impacts of Changes in Eligible Facility Size Cap (Question 4)
Rule Making versus Tariff (Question 3)
Long-Term Options (Question 5)
Participants' Overall Preferences (Question 7)

Policy Goal[4]

Staff reviewed comments filed by participants during the course of this docket and thought that establishing a policy goal or statement would be helpful to move the DG discussion forward and provide a foundation for Board decisions related to DG. Staff believed that such a goal should balance equity concerns while allowing for potential DG growth. Staff drafted a policy goal and asked for comments. Participants provided varying degrees of support for the policy goal.

IPL and MidAmerican generally support the policy goal but provided some alternate wording. IPL says that the policy goal should support a long-term, sustainable economic resolution to the cost allocation issues and the continued safety and reliability of the electric system. IPL proposes the following policy goal:

> To provide a regulatory framework that allows distributed generation to be integrated into the overall utility system in an equitable manner that balances the interests of regulated utilities and all utility customers.

MidAmerican states that the goal is consistent with Board rules that support matching rate design to cost of service for each customer class but is not consistent with current net-metering tariffs. In reply comments, MidAmerican suggests IPL's statement be revised to:

> To provide a regulatory framework that on a long-term, sustainable basis allows distributed generation to be integrated into the overall utility system in an equitable manner that balances the interests of regulated utilities with all utility customers.

Also in reply comments, MidAmerican states that promotion of DG without consideration of all customer impacts is inconsistent with the requirements of Iowa's Public Utility Act, Chapter 476. (See also Iowa Code § 476.41, § 476.3, § 476.8, and § 476.5.) Based on Iowa Code §§ 476.41 and 476.43, MidAmerican believes utility-owned renewables should be included in the policy objective.

---

[4] Question 1: Staff has proposed the following policy goal for the Iowa Utilities Board: "To provide a regulatory framework that allows distributed generation to grow in an equitable manner that balances the interests of regulated utilities and all utility customers." Comment on the advantages and disadvantages of the Board adopting such a policy goal, specifically related to net metering.

The IAEC points out that the proposed policy goal does not account for utility-owned renewable generation and suggests that 199 IAC 20.10 be used as a guide for any policy revisions to address equitable regulatory treatment. Rule 20.10 highlights the Board's legislative requirement[5] to balance the interests of customers who are situated differently within the utility's service territory and fairly allocate costs to all customers. The IAEC states that the Board's proposed policy goal contrasts with the intent of that rule, because it seeks to balance the interests of regulated utilities with the interests of all customers.

OCA opposes the policy goal because it is not sufficiently tied to a statute or existing rule. Additionally, OCA objects to any implication that current DG policy is unfair to, or unbalanced against, utilities or any subset of customers since there has been no evidence showing that customers are being harmed by Iowa's DG policy. OCA believes the language is vague and subject to improper interpretation. Furthermore, the phrase, "interests of regulated utilities," is not defined.

OCA states that the Board must reflect Iowa's policy to encourage alternative energy in its policy goal and proposes the following:

> To provide a regulatory framework which promotes the expansion of cost-effective renewable distributed generation while protecting against excessive and inappropriate cross-subsidization.

The Environmental Law and Policy Center, Iowa Environmental Council, Sierra Club, Iowa Solar Energy Trade Association, Solar Energy Industries Association, and the Vote Solar Initiative (Environmental and Solar Commenters) believe the proposed policy goal is consistent with the policy adopted by the legislature in Iowa Code § 476.41[6] which encourages the development of alternative energy production. However, the group suggests changing the phrase "that allows distributed generation" to "that encourages distributed generation." The Environmental and Solar Commenters also recommends that the policy goal refer to distributed energy resources (DER) which would include DG, energy efficiency, demand response, and other resources.

The Alliance for Solar Choice (TASC) says that the proposed policy goal is incomplete and should acknowledge that retail customers have the right to use as much utility-supplied electricity as they choose. TASC recommends revising the goal to:

> To provide a regulatory framework that allows distributed generation to grow in an equitable manner that balances out the

[5] Iowa Code §§ 476.8 and 476.43.

[6] Iowa Code § 476.41 - "It is the policy of this state to encourage the development of alternate energy production facilities and small hydro facilities in order to conserve our finite and expensive energy resources and to provide for their most efficient use."

> interests of regulated utilities and all utility customers while ensuring all retail customers have the option to self-supply their own electricity and use as much or as little utility-supplied electricity as they choose.

Andrew Johnson of Winneshiek Energy District (Andrew Johnson or Mr. Johnson) believes that the proposed goal wrongly places the financial interest of the regulated utilities on par with the interests of Iowa citizens and utility ratepayers. Mr. Johnson believes the common good of Iowans should be the foundation of any future policy goal regarding DG. He proposes the following policy goal:

> Facilitate the evolution of a distribution grid and energy marketplace fully enabling and prioritizing customer and community participation, and align utility roles and revenue models in support of this evolution.

In reply comments, Mr. Johnson concurs with OCA that this docket is not the appropriate place for creating new policy goals and that there is no evidence in this docket that shows utilities or customers are being harmed by current DG policy. Furthermore, Mr. Johnson is also concerned about the use of the phrase "interest of regulated utilities" in the policy goal. The Iowa Public Utilities Act provides guidance for encouraging DG growth which is stronger than the policy goal's use of "allow." Mr. Johnson agrees with the Environmental and Solar Commenters that DER should be included in a policy goal and that a new docket should be initiated to facilitate the evolution of DER.

Luther College supports the Board adopting an explicit policy goal regarding DG but believes it should be narrowed to include AEP facilities rather than all DG. Also, Luther College states that the policy goal should be framed in relation to existing state policy goals, legislative intentions, and legal requirements regarding renewable energy, energy efficiency, and local power production.[7]

Luther College proposed the following policy goal:

> To provide a regulatory framework that allows customer-owned or operated alternate energy production systems to grow in a manner that achieves state policy goals regarding renewable energy, energy efficiency, and local power production while also being consistent with the mission of the Board to ensure that reasonably priced, reliable, environmentally responsible, and safe utility services are available to all Iowans.

[7] Iowa Code §§§ 476.41, 476.53A, and 476.8.

In its reply comments, Luther College acknowledges that the Board must determine to what extent the Board should maximize least-cost power versus locally-owned power. Existing state policy goals, legislative intentions, and legal requirements regarding renewable energy and local power production favor locally-owned power as much as least-cost power.

Luther College concurs with OCA that the Board's draft policy goal is not sufficiently tied to a statute or existing rule and that there is no evidence showing utilities or any subset of customers are being harmed by the existing DG policy. Additionally, Luther College agrees with the Environmental and Solar Commenters that a data-driven response to DG policy must include both costs and benefits and that the policy goal should include DER.

John E. Carpenter supports the Board's establishment of a goal to grow DG but suggests a word change. He suggests revising the goal as follows:

> To provide a regulatory framework that allows distributed generation to grow in a *progressive* manner that balances the interests of regulated utilities and all utility customers.

In drafting the proposed policy goal, staff attempted to consider all parties' positions and the Board's mission: "The Iowa Utilities Board regulates utilities to ensure that reasonably priced, reliable, environmentally responsible, and safe utility services are available to all Iowans." However, staff did not tie the proposed policy goal to specific statutory language. As commenters pointed out, sections of the statute say:

- It is the policy of this state to encourage the development of alternate energy production facilities and small hydro facilities in order to conserve our finite and expensive energy resources and to provide for their most efficient use. (Iowa Code § 476.41)

- It is the intent of the general assembly to encourage the development of renewable electric power generation. It is also the intent of the general assembly to encourage the use of renewable power to meet local electric needs and the development of transmission capacity to export wind power generated in Iowa. (Iowa Code § 476.53A)

The participants had many comments about the draft policy goal, namely:

1. Utility-owned generation should be part of the policy goal.
2. If the phrase "balances the interests of regulated utilities" is included, it should be defined.

3. The goal references DG but should reference DER which includes energy efficiency, DG, and demand response.
4. The proposed goal implies that utilities or certain subsets of customers are being harmed by the current DG policy.
5. Cost-effective DG should be encouraged.
6. The goal should acknowledge that retail customers have the right to use as much utility-supplied electricity as they choose.
7. The goal should address the cost allocation/cost shifting issues.
8. The policy goal should include only renewable DG rather than all DG.
9. The policy goal should not imply that DG customers are favored over non-DG customers.
10. The policy goal raises more questions that it addresses.

Based on these comments, staff revised the proposed policy goal. Staff believes that the policy goal should follow the statutes which refer to the development of AEP or renewable energy generation rather than DG fueled by non-renewable sources. Additionally, the statutes do not limit the ownership of the renewable generation therefore the policy statement should not preclude utility ownership. Staff proposes to revise the policy goal to remove the phrase "balances the interests of regulated utilities" and to remove any inference that customers are being harmed by the current DG policy or that one group of customers is being favored over another. Lastly, by including the Board's mission in the policy goal, staff believes the policy goal now addresses the issues related to pricing or cost-shifting.

Staff Recommendation

Staff recommends the Board adopt the revised policy goal provided below. Staff has reviewed the comments and each of the proposed policy goals. The participants provided thoughtful responses to the Board's draft policy statement and overall were supportive of the idea of having a policy goal to guide the Board's decision going forward. Staff has considered the participants' suggestions and revised the draft statement to the following:

> To provide a regulatory framework that encourages growth of renewable distributed generation in a manner that achieves state policy goals while being consistent with the Board's mission to ensure that reasonably priced, reliable, environmentally responsible, and safe utility services are available to all Iowans.

Staff believes this policy goal addresses many of the concerns expressed in the participants' initial and reply comments. Additionally, it ties directly to state policy and the Board's mission.

RECOMMENDATION APPROVED **IOWA UTILITIES BOARD**

/s/ Geri D. Huser *10-7-15*
Date

Date

Date

Alternative Recommendation

The Board could conclude there is no need for a separate policy goal and determine that Iowa Code §§ 476.41 and 476.53A provide a policy that clearly encourages renewable energy generation. As some participants point out, it is unclear whether it is necessary for the Board to define a separate policy goal.

RECOMMENDATION APPROVED **IOWA UTILITIES BOARD**

Date

/s/ Elizabeth S. Jacobs *10-15-15*
Date

/s/ Nick Wagner *10/14/15*
Date

I've reevaluated the comments and can move ahead without a goal. We may want a legislative solution to this. ESJ 10-15-15

Potential Pilot Projects[8]

In the April 8, 2015, staff memorandum, Option 4 was that the Board could consider using pilot projects to explore significant changes to net metering on a limited basis while maintaining the existing net-metering rules, policies, and tariffs for the bulk of the DG customers. In the Board's order seeking additional comments from participants, the Board asked participants to present well-

[8] Question 6: Propose innovative and well-developed ideas that could be implemented as net-metering pilot projects as discussed in Option 4. Identify the advantages and disadvantages associated with each potential project. For each potential pilot project provide detailed elements including, but not limited to, the goal of the project, timelines, eligible participants, responsibilities of the utility and participants, potential impacts on non-DG customers, an explanation of how the proposal meets the specific needs of the utility, how each option would meet the objectives expressed in the draft policy goal, and possible results.

developed ideas that could be implemented as net-metering pilot projects and also to indicate their preferences for addressing net metering going forward. Staff notes that some participants provided specific proposals. For instance, the Environmental and Solar Commenters proposed a strategic deployment of DER pilot and a shared renewable pilot program. Larry Grimstad and Andrew Johnson proposed a solar pilot involving a small number of large non-taxable entities rather than all customers. Other participants offered general ideas for potential pilot projects. IPL is exploring a community-based solar pilot and a pilot that would update its Second Nature green pricing program. MidAmerican said it was exploring solar and DG projects but did not specify a particular pilot. Luther College suggested pursuing pilot projects for community solar, Time-of- use (TOU) and energy storage, smart grid technology, or technology-specific avoided cost power purchase or value of solar rates.

Overall, most participants are supportive of pilot projects[9] related to net metering and DG. Both investor-owned electric utilities have indicated that they are exploring and/or developing pilot projects, and both utilities are specifically exploring solar projects. While the Board's question specified net-metering pilots, some commenters suggested pilots that were not related to net metering, but related to aspects of DG such as increasing transparency of utility resource planning or strategically deploying solar to relieve constraints.

Generally, staff believes that given the current status of net metering and the development of DG in Iowa, that additional information is necessary before any permanent policy or rule changes should be made. There are two likely approaches for obtaining the additional information necessary for moving forward. One option would be to conduct a study on the impacts of DG in Iowa including quantification of costs and benefits. Participants have noted in previous comments that conducting a study on the impacts of DG in Iowa at this time would be premature since penetration levels are relatively low. Another option would be for the utilities to conduct pilot projects exploring various aspects of net metering or other relevant DG issues that could be used to inform potential future rule makings. The pilot project approach could provide insights into these issues now without the need to wait for the higher penetration levels that would make a study a viable option.

Other states have conducted, or are conducting, pilot projects. In particular, Arizona Public Service offers a variety of innovative programs[10] aimed at collecting more information on how to more effectively integrate solar energy.

---

[9] The IAEC argues that adoption of pilot projects in any form could add administrative burdens and prevent the regulatory environment from keeping pace with the quickly evolving generation technology but recommended that if pilot projects are explored, that timelines suitable for a quick-moving market be adopted.

[10] https://www.aps.com/en/ourcompany/aboutus/solar-commitment/Pages/bringing-solar-to-our-communities.aspx.

Hawaiian Electric Company recently proposed a community solar program[11] which would allow 50 customers to benefit from solar without installing solar panels on their roofs. Closer to Iowa, Wisconsin[12] has also launched several community solar pilot initiatives in various cities. While, some of the information from pilots conducted in other states might be relevant to Iowa, staff believes that the specific and unique circumstances of Iowa support exploration of Iowa-specific pilots.

A pilot approach creates an opportunity for innovation and the exploration of best practices outside the parameters of the current net-metering policies. It also provides an opportunity to make changes on a limited basis in order to determine the impacts that these changes may have on the utility and its customers prior to making these changes permanent.

Another advantage of pilot projects is that making significant changes to net-metering rules now may be premature since it is unclear whether the growth in DG will continue – given the uncertainty surrounding the future of the federal investment tax credits for solar projects. These tax credits are set to expire at the end of 2016[13] and could also impact the Iowa Solar Energy System Tax Credits.

Potential Pilot Project Topics

The Board's April 30, 2015, order explored two main net-metering topics which could be explored as part of a potential pilot project. The first, whether a customer's excess net-metering credits should be diverted to a special cause, such as a low-income customer assistance fund, and the second, whether the net-metering cap should be increased from 500 kW to 1 or 2 MW combined with a cap of 110 percent of a customer's annual average electric usage. These issues are discussed below.

Excess Net-Metering Credits[14]

In Iowa, a net-metered customer who has excess kWh credits can indefinitely roll them over to future months as they are needed. This method is also used by several other states that have a net-metering policy. However, one commenter suggested at the beginning of the DG NOI that the Board consider allowing a cash-out option for excess credits at the end of the annual billing cycle. The Board followed up with additional questions to get further input from other

[11] http://www.hawaiianelectric.com/heco/_hidden_Hidden/CorpComm/Hawaiian-Electric-proposes-community-solar-pilot-project.
[12] http://www.jsonline.com/business/community-solar-projects-are-popping-up-in-wisconsin-b99545688z1-320638942.html.
[13] The commercial credit will drop from 30 percent of the investment in eligible property to 10 percent and the residential credit will drop from 30 percent to zero.
[14] Question 2: Would it constitute a "sale" if the Board were to determine that at the end of each year, unused kWh credits are to be diverted and used for a special cause?

stakeholders. Most commenters support a cash-out option, but there was no consensus on how to implement it. For example, should it be mandatory or optional, monthly or annually, what rate should the excess credits be paid at, and whether a cap on the amount of credits allowed to be cashed-out is necessary. Out of this discussion, MidAmerican noted that the majority of states either allow the indefinite rollover of excess credits or require forfeiture of the excess credits at the end of a 12-month period. The forfeiture of excess credits is one way to assure the net-metering customers build systems to match their consumption needs. Of the states that allow the cash-out option, at least two states divert the credits to a special cause.

Diverting the excess credits at the end of the year to a special cause was another option the Board wanted to explore in addition to the cash-out option discussed previously. This prompted the question of whether diverting excess credits to a special cause would constitute a "sale." If it constitutes a sale, this option would possibly change the concept of net metering in Iowa from being a bill arrangement to a purchase by the utility.

OCA, Luther College, TASC, the Environmental and Solar Commenters, and Andrew Johnson believe that unused kWh credited to another account would not constitute a sale if no cash changes hands; it is a billing arrangement.

However, both IPL and MidAmerican are not sure if excess kWh credits used for a special cause would constitute a sale. IPL provided examples where in Utah the avoided cost value of unused credits are granted to low-income assistance programs or for another use as determined by the governing authority. MidAmerican states that this could possibly constitute a sale; there is still a value that is placed on an unused credit given to a third party even if the Board is not converting the credit to cash. MidAmerican recommends the Board use the Oregon approach which limits the transfer of credits to the low-income assistance programs and values the credits at the utility's avoided-cost tariff rate.

Staff reviewed Oregon's rules[15] and found the following language:

> (1) Any unused kilowatt-hour credit accumulated by a customer-generator of a public utility at the conclusion of the annual billing cycle will be transferred, in a manner approved by the Commission, to customers enrolled in the public utility's low-income assistance programs. The public utility will value any unused kilowatt-hour credit at the applicable average annual avoided cost tariff rate.
>
> (2) The customer-generator may not elect to receive a credit or payment for any unused credit accumulated at the conclusion of the annual billing cycle.

