FILED
July 13, 2021
INDIANA UTILITY
REGULATORY COMMISSION

STATE OF INDIANA

INDIANA UTILITY REGULATORY COMMISSION

PETITION OF INDIANA MICHIGAN POWER COMPANY FOR APPROVAL OF A TARIFF RATE AND ACCOMPANYING TARIFF TERMS AND CONDITIONS FOR THE PROCUREMENT OF EXCESS DISTRIBUTED GENERATION PURSUANT TO IND. CODE CH. 8-1-40	**CAUSE NO. 45506**

DIRECT TESTIMONY OF BENJAMIN D. INSKEEP

ON BEHALF OF
INDIANA DISTRIBUTED ENERGY ALLIANCE

JULY 13, 2021

TABLE OF CONTENTS

LIST OF ATTACHMENTS

BDI-1: *Curriculum Vitae* of Benjamin Inskeep

BDI-2: SEA 309 Version 1

BDI-3: SEA 309 Version 2

BDI-4: SEA 309 Version 3

BDI-5: SEA 309 Version 4

BDI-6: SEA 309 Version 5

BDI-7: Senator Hershman Letter to the Editor

BDI-8: Rejected, Withdrawn, and Approved Investor-Owned Utility Fixed Fees on Solar DG Customers

BDI-9: Key Examples of Jurisdictions Studying and Investigating Net Metering

BDI-10: Referenced I&M Data Request Responses

I. INTRODUCTION

Q. Please state your name, business address and current position.

A. Benjamin D. Inskeep, 1155 Kildaire Farm Road, Ste. 202, Cary, North Carolina 27511. My current position is Principal Energy Policy Analyst with EQ Research LLC.

Q. Please describe your educational and occupational background.

A. I earned a Bachelor of Science in Psychology from Indiana University in 2009 and both a Master of Science in Environmental Science and a Master of Public Affairs from the O'Neill School of Public and Environmental Affairs at Indiana University in 2012.

I was employed at the North Carolina Clean Energy Technology Center at North Carolina State University from June 2014 through February 2016, where I co-created and served as lead author and editor of *The 50 States of Solar*, a quarterly report series tracking net metering policies and rate design changes impacting residential solar. I also conducted policy research and contributed to the *Database of State Incentives for Renewables and Efficiency (DSIRE)* project. Finally, I provided technical support, conducted analysis, and led workshops for state and local governments on reducing solar soft costs through the U.S. Department of Energy's SunShot Solar Outreach Partnership.

I have worked for EQ Research LLC, a clean energy policy consulting firm, since 2016. In my current position, I oversee EQ Research's general rate case subscription service, which includes reviewing and analyzing investor-owned electric utility rate case filings, providing summaries to clients, and maintaining a client-facing database of rate case information. I also contribute as a researcher and analyst to other policy service offerings such as a legislative and regulatory tracking services and perform customized research and analysis for clients. I also help clients with their participation in regulatory proceedings, including serving as an expert witness on renewable energy policy issues, such as net metering. My *curriculum vitae* is attached as Attachment BDI-1.

Q. On whose behalf are you testifying?

A. I am testifying on behalf of Indiana Distributed Energy Alliance ("IndianaDG").

Q. Have you previously testified before the Indiana Utility Regulatory Commission ("IURC" or "Commission") or as an expert in any other proceeding?

A. I have not previously testified before this Commission. I have previously testified before the Kentucky Public Service Commission in the following cases:

- Case No. 2020-00174 (Kentucky Power's 2020 rate case)
- Case No. 2020-00349 (Kentucky Utilities' 2020 rate case)
- Case No. 2020-00350 (Louisville Gas & Electric's 2020 rate case)

Q. What is the purpose of your testimony in this proceeding, and how is it organized?

A. My testimony responds to the excess distributed generation rider ("EDG Rider") and accompanying terms and conditions proposed by Indiana Michigan Power Company ("I&M" or the "Company"). It is organized as follows:

- Section II addresses I&M's calculation of the EDG Rider credit rate, describes the flaws in I&M's methodology, and proposes a more accurate methodology for crediting EDG. Next, I address I&M's EDG Rider proposal to end the policy that allowed DG customers to net electricity produced by their DG systems and exported to the grid against electricity they imported during a monthly billing period. I detail the flaws of this proposal and describe why it is inconsistent with the principles underlying just and reasonable rates. I also explain why maintaining monthly netting is sound policy, is supported by the plain language of the EDG statutes, and makes logical and practical sense in this case. I also analyze the impacts of I&M's proposal on the financial value provided by DG, as well as various alternative policy options.

- Section III addresses other concerns I have with the terms and conditions of participation under the EDG Rider.
- Section IV contains my concluding remarks and summarizes my recommendations.

Q. What are your recommendations to the Commission?

A. For many reasons, especially but not exclusively the plain language of the EDG statute, I recommend that the Commission reject I&M's proposed "no netting" EDG Rider and proposal to end monthly netting.[1] To the extent the Commission disagrees with my recommendation to maintain monthly netting under the EDG Rider, I recommend it consider alternative netting methodologies that are less punitive, such as daily netting.

If the Commission approves I&M's filing as proposed or with limited modifications, I recommend that the Commission direct I&M to provide additional consumer information and education regarding its Tariff COGEN/SPP to ensure all eligible DG customers have access to and are fully informed of this rate option.

I also recommend that I&M modify its calculation of the EDG Rider credit rate to accurately reflect the average marginal price at the times DG systems are generating and exporting power to the grid.

Finally, I recommend rejection of several harmful provisions of I&M's EDG Rider regarding the treatment of EDG credits at the end of a DG customer's service and the requirement for an external disconnect switch.

[1] Direct Testimony of Seger-Lawson, p. 7; I&M Response to IndianaDG Data Request 1-03 (stating "I&M states it is not proposing any netting in this EDG case").

II. I&M'S EDG RIDER "NO NETTING" PROPOSAL

A. Description of I&M Proposal

Q. What is I&M proposing in this case?

A. In response to Senate Enrolled Act 309 ("SEA 309"), I&M is proposing a new tariff, i.e. an EDG Rider, for procurement of excess distributed generation ("EDG") under Ind. Code ch. 8-1-40 ("Distributed Generation Statutes" or "DG Statutes"). I&M proposes that customers taking service under the EDG Rider would not be able to net any electricity they export to I&M with electricity they import from I&M:

> **Q21. Is I&M proposing a time period over which energy received will be netted against energy delivered?**
>
> A. No. I&M does not read anything in the Distributed Generation Statute that indicates energy received by the utility should be netted against energy delivered by the utility.[2]

I&M's Response to INDG Data Request 1-03 indicates I&M "is not proposing any netting in this EDG case." I refer to this position in my testimony as I&M's "no netting" proposal.[3] Instead of applying monthly netting, all electricity that a DG customer does not immediately consume on-site behind-the-meter that is exported to I&M under EDG Rider would be credited to the DG customer at a rate of $0.02581/kWh, and that rate would be updated annually.[4] All electricity that a DG customer imports from I&M would be charged at the applicable retail rate. I&M will close its Net Metering Service ("NMS") Rider to new participants after June 30, 2022.[5]

Q. How does I&M calculate the EDG Rider credit rate for EDG?

---

[2] Direct Testimony of Seger-Lawson, p. 7; *see also* I&M Response to IndianaDG Data Request 1-03.
[3] Direct Testimony of Seger-Lawson, p. 7.
[4] *Id.*, p. 4.
[5] *Id.*, pp. 7-8; Direct Testimony of Cooper, p. 5.