[15] Excess Energy from Net-Metering Facilities (860-039-0070)

(3) The public utility will report in writing to the Commission by July 1 each year the unused kilowatt-hour credits and the dollar amount transferred to the low-income assistance program in the previous billing year.

Utah offers a similar program where any excess kWh credits for residential and small commercial customers remaining after a 12-month billing cycle are transferred by the utility to a low-income assistance program or other purpose approved by the Public Service Commission. Co-op customers' credits are credited at the avoided cost rate.

This treatment of the net-metering excess credits would be a departure from the current indefinite rollover of credits in the existing rules and may reduce the incentive to net meter in Iowa. Forfeiting credits at the end of the annual billing cycle to a special cause would cause the customer to forgo potential additional compensation in the form of lower future utility bills.

Staff believes this issue would be best explored in a pilot project. A pilot could include a provision that cashes out the excess kWh credits using the utility's avoided cost rate[16] and consistent with Oregon and Utah, places those funds into a special cause fund. There are benefits associated with allocating the value of the excess credits to a special cause fund. First, it gives customers an incentive to correctly size their DG system to serve their load since they do not have the ability to either rollover excess credits indefinitely or to cash out excess credits at the end of the annual billing cycle. Second, the funds generated from the excess credits would help fund a special cause such as a low-income customer fund. By shifting funds to the low-income customers, some of the utilities' cross-subsidy concerns may be diminished. Staff notes that during the last Iowa legislative session, Iowa State Representative Mary Mascher introduced a bill, House File 149 that would require any utility to apply the excess energy from solar panels to low-income customers instead of absorbing the excess energy onto the system. Although no mention of net metering was included in this bill, the concept of diverting customer's excess generation to support low-income customers is being explored by others in Iowa.

There is some question as to who owns the excess net-metering credits. The IAEC, MidAmerican, TASC, and John E. Carpenter point out that the excess kWh credits are the property of the DG customer who produced the excess credits, and that the Board cannot make the customers donate their excess credits to a special cause. Staff believes this is correct based on current net-metering rules where these credits rollover indefinitely. However, if excess credits are the property of the net-metered customer in all cases, this directly contradicts the positions taken in Oregon and Utah where, as stated above, the value of the customer-generation excess credits are placed in a low-income assistance

[16] The avoided-cost rate or a wholesale rate needs to be used to avoid the issue of making a wholesale sale transaction which is under FERC's jurisdiction.

program at the end of the annual billing cycle. Additionally, at least 10 states require that the net-metered customers forfeit all excess credits to the utility at the end of an annual billing cycle. Therefore, in both of these situations, the DG customers' credits at the end of the annual billing cycle are not considered to be their property.

Conclusion

This is a good example of an issue that could be explored through a pilot project where its impacts could be evaluated prior to implementation of any changes to the net-metering rules. Through a pilot, the utilities could collect and provide the Board with data on the amount of excess credits (and corresponding monetary amount) generated by new net-metered customers in order to determine whether there are enough credits to justify a change in the net-metering rules; observe whether this provision deters participation, or whether it ultimately results in customers installing appropriately-sized DG systems.

Impacts of Changes in Eligible Facility Size Cap[17]

This question was posed to get additional feedback on how raising the cap to levels suggested by some of the commenters in the NOI docket would impact the utilities. Prior comments from participants in this docket noted that some states cap the size of the system based on a percentage of the average annual electricity consumption of the customer or a similar method. These caps did not set a capacity (kW or MW) ceiling on the size of the system; but allow a large customer to size its system to serve its consumption at levels that could far exceed Iowa's current cap of 500 kW. Rather than allow large customers to have virtually unlimited net metering, staff included both the 110 percent of average electricity consumption[18] and the capacity cap of 1 or 2 MW.

Staff notes that the wording of question 4 caused some confusion for participants, and at least one commenter felt that it could be interpreted in different ways. The primary source of the confusion lies in combining the 110 percent of average annual electricity consumption which represents energy (kWh), and the cap of 1 or 2 MW, which represents the capacity of the system. Another source of confusion was how the average annual electricity consumption calculation would be implemented. However, MidAmerican interpreted the cap correctly when it said the intent was that a customer could net meter up to 110 percent of its energy requirements or 2 MW, which ever was lower.

---

[17] Question 4: If the Board decides to change the cap for eligible net-metered facilities, one option would be to allow customers to net meter 110 percent of their average annual electricity consumption up to 1 or 2 MW. Comment on the short-term and long-term financial impact such a change would have on non-DG customers and the utilities. Would this have an impact on grid reliability? Would it impact the way utilities do their resource and system planning? Identify any other concerns associated with this change.

[18] Staff did not attempt to define average annual electric consumption in the question knowing that if this approach was pursued, defining the phrases and determining how to calculate it would be part of further discussion.

Fortunately, the confusion did not impact the quality of the responses to this question, which focused more on the impact that the higher cap size would have on the utilities' financial situation, reliability of the system, and resource planning. Each of these is addressed below. However, general comments made about raising the cap are discussed first.

Many commenters support raising the size cap from Iowa's current cap of 500 kW to either 1 or 2 MW and/or capping the system based on 110 percent of the customer's annual electricity consumption. For example:

- The Environmental and Solar Commenters generally state that these changes would be an improvement to net-metering policy and would encourage growth in DG. DG provides many benefits including reductions in line losses, diversification of energy sources, assistance with reliability, and it can be strategically placed to avoid utility investment in generation, transmission, and distribution.

- Luther College believes that these changes could be positive for non-DG customers and utilities because the annual consumption cap will make sure systems are sized to meet the power needed to be consumed on site and 1 to 2 MW solar PV arrays will generate energy at peak times which will save non-DG customers costs. However, if demand charges are not metered for large AEP facilities, net metering would not be attractive to large general service customers.

- Andrew Johnson states the cap should be at least 2 MW and, although, the Board's net-metering policy was originally for smaller customers, the energy world is quickly changing. Including all customers who can net meter with a higher cap would be consistent with Iowa legislative and Board policies that support the expansion of renewable energy.

- William J. Pardee states that using a 110 percent of energy consumption would work for them but may not allow other kinds of DG installations such as a group of businesses that wish to lighten their footprint.

Neither IPL nor MidAmerican believes it is appropriate to increase the size cap. IPL points out that it has not yet had a customer, in aggregate, reach the current 500 kW cap; so it is not obvious that the cap needs to be increased. MidAmerican believes the subsidy issue needs to be addressed and impacts evaluated before expanding the net-metering eligibility. This could be done through a pilot project.

Many support using a pilot project, and staff agrees; if an increased cap results in negative impacts, those impacts would be limited to the pilot project where they can be explored outside the existing net-metering rules and policies.

Financial Impact

Questions about expanding the net-metering policy to include a higher cap have been asked by the Board in previous orders in this docket. Generally, the utilities expressed concern about net metering creating cross-subsidies where the costs not recovered from DG customers would be passed onto the non-DG customers. Other commenters have argued that many studies show that the benefits of net metering outweigh the costs of net metering such that cross-subsidization is not an issue.

Here the Board is asking specifically what the financial impact would be on the utility if the Board allowed customers to build a system sized at 110 percent of the customer's average annual electricity consumption (not to exceed a 1 or 2 MW cap).

There are mixed views by the utility commenters. MidAmerican believes that raising the current tariff cap of 500 kW to 1 or 2 MW would have a minimal financial impact if the customers who would take service above the 500 kW continue to take service on three-part rates and if the demand charge is not netted against energy produced by the DG facility. However, MidAmerican explains that its current tariff states that "generating capacity and associated energy is intended to serve only the electric requirements of the owner of the [net metered] Facility." This means that currently the customers size the system to meet 100 percent of its load up to the 500 kW cap. MidAmerican argues that if systems are allowed to be sized to meet 110 percent of the customer's average annual electricity consumption, there will likely be more excess energy at the end of the useful life. According to MidAmerican, the financial impact on the utility and its other customers will depend on how the excess energy is used or retired. Staff notes that this concern would be alleviated if the proposed 110 percent option is not adopted.

IPL did not comment on whether there would be financial impacts with a higher cap; one reason may be that as noted above the need to raise the cap is not apparent to IPL since its existing DG customers have not reached the current cap of 500 kW.

The IAEC believes that the short-term impact of DG can reduce cost-recovery of distribution costs, transfer costs to non-DG customers, and raise rates. Long-term impacts will vary between utilities and are less certain.

In general many non-utility commenters such as the Environmental and Solar Commenters, OCA, and Andrew Johnson agree that increasing the cap will have

minimal financial impact or no impact on the utilities. This is either because Iowa is a low-cost electricity state with a very low net-metering penetration level or because studies show that benefits of DG typically outweigh the costs or have minimal rate impact.

The one non-utility commenter that thought the utility may earn less as DG penetration increases was Larry Grimstad - Decorah Solar Field, LLC (Larry Grimstad). He further states it is not the role of the Board to make sure utility investors earn high profits if other business models better serve Iowa communities, citizens, and ratepayers.

Reliability Impact

IPL, MidAmerican, the IAEC, and the IAMU believe that increasing the cap size could negatively impact reliability. IPL believes that raising the cap to 1 or 2 MW, will create technical issues related to grid reliability that will need to be addressed: 1) production on any single distribution level circuit could exceed local load levels forcing backflow to the transmission system; 2) challenges are created to the distribution utility for real-time monitoring; 3) the system will need to be more robust to support the greater level of operation and flexibility thus increasing costs to all customers; and 4) timing imbalances are created by DG (these costs should be borne by DG customers).

MidAmerican states that a size cap is important for grid reliability because available capacity is limited on any given circuit, in addition to other system requirements. Increasing the maximum capacity for net metering could increase the amount of excess power injected into the distribution system which can hurt system reliability, and it also could reduce the number of customers able to interconnect before a system upgrade is needed. The pilot approach may be useful to understand grid reliability issues.

The IAEC states that if the cap size is increased, this may create reliability concerns such as overloaded circuits, difficulty in balancing and scheduling generation resources, power quality issues, and stray voltage.

The IAMU argues that the municipal electric utilities in Iowa range in size so a one-size-fits-all approach does not work. The quantity and location of DG can impact reliability; the current distribution system was not designed to consider the integration of DG facilities.

Other commenters believe either the current penetration level is so low that additional DG capacity will have limited impact on reliability (i.e., OCA and Andrew Johnson); or, as pointed out by Luther College, the Environmental and Solar Commenters, TASC, and Andrew Johnson, there will not be a reliability issue since the existing interconnection standards ensure the safety and reliability of the grid. Currently, DG owners are required to pay for

interconnections studies, if needed, and also for any necessary system upgrades. Finally, the Environmental and Solar Commenters further point out there have not been reliability concerns in states with higher size caps.

Staff agrees with the IAEC that the current interconnection rules requiring the DG customer to pay the costs of equipment upgrades and the engineering studies need to continue. Staff also agrees with the many commenters who stated that these rules are in place to protect the reliability of the system. However, staff believes a pilot project would be a good way of testing whether the interconnection rules are enough to ensure the reliability of the utility's system with a cap set at either 1 or 2 MW.

Resource Planning Impact

As pointed out by MidAmerican, the current penetration level of DG is small enough that it is modeled as an offset to load in MidAmerican's load forecast. However as the level increases, new forecasting methods will be needed to deal with the load forecast uncertainty created by DG which can impact the timing, size and generation technology for future construction projects. Most commenters agree that as DG levels increase, DG needs to be addressed through resource planning.

MidAmerican also states that DG can mask the growth rate of customer load, and it is an intermittent resource that creates hourly load uncertainty. It will be helpful to have data showing the aggregated historical energy production from DG resources. MidAmerican may need to make forecasts based on the vintage of the DG technology, but it will be difficult to obtain that data.

The IAEC discusses the "duck curve" that demonstrates that load steeply drops off after solar systems become active during the day and load increases sharply as solar output drops off. This creates reliability concerns due to the need for quick increases in generation from the utility. This will likely impact resource system planning and potential solutions will need to be identified. According to the IAMU, municipal utilities will start incorporating DG installations into resource and system planning as the number of installations increase.

Luther College states that data could be collected through a pilot to determine how these changes could be used in a utility resource and system planning, and Larry Grimstad believes that "Utility resource and system planning needs to be altered to fit the community production facilities and should not be any more difficult than an alternative resource and system planning."

Conclusion

Staff supports exploring the impacts of increasing the current 500 kW size cap to 1 MW[19] as part of a pilot project for the following reasons:

1) Expanding the size cap is consistent with the proposed policy statement encouraging DG growth.
2) MidAmerican and IPL (the utilities that would be impacted by such a change) did not express strong concerns regarding the financial impact this change would have on them. For example, IPL did not address this concern in its comments, and MidAmerican believed the impact would be minimal if the large general service customers remained on three-part rates and did not net meter the demand charge.
3) Reliability issues are generally addressed through the interconnection rules, and data can be collected through a pilot to ensure that as the penetration levels increase, the current policy is still adequate to address reliability issues.
4) Many commenters, including MidAmerican, support using a pilot project to test out changes to net metering such as raising the size cap.
5) Approximately half of the states that have a net-metering policy in place have a size cap of at least 1 MW.

Staff Recommendation

Staff recommends that the Board make no changes to net-metering policy at this time. Staff believes changes to the policy should be based on data and information, and that the best source of information at this time would come from pilot projects. As stated before, staff believes that a pilot approach creates an opportunity for innovation and the exploration of best practices outside the parameters of the current net-metering policies. It also provides an opportunity to make changes on a limited basis in order to determine the impacts that these changes may have on the utility and its customers prior to making these changes permanent. Therefore, staff recommends that the Board encourage all utilities (municipal, rural electric cooperatives, and investor-owned) and particularly the investor-owned electric utilities to consider implementing pilot projects that will expand renewable DG in Iowa consistent with the staff recommended policy statement presented in this docket, and to collaborate with the participants in this NOI while developing pilot program proposals. Staff believes it is important for the utilities to have the flexibility to design creative pilot programs but also believes that the investor-owned electric utilities should be encouraged to include topics that have been discussed in this inquiry, such as alternatives to the

[19] Since the proposal to have a size cap based on 110 percent of average annual electricity consumption (kWh) along with a system size cap of 1 or 2 MW caused confusion, staff suggests exploring a size cap based only on the system's size.

indefinite rollover of excess net-metering credits and the impacts of changes in the eligible facility size cap.

Staff notes that the recommendation to encourage pilots is premised on the belief that additional information is needed in order to move forward with the implementation of changes to net metering. As such, any proposed pilot programs presented to the Board should include an explanation of what additional informational needs would be addressed by each individual pilot proposal.

In order to gauge the investor-owned electric utilities' progress, staff recommends that the Board direct the investor-owned electric utilities to file a Preliminary Implementation Plan within 90 days that, at a minimum, includes the following:

- Detailed timeline of the pilot project(s);
- Plan for collaboration with NOI participants;
- The goals of the proposed pilot;
- How the results of the pilot project will be quantified; and
- A plan for reporting pilot project results.

Furthermore, staff anticipates that any proposed pilots will be presented to the Board as proposed tariff filings. Staff recommends that any tariff filed with a proposed pilot be docketed to allow all parties an opportunity to review and file comments. Staff believes the tariff filing should be distributed to the service list of participants in this docket to ensure that all interested participants are aware of the proposed pilot project and have the opportunity to comment.

RECOMMENDATION APPROVED **IOWA UTILITIES BOARD**

/s/ Geri D. Huser *10-7-15*
Date

/s/ Elizabeth S. Jacobs *10-6-15*
Date

/s/ Nick Wagner *10/14/15*
Date

Alternative Staff Recommendation

As an alternative, staff suggests the Board make no changes to net-metering policy at this time. Staff believes changes to the policy should be based upon data and information. No specific data have been filed to show the impact or the costs and benefits of net metering on the ratepayers or utilities in Iowa.

Currently DG-penetration levels are low and participants have said that it is premature to conduct a study until the level of penetration reaches at least 1 percent to ensure there is an adequate data set for Iowa-specific results. Once penetration levels reach 1 percent, staff recommends a study be conducted to determine the benefits and costs of DG and the impact of net metering on utilities and ratepayers. Based on the results of the study, the Board could consider a rule making to revise the net-metering policy.

RECOMMENDATION APPROVED **IOWA UTILITIES BOARD**

_____
Date

_____
Date

_____
Date

Rule Making versus Tariff[20]

The current net-metering rule (199 IAC 15.11(5)) does not contain the net-metering size cap or carry-over provisions that were established through settlements and included in utility tariffs The April 30, 2015, Board order asks whether future changes to net-metering policy should be handled through a rule-making docket or through modification of the tariff provisions.

There is significant support for implementing long-term, broad principle changes to net metering through the rule-making process. This provides a forum for stakeholder input and transparency.

Both MidAmerican and IPL believe that a rule-making docket is appropriate if the Board is addressing broader principles. However, MidAmerican also states that it should be able to move forward with its proposed changes to the net-metering tariff to make them more consistent with existing rules[21] before a new rule making is finalized and that it is better to use a tariff proceeding in a contested case for implementing cost-based three-part rates pursuant to 199 IAC 20.12(2). TASC believes MidAmerican's proposed tariff changes should be done in a general rate case proceeding supported by credible evidence.

[20] Question 3: Since the net-metering facility size cap and carry-over provisions were established through settlements between the investor-owned utilities (IOUs) and OCA, should any changes to those provisions be addressed via a rule-making docket, or through modification of the tariff provisions, or does the forum matter?

[21] For example, the existing rule 199 IAC 20.10(2) requires rates to be designed to the maximum extent practicable to reasonably reflect the costs of providing service to the class.

OCA supports a rule making for long-term changes, and the Environmental and Solar Commenters, TASC, and Andrew Johnson support the rule-making approach as a transparent way to address net-metering policies, and they wish to make comments during the process. Luther College agrees that broad principles should be the addressed in a rule-making docket. William J. Pardee stated generally that those people affected by the changes need an opportunity to express their concerns to prevent "abuses and misunderstandings."

Staff notes that the Board's question suggested two changes: an increase in the size cap and the addition of a cash-out option. These were addressed in the settlement between MidAmerican and OCA and the settlement between IPL and OCA. Currently, the cap is set at 500 kW, and there is no cash out option available. The excess credits are rolled over indefinitely. Other changes recommended by participants that have been discussed in prior staff memos include: 1) aggregate net metering, 2) virtual net metering, and 3) Combined Heat and Power (CHP)/Waste Heat to Power (WHP) as eligible AEP facilities.

One concern expressed by many is that it would not be appropriate to make changes to the net-metering policies without knowing the impact these changes could have on all customers and on the utility's ability to provide safe and reliable service first. Many agree that proposed changes to net metering would be best implemented through a pilot project. This process could provide the needed data and additional information to assist in the Board making well educated/thought-out decisions. Others have also suggested that a study of the costs and benefits that DG provides to a utility needs to be done prior to making permanent changes.

Conclusion

Staff believes future changes to the net-metering policy should be implemented through a rule making and should be done once data are collected either through pilot projects or a study and have been reviewed and analyzed. Staff recommends revisiting this issue once appropriate data has been evaluated.

Long-Term Options[22]

In the April 8, 2015, staff memorandum, staff noted that net metering has been offered by Iowa investor-owned utilities for a number of years but current participation levels are relatively low. Therefore, staff reasoned that there was time to study alternatives to address concerns related to net metering. Option 3 suggested the participants explore long-term options.

[22] Question 5: Propose innovative and well-developed ideas that address long-term net-metering options as discussed in Option 3. These options should identify the associated advantages and disadvantages and also allow for the growth of DG while balancing the interests of the regulated utilities and all utility customers.

IPL, MidAmerican, and the IAEC argue that net metering should consider the utility's ability to recover costs from its customers in an equitable manner. IPL proposes an approach which includes four phases: 1) data collection and communication; 2) design and file new DG tariffs; 3) new options via pilot programs; and 4) 2017 electric rate case. MidAmerican proposes a three-part rate that includes a basic service charge, a volumetric kWh – based energy component, and a kW-based demand component which could be implemented before another rate case proceeding.[23] IPL and MidAmerican also believe that the current rate design will lead to inefficient investments and increase the cost imbalance among customers or the utility. The IAEC argues that a delay in the rate design change increases the risk associated with stranded investment for utilities and DG owners, developers, and investors. OCA believes that the incorporation of TOU rates is a possible long-term solution to resolve fixed-cost recovery and cross-subsidization concerns.

Staff notes that rate design and net-metering tariff changes are currently being discussed in many states. One recent report[24] said, "Rate design, net metering, and distributed solar ownership are among the most contentious ongoing renewable energy policy issues." The report also explained that studies have been inconclusive about the presence of cost-shifting due to net metering, but that some studies have shown that net-metered customers produce benefits to all customers. The report showed that in a number of states there have been regulatory filings related to increasing fixed customer charges, adding a residential solar or DG charge, or having minimum bill increases.

The Critical Consumer Issues Forum also released a paper[25] that potential regulatory approaches to DG integration that include: buy-all sell-all, decoupling, demand charge, feed-in tariffs, fixed customer charge, minimum monthly billing, net metering, new rate group for DG customers, three-part rates, TOU pricing, two-way rates, and value of solar. This list includes the utilities' proposal for a three-part rate design, IPL's proposal for a partial requirements customer class, and OCA's suggestion to consider TOU rates. There have been many reports and studies published related to rate design and the integration of DG that highlight these approaches. Staff highlights some of the arguments for and against demand charges and TOU rates.

---

[23] MidAmerican stated that it met the conditions to implement these rate structures[23] in Docket No. RPU-2013-0004. These conditions are: 1. Cost of service needs to clearly identify costs for services being provided; 2. Cost of service principles for each utility need to be identified and approved by the Board; 3. Current rates need to be based on approved cost of service principles; and 4 Cost data need to exist that support current rates.

[24] NC Clean Energy Technology Center and Meister Consultants Group, "The 50 States of Solar, a Quarterly Look at America's Fast-Evolving Distributed Solar Policy Conversation," Q2 2015, page 4, http://nccleantech.ncsu.edu/wp-content/uploads/50-States-of-Solar-Q2-2015-final.pdf.

[25] *DG: A Balanced Path Forward Providing Customer Choice While Ensuring Reliability*, July 2014.

According to a report[26] by Regulatory Assistance Project (RAP), commercial and industrial rates include a demand charge which is a monthly charge based on the customer's highest usage during the year. The demand charge is intended to cover the cost of generation and transmission resources needed to cover peak demand and distribution resources needed for the particular customer. This report states that demand charges, "…may not be appropriate in the presence of current market conditions, smart technologies and other regulatory policies." With the wholesale market, utilities have the option to purchase generation on a short-term basis rather than build generation to cover peak demand. The RAP paper also notes that demand charges are difficult for customers to understand and suggest that TOU rates may be a more equitable approach to recover peak costs from customers. Lastly, the reports says, "These [demand charges] provide stable revenues to utilities, but discourage energy efficiency throughout the year, since a significant part of the cost of service is fixed and are not realized until the ratchet period has been completed."

A report[27] by Rocky Mountain Institute gives a contrasting view of demand charges. The report says that demand charges provide utilities more assurance of cost recovery, provide price signals to customers, and begin to reduce intra-class cross subsidies. The report also notes, "When a customer with a demand charge is also a net-metered customer, the demand charge is not avoided by excess generation credits, resulting in better cost recovery for the capacity required to support DER." However, the report lays out some of the challenges of implementing demand charges such as: some customers may experience negative bill impacts if they are not able to alter their energy usage patterns; more advanced meters would be required; and customer education would be needed to ensure customers understand the demand charges. This paper concludes, "Despite these obstacles, it is conceivable that many parts of the country could establish a timeline of just a few years to introduce demand charges as a default rate option for mass-market customers, provided appropriate service offerings and alternative rates were also made available."

TOU rates typically include a period of time designated as "on-peak" when rates are higher and a period of time designated as "off-peak" when rates are lower. The RAP paper also discusses TOU rates saying, "TOU rates are an improvement over flat or inclining block rates because they offer some correlation between the temporally changing costs of providing energy and the customer's actual consumption of energy." It also notes that the challenge with TOU rates is setting the time period and rates so that they produce appropriate results without confusing the customers.

---

[26] Lazar, J. and Gonzalez, W. (2015). *Smart Rate Design for a Smart Future*, Montpelier, VT: Regulatory Assistance Project. Available at: http://www.raponline.org/document/download/id/7680

[27] Glick, D, Lehrman, M. and Smith, O. (2014). *Rate Design for the Distribution Edge*, Rocky Mountain Institute.

According to the Rocky Mountain Institute report a benefit of TOU rates is, "…that customer interaction with the grid is priced to more closely match the costs to generate, transmit, and distribute energy." Customer acceptance and program design are challenges of TOU rates. There are some successful TOU programs which suggest that it is possible for others to implement TOU rates.

Staff has highlighted some of the basic debates related to demand charges and TOU rates but makes no conclusions on the feasibility of these options. Many of the non-utility participants provided reply comments that argued against the rate design proposals made by IPL and MidAmerican and suggest that more data are needed to justify such rate design changes.

In addition to the utility proposals for rate design changes, non-utility participants commented that there is no need for Iowa to look at long-term options now because the penetration of DG or net metering is low in Iowa. OCA states that net metering currently has a minimal impact on the utilities' revenue recovery, and no one has demonstrated that long-term solutions are necessary. TASC agrees that there is no need to address long-term net-metering options now but suggests a comprehensive study should be conducted to determine whether a policy change is necessary. Andrew Johnson also agrees that the utilities have not proven that there is a need to redesign rates at this time.

The Environmental and Solar Commenters recommend initiating a docket to specifically collect data and to increase transparency about distribution grid constraints. This docket could explore and independently evaluate the pilot projects while reviewing studies done in other states. Additionally, a value of solar study could also be completed in this docket when appropriate. The Environmental and Solar Commenters suggest that any changes to rate design or restrictions on net metering should wait for the results of a value of solar study.

Staff understands that some participants believe Iowa is not currently in a position to make changes to rate design or net metering due to the low DG penetration levels. However, staff believes that the Board and the participants would benefit from having the utilities and other participants make presentations on potential rate design approaches that may be considered in the future. The presentations would educate the Board, staff, and other participants about various options (including those proposed by the utilities in this docket) prior to them being litigated in a rate case or tariff docket. This approach may also provide valuable feedback to the utilities before they make filings to implement changes. Furthermore, it would allow IPL and MidAmerican an opportunity to explain any underlying issues and to address some of the participants' concerns expressed in reply comments.

Staff Recommendation

Staff recommends the Board direct General Counsel to draft an order scheduling a time for the participants to present potential alternative rate designs to the Board. The Board should direct IPL to present its plan for designing and filing new DG tariffs and MidAmerican to present the three-part rate it is considering; address questions raised in reply comments; and provide examples of how (DG and non-DG) customers would be impacted by the proposed rate designs. The Board order should indicate that other participants interested in presenting alternative rate design options should contact Brenda Biddle, the inquiry manager in this docket. These presentations would provide an educational opportunity for the Board, staff, and other interested parties. Staff believes that these presentations could be held as part of, or on the same day as the Board's monthly meetings.

RECOMMENDATION APPROVED **IOWA UTILITIES BOARD**

/s/ Geri D. Huser *10-7-15*
Date

/bkb

/s/ Elizabeth S. Jacobs *10-6-15*
Date

/s/ Nick Wagner *10/14/15*
Date

Participants' Overall Preferences [28]

The April 8, 2015, staff memorandum laid out four alternatives for the Board and participants to consider as possible paths forward for net metering. The options include:

- *Option 1 – No changes are made to the current net-metering policies.*
- *Option 2 – Make select changes to the net-metering policy such as:*
  - *Cash-out option*
  - Aggregate net metering
  - Virtual net metering
  - Increase the net-metering size cap
  - Include CHP and WHP as Eligible Facilities

[28] Question 7: Participants should indicate their preferences for addressing net metering going forward based on the options 1-4 presented in the memo. Participants should also explain the basis for their preferred options and address how their preferred approach achieves the draft policy goal.

- *Option 3 – Explore long-term solutions.*
- *Option 4 – Explore pilot projects.*

This question was asked to assess the participants' priorities based on the four options laid out in that memo. Most of the participants' responses to this question have been reflected in their responses to the other questions, but staff has included a broad overview of the participants' recommendations and preferences below.

IPL favors a multi-phased approach focusing on near and long-term solutions to address cost allocation and rate design. IPL supports changes to the net-metering rules such as elimination of the rollover provision; exploration of long-term solutions; and pilot projects.

MidAmerican supports exploring a long-term sustainable strategy while penetration levels are low; ending subsidization of DG ownership through utility rates with any ongoing subsidies addressed through tax policies; adopting three-part rates; and implementing pilot projects. MidAmerican also believes the Board should offer education to help customers understand various aspects of their DG facility. This proceeding should conclude with general proposals for long-term resolutions such as carefully targeted pilot projects and permanent, three-part rate changes.

The IAEC seeks policy solutions which balance the concerns of DG investing customers and customers who prefer to receive all of their electricity from their local cooperative.

The IAMU will address net metering policies at the local level. Municipal utilities are examining methods of incorporating DG into their operations.

OCA prefers a long-term solution. The utilities should provide a study demonstrating the extent of cross-subsidization between DG and non-DG customers from which alternative rate designs can be explored.

The Environmental and Solar Commenters support policies that catalyze the market and remove barriers to the development of a DG market. The Board should initiate a new docket that collects data which could then be applied to explore rate design options and that collaboratively explores new approaches and develops specific consensus DG and net metering policy recommendations.

TASC supports an increase in the individual system size limit and pilot projects that encourage the development of DG on optimal locations on the grid and sees no need to explore long-term solutions at this time.

Andrew Johnson supports raising the cap to 2 MW, including the valuation of demand charges for larger customers, perpetual carryover of credits with a

common sense cap (such as 50 percent of annual usage), virtual net metering per the pilot program discussion, continued net metering eligibility for customers entering into third party ownership arrangements, and encouraging the Board to refrain from major rate design change.

Luther College favors making changes to the net metering rule. Due to the low penetration levels, there is no pressing need for an immediate solution to the issue of potential rate impacts of net metering. Luther College supports the Environmental and Solar Commenters' proposed new docket.

Staff believes the recommendations proposed above are consistent with the preferences of most participants. Staff also maintains that by gathering data through pilot programs, implementing net-metering policy changes (based on data) through a rule-making process, and continuing the discussion related to long-term options encourages the growth of renewable DG in a manner that achieves state policy goals while being consistent with the Board's mission to ensure that reasonably priced, reliable, environmentally responsible, and safe utility services are available to all Iowans.

Appendix A - Participants Responding to the Board's April 30, 2014, Order

Utility/Regulatory

- Interstate Power and Light Company (IPL)
- MidAmerican Energy Company (MidAmerican)
- Iowa Association of Electric Cooperatives (IAEC)
- Iowa Association of Municipal Utilities (IAMU)
- Office of Consumer Advocate (OCA), a division of the Iowa Department of Justice

Organizations

- Environmental Law and Policy Center, Iowa Environmental Council, Sierra Club, Iowa Solar Energy Trade Association, Solar Energy Industries Association, and the Vote Solar Initiative (Environmental and Solar Commenters)
- Midwest Cogeneration Association (MCA)
- The Alliance for Solar Choice (TASC)

Individuals/Small Business

- Don Anderson
- Lisa Beam
- John E. Carpenter
- Chuck Feldman
- Harold Flatland
- Larry Grimstad - Decorah Solar Field, LLC (Decorah Solar)
- Andrew Johnson – Winneshiek Energy District (WED)
- Johnson County Board of Supervisors
- Luther College
- Nancy Gates Madsen
- Birgitta R. Meade
- Marguerite and Carol Meade
- Craig Moser
- William J. Pardee

Appendix B – Summary of Participants' Initial and Reply Comments

Appendix B Table of Contents

General Comments

Initial Comments

Interstate Power & Light (IPL)
IPL has experienced a growth in DG which demonstrates that cost allocation and grid reliability must be addressed now. IPL believes that it is time to revisit rate design for customer-owned generation to ensure economic sustainability for DG participants and non-participants. In the past, the Board has recognized that cost allocation and rate design issues may be unique to each utility although based on fundamental pricing standards. Cost allocation and rate design for DG is no different.

IPL believes DG can be more sustainable through a cost-based approach rather than net metering. However, IPL notes that net metering is not the primary issue but rather cost allocation and rate design. The Board's rules support cost-based rates, and these rules[29] should be applied to DG customers. Customer classes are established based on reasonably similar usage patterns. Customers without DG are "full requirements" customers whereas customers with DG are "partial requirements" customers. There are distinct usage patterns for both groups of customers. Proper rate design will ensure that DG customers can continue to be added to the system while protecting non DG customers from paying more than their share of energy and system costs; provide transparency and clarity of energy prices; and provide incentives to customers to operate in a more-efficient manner.

The net-metering tariff was implemented in 2002 as an incentive to increase DG participation but the landscape and economics have changed. Today there are state and federal tax incentives that incentivize DG. IPL argues that net metering places the same value on generation from DG customers as on fully-delivered electric services provided by the utility. Absent rate design and cost-allocation changes, the impact of the transfer payment to IPL's non-net-metered customers will continue to grow as additional DG is installed.

Additionally, IPL points out that certain distribution circuits exceed 25 percent DG penetration which caused changes in service delivery costs and processes. IPL must continue to provide and maintain reliability while incorporating a DG customer's two-way network and transactional use of the grid. IPL states, "The right price signals will ensure economic sustainability and maximum economic and social benefit for all IPL customers with the goal to maximize location and operation of DG technologies in the integrated electrical service system, while fairly allocating costs and benefits."

[29] 199 IAC 201.10(2)

IPL proposes to integrate DG by using the following approach over the next 24 months: 1) data collection and communication; 2) design and file new DG tariffs; 3) new options via pilot programs; and 4) filing an electric rate case in 2017.

Iowa Association of Electric Cooperatives (IAEC)
The current approach to net metering is not sustainable long term if there is a significant increase in penetration of DG. The IAEC states that policymakers should be careful about funding incentives (such as net metering) through utility rate structure because it will impact customer classes differently than if the incentives were funded through other mechanisms like the income tax or property tax structure.

Environmental Law and Policy Center, Iowa Environmental Council, Vote Solar, Solar Energy Industries Association, Iowa Solar Energy Trade Association and the Sierra Club (Environmental and Solar Commenters)
Based on data collected in this docket, Iowa's net-metered DG levels are low compared to other states. Therefore, the immediate priority should be to eliminate barriers to the development of DG. The Environmental and Solar Commenters support: increasing the cap for net-metered facilities; initiating pilots to strategically deploy distributed energy resources (DER); and allowing virtual and aggregate net metering through a shared renewable program.

Don Anderson, Chuck Feldman, and Harold Flatland
Although the utilities say that DG customers are not carrying the appropriate share of costs for the grid, studies by Cross Border Energy show that when all costs and benefits are considered cross subsidies only exist when the residential rate structure distorts fixed and variable costs.

DG provides: generation near the point of consumption which saves on transmission costs; production at peak load times; and generation with less carbon to slow climate change. The utilities should recognize DG's contribution fairly.

Lisa Bean
The Board should be open to net metering and should avoid alienating customers who may seek independent options outside of the shared grid.