A. I&M calculated the average Real-Time Locational Marginal Price ("LMP") for its load zone within PJM Interconnection ("PJM") for all hours of the entire 2020 year and multiplied that by 1.25. The Average LMP for the I&M load zone in 2020 was $0.02065/kWh, resulting in a calculated EDG rate of $0.02581/kWh.

B. EDG Credit Calculation

Q. What does the language in the DG Statutes provide with respect to how the EDG credit rate must be calculated?

A. Please note, I offer no legal conclusions in my testimony. I only describe the plain language of the statutes and related documents I have read. Section 17 of the DG Statutes provides that the EDG credit rate must equal:

> the product of: (1) the average marginal price of electricity paid by the electricity supplier during the most recent calendar year; multiplied by (2) one and twenty-five hundredths (1.25).

Section 6 provides that marginal price of electricity:

> means the hourly market price for electricity as determined by a regional transmission organization of which the electricity supplier serving a customer is a member.

I&M's proposed hourly market prices are determined 24 hours each day, including in daylight hours when customer solar is generating electricity and helping offset daylight demand.

Q. Is I&M's calculation of the EDG credit rate reasonable?

A. No. I&M has averaged the wholesale electricity price for *all hours* of the year. However, nearly all DG systems are solar facilities that only produce electricity and export power during daylight hours. I&M's calculation using *all hours* including nighttime hours does not align with the hours in which a DG system actually generates electricity, and therefore does not accurately reflect the marginal price of electricity during the hours in which a DG system is providing EDG to I&M. I&M's customers' highest summer demands for electricity generally occur during the afternoon, coinciding with when solar is typically generating electricity. Market prices for electricity are generally higher during these hours. Customer solar output shaves or eliminates their demand for electricity during these hours, and their EDG exports help reduce the need for market purchases during these hours. It would be an irrational result to calculate the value of customers' EDG based on hours of darkness when customers' solar facilities are not generating electricity and exporting power to the grid.

Q. What is a more reasonable way of calculating the marginal price of electricity?

A. I&M should calculate "the average marginal price of electricity paid by the electricity supplier during the most recent calendar year" by using the average marginal price for when DG generation is being exported, i.e. daylight hours which would be more reflective of what is "paid by the electricity supplier." For example, a reasonable method to achieve this is to calculate the average marginal price of electricity for each hour of the previous year and apply an appropriate factor that weights the average price in each hour according to the amount of generation a DG system is expected to actually produce during that hour.

I have conducted such an analysis based on the expected output of a typical residential solar DG system located in Fort Wayne, Indiana, using the default assumptions and output produced using the National Renewable Energy Laboratory's ("NREL") PVWatts Calculator.[6] This analysis demonstrates that expected solar DG generation for systems not paired with battery energy storage will occur between the hours of 5 a.m. to 7

[6] National Renewable Energy Laboratory, PVWatts Calculator, available at https://pvwatts.nrel.gov/.

p.m., so no exports will occur in hours outside of this time period. For instance, a solar DG system will produce the most electricity during the noon hour, equating to 13.8% of the system's total production on an annual basis. Therefore, the LMP for the noon hour should be weighted accordingly by multiplying the hourly LMP at noon for the previous year by 13.8%, conducting this same calculation for each other hour of the day, and summing each calculated value to arrive at "the average marginal price of electricity paid by the electricity supplier during the most recent calendar year" as it applies to the generation profile of a typical DG customer. In contrast, the solar DG system produces no electricity during the midnight hour, equating to 0% of the system's total production on an annual basis, and therefore the LMP for the midnight hour is weighted by a factor of 0%.

This approach results in a 2020 average LMP of $23.72/MWh, or $0.02372/kWh, which produces an EDG credit rate of $0.02965/kWh, which is 14.9% higher than I&M's proposed EDG credit rate that incorrectly includes non-solar-generating hours in its calculation.

This approach produces a more reasonable value for the EDG Rider credit rate that is consistent with the plain language of the DG Statutes and aligns with the time when solar DG facilities are generating electricity with the average marginal cost at those times.

C. Measurement of EDG

Q. How does the language in the DG Statutes define EDG?

A. Section 5 of the DG Statutes provides:

> As used in this chapter, "excess distributed generation" means the difference between:
>
> (1) the electricity that is supplied by an electricity supplier to a customer that produces distributed generation; and
>
> (2) the electricity that is supplied back to the electricity supplier by the customer.

Q. How does the language in the DG Statutes specify the compensation rate for EDG be calculated?

A. Section 17 of the DG Statutes requires the Commission to approve a "rate" for compensating EDG that:

> equals the product of (1) the average marginal price of electricity paid by the electricity supplier during the most recent calendar year; multiplied by (2) one and twenty-five hundredths (1.25).

Q. Do you see any language in the DG Statutes that specifies a change in netting methodology or prescribes a new method for measuring EDG; or otherwise directs the Commission to review and approve a new measurement or netting methodology?

A. No, I do not see such language. Notably, the language in the DG Statutes requires the Commission to approve a *rate* – not consider a new methodology or netting measurement for determining EDG. I do not see language that requires or asks the Commission to consider a new methodology or netting measurement for determining EDG.

Q. Have you researched the legislative evolution of SEA 309 from publicly available documents?

A. Yes, I have. The variations of the bill and video of legislative public hearings on the bill are on the Indiana General Assembly's website.

Q. What has your research found with respect to provisions addressing the issue of netting in the legislative history of the SEA 309 DG Statutes?

A. As introduced ("Version 1," which is my Attachment BDI-2), Section 15 of SEA 309 would have changed the netting methodology by expressly removing all netting. Specifically, it would have established a buy-all, sell-all tariff to replace net metering by providing that:

> all distributed generation produced by the customer shall be purchased by the electricity supplier at the rate approved by the commission under section 13 of this chapter; and (2) all electricity consumed by the customer at the premises shall be considered electricity supplied by the electricity supplier and is subject to the applicable retail rate schedule.[7]

This definitional language makes clear that netting would not be permitted, since "***all*** distributed generation produced by the customer" is being credited at the specified rate and "***all*** electricity consumed by the customer" is subject to the applicable retail rate charges (emphasis added). A buy-all, sell-all tariff would have the DG customer pay retail rates for their full electricity usage, receive a set EDG rate for their electricity production, and their usage would not be offset by any of their own generation output. A buy-all, sell-all policy would have been a change from the existing measurement methodology of monthly netting.

SEA 309 was subsequently amended four times ("Version 2," "Version 3," "Version 4," and "Version 5," respectively; see Attachments BDI-3, BDI-4, BDI-5, and BDI-6), with Version 5 ultimately enacted as the DG Statutes. None of the subsequent versions retained the buy-all, sell-all framework or stated a new netting or no netting

[7] Indiana General Assembly, 2017 Session, Senate Bill 309 (As Introduced), available at http://iga.in.gov/legislative/2017/bills/senate/309#document-6bef29ba

methodology, i.e., something different from the existing monthly netting, or otherwise instructed the Commission to evaluate any need for a different netting proposal.

Q. What was the public reaction to Version 1 of SEA 309, which included revising the existing monthly netting methodology?