Johnson County Board of Supervisors
The Johnson County Board of Supervisors urges the Board to ensure that power purchase agreements (PPAs) are eligible for net metering. Recently the Board of Supervisors entered into a PPA with Moxie Solar and later discovered that MidAmerican would not allow them to net meter since the Board of Supervisors did not own the solar array. Ultimately the solar array size was downsized so there would be less excess electricity. The Johnson County Board of Supervisors supports both aggregate and virtual net metering.

Nancy Gates Madsen
Ms. Madsen supports net metering as a way to encourage renewable energy sources. The Board should not allow utilities to add costs to DG customers as this may incentivize customer to opt-out of the system and move off the grid. Solar helps with peak demand and supports voltage and frequency regulation. Net metering should be available to all customers.

Birgitta R. Meade
Currently the REC charges a monthly fee of $27.50 for line maintenance. Ms. Meade understands that the grid must be maintained and says she supports the grid by selling excess solar power to the REC at bargain prices during high demand times. She urges the Board to not alienage early adopters of future technologies.

Marguerite and Carol Meade
The Meades are disappointed that the Board is alienating small households. The line maintenance fee paid each month to the REC is reasonable but if necessary, they say they would simply go off the grid to produce and store what she needs. The Meades support community solar.

Craig Moser
Net metering is working well, and it is critical for further development of solar. Solar DG adds value to the system by helping to meet peak demand, reducing transmission needs, and reducing the need for additional power plant construction. Community solar and virtual net metering are important for customers who cannot site solar on their buildings.

Mr. Mosher encourages the Board to make PPAs eligible for net metering, because they put customer-owned power onto the grid from the customer's side of the meter which is consistent with widespread net-metering practices.

Reply Comments

MidAmerican Energy Company (MidAmerican)
The fundamental principles of the Board's net-metering analysis should include: rate design for DG that follows existing Board ratemaking principles; maintenance of the reliability and integrity of the electrical grid; and goals established by the Board for net metering and subsequent implementation of such goals must take into consideration all customers by ensuring all interests are fairly balanced. MidAmerican proposed a rate design that reflects the costs of service and compliance with 199 IAC 20.10. This rate design should be implemented on permanent, rather than pilot, basis to provide reasonable, non-subsidizing net-metering policies for Iowans.

Luther College

Both costs and benefits need to be assessed in any rate case or rule making related to Alternate Energy Production[30] (AEP) DG facilities otherwise DG customers will not be treated in a reasonable and just manner. Rule 20.10 should be revised to reflect the importance of measuring and valuing both the benefits and costs associated with electricity service provided by the utilities and customers who own or operate AEP systems.

IPL plans to undertake a four-phase process to develop a new cost-based approach that will lead to new rates for DG customers. The Board should direct the process rather than the utilities.

TASC

Both MidAmerican and IPL characterize net metering as a subsidy. However, there is no credible, unbiased analysis that supports these conclusions in Iowa. Nearly every independent benefit-cost study of net metering finds that the benefits that net metering provide are worth more than the compensation these customers receive through net metering.

TASC supports the Johnson County Board of Supervisors' recommendation that the Board ensure third-party PPAs are eligible for net metering.

Andrew Johnson – Winneshiek Energy District (WED)

Although the utilities advocate a rate design that unbundles costs, they fail to recognize that net metering represents a "bundle of benefits" that DG customers provide – not simply energy credits. Mr. Johnson recommends that the Board refrain from major long-term changes to net metering and require that any changes made are done in a rule-making docket with a detailed analysis of costs and benefits. The current net-metering approach functions well as a proxy for balancing the costs and benefits of DG to both the customer and utility.

Mr. Johnson supports improvements to net metering that focus on removing barriers/increasing access and do not significantly change the current policy. Suggested improvements include: raising the net-metering cap to 110 percent of annual usage; allowing all customers, regardless of size or method of financing to be eligible for net metering; clarifying that net-metering kWh credits rollover monthly and that customers are permitted to carry a positive kWh credit balance; and allowing virtual and aggregate net metering.

[30] The definition of AEP facilities included in Rule 199 IAC 15.1 identifies the types of generation that are eligible for net metering. These include: 1) an electric production facility which derives 75 percent or more of its energy input from solar energy, wind, waste management, resource recovery, refuse-derived fuel, agricultural crops or residues, or wood burning; and (2) a hydroelectric facility at a dam.

John E. Carpenter
The need to incent renewable energy development still exists. Mr. Carpenter acknowledges that the cost of residential solar is likely higher on a per watt basis compared to the cost of utility-scale solar, because there are fewer modules to amortize fixed costs over. Additionally, Mr. Carpenter states that he is not opposed to utility-scale solar but believes there are advantages to producing the power where it is consumed.

Responses to the Board's questions:

Question 1: Staff has proposed the following policy goal for the Iowa Utilities Board:

> "To provide a regulatory framework that allows distributed generation to grow in an equitable manner that balances the interests of regulated utilities and all utility customers."

Comment on the advantages and disadvantages of the Board adopting such a policy goal, specifically related to net metering.

Initial Comments

IPL
The policy goal would provide a framework for future action, better align stakeholder expectations, and mitigate the risk of conflicts and confusion in the future as customers, utilities, and policymakers make decisions about DG integration. The policy goal should support a long-term, sustainable economic resolution to the cost allocation issues and the continued safety and reliability of the electric system. IPL proposes the following goal: "To provide a regulatory framework that allows distributed generation to be integrated into the overall utility system in an equitable manner that balances the interests of regulated utilities and all utility customers."

MidAmerican
MidAmerican supports the proposed policy statement and believes it is consistent with the Board's rules that support rate design which matches cost of service for each customer class. The policy goal does not propose policies that favor DG customers over non DG customers.

However, MidAmerican notes that the policy goal is not consistent with current net-metering tariffs which shift certain costs disproportionately from net-metered DG customers to other ratepayers. MidAmerican believes the cost shifting is

improper and maintains that it is important for the Board to examine removal of the subsidy and to eliminate cost-shifting.

Another disadvantage of the policy goal is that it may be difficult to gain consensus. MidAmerican also noted that two positions articulated in staff's gold memo (that the Board has found penetration of net metering is at, and will remain at, low levels; and that it is acceptable to subsidize DG customers because there are other subsidies in rates) are not reflected in the policy statement.

Iowa Association of Municipal Utilities (IAMU)
The IAMU is unsure that the policy statement would impact municipal utilities. However, acknowledging that implementation of DG must be equitable to all customers is important and the proper regulatory framework (and rates) must be in place.

IAEC
The IAEC provides the following advantages of a policy statement: 1) enhances customer choice; 2) provides reassurance of equitable treatment for utilities and customers; 3) the Board's expectations are clarified; and 4) implies current net-metering options may need to be revised. The IAEC also provide the following disadvantages: 1) increased uncertainty for utility investment without direct information about recovery of sunk fixed costs or new investment costs; 2) broadly favors DG customers over non-DG customers; 3) the net-metering policy may be viewed as outside the Board's role; and 4) the policy many not accurately depict the Board's ultimate goal since it raises additional questions.

Additionally, the IAEC states that the policy statement does not account for utility-owned renewable generation and believes one form of renewable generation should not be promoted over another.

The IAEC refers the Board to 199 IAC 20.10 for guidance in considering any policy revisions to address equitable regulatory treatment. Rule 20.10 highlights the Board's legislative requirement[31] to balance the interests of customers who are situated differently within the utility's service territory and fairly allocate costs to all customers. The Board's proposed policy goal contrasts with the intent of that rule because it seeks to balance the interest of regulated utilities with the interests of all customers.

Furthermore, the IAEC argues that the policy goal is too broad because it includes all utility customers – including those of utilities that are not regulated by the Board (i.e., municipals and most rural electric cooperatives). The policy should also be considered with other net-metering policies and incentives that have helped to advance renewable generation. The Board should ensure that the economics of choosing DG include the need for utilities to recover sunk costs and potential new distribution infrastructure costs. In addition, the Board should

[31] Iowa Code §§ 476.8 and 476.43.

consider whether non-participating customers will be impacted by increased rates due to customer adoption of DG.

The Office of Consumer Advocate (OCA), a division of the Iowa Department of Justice

OCA opposes the policy goal because it is not sufficiently tied to a statute or existing rule. Additionally, OCA objects to any implication that current DG policy is unfair to, or unbalanced against, utilities or any subset of customers since there has been no evidence showing that customers are being harmed by Iowa's DG policy. OCA believes the language is vague and subject to improper interpretation. Furthermore, the "interests of regulated utilities" is not defined. OCA proposes the following policy goal: "To provide a regulatory framework which promotes the expansion of cost-effective renewable distributed generation while protecting against excessive and inappropriate cross-subsidization."

Environmental and Solar Commenters

The proposed policy goal is consistent with the policy adopted by the legislature in Iowa Code § 476.41 which encourages the development of alternative energy production. The Environmental and Solar Commenters suggest changing the phrase "that allows distributed generation" to "that encourages distributed generation."

The Environmental and Solar Commenters note that a balanced approach should be based on real data that quantifies and credits the benefits of DG. Additionally, it is important to balance utility interests as long as they are considered in the appropriate public interest context. Finally, the Environmental and Solar Commenters suggest that the policy goal should be broader to include all distributed energy resources such as DG, energy efficiency, demand response, and other resources.

The Alliance for Solar Choice (TASC)

The proposed policy goal is incomplete and should acknowledge that retail customers have the right to use as much utility-supplied electricity as they choose. TASC recommended the following goal: "To provide a regulatory framework that allows distributed generation to grow in an equitable manner that balances out the interests of regulated utilities and all utility customers while ensuring all retail customers have the option to self-supply their own electricity and use as much or as little utility-supplied electricity as they choose."

Midwest Cogeneration Association (MCA)

True balancing requires looking at the entire set of costs and benefits that DG provides to the grid and the ratepayers. MCA strongly disagrees with the contention that DG shifts costs to other ratepayers because DG provides many benefits to the electric generation, transmission, and distribution system.

Andrew Johnson – WED

The goal wrongly places the financial interest of the regulated utilities on par with the interest of Iowa citizens and utility ratepayers. Mr. Johnson believes the common good of Iowans should be the foundation of any further policy goals regarding DG. To realize the economic benefit of DG to Iowa ratepayers and communities, maintain consistency with existing Iowa policy, address climate change and support Iowa's Clean Power Plan, and promote grid evolution, Mr. Johnson proposes the following policy goal: "Facilitate the evolution of a distribution grid and energy marketplace fully enabling and prioritizing customer and community participation, and align utility roles and revenue models in support of this evolution."

Luther College

Luther College supports the Board adopting an explicit policy goal regarding DG but has concerns about the draft goal. First, the policy goal should be narrowed to include alternate energy production (AEP) facilities rather than all DG. Second, the Iowa Code and the Iowa Administrative Code do not use the phrase "interests of regulated utilities" but rather uses "the public interest." The Board has "…an obligation to ensure public utilities have just and reasonable rates, as well as a consistent and fair return on common stock equity for shareholders of investor-owned utilities, but only when and because these utilities provide a valuable service to Iowa utility customers." (Luther College Comments, p. 2) Third, it is unclear how the new regulatory framework will "enable distributed generation to grow in an *equitable* manner" while it "*balances* the interest of regulated utilities and all utility customers." (Emphasis added.) Iowa Code does not place the interests of regulated utilities on par with those of Iowa utility customers (public interest). Last, the policy goal is not framed in relation to existing state policy goals, legislative intentions, and legal requirements regarding renewable energy, energy efficiency, and local power production.[32]

Luther College proposes the following policy goal: "To provide a regulatory framework that allows customer-owned or operated alternate energy production systems to grow in a manner that achieves state policy goals regarding renewable energy, energy efficiency, and local power production while also being consistent with the mission of the Board "to ensure that reasonably priced, reliable, environmentally responsible, and safe utility services are available to all Iowans." Luther states that this goal's narrowed focus is justified given the various Iowa laws that encourage investment in renewable energy.

John E. Carpenter

Mr. Carpenter supports the Board's establishment of a goal to grow distributed generation but suggests a word change. He suggests, "To provide a regulatory framework that allows distributed generation to grow in a *progressive* manner…"

[32] Iowa Code §§§ 476.41, 476.53A, and 476.8.

Larry Grimstad (Decorah Solar)
Clean power should be encouraged by state utility regulators. The government should encourage the transition and arrange for the public and all ratepayers to absorb the cost of the transition from fossil fuels to clean power production.

William J. Pardee
Mr. Pardee believes the goal is necessary and worthy but said, "…the devil is in the definition of 'balance.'" The utilities need a business model that incorporates DG equitably and DG investors deserve a decent return on their investment.

Reply Comments

MidAmerican
MidAmerican points out that commenters take a variety of positions on the policy goal and suggest numerous changes to the statement. MidAmerican proposes the following statement, which also reflects IPL's proposal: "To provide a regulatory framework that on a long-term, sustainable basis allows distributed generation to be integrated into the overall utility system in an equitable manner that balances the interests of regulated utilities with all utility customers."

Additionally, MidAmerican states that promotion of DG without consideration of all customer impacts is inconsistent with the requirements of Iowa's Public Utility Act, Chapter 476. (See also: Iowa Code § 476.41, § 476.3, § 476.8, and § 476.5) Based on Iowa Code §§ 476.41 and 476.43, MidAmerican believes utility-owned renewables should be included in the policy objective. MidAmerican argues that rates must be reasonable, based on cost-of service, and should not contain a subsidy that unfairly requires non-DG customers to pay more than their share of costs.

OCA
OCA states that the Board must reflect Iowa's policy to encourage alternative energy in its policy goal.

Andrew Johnson – WED
Mr. Johnson concurs with OCA that this docket is not the appropriate place for creating new policy statements and that there is no evidence in this docket that shows utilities or customers are being harmed by current DG policy. Furthermore, Mr. Johnson is also concerned about the use of the phrase "interest of regulated utilities" in the policy goal. The Iowa Public Utilities Act provides guidance for encouraging DG growth which is stronger than the policy goal's use of "allow." Mr. Johnson agrees with the Environmental and Solar Commenters that distributed energy resources should be included in a policy goal and that a new docket should be initiated to facilitate the evolution of distributed energy resources. Mr. Johnson reiterates the policy goal proposed in his initial comments.

Luther College
Based on MidAmerican's comments that utility scale projects will capture economies of scale not available from a DG owner, the Board is faced with a philosophical question – to what extent should the Board maximize least-cost power versus locally-owned power? Existing state policy goals, legislative intentions, and legal requirements regarding renewable energy and local power production favor locally-owned power at least as much as least-cost power.

The IAEC discusses the term "equitable." Luther College notes that equity involves distributing burdens or benefits on the basis of ability or need in order to achieve a public good. Owners and operators of AEP-DG systems provide a public good through grid benefits and services, thus their share of the burden to maintain the grid should be reduced proportionately.

Luther College concurs with the OCA that the Board's draft policy goal is not sufficiently tied to a statute or existing rule and that there is no evidence showing utilities or any subset of customers are being harmed by the existing DG policy.

Additionally, Luther College agrees with the Environmental and Solar Commenters that a data-driven response to DG policy must include both costs and benefits. Luther College also agrees that the policy goal should include distributed energy resources.

Question 2: Would it constitute a "sale" if the Board were to determine that at the end of each year, unused kWh credits are to be diverted and used for a special cause?

Initial Comments

IPL
It is not clear whether transferring unused credits to a special cause would constitute a sale. FERC has stated that no sale occurs when a customer (i.e., homeowner or farmer) installs generation and accounts for its dealings with the utility through net metering but has also stated that a net sale has been made and FERC has jurisdiction when a net-metering customer produces more energy than it needs over the applicable billing period. Therefore, energy transferred to the utility may be considered a sale that must be at an avoided cost rate.

Oregon and Utah are examples where the unused credits are transferred to low-income customer funding or other use. In Utah the avoided cost value of unused credits are granted to low-income assistance programs or for another use as determined by the governing authority.

MidAmerican
This could possibly constitute a sale. There is still a value that is placed on an unused credit given to a third party even if the Board is not converting the credit

to cash; the utility has acquired that excess credit which creates a wholesale sale transaction. The FERC has jurisdiction over wholesale sales. FERC explained that to avoid being a wholesale sale, net metering needs to be implemented via a series of credits:

> The Commission has explained that net metering is a method of measuring sales of electric energy. Where there is no net sale over the billing period, the Commission has not viewed its jurisdiction as being implicated; that is, the Commission does not assert jurisdiction when the end-use customer that is also the owner of the generator receives a credit against its retail power purchases from the selling utility. Only if the end-use customer participating in the net metering program produces more energy than it needs over the applicable billing period, and thus is considered to have made a net sale of energy to a utility over the applicable billing period, has the Commission asserted jurisdiction. (*Sun Edison* LLC, 129 FERC ¶ 61,146 (2009) at ¶ 18).

FERC requires the sale of energy at the avoided cost rate; therefore, avoided cost rate should be used to make sure the state is not inadvertently engaging in prohibited wholesale sale. MidAmerican recommends the Board use the approach used by Oregon which limits the transfer of credits to the low-income assistance programs and values the credits at the utility's avoided-cost tariff rate.

<u>IAEC</u>
If the Board were to opt for a cash-out option, there could be legal concerns because it would change the nature of the transaction.

With respect to using the excess credits for a special cause, it raises the question of whether this would be mandatory or voluntary. The credits are the property of the customer.

Also the IAEC states that if the credits are diverted to another customer as an actual energy transfer than there could be issues with virtual net metering that includes "potential violations of exclusive assigned service territory laws, accounting issues if two different utilities were involved, and challenges in determining an adequate compensation to the utility for the DG customer's use of the distribution system where the DG facility is located distant from the load." (IAEC Comments, p. 8)

<u>OCA</u>
Unused kWh credited to another account would not constitute a sale; it would be an accounting recognition for metering purposes.

<u>Environmental and Solar Commenters</u>
If excess credits are transferred to a special cause that would still be considered a billing arrangement and would be considered a donation of "credits." The

Environmental and Solar Commenters reference language from PURPA and FERC as support that net metering is a billing arrangement.

To provide the maximum flexibility the customers should have the option to rollover their credits on an annual basis if the Board pursues this option; customers should be able to choose how the credits are allocated.

TASC
Kilowatt-hour (kWh) credits are considered the customer-generator's property, and the arrangement would not constitute a sale unless the customer receives payment. FERC also clarified that "netting" kWh is not a sale. The credits under this scenario would likely be considered a donation.

Luther College
This would not be consider a sale if no cash changes hands and the credits are diverted electronically to offset charges to another customer's account. However, the transfer of credits for a special cause must be done voluntarily by the customer. The Board has required the utilities to establish a fund for low-income customers[33] but has not required customers to donate to that fund.

Luther College does not believe that there is any federal requirement limiting net metering to one year and requiring a zeroing out of any surplus on an annual or monthly basis.

Andrew Johnson - WED
The transfer of kWh credits would not represent a sale, since cash is not changing hands, but there is no evidence that credits continuously rolling forward has caused problems. Mr. Johnson believes that time-of-use (TOU) tariffs are relevant to the cash-out discussion. A dollar value could be placed on the surplus production based on the TOU retail rate and then the value applied to the remaining monthly bill. This is referred to as net billing. Mr. Johnson would also support a cash-out at the avoided cost if it were optional and on an annual basis. However, he does not support a mandatory diversion of surplus credits to a "special cause."

John E Carpenter
There should be monthly balances made between the users of power and the utility; however, the power produced by the solar PV array is owned by the person who owns the array, and it would be seizure of property if the Board dedicated the kWh credits to a special cause.

[33] Iowa Code § 476.66(1)

Reply Comments

MidAmerican
It may not be legal for the Board to order transfer of kWh credits at the end of each calendar year. As the IAEC points outs, unused credits remain the customer's property, and if presumed abandoned under Iowa Code § 556.4 (Deposits and refunds held by utilities), they are to be returned to the state of Iowa.

TASC
The excess kWh credits are the property of the customer-generation and as long as there is no payment for the unused credits there is no sale. PURPA and FERC precedent support this position.

It should be the customer's choice to donate their excess credits to a special cause. "Compelling a customer to make a donation is a regulatory taking of a property right without due compensation." (TASC Comments, p. 12)

Luther College
IPL claims that FERC decisions are less clear when there are excess bill credits over a billing period and further states that if transferred to the utility, it could be considered a sale and must be paid at an avoided-cost rate. MidAmerican made similar points. However, Luther College believes that the transfer of unused credits would not constitute a sale.

The Board may want to clarify in its net-metering rule what constitutes a billing period. Luther College suggests one calendar year or 12 consecutive months agreed to by customer and the utility. The Board should also set "technology-specific avoided cost rates" so owners can be properly compensated for their excess energy.

Lastly the Board should give "careful attention" to Mr. Johnson's recommendations regarding TOU rates and the cash-out option.

Andrew Johnson - WED
Mr. Johnson agrees with OCA and the Environmental and Solar Commenters that this would not constitute a sale. Additionally, Mr. Johnson supports the Environmental and Solar Commenters comment that it should be the customers' choice and not be mandatory. Finally, the Board should clarify that the existing net-metering policy allows excess credits to rollover monthly, and the Board should consider capping the rollover at 50 percent annual usage and any credits beyond the cap are cashed out at the avoided cost rate.

Question 3: Since the net-metering facility size cap and carry-over provisions were established through settlements between the IOUs and OCA, should any changes to those provisions be addressed via a rule-making docket, or through modification of the tariff provisions, or does the forum matter?

Initial Comments

IPL
Whether to use a rule-making docket or to modify the tariff will depend on the nature of the changes. A rule-making docket would be appropriate for developing a broad set of principles. The facility size cap and carry over provisions could be revisited in either a rule making or a tariff filing.

IPL supports the current facility size cap and modifications to the carry over provisions to reduce cross-subsidization but believes the focus needs to be on rate design and cost allocation.

MidAmerican
MidAmerican supports using either approach and suggests that it may be appropriate to use both. A rule making could be used to develop broad principles for revisions to net-metering tariffs, and the individual tariff filings could be used to implement the rules. This approach worked well for implementation of other regulatory requirements.

MidAmerican also states that it should be able to move forward with its proposed changes to the net-metering tariff to make them more consistent with existing rules[34] before a new rule making is finalized.

IAEC
The forum to make changes to the size cap "could matter if the forum allows the Board to take into account individual impacts on utilities in a positive and constructive manner." The IAEC discusses the Board's limitations for proposing net-metering rules on non-rate regulated utilities.

OCA
Short-term changes to the net-metering policy can be done in this proceeding, but long-term changes should be made in a rule-making proceeding.

[34] For example, the existing rule 199 IAC 20.10(2) requires rates to be designed to the maximum extent practicable to reasonably reflect the costs of providing service to the class.

Environmental and Solar Commenters

The rule-making approach should be used to make improvements to the net-metering rule since it is a transparent process that provides options for public participation. State policy should not be set on a case by case basis.

The net-metering rule is clear that a utility shall net meter all qualifying AEP facilities. However, an exception was carved out in MidAmerican's settlement where only a certain sized facility can net meter creating an inconsistency between rules and the settlement. The Board waived the Board rule to accommodate the cap restriction. The Environmental and Solar Commenters question whether that was appropriate; and believe that if it was intended to be permanent the Board should have initiated a rule making to consider amendments instead of relying on periodic waivers.

A rule making is the best way to address changes to net metering and should provide safeguards to the participants to allow sufficient time to respond to other stakeholder comments including filing expert testimony if necessary.

The recent issues with net metering and third-party PPAs makes it clear the importance of transparent net-metering policy established in the rules. MidAmerican and IPL have interpreted the net-metering tariff to prohibit net-metering systems with third-party PPA financing. This has led to the downsizing, delaying, or scrapping of projects by school districts, municipal wastewater treatment facilities, and municipal buildings. Their interpretations are inconsistent with Iowa's net-metering rules that requires a utility to net meter all qualifying AEP facilities and are not supported by the recent order made by the Iowa Supreme Court in the *Eagle Point Solar* case.

The Board needs to make it clear that Iowa's net-metering rule is Iowa's policy that the utilities must follow no matter what method of financing that is used.

TASC

A rule making is the proper forum. The tariff process is less transparent and utility specific which could lead to discrepancies between the utilities. State policy should be established in an open process, and rules should be consistent across the state.

An example of confusion is with third-party PPAs. MidAmerican and IPL prohibit some of these arrangements from net metering despite the recent *Eagle Point Solar* court decision. The Board should clarify that the utilities should allow third-party arrangements to be net metered.

Luther College

MidAmerican and Board staff have made comments that FERC would not assert jurisdiction over farmers or homeowners, and based on this MidAmerican set a cap at 500 kW for net metering as part of a settlement. Luther College states

that FERC only gave those as examples and also did not assert a 500 kW cap. Therefore, there is no reason to limit net metering to only those two classes of customers. If other classes of customers are considered, than the rationale of that cap is gone.

The Board should be able to make changes to Iowa's net-metering rules in the appropriate venue. Board's staff recommended use of pilot projects to test the impacts of any long-term changes, and Luther College commends it. Before approving changes in a rule making, the Board needs to invite public comments.

Andrew Johnson - WED
Mr. Johnson defers to the recommendations made by the Environmental and Solar Commenters on the legal processes but requests that the stakeholders have maximum opportunity for participation in the process.

He also supports pilot projects as a way to test the "functionality" of changes before making the changes in a rule making or tariff docket.

John E. Carpenter
No comment was offered because it is a legal issue except to say if net metering is decided as part of a rate case, the issues decided by this decision may need to be re-examined.

Larry Grimstad (Decorah Solar)
Net-metering caps and the carry-over options need to be structured to encourage the development of clean power. Rules need to be established and agencies may need to be changed to meet the objective of using clean power facilities in place of fossil fuel and nuclear facilities.

William J. Pardee
Those people affected by the changes need an opportunity to express their concerns to prevent "abuses and misunderstandings."

Reply Comments

MidAmerican
MidAmerican does not object to developing changes to the net-metering policy through a rule-making process as many others support. However, it is better to use tariff proceeding in a contested case for implementing cost-based, three-part rates pursuant to 199 IAC 20.12(2).

TASC
MidAmerican is proposing a three-part rate structure for net-metered customers to make the ne-metering tariffs more consistent with existing rules which require rates to "reflect the costs of providing service to the class." This change would help MidAmerican and hurt net-metered customers.

Any proposed change needs to be a part of a general rate proceeding and supported with credible evidence as required by the Iowa Code and Board precedent.

Andrew Johnson - WED
The Environmental and Solar Commenters' review of Iowa's net-metering history is relevant to this question, especially the comments that a waiver of the rule requirement is not the same as a permanent change to the net-metering rule

Additionally, the Environmental and Solar Commenters and OCA are right in saying that the rule-making process is what should be used to make major changes to net metering. However, the Board could re-establish the original scope and clarity to the net-metering rule here by:

- Removing the net-metering cap.
- Establishing clear rollover procedures.
- Clarifying that no customer class may be discriminated against.
- Clarifying the no customer may be discriminated against based upon method of financing, including those using third-party PPA models.

Luther College
Luther College supports a rule-making docket for making changes to net metering because it provides better transparency and better capacity for public input.

Luther College agrees with IPL that broad principles should be the focus of the docket and reiterates that a calculation of both the costs and benefits created from AEP systems need to be included in the principles.

Question 4: If the Board decides to change the cap for eligible net-metered facilities, one option would be to allow customers to net meter 110 percent of their average annual electricity consumption up to 1 or 2 MW. Comment on the short-term and long-term financial impact such a change would have on non-DG customers and the utilities. Would this have an impact on grid reliability? Would it impact the way utilities do their resource and system planning? Identify any other concerns associated with this change.

Initial Comments

IPL
IPL makes the following points with changing the size cap:

- IPL has not had a customer yet, in aggregate, reach the current 500 kW cap; so it is not obvious that the cap needs to be increased.
- If the cap was doubled or quadrupled, it could create an incentive for customers to oversize their DG facilities. Tariffs should not be used to create incentives.
- The 110 percent of average annual electric usage would incent customers to properly size their system, but the Board is also suggesting an annual cash out when a monthly cash out is better aligned with usage and time-of-year pricing.
- The language in the proposed change could be interpreted several ways, but IPL interprets the language to mean that a customer with a 1 MW demand could net meter up to 1 MW of aggregate nameplate capacity, but any annual cash-out would be limited to 110 percent of average electrical usage.

By raising the cap to 1 or 2 MW, there will be technical aspects to grid reliability and resource planning that will need to be addressed: 1) production on any single distribution level circuit could exceed local load levels forcing backflow to the transmission system; 2) challenges are created to the distribution utility for real-time monitoring; 3) the system will need to be more robust to support the greater level of operation and flexibility, increasing costs to all customers; and 4) timing imbalances are created by DG (which these costs should be borne by DG customers).

As DG continues to grow in scale, the Board should consider mandating "islanding" principles for times when the local circuit separates from the rest of the system for reasons of liability and damages. DG customers should have the responsibility for holding other system users harmless if the DG creates additional damages or system reliability issues.

MidAmerican
The subsidy issue needs to be addressed and impacts evaluated before expanding the net-metering eligibility. This could be done through a pilot project.

This question has two inconsistences with MidAmerican's existing tariff. First, the tariff requires that the "generating capacity and associated energy is intended to serve only the electric requirements of the owner of the [net-metered] facility." MidAmerican is not clear if that language would be changed to allow a customer to meet 110 percent of its needs instead of 100 percent. If the customer wants to install a larger system to sell excess energy instead of banking it, this would be a

significant change to the philosophy that a user's generation is netted against his load.

Second, this change would increase the current tariff cap of 500 kW to 1 or 2 MW. This creates financial issues as well as issues with grid reliability and resource and system planning.

The financial impact of raising the cap would be minimal if the customers who would take service above the 500 kW would continue to take service on three-part rates where the demand charge would not be netted against energy produced by the DG facility. However, it systems are increased to 110 percent of the customer's average annual electricity consumption; there will be excess energy at the end of the useful life since the system is larger than what is needed to serve that customer. The financial impact on the utility will depend on how the credits are used or retired. One solution is to implement a three-part rate structure.

Capping the size of a DG system up to 110 percent of average annual electricity consumption would not give customers the incentive to significantly overbuild their DG system. Capping the size is important for grid reliability because available capacity is limited on a given circuit or other system requirements.

Increasing the maximum capacity for net metering could increase the amount of excess power injected into the distribution system which can hurt system reliability, and it also could reduce the number of customers able to interconnect before a system upgrade is needed. A pilot approach may be useful to understand grid reliability issues.

With respect to resource and system planning, MidAmerican sizes its facilities to serve its customers' loads often before the net-metering customers request to interconnect with its system. Therefore, when MidAmerican is performing its resource planning, it does not know how much power DG system will produce and over what period of time.

MidAmerican points out:

> "…an increase in the maximum capacity limit would affect system operations because if there are fewer, but larger, generators on a circuit or a substation transformer, then the potential for any one, larger generator to be offline and affect the expected loading of a circuit or substation transformer on a real-time basis is greater." (Comments, p. 13)

The current penetration level of DG is small enough that it is modeled as an offset to load in MidAmerican's load forecast. However, as the level increases, new forecasting methods will be needed to deal with the load forecast uncertainty

created by DG which can impact the timing, size, and generation technology for future construction projects.

DG can mask the growth rate of customer load, and it is an intermittent resource that creates hourly load uncertainty. It will be helpful to have data of the aggregated historical energy production from DG resources, and MidAmerican may need to make forecasts based on the vintage of the DG technology but it will be difficult to obtain that data.

Finally, MidAmerican points out that as DG penetration levels rise, MISO is expected to require DG to register as a load modifying resource (LMR) to identify DG from the load and that it may be necessary to have fast ramping generation capabilities to deal with load requirements across the evening peak as solar production diminishes. This is due to the on-peak nature of solar generation's energy profile.

IAEC

The impact of the changing the size cap can impact utilities differently depending on the utility's rate design and rate structure, types of customers served, size of the utility, timing of peaks, etc. which indicates one size does not fit all.

If the cap size is increased, this may create reliability concerns such as circuits getting over loaded, difficulty in balancing and scheduling generation resources, and power quality issues.

The Board should also consider stray voltage problems if the size cap is increased.

The current interconnection rules require the DG customer to pay the costs of equipment upgrades and engineering studies to comply with IEEE standards; this policy needs to continue.

Finally, the IAEC discusses the "duck curve" that demonstrates that load steeply drops off after solar systems become active during the day and load increases steeply as solar output drops off. This requires fast generation response to make sure customers have power which creates reliability concerns. This will likely impact resource system planning, and potential solutions will need to be identified.

IAMU

The size of municipal electric utilities in Iowa range in size so this one-size-fits-all approach does not work. The quantity of DG and where it is located can impact reliability; the current distribution system was not designed to consider DG facilities.

The short-term impact of DG can reduce cost-recovery of distribution costs, transfer costs to non-DG customers, and raise rates. Long-term impacts will vary between utilities and are less certain.

Municipals will start incorporating DG installations into resource and system planning as the installations increase.

OCA

OCA cited recent testimony from another docket that explains that Iowa rates are not at a level that would encourage larger-scale DG companies; the very-high cost states are where these companies are at. Therefore, with limited DG growth and penetration, there should be limited impacts on grid reliability, and capping the generation at 110 percent of annual energy consumption should not have a significant impact on the utilities' financial position.

Environmental and Solar Commenters

These changes would be an improvement to net-metering policy and would encourage growth in DG. DG provides benefits including: reduces line losses, diversifies energy, helps with reliability, hedges against future fuel price increases and environmental costs, and provides health benefits from reduced emissions. DG can be strategically placed to avoid utility investment in generation, transmission, and distribution and provide economic benefits through job creation and investment opportunities. These benefits should be considered when quantifying the impact of increasing the size cap.

There should be minimal impact on the utilities' financial situation in the near term with the current penetration levels, and this supported by a Lawrence Berkeley National Laboratory study (LBNL)[35] where it found that at a 2.5 percent penetration rate for a vertically integrated utility there was roughly an equal impact on revenues and costs.

Increasing the cap will increase penetration rates, but Iowa will unlikely reach a 2.5 percent penetration rate in the near term and even if it does the study shows minimal impacts.

There will not be a reliability issue since the existing interconnection standards ensure the safety and reliability of the grid. The DG system would have to conduct any needed interconnections studies and then pay for any necessary system upgrades. Finally, there have not been reliability concerns in states with higher size caps.

The Board should have the utilities include DG as a supply-side resource when implementing an Integrated Resource Plan. Public information seems to show

[35] Satchwell, Andrew et al., Lawrence Berkeley National Laboratory, "Financial Impacts of Net-Metered PV on Utilities and Ratepayers: A Scoping Study of Two Prototypical U.S. Utilities" (2014).

DG and energy efficiency are indirectly incorporated in utility planning with low load growth planning scenarios.

The Board should also require the utilities to file periodic distribution system plans that encourage proactive planning to incorporate DG instead of its passive approach through the interconnection process to capture DG benefits as discussed in a 2013 paper by the Interstate Renewable Energy Council and Sandia National Laboratories.[36]

Midwest Cogeneration
Many states allow net metering for systems up to 1 MW and some allow it for systems up to 4 MW. Systems of these sizes should have a negligible effect on the overall energy flow of the modern electric system. Allowing an increase in the size allowed for net metering will allow CHP systems to optimize their thermal load.