A. There was strong opposition with letters to the editors sent to newspapers and opposition voiced to the bill's author, Senator Brandt Hershman.[8]

Q. How did the author of SEA 309 and the General Assembly respond to the public reaction to Version 1?

A. Senator Hershman amended Version 1 of SEA 309. Version 2 and all subsequent versions of SEA 309 removed what had proved to be the highly contentious and controversial buy-all, sell-all provisions that had been included in Version 1, which neither allowed for on-site consumption, nor any form of netting exported electricity against imported electricity. Version 2 and all subsequent versions of SEA 309 contained the same definition for "excess distributed generation" that the General Assembly enacted through Section 5 of the DG Statutes.

Q. What statements did the author of SEA 309 make regarding the intent of the bill and its provisions with respect to EDG?

A. After amending Version 1 to remove the buy-all, sell-all provisions, Senator Hershman submitted a letter to the editor (Attachment BDI-7) in response to the strong public

[8] *E.g.*, John Russell, "Bill Alarms Solar-Power Advocates," *Indianapolis Business Journal,* January 23, 2017; Dennis Shock, "Ending Net Metering Bad for Hoosiers" [Letter to the Editor], *The Indianapolis Star*, January 29, 2017; "A Bright Idea: Resist Urge to Tie Solar-Energy Producers' Hands," *The Journal Gazette*, January 27, 2017; Paul Steury, "Senate Bill 309 Could Kill Solar Buyback Program," *The Goshen News*, February 4, 2017; Christopher Rohaly, "Strengthen Solar Industry, Legislature" [Letter to the Editor], *Kokomo Tribune*, February 7, 2017; and Ray Wilson, "Don't Kill Indiana's Solar Industry" [Letter to the Editor], *The Indianapolis Star*, February 7, 2017.

opposition to Version 1 of SEA 309, explaining that the buy-all, sell-all provisions had been removed from the bill and describing his view of the other aspects of SEA 309.[9] He characterized the amended bill as still "encourag[ing] renewable energy generation" while stepping down the compensation *rate* for EDG. He responded to the vocal opposition by clarifying in his letter that SEA 309 "has already been amended to address many of these concerns."[10]

Notably, none of the bill versions introduced after Version 1 was amended, including the enacted DG Statutes, have language that mentions, suggests, or contains provisions implying a change to the monthly netting methodology. What is clear is that the DG Statutes' language changes the *rate* at which EDG is compensated, moving from the full retail-rate rollover crediting under Net Metering to a credit rate based on an average marginal price, plus 25%. It also included provisions allowing existing net metering customers to continue to take service under net metering for a specified period of time, depending on when the system was installed.

In hearings on SEA 309, Senator Hershman made the following statements about SEA 309 (emphasis added):

- "That is what this tries to do: by stepping us down over a fairly long period of time, **so that we don't kill the solar industry, but we do start to transition them to a market-driven rate**, and as I said, I think the technology is going to allow that to happen and for them to continue to be a viable means of generation."[11]
- "The language in the bill itself is not all that complicated. It has the IURC determine the wholesale rate for a particular utility and then adds 25% to it, which you and I can do on the back of an envelope right here […] [A]nything that's even close to a ratemaking procedure at the IURC is an

[9] Brandt Hershman, "Utility Fairness for Hoosier Customers," *The Star Press,* available at https://www.thestarpress.com/story/opinion/contributors/2017/02/23/utility-fairness-hoosier-customers/98318350/.
[10] *Id*.
[11] Indiana Senate Utilities Committee, February 9, 2017, First Reading of SEA 309 [Timestamp 13:40].

exhaustive and expensive process that oftentimes takes years […] **Simplicity and certainty was actually my goal in doing it this way**."[12]

- "The only real issue here is how many people may sell their excess power back to the utility, and at **what rate they will be paid** […] That's it."[13]
- "…that **[25% above average wholesale prices] premium recognizing that we do assign a public policy value to renewable power**."[14]
- "We are providing **a very, very slow ramp-down of the rates** while we provide a substantial grandfathering for anyone who is currently participating in the program, and **we move ourselves, recognizing the advances in technology, closer to a market rate over a very long period of time**."[15]
- Described the 25% premium above wholesale rates as "**putting in law a public policy preference for alternative energy**."[16]

Although Senator Hershman spoke frequently in these hearings of modifying the ***rate*** by which EDG is compensated to slowly begin to align it with "market-based rates," I did not observe him or other members of the General Assembly in these hearings discuss any intent in the bill to modify the methodology or measurement for determining EDG. Senator Hershman's words are clear that the changing compensation rate was meant to be a gradual change, and not produce a devastating impact to distributed solar industry in Indiana. Senator Hershman made clear that he was not opposed to distributed solar – in fact, he states this bill was enshrining in Indiana law a *preference* for technologies like distributed solar – and that the bill was not designed to harm the distributed solar market, but rather gradually align the State's policy based on the maturation of this technology.

Q. What is the significance of the EDG definition with respect to determining the appropriate EDG measurement for compensation under the specified rate?

[12] Indiana Senate Utilities Committee, February 9, 2017, First Reading of SEA 309 [Timestamp 25:30].
[13] Indiana Senate Utilities Committee, February 16, 2017 [Timestamp 14:45].
[14] Indiana Senate Utilities Committee, February 16, 2017 [Timestamp 17:10].
[15] Indiana Senate Utilities Committee, February 16, 2017 [Timestamp 17:10].
[16] Indiana House Utilities, Energy and Telecommunications, March 22, 2017 [Timestamp 25:30].

A. The DG Statutes expressly provide that the measurement of EDG requires a calculation between the "difference between" two values: (1) electricity supplied by the utility ("imports" of electricity from the DG customer's perspective) and (2) the electricity supplied by the DG customer to the utility ("exports" of electricity from the DG customer's perspective). Instead of calculating that difference, I&M is proposing that EDG be measured so that ***all*** kWh supplied by a DG customer to I&M is credited at the low EDG Rider credit rate of $0.02581/kWh, and ***all*** kWh supplied by I&M to the DG customer is charged to the customer at that customer's applicable retail rate – and not by first taking the *difference between* these kWh values and then applying the EDG rate to the total EDG. Although the EDG Rider is distinguishable from a buy-all, sell-all tariff in that it does allow a DG customer to self-consume electricity generated behind the meter, by treating each of the two components of EDG in isolation, I&M's "no netting" proposal resembles the provisions of the initial Version 1 of SEA 309 that were subsequently removed.

Under this new I&M "no netting" measurement methodology, I&M is not actually taking the "difference between" electricity supplied by I&M and by the customer to I&M, respectively. Applying this methodology instead of the "difference between" prescribed by the Distributed Generation Statutes results in DG customers compensated for all exported electricity at an extremely low compensation credit relative to the per-kWh credit to which they should have their excess generation netted against. In contrast, the adopted statutory language implicitly defines EDG as occurring over a period of time, and necessarily requires a netting calculation. *Netting*, by definition, is taking the *difference between* two values – in the context of net metering or the DG Statutes, the difference between electricity imports and exports over the billing period.

Finally, since electricity flows in one direction, a DG customer does not both supply electricity to the utility and receive electricity from the utility at the same instance – they are either providing electricity to the utility, or they are being supplied electricity by the utility at any given time. Therefore, a utility cannot calculate EDG as defined by the DG Statutes without measuring imported and exported electricity from a DG customer over a period of time. As further explained below, that period of time is the monthly billing period.

Q. What other support do the DG Statutes' plain language provide in favor of using a monthly netting period for DG customers?

A. First, by defining "excess distributed generation" as the "difference between" exports and imports, the plain language of the DG Statutes suggests a netting calculation. Had the General Assembly intended for *all* exported generation from a DG facility to be compensated at the EDG Rider rate, it could have easily done so by defining "excess distributed generation" as "the electricity that is supplied back to the electricity supplier by the customer" – i.e., using only the second part of the definition that was adopted, and completely omitting any reference to the first part of the definition regarding "the electricity that is supplied by an electricity supplier to a customer that produces distributed generation." I&M's interpretation of the DG Statutes renders meaningless the first component of the definition of EDG. Version 1 of SEA 309 contained provisions that would have required all generation by a DG facility to be credited at a prescribed rate, but in totally removing that provision without any similar replacement language in subsequent amendments, it is clear that these provisions were not endorsed by the General Assembly.

Second, Section 3 defines "distributed generation" to include DG facilities

> sized at a nameplate capacity of the lesser of: (A) not more than one (1) megawatt; or (B) **the customer's average annual consumption of electricity on the premises**

(emphasis added). In other words, a key limitation for becoming eligible for service under the EDG Rider is that the customer's DG system is sized to meet their "average annual consumption." There is no requirement – indeed, there is no indication in the statute's language – that the DG facility should be designed in a manner to limit EDG on an *instantaneous* basis; instead, it expressly requires that DG systems be designed to generate electricity to meet a customer's *average annual* energy needs.

In addition, Section 18 of the DG Statutes provides, in relevant part, that:

> An electricity supplier shall compensate a customer from whom the electricity supplier procures EDG (at the rate approved by the commission under section 17 of this chapter) through **a credit on the customer's *monthly* bill**…

(emphasis added). This provision identifies that EDG is being calculated and credited on a **<u>monthly</u>** bill basis, and not on an instantaneous basis.

Q. Has the Commission established regulations implementing changes to netting since the enactment of the DG Statutes in 2017?

A. No. In response to SEA 309, the Commission held collaborative meetings, issued Emergency Rulemaking 17-04, and General Administrative Orders 2017-2 and 2019-2. However, it did not issue formal regulations that would modify the measurement of EDG as currently prescribed under its net metering rules to a new netting policy or a "no netting" policy. Currently, 170 IAC 4-4.2-7 provides, in part, that under net metering,

> The investor-owned electric utility shall measure the difference between the amount of electricity delivered by the investor-owned electric utility to the net metering customer and the amount of electricity generated by the net metering customer and delivered to the investor-owned electric utility during the billing period, in accordance with normal metering practices.

Normal metering practice is monthly netting, not a new "no netting" metering.

D. Drawbacks of I&M's "No Netting" Proposal

Q. Besides lacking support in the plain language of the DG Statutes, does I&M's "no netting" proposal have any significant drawbacks?

A. Yes, absolutely. In sum, I&M's proposal is insufficiently supported by its case-in-chief, creates perverse incentives rather than desirable price signals, substantially reduces the economic value of DG to customers thereby making it accessible primarily to higher income Hoosiers, produces a tariff that appears to be substantively worse than I&M's Cogeneration and Small Power Production tariff, is a radical departure from the current Indiana DG policy and the best practices established in other states, and is not based on sound ratemaking or cost-of-service principles.

It is difficult to overstate the devastating effect I&M's "no netting" proposal would have on Indiana's distributed solar market and industry, especially taken in context with the similar proposals filed by Indiana's other investor-owned utilities. It would significantly limit the ability of customers to benefit from more clean, local, on-site generation that supports the growth of Hoosier jobs. Similarly, it would reduce the ability of solar vendors and installers to do business in Indiana, leading to job losses and forgone economic development opportunities for the State. I&M's "no netting" proposal produces unjust and unreasonable rates and should be rejected.

1) I&M's "No Netting" Proposal Lacks Support

Q. Why do you say that I&M's proposal is insufficiently supported?

A. I&M's "no netting" proposal would result in a major policy change to how rooftop solar and other DG technologies will be compensated in the future compared to the monthly netting policy that has been in place for roughly the past 16 years in Indiana. Yet, its application and testimony are bereft of any meaningful analysis or justification to support this drastic change, meaning the Commission and parties have an extremely limited basis on which to consider the proposal and its intended and unintended impacts. The utility is proposing a major policy change without offering any meaningful analysis demonstrating its impacts, and as I describe below, it is apparent I&M lacks the basic data on DG customers to do the analysis necessary to present a meaningful defense of its radical departure from its current policy. Net metering as it existed is ended by SEA 309. Imposing a "no netting" policy in addition to this change is unwarranted.

I&M's proposal is also not supported with a class cost of service study or any other evidence demonstrating that moving to a "no netting" framework would produce just and reasonable rates. It did not provide a DG benefit-cost analysis or a value of distributed solar study that would demonstrate on a forward-looking basis (as opposed to a backwards-looking snapshot in time that is typical of an embedded cost of service study) that its "no netting" proposal produces net benefits rather than costs, or reflects an overall fair policy for compensating DG customers for the benefits that they provide to both DG and non-DG customers. Furthermore, I&M did not include any information on how its proposal will impact future DG growth, solar installer jobs, or related economic impacts in its service territory. Those ignored impacts will be harmful to Indiana.

An important question related to determining whether a rate is just and reasonable is whether it reflects cost causation principles. By that, I mean I&M's harmful "no netting" filing provides the Commission with no ability to conclude that the EDG Rider would produce rates that reflect or are designed to recover I&M's cost to serve DG customers or are reflective of the value of the benefits DG customers provide. Importantly, I&M has not made any showing demonstrating its proposed "no netting" policy would not recover *more than* I&M's cost to serve DG customers. And even if one argues monthly netting is overly generous to DG customers at the expense of non-DG customers – a position I do not endorse and which no evidence has been offered by I&M to substantiate – I&M has failed to provide any reasonable basis on which the Commission can conclude its specific "no netting" approach is the right one compared to many alternatives (e.g., netting intervals within the month based on time of use periods; weekly netting; daily netting; etc.).

On this basis alone, the Commission should reject I&M's application, at least with respect to its "no netting" proposal, as insufficient and failing to demonstrate its rates are just and reasonable.

Q. Does the "no netting" proposal in I&M's EDG Rider align with the longstanding principles of just and reasonable rates?

A. In my opinion, it does not. The EDG Rider rate itself is calculated through an arbitrary, albeit legislative, 25% adjustment to the applicable average wholesale market locational marginal price, and not an objective assessment on the actual value provided by EDG. Applying such an arbitrary calculation to determine the export credit rate for *all* kWh exported is not conducive of reaching a just and reasonable rate result. I&M's proposal substantially worsens the impact of the statutorily prescribed credit rate by ignoring the statutorily prescribed "difference between" exports and imports in its measurement of EDG, resulting in an arbitrary rate untethered to any ratemaking principles and in a manner that will materially harm DG customers taking service under such a rate, as further analyzed below.