TASC
No additional impacts on the utilities and non-DG customers would occur if customers were allowed to net meter 110 percent of their annual electricity consumption. If excess credits are not allowed to be cashed out at retail rate, this discourages oversizing a solar system. Other states allow even a higher percentage of annual usage such as Arizona allows up to 125 percent.

Allowing 110 percent of a customer's load allows flexibility for future plans such as additional children, adding an addition, and purchasing an electric car. Increasing the size cap would encourage additional DG growth for larger customers and would benefit all utility customers as shown in various studies that have been done where the benefits of DG outweigh the costs. (Examples of studies were provided).

The Board should require utilities to incorporate DG into system planning to provide more cost-effective service to their ratepayers. Solar DG and demand-side resources should reduce substantial capacity and operating costs at the lower voltage distribution system.

John E Carpenter
This option is problematic because it is unclear on how to define annual electricity consumption and it limits a customer with excess credits to share with neighboring properties.

The cap should be raised to 2 MW so that larger organizations are not constrained by net-metering limits.

[36] Lindl, Tim et al., Integrated Distribution Planning Concept Paper: A Proactive Approach for Accommodating High Penetrations of Distributed Generation Resources (May 2013).

Finally, a third party should be able to own the DG facility and transfer ownership of power to the consumer and sell the remaining power to the utility.

Larry Grimstad (Decorah Solar)
Community wind and solar projects, owned by residents and investors, will exceed the 1 or 2 MW size cap; and community projects: 1) are the best alternative; 2) provide the greatest benefit for Iowa; 3) provide opportunity for the all the public and utilities; and 4) improve grid reliability. "Utility resource and system planning needs to be altered to fit the community production facilities and should not be any more difficult than an alternative resource and system planning." (Larry Grimstad, Comments, p. 1)

Andrew Johnson - WED
The cap should be at least 2 MW and, although, the Board's net-metering policy was originally for smaller customers, the energy world is quickly changing. Including all customers who can net meter with a higher cap would be consistent with Iowa legislative and Board policies that support the expansion of renewable energy.

It makes sense to set a cap based on the customer's annual consumption but some questions need to be addressed including: 1) how will the annual consumption be calculated; 2) how is the eligibility for future system expansion with growing usage be calculated; 3) how will meter aggregation and virtual net metering be implemented together with aggregated caps (at the very least done in a pilot project); and 4) will net billing be an option for offsetting demand charges and kWh?

Increasing the cap should not have a significant impact on grid reliability since this is handled under the interconnection rules. Eventually there will need to be improvements made to the grid as DG levels grow with the costs shared among all customers. Other states with higher penetration levels had existing grids evolve to handle more DG.

As DG penetration increases, the utilities will earn less, but it is not the role of the Board to make sure utility investors' earn high profits if other business models better serve Iowa communities, citizens, and ratepayers. Utility management should be responsible for including customer-owned DG into its resource planning.

Luther College
Luther College had some concerns and questions of clarification it addressed first. They include the following:

- How will the average annual electricity consumption be determined? Luther College believes that it should be up to the customer to decide which method to use.

- What specific components of the electricity bill are affected by net metering like demand charges or volumetric charges? If demand charges are not metered than for AEP facilities larger than the 1 or 2 MW cap net metering would not be attractive to large general service customers; demand charges usually represent 30 to 35 percent of their bills. This needs to be clarified by the Board in the existing net-metering rule but proposes that all components be net metered except for the service fee and energy efficiency cost recovery charges. One approach is net billing where there is a bill credit rather than a kWh credit.
- Some utilities support levying demand charges for all customer classes to deal with the cross-subsidization issues. This would reduce the amount of new net-metered AEP systems in Iowa and could lead to some to invest in energy storage. Demand charges could cause ratepayers to leave the grid if energy storage costs get low enough, which would not be in the best interests of Iowa ratepayers.
- Luther College points out that item 1(b) under Iowa Code 476.42 states "a qualifying facility under 18 C.F.R. pt. 292, subpt. B is not precluded from being an facility under this subchapter." This part of the Federal Code provides criteria for two types of qualifying facilities: 1) small power production facilities and 2) cogeneration facilities. However, Section 199.15 of the Iowa Administrative Code excludes qualifying cogeneration facilities from the definition of AEP facilities. Luther College believes that the Iowa Code supersedes the Iowa Administrative Code. Since the Iowa Code does not expressly focus on either type of qualifying facility, Luther College believes that qualifying cogeneration facilities that meet the AEP fuel use requirements should be able to net meter. MidAmerican's net-metering tariff offers net billing to a "[c]ogeneration facility or a small power production facility that has a design capacity of 100 kilowatts or less and which has obtained qualifying status under 18 CFR Part 292, Subpart B."
- Some Iowa counties are considering or implementing feasibility studies on the economic potential of pipeline quality biogas development in Iowa. This provides another reason to add the language "qualifying cogeneration facilities that meet the AEP fuel use requirements are eligible for net metering" to Iowa's net-metering rule.
- Staff is correct in saying that the 500 kW is too small to encourage additional Combined Heat and Power (CHP) or Waste Heat to Power (WHP) project.
- The Board should expressly exempt all eligible net-metered AEP systems from standby charges.

- The Board should "address IPL's disproportionate and punitive standby charges for CHP systems that do not meet the AEP fuel use requirements."
- With a larger cap of 1to 2 MW, aggregate net metering would be a good candidate for a pilot project. However, Luther College disagrees with IPL and MidAmerican that aggregate metering should be limited to meters on contiguous plots of land and that the meters have to be physically integrated.
- If the 110 percent consumption limit included virtual net metering it would enable siting of DG to capture and use renewable energy resources where it would be more optimal for the utility's distribution system. Luther College assumes virtual net metering could be a part of a pilot without legislation adopting it on a permanent basis. This will allow community solar gardens to take advantage of economies of scale.
- The Board needs to address the matter where leasing from a third party qualifies for net metering but if a third party owns the facility and uses a PPA with the customer that does not qualify for net metering. Luther College will soon be financing a system via a third-party PPA.

Luther College believes raising the size cap to 1to 2 MW and imposing a 110 percent consumption limit could be positive for non-DG customers and utilities because: 1) the annual consumption cap will make sure systems are sized to meet the power needed to be consumed on site which reduces power needed to be provided by the utility that could be used elsewhere; 2) large 1to 2 MW solar PV arrays will generate energy at peak times which will save non-DG customers costs.

If there is a concern that at some point the net-metered system's costs outweigh the benefits they provide, the Board may wish to cap the obligation of utilities to interconnect net-metered systems to a certain percentage of the utility's peak demand in a baseline year.

With respect to grid reliability, the interconnection process takes care of that concern. The customer that wants to interconnect is responsible for costs to ensure grid safety and reliability.

Finally, data could be collected through a pilot to determine how these changes could be used in a utility resource and system planning.

<u>William J. Pardee</u>
The wording of this question is unclear. The 1 or 2 MW is power not energy. Using a 110 percent of energy consumption would work for them but may not allow other kinds of DG installations such as a group of businesses that wish to lighten their footprint.

Reply Comments

MidAmerican
Many commenters believe this option would create limited expansion and would not cause overbuilding if the size is limited to the customer's average annual electricity consumption. But this expands net metering before addressing the issues that MidAmerican has identified in its comments. MidAmerican believes that examining the impact of large DG systems and increased DG penetration on grid reliability and system planning would best be studied through pilot projects.

TASC
The utilities allege that grid reliability would be impacted if the cap was raised to 1 or 2 MW. Iowa's interconnection procedures protect grid reliability.

TASC agrees with MidAmerican that with a 110 percent net-metering limit customers would not have an incentive to overbuild their DG system. It also agrees with OCA that net-metering penetration does not have a significant impact on grid reliability. TASC believes that customers will not oversize a DG system if it is not economical, which would be the case in Iowa will a low avoided cost rate.

MidAmerican suggests that the cross-subsidy be addressed before expanding net metering, but it is unreasonable to support "erosion" of net metering unless a cost-benefit study showed that the revisions are appropriate.

Andrew Johnson - WED
IPL stated that no customer has come close to reaching the current cap of 500 kW. However, that is because IPL does not allow net metering for large general service customers. The cap should be raised and all customers should be eligible to net meter.

The concern about oversizing is address by the proposal to limit systems to 110 percent of average annual consumption.

The monthly cash-out proposal goes against the letter and the intent of net-metering policies. The billing cycle is defined on an annual basis to allow for monthly seasonal balancing of production/usage in DG systems.

As pointed out by OCA, the penetration level is low in Iowa and likely to remain low for the foreseeable future. Therefore, there should be no significant impact on grid reliability and all interconnection standards and processes apply.

The LBNL study (cited by the Environmental and Solar Commenters) addresses the point made by utilities that DG creates cost shifting to non-DG customers by showing that penetration scenarios ten times Iowa's penetration rate will increase the average rate by only less than a quarter of a percent.

Luther College
There are two reasons why IPL has not had a customer reach the 500 kW cap yet: 1) it does not allow net metering of a system financed with a PPA. This issue needs to be addressed by the Board; and 2) customers that would net meter at 500 kW cap would likely be large general service customer who pay a large demand charge. This charge would not be reduced by net metering. Luther College again suggests net billing as an option.

IPL and MidAmerican are suggesting charging all customer classes a demand charge. This will reduce the number of DG systems in Iowa if no net billing is allowed. Customers may invest in energy storage and defect from the grid.

Regarding grid reliability, IPL discusses that DG customers should pay for the timing imbalances between loads and generation that they create. This does not consider the value provided by DG customers supply and could be discriminatory.

Question 5: Propose innovative and well-developed ideas that address long-term net-metering options as discussed in Option 3. These options should identify the associated advantages and disadvantages and also allow for the growth of DG while balancing the interests of the regulated utilities and all utility customers.

Initial Comments

IPL
According to IPL, DG tariffs should be revised to consider grid maintenance and development costs incurred by the utilities. IPL proposes an approach which includes four phases: 1) Data collection and communication; 2) Design and file new DG tariffs; 3) New options via pilot programs; and 4) 2017 electric rate case.

In the first phase, IPL would collect load profile data from existing customers which would support a new cost-of-service class for partial requirements customers. For phase two, IPL plans to revise the carryover/banking provision in the current net-metering tariff and cash out excess energy on a monthly basis at IPL's avoided cost. Also, IPL would freeze the existing net-metering tariff and propose a three-part rate (with a customer, demand, and energy charge) for new residential and non-residential general service customers. IPL says that it is considering a number of pilots for phase three which would provide options for customers and could provide additional information. Lastly, IPL plans to file a rate case in 2017 which would consider cost shifts between customer classes.

MidAmerican
The best long-term option is to develop utility rate structures that appropriately price the services that utilities provide to all customers. The long-term rate

structure should include both the production of energy and the grid services provided by the vertically integrated utility and identify pricing for each of these services. The price of these services should be based on the cost of service. The rate structure for the grid services should be based on the amount of grid capacity an individual customer needs over a billing period whereas the rate structure for the energy services should be based on the time of use. According to MidAmerican, a three-part rate that includes a basic service charge, a volumetric kWh–based energy component, and a kW-based demand component should be considered.

MidAmerican states that it has met the conditions to implement these rate structures[37] in Docket No. RPU-2013-0004 and could implement long-term rate design solutions before another rate case proceeding. MidAmerican's plan balances the interest of the utility with those of the DG and non-DG customers by making all generation service on the same basis in terms of price and making sure all customers pay for the grid and energy services.

IAEC

Any consideration of an appropriate net-metering policy must take into account existing rate structure and the utility's ability to recover costs from its customers in an equitable manner. Addressing net metering through tariffs allows the Board to account for how it impacts the utility and the uniqueness of that utility.

OCA

OCA believes that the incorporation of TOU rates is a possible long-term solution to resolve fixed cost recovery and cross-subsidization concerns. However, OCA believes that long-term solutions should be incorporated once it has been demonstrated that it is necessary. OCA states that net metering and DG currently have minimal impact on the utilities' revenue recovery.

Environmental and Solar Commenters

The long-term approach should be based on Iowa specific data used to explore new approaches and develop consensus policy recommendations on net metering and distribution system planning with the goal of deploying DG and other distributed energy resources to make Iowa's electric grid stronger and more efficient. Future decisions should be based on actual data rather than assuming current policies need to be changed or eliminated.

The Environmental and Solar Commenters recommend initiating a docket to specifically for collecting data and to increase transparency about distribution grid constraints. This docket would also be a place to explore and independently evaluate the pilot projects while reviewing studies done in other states.

[37] 1. Cost of service needs to clearly identify costs for services being provided; 2. Cost-of-service principles for each utility need to be identified and approved by the Board; 3. Current rates need to be based on approved cost-of-service principles; and 4. Cost data need to exist that support current rates.

Additionally, a value of solar study could also be completed in this docket when appropriate. The Environmental and Solar Commenters also suggest that any changes to rate design or restrictions on net metering should wait for the results of a value of solar study.

The Environmental and Solar Commenters argue that net-metering policy is a state policy, adopted in Board rules, and should not be changed through future rate cases. It is important for the changes to the policy to be made in a transparent, collaborative process that involves all stakeholders.

TASC
There is no need to address long-term net-metering options now or in the future. It would be appropriate to conduct a comprehensive study to determine whether there is sufficient cross-subsidization to warrant a policy change when the aggregate capacity of net-metering systems reach 3 percent of the utility's previous year's peak demand.

John E. Carpenter
Mr. Carpenter is open to establishing rates that implement net metering in spirit and help incentivize the growth of renewable energy.

Larry Grimstad (Decorah Solar)
To ensure utilities remain financially viable, rates may need to be increased to help pay for the production and grid transition. Rates paid to DG owners need to encourage DG and clean power production.

Andrew Johnson – WED
The IOUs have not provided material evidence that supports cross-subsidization so there is no need to redesign rates at this time. The Value of Solar approach used in Minnesota would be an alternative to net metering.

Luther College
The Board is not responsible for the financial health of the utilities. The utilities have expressed a concern about loss of sales associated with DG facilities. However, revenue loss also occurs with energy efficiency and those lost revenues are not allowed to be recovered. There are limits to the Board's responsibilities for the financial health of the public utilities.

Luther College is interested in OCA's comments about how TOU rates could be a reasonable alternative and the Environmental and Solar Commenters' response that new, mutually-beneficial regulatory models, and ratemaking principles can work better than traditional cost-of-service models to maximize clean DG and energy efficiency. Minnesota's Value of Solar approach discussed in prior comments is another way to address this issue.

Reply Responses

IPL
IPL believes that in light of increased DG penetration, it is appropriate to reevaluate the rate design and net-metering configuration. Long-term growth of DG must be accomplished in a manner that enables the long-term sustainability of DG which includes allocating costs to the cost causer and utilizing cost-based rates. The current rate design will lead to inefficient investments and increase the cost imbalance among customers or IPL. Additionally, the current artificial pricing signals produce indirect costs such as complaint processing. IPL also argues that the current net-metering and rate design configuration causes the utility to purchase energy from net-metering customer at an inflated cost which is not economically sustainable. IPL notes that as DG expands it must be integrated to maintain reliability of the electric system.

IPL says that current net-metering participation and the financial impact of this participation require near-term action to ensure cost-based pricing. Despite high levels of net-metered customer participation, data indicate that utility resources (generation, transmission, distribution, and administrative services) are still needed to meet customer demand. Furthermore, IPL states that current net-metering rate design should change, because it creates disparate financial impacts between net-metered and non-net-metered customers.

IPL states that the proposed rate design is appropriate because demand is the largest utility cost component due to the fixed cost nature of generation, transmission, and distribution capacity. The three-part rate design will minimize the impact on non-net-metered customers and will help IPL achieve the balance required to provide reliable, environmentally responsible, cost-effective electric service to all its customers.

MidAmerican
A three-part rate design captures the demand and energy benefits delivered by DG customers but does not capture the value of grid services or other benefits included in the retail price of electricity that they do not deliver. The Board has an opportunity to proactively address the rate design issue before it becomes problematic.

IAEC
The IAEC believes changes in the current retail structure would be a prudent step as the market evolves. Although some participants suggest waiting to change rate structure until there is greater DG penetration, a delay in the rate design change increases the risk associated with stranded investment for utilities and DG owners, developers, and investors.

Environmental and Solar Commenters

According to the Environmental and Solar Commenters, the utility have not provided data to quantify cross-subsidy claims or support its assertions about net-metering impacts. The utilities have also not explained why rates and net-metering policy should be changed now. The Environmental and Solar Commenters suggest conducting an Iowa-specific cost-benefit study once Iowa reaches a 1 percent penetration level to ensure there is an adequate data set for Iowa-specific results.

MidAmerican's argument that there are cross-subsidies associated with DG customers is flawed since MidAmerican has not quantified how much it costs to serve DG customers and how much DG customers currently contribute to their cost of service through rates. Additionally, MidAmerican fails to acknowledge the benefits of DG. Until an independent Iowa-specific study is conducted, the Environmental and Solar Commenters support existing net-metering policy.

IPL notes that some circuits have 25 percent penetration, but the Environmental and Solar Commenters state that IPL has successfully managed the situations where penetration levels have reached 25 percent or more through the Board's waiver process. This issue is being addressed in the interconnection portion of this docket.

The Environmental and Solar Commenters believe IPL overstates the impact and understates the benefits of DG customers. The statements IPL makes regarding the impact of DG customers on the grid are erroneous, without support, and misleading. IPL has not provided a comprehensive, independent study to support its claims. Furthermore, IPL's proposal to revise the kWh carry-over provisions changes the rules for customers who have already made investments in their system based on the current net-metering policy. IPL's proposal would adversely impact any net-metering customer whose energy use and DG production vary on a seasonal basis.