The negative impact of this combination will be worsened by the EDG rate changing every year, depriving an EDG customer of any certainty or stability in their rate and making it very difficult to reliably estimate the most basic financial metrics of a potential DG system, such as the savings potential and simple payback period of such a significant investment.

Finally, the negative impact I&M's proposal will have on DG adoption rates will also harm *non-DG* customers by both limiting their ability to later adopt DG and by reducing the benefits non-DG customers can realize from having more clean, local, distributed generation on the grid.[17]

2) I&M's "No Netting" Proposal Creates Perverse Incentives

Q. What do you mean when you say that I&M's proposal creates perverse incentives?

A. Utility ratemaking typically aims to provide price signals to customers that align, to at least some degree, with how the utility incurs costs and in a manner that discourages waste and promotes efficiency.[18] For example, I&M's time-of-day ("TOD") tariffs feature more expensive rates during the tariffs' on-peak periods, 7 a.m. to 9 p.m., with an exception

[17] *E.g., see* Lawrence Berkeley National Laboratory, Indiana 21st Century Energy Policy: Emerging Technologies on the Electricity Distribution System, pp. 55-56, available at https://www.in.gov/iurc/files/2020-Report-to-the-21st-Century-Energy-Policy-Development-Task-Force.updated-min.pdf; National Standard Practice Manual for Benefit-Cost Analysis of Distributed Energy Resources, 2020, available at https://www.nationalenergyscreeningproject.org/national-standard-practice-manual/

[18] *See* James Bonbright's Principle 8 ("Efficiency of the rate classes and rate blocks in discouraging wasteful use of service…"). Bonbright principles are discussed further below.

being electric vehicle charging tariffs that have somewhat different hours.[19] By charging higher rates during on-peak periods, these rates discourage discretionary use and encourage energy conservation during on-peak periods relative to less expensive off-peak periods.

In contrast, I&M's "no netting" proposal in its EDG Rider would create a perverse incentive by doing the *opposite* of what the price signals in the TOD rates are designed to incentivize: ***The "no netting" component of the EDG Rider would encourage DG customers to <u>increase</u> their consumption during I&M's highest cost summer on-peak periods***. I&M's summer on-peak hours align with the production of solar generation, which is the predominant form of DG technology on I&M's grid now and anticipated into the future. A solar DG system designed to generate electricity in an amount equal to a customer's average annual electricity needs, as allowed by the DG Statutes, will tend to produce more electricity during the daylight than the DG customer immediately consumes behind-the-meter. However, if the DG customer no longer can net, or net over a meaningful period of time, their exported electricity against their imported electricity, the DG customer has a strong financial incentive to export as little electricity as possible to avoid the "penalty" of receiving the low EDG Rider compensation rate, particularly during the peak pricing period.

To avoid receiving this low EDG compensation rate, the economically rational DG customer would strive to shift all possible discretionary electricity consumption to hours when their DG system is generating more electricity than the customer is immediately consuming behind the meter (e.g., by cranking up their air conditioners on hot summer

[19] I&M, Schedule Of Tariffs And Terms And Conditions Of Service Governing Sale Of Electricity In The State Of Indiana, March 11, 2020, available at https://www.indianamichiganpower.com/lib/docs/ratesandtariffs/Indiana/IMINTB1805-28-2021.pdf

afternoons – during peak periods – to "pre-cool" their house for the nighttime hours). Since this time period aligns with the utility's on-peak period, it means DG customers will be strongly incentivized to increase their gross consumption during on-peak periods and decrease gross consumption during off-peak periods.

This perverse incentive baked into the "no netting" EDG Rider proposal would harm *non-DG customers* because these non-DG customers would no longer be able to benefit from the EDG the DG customer would otherwise have provided during higher-cost peak hours. A key objective of demand-side management programs and TOD pricing are to reduce utility peaks. I&M's "no netting" proposal would push in the opposite direction to the detriment of its customers.

<u>*3) I&M's "No Netting" Proposal Compensates EDG Customers at a Rate below I&M's Avoided Cost Rate*</u>

Q. Why do you claim that I&M's "no netting" proposal is substantively worse than I&M's Cogeneration and Small Power Production tariff?

A. I&M's Cogeneration and/or Small Power Production Service tariff ("COGEN/SPP"), available to eligible DG facilities sized 100 kW or less, provides a substantially higher compensation rate to DG customers than I&M's EDG Rider. Under I&M's COGEN/SPP tariff, DG customers receive a credit or payment of $0.0283/kWh for customers with standard meters, which is 9.6% higher than the proposed EDG Rider rate of $0.02581/kWh, or an on-peak[20] credit or payment of $0.0345/kWh for customers with TOD meters, which is <u>**33.7% above the proposed EDG Rider rate**</u>. In addition, <u>**COGEN/SPP customers**</u>

[20] The on-peak period is 7 a.m. to 9 p.m., which is the time period in which a DG solar facility would be expected to produce all, or nearly all, generation.

are eligible for a capacity credit of $5.29/kW, which could further increase the financial benefit of the COGEN/SPP tariff relative to EDG Rider.

To further explore the differences between the EDG Rider and Tariff COGEN/SPP, I conducted an analysis of the financial benefits of EDG under each option for a typical residential customer in I&M's service territory. The analysis shows that a typical residential customer would be significantly better off taking service under Tariff COGEN/SPP, even if the customer does not contract with I&M to provide any capacity (i.e., the DG customer does not receive a capacity payment). **The compensation a DG customer would receive over the first year after installing a DG system for EDG would be $196.99 under Tariff COGEN/SPP, whereas it would only be $156.80 under the EDG Rider, assuming *no capacity credit***. A DG customer that can provide 3 kW of contract capacity for a 7.8 kW solar system would see their compensation increase to $387.43 in the first year, although tariff limitations may prevent solar DG customers from earning such a credit in practice.[21]

I&M's COGEN/SPP tariff represents I&M's avoided cost rate under the Public Utility Regulatory Policies Act of 1978 (PURPA), and as such, reflects I&M's incremental cost. Additionally, PURPA allows Qualifying Facilities to negotiate the length of the contract, whereas the DG Statutes provide for an annual change in the EDG rate. It would be an absurd result and illogical to assume the General Assembly intended for DG customers to be compensated at a rate *far below* I&M's avoided cost rate while also experiencing less certainty in pricing from year-to-year. DG customers generally provide substantial value that goes beyond that of centralized power generation facilities, such as

[21] *See* I&M Response to IndianaDG Data Request 2-07.

by directly serving on-site load, avoiding line losses, avoiding wear and tear on transmission and distribution facilities, mitigating congestion on the grid, and providing enhanced resilience opportunities, among other benefits. Providing a compensation rate for *all* exported electricity that is far below I&M's PURPA avoided cost rate is patently unjust and unreasonable on its face. It also conflicts with the statements made by the author of SEA 309 about the purpose of the legislation continuing to encourage DG and conferring a preference for DG technologies in statute, as described above in more detail.

If I&M's EDG Rider is adopted, it seems reasonable to assume it would be seldom used by customers with DG facilities that would be eligible under Tariff COGEN/SPP, given I&M's COGEN/SPP tariff would likely provide a far better economic value proposition for DG customers. Therefore, I&M's interpretation of the DG Statutes produces an absurd result pushing small EDG customers to I&M's COGEN/SPP tariff.

If the Commission declines my recommendations and adopts I&M's EDG Rider as proposed or with only modest revisions, I recommend the Commission also direct I&M to make Tariff COGEN/SPP the "default" tariff for DG customers, or at least ensure prospective DG customers are clearly presented with this option on an equal basis to the EDG Rider. For example, the Commission should direct I&M to provide clear summary information on its COGEN/SPP tariff option on its website side-by-side with any descriptions of its EDG Rider, in a location on its website that is easy to find, and that describes and compares the tariffs' terms and requirements in a manner that are easily understandable to a typical residential customer so that they are able to compare and contrast taking service under the COGEN/SPP tariff and the EDG Rider.

4) I&M's "No Netting" Proposal Is a Dramatic Departure from DG Policies Adopted in Most Other States

Q. While not necessarily controlling on any issue, do you think it appropriate and beneficial to sound public policy and intelligent regulatory discretion that utility regulatory Commissions stay apprised of regulatory trends in other states?

A. Yes, I do. It has been my experience that utility regulatory commissions inquire about and watch with interest how evolving regulatory matters in other states raise new ideas, address emerging issues, and integrate new technologies. Such knowledge is beneficial to regulators when navigating evolving or new regulatory matters and in applying their discretionary findings to reach an overall balanced outcome on issues consistent with the public interest. This is particularly so when a multifaceted issue like EDG can be broken down into its subcomponents and each subcomponent is subject to a regulatory finding, and potentially differing levels of regulatory discretion. Knowledge and understanding facilitate a balanced outcome in the formation of just and reasonable rates and sound regulatory public policy.

Q. Have other state utility regulators decided to retain monthly netting after conducting a review or investigation into DG policies?

A. Yes. In fact, maintaining monthly netting has frequently been the outcome of state proceedings that have addressed DG policies in recent years. In states with relatively modest customer net metering adoption rates, regulators have typically preserved monthly netting and only made modest changes that would not fundamentally alter the viability of solar DG, **even when the utility regulator is acting to implement new legislation authorizing changes to net metering**.

Q. Can you provide specific examples of state utility regulators retaining monthly netting after legislation was enacted authoring changes to net metering?

A. Yes. The Arkansas Public Service Commission ("PSC") issued an Order on June 1, 2020, addressing implementation of Act 464 (2019). Even though Act 464 authorized the Arkansas PSC to make changes to net metering, it elected to maintain monthly netting for the time being for residential and small commercial customers. It determined that:

> [b]ased upon the evidence currently showing very low levels of penetration of renewable distributed generation by solar facilities in Arkansas in the residential class and in any non-residential customers without a demand component, the Commission finds that the current 1:1 full retail credit for net excess generation should be retained for now as the default Net-Metering rate structure," (footnote omitted).[22]

The decision permits utilities to propose more substantive changes through filings submitted after December 31, 2022 but requires the utilities to justify such a proposal by using a "timely and properly designed cost-of-service study" that demonstrates the alternative DG policy is "in the public interest and will not result in an unreasonable allocation of or increase in costs to other utility customers.[23]

As I describe below, the Kentucky PSC also recently rejected changes to KPC's monthly netting policy, despite being granted discretion under Senate Bill 100 (2019) to make significant changes to DG policies.

Most states, including those with high DG adoption rates, have continued to offer monthly netting, while rejecting more significant changes or multiple changes that in combination could be detrimental to prospective net metering customers.

---

[22] Arkansas Public Service Commission, Docket No. 16-027-R, Order, June 1, 2020, p. 525.
[23] *Ibid*.

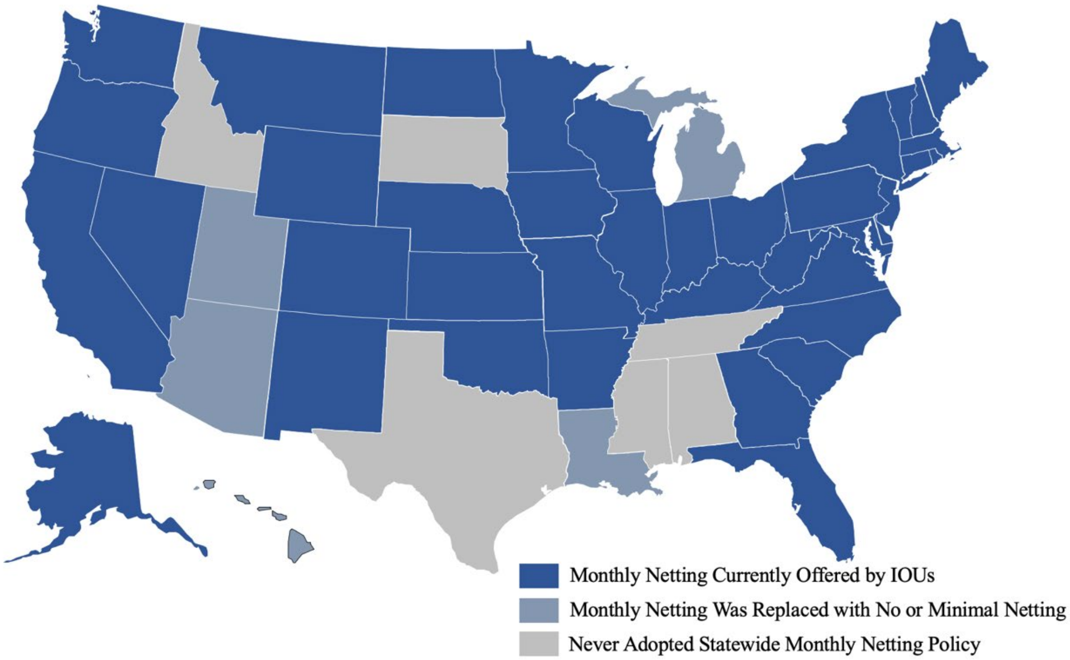
Q. Does I&M's "no netting" proposal align with broader industry trends with respect to policy changes to net metering?

A. No. In fact, as I will describe below, although they both have approved different netting policies, both the Kentucky PSC and Michigan PSC have established DG compensation rates for Kentucky Power and I&M Michigan (sister utilities of I&M Indiana), respectively, that are roughly *four times* the EDG Rider credit rate proposed by I&M in this case in conjunction with its "no netting" proposal. Furthermore, while many utilities have *proposed* significant changes to DG policies like net metering, few state regulatory commissions or state legislatures have adopted dramatic changes to existing policies in a manner that would significantly harm the future growth of DG, such as would be the case under I&M's "no netting" proposal.

Q. How prevalent is monthly netting?

A. Monthly netting continues to be one of the most widespread and important components of DG compensation policies across U.S. states and utilities. At its peak, investor-owned utilities ("IOUs") in at least 43 states and the District of Columbia offered monthly netting to customers. Currently, most IOUs in 39 states and the District of Columbia offer monthly netting to new residential and small commercial customers, as identified in Figure 1. Only five states have transitioned from monthly netting to an "import/export" crediting scheme, characterized by no netting or a netting within only a short time interval (e.g., 15 minutes or one hour) and where exports are credited at a substantially lower rate than imports. In one state (Georgia), state regulators recently mandated a change *from* a "no netting" policy *to* monthly netting for Georgia Power, and two states (Nevada and Maine) that previously ended monthly netting subsequently restored it for residential customers through legislative changes.