The utilities presented rate design proposals to address DG but the Environmental and Solar Commenters believe rate design changes should be systematically studied and informed by an independent valuation of DG costs and benefits. The Board should discourage utility proposals to rush through rate design changes on an individual rate case basis before a broader statewide discussion and inquiry can take place. The details of rate design will be important, especially if that rate design is attempting to balance policy priorities to encourage DG, cost recovery, and equity concerns. Since Iowa currently has low DG penetration levels, there is time to explore rate design and fully understand the value of distributed energy resources.

The Environmental and Solar Commenters argue that Iowa policy (Iowa Code § 476.21) limits the permissible approach to rate design and requires strong data-based foundations for rate design changes affecting DG. Iowa Code

§ 476.21 prohibits discrimination based on the use of renewable energy sources; therefore, the proposal to have a distributed generation customer rate class may not be allowed. MidAmerican's position that DG customers are not paying their fair share of grid services appears to be based on the utilities theory that DG customer consuming less energy than other utility customers. However, it is not clear that the usage patterns of DG customers will differ from residential or commercial customers as a whole.

According to the Environmental and Solar Commenters, IPL's and MidAmerican's comments include broad, general statements that are not supported by evidence in the record. The Environmental and Solar Commenters suggest the Board require the utilities to gather and file the missing data to fully inform the Boards consideration of these issues. The Environmental and Solar Commenters provide an extensive list of statements made by the utilities along with numerous follow-up questions.

TASC

In its introductory comments TASC states that IPL and MidAmerican have not justified their proposals to revise net metering and rates. TASC believes that a fair evaluation of DG costs and benefits would demonstrate that maintaining current net-metering policy coupled with existing rate structures in Iowa is just, reasonable, and in the public interest. TASC suggests the Board consider the benefits that a net-metered system provides to utility ratepayers over the system's lifetime but says that an Iowa-specific, cost-benefit study is premature at this time.

TASC also states that the utilities' proposals to include a demand rate for residential customers are highly inappropriate. Including a demand rate would lessen the incentive for conservation and would shift costs from large households to small households. Demand rates do not provide the appropriate price signals for customers to consume less when electricity demand is most costly to serve.

TASC explains that rates are typically established in a rate proceeding, and the Board has consistently described utility proposals to changes in rates outside a general rate case as piecemeal ratemaking which is to be done only in extraordinary circumstances. TASC argues that the current adoption rate for DG does not constitute extraordinary circumstances.

Specifically, TASC points out that IPL's proposal to cash out excess kWh monthly at the avoided-cost rate is contrary to Iowa Code § 476.43(2) which requires the Board establish rates for alternative energy producers "at levels sufficient to stimulate the development of alternate energy production…" Additionally, IPL plans to freeze the existing net-metering tariff, but TASC believes that would be contrary to State and Federal laws that promote alternative energy production. TASC also notes that MidAmerican proposes a three-part, TOU rate for all customers. TASC says there is no evidence to justify

such changes at this time and supports OCA's position that a future solution to address net metering would be appropriate if it has been demonstrated that a solution is necessary.

Andrew Johnson – WED
Mr. Johnson agrees that DG customers that choose to remain connected to the grid receive value from the grid and utilities but argues that DG customers also provide value to the grid and utilities. Mr. Johnson reiterates his position that net metering represents a fair, elegant, and efficient approach to balancing the services. He goes on to say that any value of solar study should include both costs and benefits; and, if such a study is done, it should be done in the context of a rule-making docket.

Luther College
In response to IPL's statement that no sources of electricity should receive preferential treatment, Luther College argues that fossil fuels receive preferential treatment because their price does not include environmental costs or the costs of society for burning fossil fuels. Additionally, the statement does not acknowledge that AEP-DG customers reduce those societal costs while providing other benefits.

Luther College urges the Board to carefully examine IPL's claim that AEP-DG customers should be a separate class of ratepayers. Luther College also argues that IPL's proposed changes to net metering (removing the carry-over provision and discontinuing net metering for new DG customers) should be addressed in a rule-making docket and that approval of either of these provisions will result in less investment in AEP-DG for Iowa. IPL's and MidAmerican's proposed three-part rate design will likely result in significant reduction in new AEP-DG facilities which would undermine the Board's intentions stated in the policy goal.

Question 6: Propose innovative and well-developed ideas that could be implemented as net-metering pilot projects as discussed in Option 4. Identify the advantages and disadvantages associated with each potential project. For each potential pilot project provide detailed elements including, but not limited to, the goal of the project, timelines, eligible participants, responsibilities of the utility and participants, potential impacts on non-DG customers, an explanation of how the proposal meets the specific needs of the utility, how each option would meet the objectives expressed in the draft policy goal, and possible results.

Initial Comments

IPL

IPL supports well-designed pilot projects. IPL is undertaking a load research project to collect interval data on its DG customers that will allow for the assessment of the impact to IPL's customers of the benefits and costs associated with DG. Given that IPL has over 1,000 DG customers with more than 1,500 DG systems, the load research project will provide sufficient data to support future analysis of the impact of DG on IPL's system. IPL may propose a pilot mechanism to implement net-metering tariff changes as described in the four-phase approach discussed in response to question number 5.

IPL is exploring and developing several potential pilot projects. Pilots such as community-based solar would provide opportunities for customers to participate in DG without an installation on their properties. There may also be opportunities to review and update IPL's Second Nature green-pricing program under the umbrella of a pilot project. IPL is committed to working with interested parties to explore other pilot project opportunities and addresses additional opportunities in its response to question number 7.

MidAmerican

MidAmerican supports the exploration of pilot projects. Iowa Code § 476.41 states the policy of the state is to encourage the development of AEP facilities and small hydro facilities to provide for their most efficient uses. MidAmerican agrees that the pilot project route creates an opportunity for innovation and exploration of best practices that can help achieve the policy goal for DG suggested by the Board and further the efficient use of DG consistent with state policy.

Option 4 referenced in the question proposes limited, but significant, pilot projects that simultaneously hold the rest of the net-metering framework constant. The Board's April 8, 2015, gold memo also states, “an advantage to the pilot approach is that it creates an opportunity for innovation and exploration of best practices within the context of the proposed policy goal.” MidAmerican agrees pilot projects are useful to help a company and the Board learn how a larger-scale project – or additional smaller projects – might work in practice but does not agree that the existing framework must remain in place. A good pilot project provides an opportunity for the company to test logistics, prove the value of the project, and reveal insufficiencies prior to spending a significant amount of time, energy, or money on a larger-scale project. But to truly understand these items, proposed changes, modifications, or new programs, MidAmerican would encourage the Board to not de facto limit the size, application, or framework of a proposed project.[38]

[38] Staff note: Staff believes there may be some confusion on this issue. The statement in the gold memo regarding the existing framework remaining in place is in reference to non-pilot participants.

MidAmerican is currently exploring a solar and DG pilot project to propose to the Board that will include components proposed by the NOI participants and highlighted by the Board's April 8, 2015, order. The ultimate goals of any MidAmerican pilot project will be to understand:

1. The demand for solar and DG in Iowa;
2. The impact of rate design mechanisms on providing fair and economical services to all of our customers, including those who chose not to install solar;
3. The impact of solar and DG on providing load relief which may lead to distribution investment deferrals;
4. The associated costs and benefits of using solar and DG resources as part of MidAmerican's system portfolio;
5. Implementation, reliability, and operational issues of solar;
6. Actual and expected output of solar on a real-time basis;
7. The extent to which new forecast techniques will be needed;
8. Interconnection issues and real-time operational effects of solar on the distribution system and customers; and
9. How batteries or other storage systems might best be used to complement the integration of intermittent DG resources.

The fastest growing DG segment is solar. Because of this, MidAmerican believes solar is an appropriate generation resource to investigate through a pilot project. One disadvantage of a photovoltaic solar pilot project, however, is that it is relatively expensive. Given the natural resource level, available incentives, and installed generating system cost, solar is not economically competitive with other generating resources, most notably wind, in MidAmerican's portfolio, but it is worth additional study.

IAEC

The IAEC seeks additional rationale from the Board regarding Option 4 of the Staff Memo in order to clarify if whether Option 4 is based on the belief that net metering provides appropriate incentives for the promotion of renewable generation. The IAEC suggests adoption of pilot projects in any form has potential to add administrative burdens to the policy process and prevent the regulatory environment from keeping pace with the quickly evolving generation technology. Proper policy should send clear signals to the marketplace. In the event that multiple policy alternatives co-exist as pilot projects that are studied at length, the increase in penetration of DG will create a significant challenge for utilities to meet and maintain customer service standards.

If pilot projects are explored, the IAEC recommends timelines be adopted that are suitable for a quick moving market. If a pilot net-metering option involves a modification to rate design, the cooperatives believe that the non-rate-regulated utility's Board of Directors is best suited to act in a policymaking role and evaluate the impacts of alternatives to current net-metering obligations and make

informed and appropriate policy decisions about possible pilot projects. To the extent the Board asserts regulatory jurisdiction over rate-regulated utilities as to net-metering rules, the IAEC can monitor the Board's actions to ensure the timing of policy changes are consistent with the IAEC members' policy initiatives.

IAMU
Decisions about pilot projects and net-metering policies are appropriately determined by municipal utility governing bodies. Any pilot projects conducted with rate-regulated utilities will be monitored by the IAMU.

OCA
OCA has responded to pilot concepts advocated by other parties in this case and has not developed detailed concepts for any pilot. OCA agrees that pilot projects could be beneficial and should test innovative concepts that are guided by well-developed elements, timelines, and objectives. Innovative projects could focus on community solar gardens and other initiatives that facilitate broader consumer participation in DG, or evaluate the use of enhanced DG incentives in targeted zones, sometimes referred to as geographic targeting. The Board could produce pricing incentives of zonal requirement for DG system installation based on load flow and transmission and distribution system congestions.

Incentivizing DG by zonal needs could aid the deployment of new resources where they are needed most, thus alleviating transmission congestion and lowering transmission cost as well as potentially minimizing the need for system upgrades. However, zonal incentives could lead to overbuilding in a particular zone that could produce economic inefficiencies. To mitigate this problem, the utilities could put caps and restrictions on how much and what capacity could be built in each zone. This project could allow new generation priced at system marginal cost, minimize the needs for system upgrades for new DG generation where there is transmission congestions, and lower locational marginal pricing. All of these benefits meet the utility’s needs, pose no harm to the utility system, and balance the interest of the utility and ratepayers.

Environmental and Solar Commenters
The Environmental and Solar Commenters support exploration of pilot projects while maintaining existing net-metering rules and policies for the bulk of DG customers. Voluntary customer participation will encourage pilot programs to be designed in a manner that attracts participation and meets the policy goal of encouraging DG's continued growth.

The Environmental and Solar Commenters encourages the Board to:

- Expand the scope of the policy goal to include all distributed energy resources (DER), not just DG;
- Investigate how utilities can strategically facilitate the deployment of solar DG or other DER to reduce peak demand,

relieve constraints, and potentially avoid or defer distribution capital investment; and
- Increase the transparency of utility resource planning, particularly at the distribution level, and to more explicitly consider the full benefits of DER.

The Environmental and Solar Commenters offers the following pilot projects on the strategic deployment of distributed energy resources and shared renewables.

Pilot 1: Strategic Deployment of Distributed Energy Resources Pilot

This pilot could be limited to solar DG, but the Environmental and Solar Commenters believe it would provide greater benefits, more opportunities for impact, and a greater likelihood of attaining the Board's end goal as a broader DER pilot. Board-mandated solar DG (or DER) local capacity pilot projects could help achieve the expanded policy goal and increase planning transparency by requiring the following:

- Utilities shall identify and publish descriptions of their planned capital projects above $250,000 to address distribution system demand growth or capacity constraints.
- Utilities shall publish details on load, system, and customer characteristics at the constrained distribution system locations (e.g., historical load patterns including the magnitude, duration, and timing of peak demand; projected demand growth rates; voltage and power factor profiles; types of customers served; etc).
- Utilities shall solicit proposals from third parties to demonstrate the feasibility, costs and benefits for solar DG (or other DER) to provide demand reduction in one or more constrained location and to potentially avoid or defer distribution capital investment. Successful bidders shall determine the most viable solar DG (or other DER) equipment; the most optimal locations, configurations, and orientations for the equipment; and the expected sustained, reliable load relief from the solar DG (or other DER). Bidders shall be encouraged to consider a wide range of deployment, interconnection, and ownership alternatives.
- Utilities shall award contracts to bidders offering alternatives that provide sustained and reliable demand reductions.
- Utilities shall report to the Board on the selected alternatives, rationale for the selections, and expected savings (if any) from the selected alternatives.

The objectives of these pilot projects would be to:

- Begin to document the potential for solar DG (or other DER) to provide sustained, reliable peak demand reductions potentially leading to deferral or avoidance of distribution capital investment in specific and identified instances.
- Develop a better understanding of the costs, benefits, and risks associated with deploying solar DG (or other DER) as a resource to address distribution system capacity constraints in the short term.
- For the Board to gather information about the long-term benefits and risks of deploying solar DG (or other DER), which may or may not be different from the short-term benefits and risks.
- Include providers of renewable energy, load control, energy efficiency, and energy storage solutions as eligible participants if the Board expands the pilot to include all DER.

The Environmental and Solar Commenters recommend that as part of this docket, the Board form a working group which could:

- Develop a framework for fair compensation to third-party providers, customer participants, and utilities.
- Evaluate the impact of the pilot projects including the cost savings realized by each utility and its customers.
- Receive annual status updates and evaluations.

Pilot 2: Shared Renewable[39] Pilot Program
These pilot programs should:

- Provide another outlet for the growth of DG, expand DG participation to a broader base of customers, and provide customers with another choice for pursuing renewable generation.
- Provide an opportunity to locate DG in strategic areas such as constrained areas, underutilized properties such as brownfields, and highly visible areas that can help promote DG.
- Provide an opportunity for third-party development to maximize the benefits of the market and choices for customer participation.
- Allow participants to receive fair bill credits.

The Environmental and Solar Commenters recommend that the pilot program use the Interstate Renewable Energy Council's and Vote Solar's guiding

[39] Sometimes referred to as virtual or community net metering, or community solar.

principles[40] for the design of shared renewable energy programs. Vote Solar's Model Rules for Shared Renewable Energy Programs offer model provisions, which could be integrated into program rules or tariffs and could serve as a starting point.

TASC
TASC supports Staff's Option 4 suggestion regarding pilots. The potential difference in the value of onsite solar depending on location can vary based on a wide set of factors, including grid conditions and the capabilities of the particular on-site solar system. However, it is crucial to understand that in virtually all scenarios, the addition of on-site solar has the potential to provide significant value to the system.

Distributed resources can provide value to the grid in capacity constrained areas, can help alleviate grid current constraints, and defer future constraints. Utilities can play a central and critical role in the deployment of DG into high priority locations. By identifying locations where solar and DG would have outsized grid benefits and encouraging DG to be deployed in these locations through price signals or locational tariffs, utilities can unlock the value of solar and DG to support their own grid needs.

Larry Grimstad (Decorah Solar)
Decorah and Winneshiek County public entities want to partner with developers to build a community solar field utilizing virtual net metering with IPL. The Winneshiek Energy District has been assisting the public entities with the request to IPL and to the Board. Mr. Grimstad believes this could be a pilot project. The project includes a small number of customer entities with multiple meters in various locations. The project could be operational in a year and could be easier for the utility interconnection due to a smaller number of entities.

Andrew Johnson - WED
Winneshiek Energy District proposed a specific pilot project (included as Appendix A to his comments). From early in 2015, discussions have revolved around the potential for an offsite, shared array, and the need for such an option in Iowa. Hence the Board's request for pilot projects and approaches is timely.

Versions of community or shared solar, or solar gardens, have been established legislatively as options for utility customers in many states, though not yet in Iowa. The pilot we're proposing here is not a community project per se, as it is focused on a small number of large non-taxable entities (primarily public institutions) rather than the full universe of customers. Appendix A provides the full text of the request to IPL for consideration of terms and conditions. The document was drafted prior to the Board's current solicitation for net-metering comments, but the last of the signatory entities has just recently signed on.

[40] These principles are discussed in more detail in IREC and Vote Solar's Model Rules for Shared Renewable Energy Programs.

Signatories consist of: Northeast Iowa Community College, Winneshiek County Board of Supervisors, Luther College, Winneshiek Medical Center, and the City of Decorah.

The request is presented here for immediate consideration by the Board of relevant issues, simultaneously with submission to IPL. The key terms and conditions signatory entities are requesting have grown out of extensive discussion of the limitations of current DG and net-metering policy and are presented below:

1. That multiple meters pertaining to a single entity and under similar rate structures may be virtually aggregated for the purpose of retail net-meter calculation, balancing, and crediting.
2. That monthly production for each entity, as reported to IPL in an acceptable electronic format and timing, be net metered in the same manner as would happen if production were interconnected behind the physical meter/s.
3. That surplus monthly and annual production for each entity be credited on a kWh basis and continuously rolled over for future availability, as long as the surplus at the end of a given calendar year does not exceed 50 percent of average annual consumption.
4. That both outright entity ownership, and entity participation in a PPA arrangement within the non-taxable entities' solar array, be treated equally at the point of interconnection.
5. That renewable energy credits remain with customer/entities, the current norm in Iowa.
6. That the array be sited and planned with the understanding of potential future expansion.

This approach allows testing the implementation of many issues under discussion via an offsite shared approach, but one limited to a manageable number of participants. A focus on non-taxable entities adds to the fairness and equity arguments, because these entities (local government, educational and nonprofit institutions) are non-taxable precisely because they serve the public good. This approach also addresses the importance of keeping local government, other public institutions, and communities a central part of this conversation. These institutions are the most local representatives of Iowa's citizens and ratepayers, and are responsive to their constituents.