Figure 1. Netting Policies for Residential and Small Commercial DG Customers of Investor-Owned Utilities



Q. Can you describe the types of DG policy changes that policymakers have approved?

A. States that moved from monthly netting to an alternative policy have, in most cases, established a compensation rate for exported electricity that is significantly higher than the EDG rate proposed by I&M. For example:

- In **Michigan**, new DG customers receive an export credit rate based on the power supply rate excluding transmission. The credit rate for I&M Michigan customers is based on the specific rate schedule's combined Capacity and Non-Capacity Power Supply rates plus the Power Supply Cost Recovery factor. For residential customers, these values are $0.0762/kWh, $0.02689/kWh, and ($0.00285)/kWh, which results in a total compensation rate for exports of $0.10024/kWh, which is roughly *four times* as much as I&M's proposed compensation rate across the border in Indiana.[24] The credit rate for Consumers Energy's residential customers is

[24] I&M Tariffs, available at https://www.indianamichiganpower.com/lib/docs/ratesandtariffs/Michigan/IMMITBBk172021-06-21.pdf

$0.119655/kWh for summer on-peak, $0.080485/kWh for summer off-peak, and $0.084785/kWh for all exports in non-summer months.[25]

- In **Arizona**, new residential DG customers of Arizona Public Service receive a specific export credit rate for a period of 10 years, with the amount depending on when the DG system is installed. A system installed October 1, 2021 through August 31, 2022 receives an export credit rate of $0.09405/kWh.[26]
- In **Utah**, new DG customers of Rocky Mountain Power receive summer and winter export credit rates of $0.05817/kWh and $0.05487/kWh, respectively.[27]

However, many state policymakers have rejected attempts to fundamentally alter the monthly netting framework when implementing other changes to a net metering policy. One notable recent example is the Kentucky PSC's rejection of a net metering replacement tariff proposed by Kentucky Power Company ("KPC"), a subsidiary of AEP like I&M. In that case, KPC requested to move from monthly netting for all imports and exports to having two netting periods within the month that KPC alleged corresponded to on-peak and off-peak time periods. The Kentucky PSC's May 2021 Order ("KPC Order") rejected KPC's net metering tariff proposal and retained standard *monthly netting* while reducing the EDG *rate* for monthly rollover from the retail rate to $0.09746/kWh for residential customers and $0.09657/kWh for commercial customers, based on a bottom-up calculation of various categories of benefits provided by EDG.[28]

Other examples of state utility regulators maintaining monthly netting policies include:

- In **South Carolina**, the PSC rejected a Dominion Energy proposal in May 2021 to replace monthly netting with netting on a 15-minute basis, where all exports would

[25] Consumers Energy, Rate Book for Electric Service, Original Sheet No. C-64.30, available at https://www.consumersenergy.com/-/media/CE/Documents/rates/electric-rate-book.ashx?la=en&hash=3EC495A835F623EFFD51C5486014D83F
[26] Arizona Public Service, Rate Rider RCP, available at https://www.aps.com/-/media/APS/APSCOM-PDFs/Utility/Regulatory-and-Legal/Regulatory-Plan-Details-Tariffs/Residential/Renewable-Plans-and-Riders/rcp_RateSchedule.ashx?la=en
[27] Utah Public Service Commission, Order on Agency Rehearing, Docket No. 17-035-61, April 28, 2021, available at https://pscdocs.utah.gov/electric/17docs/1703561/318459170356 1ooar4-28-2021.pdf
[28] Kentucky Public Service Commission, Order, Case No. 2020-00174, May 14, 2021, pp. 39-40, https://psc.ky.gov/pscscf/2020%20Cases/2020-00174//20210113_PSC_ORDER.pdf

have been credited at time-based avoided cost rates, and charge DG customers additional surcharges. Instead, the PSC approved a tariff that has an annual netting period in which on-peak generation can offset on-peak usage on a 1:1 basis, and off-peak generation can offset off-peak generation on a 1:1 basis.[29] The PSC separately approved DG tariffs for Duke Energy customers that featured monthly netting within TOD periods.[30]

- In **New York**, the PSC has repeatedly decided to retain monthly netting for residential and small commercial customers, among others, even as it has moved other types of DG customers to its "Value of Distributed Energy Resources" tariff that differentially credits exported energy relative to imports.[31]
- In **Louisiana**, the PSC revised its net metering rules in December 2016 to maintain monthly netting while reducing the EDG credit rate to the applicable avoided cost rate after the utility reached its net metering cap.[32] Years later, in September 2019, it replaced the monthly netting policy with a no netting policy effective January 1, 2020.[33]
- In **California**, the Public Utilities Commission maintained monthly netting under its revised net metering policy that applied after a utility reached its net metering cap ("NEM 2.0"). NEM 2.0 customers were required to take service under a TOD rate and pay certain non-bypassable charges (e.g., related to funding public purpose programs), but otherwise were allowed to use monthly netting within the TOD period.[34]

Q. Have some utilities proposed additional charges on DG customers either in lieu of, or in addition to, changes to monthly netting?

A. Yes, but relatively few are adopted. Utilities across the country have proposed a variety of other changes to DG policies, including new surcharges or fees, either in combination with proposals to modify or end monthly netting or in lieu of these changes. These include proposals for new capacity-based charges based on the size of the DG system, mandatory demand charges, minimum bill amounts that exceed the amount charged to non-DG customers, and additional monthly fixed charges. While numerous, these utility proposals,

[29] South Carolina Public Service Commission, Docket No. 2020-229-E, Order No. 2021-391, May 29, 2021.
[30] South Carolina Public Service Commission, Docket Nos. 2020-264-E and 2020-265-E, Order No. 2021-390, May 30, 2021.
[31] New York Public Service Commission, Docket No. 15-E-0751, Order, July 16, 2020.
[32] Louisiana Public Service Commission, Docket No. R-33929, Phase I Order, December 8, 2016.
[33] Phase II Order, September 19, 2019.
[34] California Public Utilities Commission, Docket No. R.14-07-002, Decision No. 16-01-044, February 5, 2016.

like changes to monthly netting, are seldom adopted. Specifically, since November 2012, there have been at least 27 distinct examples of investor-owned utilities in the U.S. proposing extra surcharges on DG customers. In nearly every instance, those proposals were withdrawn by the proponent, denied by regulators, or overturned in court on appeal. I provide an overview of these examples in Attachment BDI-8.

While I&M is not proposing a surcharge on DG customers in this case, its proposal to end monthly netting is analogous to utility proposals for DG surcharges insofar as both reduce the economic benefit to the customer of installing DG. These examples provide further evidence demonstrating that utility proposals of all types aimed at significantly undermining the growth of DG have broadly lacked policymaker support and failed to gain traction despite the substantial and numerous efforts by utilities to have them approved.

Q. How does I&M's proposed "no netting" policy compare to modifications adopted in other jurisdictions to their DG policies?

A. Over the last decade, DG policies like net metering have been extensively studied and investigated in many jurisdictions across the country.[35] While I have not quantitatively analyzed the impact of every utility proposal, based on my professional experience, I can say that I&M's proposed "no netting" policy in combination with its implementation of EDG Rider to replace net metering would be more far-reaching and likely more detrimental than the vast majority of the changes adopted to DG policies in other jurisdictions, including those with far greater deployment rates of DG.