Luther College

Luther College is unable to offer fully-developed pilot project proposals; however, encourages the Board to consider projects such as: 1) Community Solar Gardens; 2) TOU and Energy Storage; 3) Smart Grids; and 4) Technology-Specific Avoided Cost/Power Purchase Rates or a Value-of-Solar Rate.

Reply Responses

MidAmerican
Several stakeholders, including MidAmerican, have provided comments supportive of pilot projects of varying designs throughout their responses. MidAmerican's June 15, 2015 response introduces concepts MidAmerican believes should be included in a solar pilot project.

The OCA has proposed a community solar garden pilot project. While there is at least one solar garden program underway in Iowa, MidAmerican agrees that additional programs such as this may be a short term way to see whether such a program can facilitate broader consumer participation in DG and may also assist in determining solar DG viability in Iowa.

The Environmental and Solar Commenters and OCA have suggested proposed pilot projects with the goals of alleviating transmission congestion and lowering transmission costs. MidAmerican agrees there may be potential benefits in this as well but notes that to be useful utilities must be able to measure the benefits. There are currently many ongoing changes that will affect potential system benefits, including MISO Multi-Value Projects, generation retirements, new wind and other generation, and new large loads. Because of this, the Board should consider how the impact of these changes on potential benefits could be effectively determined before such projects are undertaken.

The Environmental and Solar Commenters make recommendations about increasing the transparency of the distribution planning process so that solar DG or other distributed resources can be used to defer utility distribution capital investment. There may be some long term benefit to starting to consider this approach; however, MidAmerican's experience has been that solar DG resources without battery storage cannot take the place of distribution improvements, and the Board will need to consider that battery storage may exceed the cost of other distribution improvements. Also, distribution planning is a dynamic process that can be affected by unforeseen load growth which will impact the calculation of benefits from the addition of DG solutions to defer other distribution additions.

Environmental and Solar Commenters
As MidAmerican develops its proposed pilot, the Environmental and Solar Commenters suggests that MidAmerican work closely with interested stakeholders and that the pilot include the following components:

- Include all potential distributed energy resources (DER) in addition to solar, such as energy efficiency and load management.
- As part of the pilot, develop the planning tools and forecasting methods identified in goal #7.
- Allow third-party providers of DER to actively participate.

- Target strategic locations based on planned capital expenditures, constrained distribution systems, or local brownfields.

The pilot program is also an opportunity to target low/moderate income participants for inclusion. The Environmental and Solar Commenters believes that it is important for a pilot program to run long enough to conduct sufficient customer education and awareness to get significant participation and collect representative data.

TASC
TASC is pleased to learn that MidAmerican is considering proposing a PV pilot where it will explore the potential uses of PV, TASC recommends that the costs and benefits of this pilot program, if approved, be assessed and analyzed by the Board rather than by MidAmerican. It would be inaccurate for MidAmerican to apply its own determination of the costs and benefits of *utility-owned* PV to *customer-owned* PV. Furthermore, depending on the pilot program's details and MidAmerican's future business intentions, it might not be appropriate for MidAmerican, as a regulated utility, to conduct it.

Andrew Johnson - WED
Mr. Johnson is excited to hear that "IPL is supportive of well-designed pilot projects" and "IPL is committed to working with interested parties to explore other pilot project opportunities." Mr. Johnson hopes IPL's stated interest in working together with interested parties will suggest immediate forward movement on the project proposed in his initial comments. This project will be an excellent pilot to test practices such as virtual net metering in a manner equitable among ratepayers, as participating entities represent ALL ratepayers and taxpayers in Winneshiek County. It will also be relatively easy administratively, with participation of a small number of customers compared to the hundreds or thousands participating in some shared renewable projects, such as in Minnesota. An administrative entity has been formed (NEI Renewables LLC) with existing experience in large-scale solar siting, build, management, and finance in Iowa, to provide a principal IPL partner and efficient implementation.

Mr. Johnson believes this proposed pilot would be an excellent test for a shared renewable pilot program open to all IOU customers, as proposed by the Environmental and Solar Commenters. Mr. Johnson and other commenters have noted, fewer than half of all customers of IOUs typically have a suitable site or the ability to participate in DG behind their meter, thus a shared renewables program is a critical mechanism to expand access and equitability of net metering to the wider universe of utility customers.

Luther College
Luther College is encouraged to see IPL acknowledge that there are *benefits* and costs associated with DG (emphasis added). Luther College urges the Board to

ensure that all benefits are included and properly valued. Benefits include grid services like avoided energy costs, reduced line losses, avoided capacity investments, reduced financial risks and electricity prices, increased grid resiliency, and avoided environmental compliance costs. There are also additional environmental and social benefits associated with avoided greenhouse gas emissions, reduced public health threats, reduced freshwater consumption, and increased job creation and economic development.

Luther College commends a recent report coauthored by the Environment New York Research & Policy Center and the Frontier Group, titled *Shining Rewards: The Value of Rooftop Solar Power for Consumers and Society*. The report reviews eleven net-metering studies and discovers that the value of solar electricity in eight of the studies was higher than the average local residential electricity rate. The median value of solar power across all 11 studies was nearly 17 cents per unit, compared to the nation's average retail electricity rate of about 12 cents.

Luther College also encourages the Board to carefully consider the detailed pilot programs recommended by the Environmental and Solar Commenters.

Question 7: Participants should indicate their preferences for addressing net metering going forward based on the options 1-4 presented in the memo. Participants should also explain the basis for their preferred options and address how their preferred approach achieves the draft policy goal.

Initial Comments

IPL

IPL provides the following comments on the options presented in the staff memorandum:

Option 1 – No changes are made to the current net-metering policies

- Now is the time to act. DG penetration is higher for IPL than for other utilities in Iowa, exceeding as much as 25 percent of the load on certain circuits. While net metering as part of the current rate design served the initially intended purpose of providing a subsidy to incent the growth of DG in Iowa, it is no longer appropriate. As guided by the policy goal, an economic solution is needed that is sustainable in the long term.

Option 2 – Make select changes to the net-metering policy

- Elimination of the net-metering banking provision in favor of a monthly cash-out of excess kWh at the avoided cost rate. This could encourage customers to right-size DG systems to their

energy needs, and thereby help to temper the issues associated with the current rate design and net-metering configurations.

- Explore rate design changes rather than to increase eligibility for net-metered DG projects under the current format. This approach will preserve the reliability and safety of the grid and will continue to provide customer choice for both participating and non-participating DG customers.

Option 3 – Explore long term solutions

- IPL's has an action plan that is purposed in enabling the long-term, sustainable integration of DG leading into the 2017 electric rate case.

Option 4 – Explore pilot projects

- IPL is pursuing pilot options including market research leading to subsequent program updates on IPL's Second Nature green-pricing program and a community solar project. IPL is also actively proceeding with a research and customer education solar pilot in Cedar Rapids.
- IPL is partnering with Indian Creek Nature Center which promotes environmental education and has been declared a National Environmental Study Area by the National Park Service. The Nature Center is building a new outdoor campus and a new, 12,000 square foot building with a goal of achieving Living Building Challenge™ certification
- IPL is collaborating with Electric Power Research Institute (EPRI) and Iowa State University on the research design and analysis, and the University of Iowa on an educational solar panel display. Examples of desired outcomes include: tracking real-time information on the Nature Center's energy uses and sources, understanding smart inverter technology, capturing best practices, and sharing these findings via the same customer web portal as above, onsite kiosk and informational signage, and Nature Center classes. Dependent upon the Nature Center's construction schedule, IPL expects this solar pilot to be operational summer of 2016.

<u>MidAmerican</u>

- Addressing long-term sustainable strategy for net metering while penetration levels are low in order to prevent customer backlash and controversy.
- Believes it is not appropriate to continue subsidizing DG ownership; however, if policy makers should continue, it should be addressed through tax policies where incentives could be reduced more gradually as the economics of DG improve.

- Implementation of three-part (service charge, volumetric energy, demand) TOU rates.
- Oral arguments on pricing for net metering would allow all parties to gain a better understanding of the underlying issues.
- Consider DG pilot projects to gather information that can support decisions for the longer term. MidAmerican is investigating potential pilot project options and anticipates discussing some of those options before the Board in the near future.
- Board-offered customer education so that customers can understand how their potential DG facilities will function, how those facilities interact with the electric grid, and assistance determining the potential impacts of their available choices.

IAEC

The IAEC does not advocate any specific policy changes or recommendations. Instead, the IAEC notes various issues that are worthy of consideration if there is going to be adequate balancing of interests between electric consumers who adopt DG and those who do not. Any one of the four options listed in the Staff Memo may not sufficiently fulfill this need for equity, yet certain policy options could bring greater balance than others. Since net-metering encompasses rate issues, the IAEC seeks policy solutions which balance the concerns of DG investing customers and customers who prefer to receive all of their electricity from their local cooperative. The IAEC suggests that any short and long-term options should assist utilities in fulfilling their statutory obligation to promote DG and also send appropriate price signals to encourage capital investment in generation at both the utility-scale and distributed levels.

IAMU

Municipal utilities will address net-metering policies at the local level. As more customers desire to install DG, municipal utilities will respond to accommodate. While the number of DG systems interconnected with municipal utilities is currently small, utilities should establish policies that anticipate the long-term growth in DG. While net-metering is a relatively simple policy to implement, it does not rely on the same principles that rates based on a cost of service study employ. If DG, such as solar PV, continues to grow, it would be best to have policies in place that fairly compensate customers for energy they deliver to the grid, allow utilities to recoup the cost to provide grid services to customers, and prevent customer cross subsidization. Municipal utilities are examining methods for incorporating DG into their operations.

Several municipal utilities[41] have entered into purchase power agreements with locally-owned wind generators. By purchasing the wind energy through a purchase power agreement all customers of the utilities benefit from the

[41] Including Traer Municipal Utilities, Greenfield Municipal Utilities, and Story City Municipal Electric Utility.

renewable energy. Other municipal utilities are offering community solar arrays to allow any interested customer to invest in solar energy. Traer Municipal Utilities' community solar array entered service in the fall of 2013, and Cedar Falls Utilities is currently marketing participation in a project.

OCA

OCA prefers a long term solution as proposed in option 3. OCA believes the utilities should provide a study demonstrating the extent of cross-subsidization between DG and non-DG costumers. If the study reveals significant revenue losses and diminished cost recovery, alternative rate design modification should be considered as a viable alternative to the utilities. The rate design could reflect TOU pricing reflective of the characteristic resource load for DG costumers. Special pricing for DG costumers should also be implemented, either on a pilot basis or as a temporary modification to rates.

Environmental and Solar Commenters

The Board's first focus should be consideration of policies that catalyze the market and remove barriers to the development of a DG market, such as:

- Updating interconnection standards to reflect current best practices and preserve and expand Iowa's existing net-metering policies.
- Increasing the net metering eligibility size cap and allowing virtual net metering, community solar and aggregation techniques.
- Initiating an Iowa-specific docket that collects data, collaboratively explores new approaches, and develops specific consensus policy recommendations on net metering and distribution system planning with a goal of deploying DG and other distributed resources to make Iowa's electric grid stronger and more efficient.
    - The new docket should also serve as a collaborative process to oversee and evaluate results on any pilot projects initiated as a result of this docket.
    - The new docket should also oversee any future value of solar study that is conducted.
- Collecting information in the new docket could then be applied to explore rate design options informed by the data about actual benefits and costs of distributed resources and where deploying distributed resources could provide the most benefit to the grid.

TASC

TASC does not see any need to explore long-term solutions to net metering at this time. Net-metering penetration is too low to warrant any concern over cost shifts to other ratepayers and continues to provide a simple and straightforward means for customers to offset their energy use. TASC supports an increase in

individual system size limit to allow more customers to participate in net metering. TASC also supports the development of pilot projects that encourage the development of DG on optimal locations on the grid.

Net metering is a proven policy that has driven the adoption of DG across the country while providing tangible benefits to other ratepayers. There is no reason at this time for an extensive redesign of this regulatory framework in order to achieve the Board's policy goal. By expanding net-metering access to larger customers and including DG in system planning, Iowa will be able to achieve a balanced approach that encourages a strong and sustainable DG market.

Andrew Johnson - WED

Mr. Johnson largely agrees with staff sentiment in Option #1 of the Gold Memo that "the current net metering policies appear to balance the interests of most customers and utilities and seem to be serving the intended purpose;" however, notes the following caveats:

1. Assuming that "most" refers to the fact that most Iowans are customers of utilities that offer net metering. Many are not and are frustrated that they can't access net metering.
2. Most Iowa utility customers are not being served by net metering. Net metering is not offered by all utilities and where it is offered, roughly half or more of the customers do not have adequate siting to install behind-the-meter DG. Virtual net metering via a shared/community renewable program with would solve this problem for the majority of these customers, and pilot projects could test the waters.
3. Third-party ownership is now settled in Iowa law. Yet IOUs are denying net metering to local governments and other non-taxable entities, which make up a large number of customers and collectively represent the majority of Iowans. The Board should clarify that net metering is available to all customers including those in third-party ownership structures.

The application of net metering has been inconsistent and unfair. To improve coverage for all Iowans, Mr. Johnson supports the following:

- Raising the cap to 2MW, and finding a way to include the valuation of demand charges for larger customers, including local governments.
- Perpetual carryover of credits with a common sense cap (such as 50 percent of annual usage) and cash out beyond the cap at avoided cost.
- Establishing virtual net metering and virtual meter aggregation per the earlier pilot program discussion.

- Continued net-metering eligibility for customers entering into third-party ownership arrangements.
- Refrain from major rate design change.

Mr. Johnson proposed a workable pilot project.

Luther College
Luther College favors making changes to Iowa's net-metering rule per the terms of previous comments. Luther College recommends alternate phrasing of the draft policy goal as discussed previously.

With the likely upcoming changes to the federal and state tax credits, Iowa's existing net-metering rule would be one of the few remaining significant incentives to invest in an AEP system. Given the state's policy "to encourage the development of alternate energy production facilities…" (Iowa Code § 476.41), Luther College encourages the Board to make changes to the rule consistent with this goal. This would also be a good time for the Board to consider adopting technology-specific avoided cost/power purchase rates to encourage the development of AEP-DG facilities.

Reply Responses

MidAmerican
MidAmerican generally agrees with OCA and the IAEC that the focus should be on a long-term solution with an alternative rate design to mitigate cross subsidization and revenue loss. The Board has dutifully studied DG and net metering for over a year in this docket. This proceeding should conclude with general proposals for long-term resolutions, such as recommendations for carefully targeted pilot projects and permanent, three-part rate changes. The Board should then proceed with rule making or contested case proceedings initiated by the utilities where the public interest for all Iowans can be considered.

TASC
TASC states that no solution to the alleged net-metering subsidy is currently required because Iowa's DG market is extremely small and no subsidy has been proven. Of the 44 U.S. states that have established net-metering policies, the overwhelming majority of those subsequently amended their policies and expanded them; not diluted them, as IPL proposes.

TASC believes that a utility study would present an inherent conflict of interest. If the Board determines to move forward with an evaluation of DG benefits, which we do not recommend at this time, TASC believes a rigorous examination requires an unbiased analysis conducted either by Board staff or an outside consultant with the following qualifications:

- Prior experience in conducting cost-benefit evaluations of demand-side programs, preferably prior experience conducting DG cost-benefit or benefit-alone studies;
- A deep knowledge of the technological, operational and policy elements of customer-sited generation; and
- A significant track record of consulting for state regulatory commissions on complex public policy issues.

The Board should maximize transparency and stakeholder participation if it chooses to move forward with a full analysis at this time despite current low levels of DG penetration in Iowa. The Board should allow for comment and/or workshops on the study's scope, inputs, assumptions, and methodology. Moreover, the study's authors should submit a draft of the completed analysis for full stakeholder review before it is submitted to the Board. Such procedural safeguards will ensure that a cost-benefit study will uphold the Board's tradition of transparency and broad stakeholder input.

Andrew Johnson - WED

Net metering is not a subsidy to DG participants; it is an imprecise yet remarkably elegant and effective proxy for valuing the bundle of services provided by non-utility owned DG to the utility, grid, and society. Given the body of evidence supporting this view, no major long-term fixes are necessary to net metering. However, improvements that remove barriers and expand access to net metering to the full universe of customers are necessary.

Given the scope and speed of current technology-driven changes in the energy world due in large part to growing desire for customer and community participation, a new and much broader effort led by the Board and focused on the evolution of the distribution system and the full suite of DER is in order. New York's *Reforming the Energy Vision* and other such efforts referenced by us and others represents a possible model for this process. NREL's *Power Systems of the Future; A 21st Century Power Partnership Thought Leadership Report* provides a conceptual framework for considering options.

Luther College

Luther College does not believe there is a pressing need to find an immediate solution to the issue of potential rate impacts of net metering. Therefore, even if utilities are interested in proposing a rate design change that provides proper price signals, it may be several years before any further work is done simply because of the low penetration rates and minimal amount of cross subsidization that may exist.

Luther College shares OCA's preference for a long-term solution to issues raised in this docket; however, Luther College is not convinced a study is warranted at this time. If and when a study is conducted the Board should set the parameters

for the study and ensure that both costs and benefits associated with AEP systems are fully accounted for.

Luther College agrees with the Environmental and Solar Commenters that “the Board [should] initiate an Iowa-specific docket that collects data, collaboratively explores new approaches and develops specific consensus policy recommendations on net metering and distribution system planning with a goal of deploying DG and other distributed resources to make Iowa's electric grid stronger and more efficient.”