---

[35] *See, e.g.,* ICF International, "Review of Recent Cost-Benefit Studies Related to Net Metering and Distributed Solar" (May 2018).

More fundamentally, I&M's proposal stands out when compared to most changes that have been adopted in other jurisdictions for its lack of underlying support and justification. Other jurisdictions, especially those that have higher penetration rates of DG, have undergone extensive investigation, study, and evaluation of DG policies over a period of several years *prior* to making significant modifications that were not expressly directed by legislation. Typically, state utility regulators have overseen investigations into net metering policies that include studies that quantify the costs and benefits of net metering or the value of distributed energy resources like solar prior to making significant changes to policies like monthly netting. The most common outcome of these proceedings is that the state utility commission adopts only limited and incremental changes to the overall design of the DG policy. Some states have gone through multiple iterations of this process, spanning multiple years, to collect evidence, gather input from a variety of parties, implement adjustments, monitor the results, and then restart the process in an iterative fashion to consider additional refinements.

I have developed Attachment BDI-9 to highlight a selection of jurisdictions that have examined net metering policies. The table identifies examples of studies that have been conducted, key regulatory proceedings that have investigated these issues, and a summary of the outcomes for each jurisdiction examined. The table is meant to be illustrative, and not entirely comprehensive of every jurisdiction, study, and docket.

Q. What other observations do you have regarding state practices used when considering modifications to monthly netting based on your review of DG policies in other jurisdictions?

A. There are several commonalities among many jurisdictions in how they have considered modifications of DG policies like net metering. At a high level, some of the commonalities evident from the numerous state public utility commission proceedings evaluating modifications to DG policies are:

- **Quantitative analysis is key:** Cost of service studies, cost-benefit analyses, and value of solar (or distributed energy resources more broadly) studies, or a combination thereof, have been used to quantify the impacts of DG policies. These studies have been paramount in informing discussions of DG policy changes, although they are not necessarily dispositive of the ultimate outcome, as larger policy considerations have also played an important role in shaping discussions. They can also be helpful in identifying policy solutions that align DG customer incentives with broader grid benefits in a manner that does not unfairly discourage the adoption of DG.
- **Gradualism is an important ratemaking principle:** After gathering robust evidence on net metering implementation, public utility commissions that have determined that changes should be made to existing net metering policies have adhered to the ratemaking principle of Gradualism by implementing modest changes. For example, regulators in New Hampshire maintained monthly netting, excluding certain non-bypassable charges, when they implemented a reduced EDG credit rate for the rollover credit at the end of the month, while directing a multi-year study into DG to collect additional data. Most states that ultimately ended monthly netting, such as Arizona, Utah and Louisiana, only did so after many years, multiple investigations, and a transition period where a modified policy was in place that limited the immediate financial impacts on prospective DG customers.
- **Iterative process:** DG policy discussions are rarely resolved through one proceeding. Rather, the proliferation of rooftop solar has led many policymakers to study and evaluate DG policies on an iterative basis, incorporating new information as additional experience is gained and data is collected.
- **Insufficiently supported utility proposals are rejected.** Numerous utility requests to modify DG policies or related rate design changes impacting DG customers have been rejected by regulators across the U.S. when they have not been adequately supported and justified by the utility. Regulators have been reluctant to make drastic changes to DG policies that are not clearly directed by statute that could undermine customer adoption of rooftop solar when the utility has not met its burden to demonstrate that its proposed changes result in just and reasonable rates and are in the public interest. In other words, regulatory determinations on DG policies have typically required utilities to meet the same burden of proof standard that applies more generally. Such a standard is critical for ensuring that adopted policies or rates are well vetted and not discriminatory.
- **Monthly netting remains commonplace.** Despite numerous proceedings and legislation addressing DG policies in states across the country, monthly netting remains one of the most widespread DG policies currently in place in the U.S.

Q. Why have some states adopted changes to their DG policies in recent years?

A. Based on my experience closely tracking this industry for more than seven years, I conclude that two factors are the primary drivers of this trend. First, rooftop solar deployment has increased in recent years, driven by equipment cost declines. Most state net metering policies specify an aggregate capacity limit for net metering programs ("net metering cap"). Often, state legislatures and utility regulators have responded to utilities nearing or exceeding the specified net metering cap as a result of the proliferation of DG solar by increasing the net metering cap and/or by adopting policies to modify net metering or establish a pathway for adopting a net metering successor policy, which is often preceded by a study or formal investigation.

Second, utilities, their trade associations, and other aligned interests have waged a long-running campaign against policies encouraging the adoption of rooftop solar, particularly net metering.[36] Net metering allows a customer to purchase less electricity from a utility, which can result in a decrease in a utility's revenue. In addition, electric utilities earn profit by making capital investments, on which they are permitted the opportunity to earn a return on equity. Investment in generation facilities such as solar DG by utility customers can therefore compete with a utility's generation investments, with a reduced need in new utility generation assets corresponding to a reduced profit opportunity for the utility. In states without retail choice, rooftop solar is one of the few examples of a

[36] *See, e.g.,* Joby Warrick, "Utilities Wage Campaign Against Rooftop Solar," *Washington Post* (March 7, 2015); Hye-Jin Kim, Rachel J. Cross, and Bret Fanshaw, "Blocking the Sun: Utilities and Fossil Fuel Interests That Are Undermining American Solar Power," Frontier Group and Environment America Research & Policy Center (November 2, 2017); Gabe Elsner, "Edison Electric Institute Campaign Against Distributed Solar," Energy and Policy Institute (March 7, 2015); *See Generally,* Energy and Policy Institute, "Category: Net Metering," https://www.energyandpolicy.org/category/solar/net-metering/.

utility facing a form of, albeit limited, competition, as utility customers otherwise need to be fully served by the electricity generated or procured by their monopoly utility.

Q. Have some state utility regulators <u>expanded</u> the availability of monthly netting after conducting a review or investigation into the policy?

A. Yes. For instance, the Iowa Utilities Board issued an Order in July 2016 maintaining monthly netting after investigating its net metering policy.[37] The Order created a three-year study process, while expanding the availability of net metering to all customer classes and increasing the maximum eligible system size from 500 kW to 1,000 kW.

More recently, the Georgia Public Service Commission modified the DG compensation policy in place for Georgia Power in December 2019 by moving from no netting to monthly netting.[38]

Q. Why are other states' policy decisions on monthly netting or DG policy in general relevant to this proceeding?

A. All states and their Commissions value their autonomy. Their policy decisions are governed by their unique legal frameworks, policy priorities, and objectives. Knowledge about how other states regulatory commissions have approached new technologies and related ratemaking issues may provide useful insights for regulators reviewing similar matters. Despite inherent differences, it is significant that after substantial focus on DG policies in recent years, most states have elected to expand or maintain existing net metering policies, make only modest changes that retain monthly netting within a DG

[37] Iowa Utilities Board, Docket No. NOI-2014-0001, Order, July 19, 2016.
[38] Georgia Public Service Commission, Docket No. 42516, Order, February 6, 2020.

policy, or establish a future process for considering changes to DG policies while allowing customers to continue to use monthly netting in the interim.

5) I&M's "No Netting" Proposal Is Inconsistent with Longstanding Ratemaking Principles

Q. What other factors do you think the Commission should consider when evaluating I&M's "no netting" proposal?

A. In addition to the DG Statutes, the Commission should consider other relevant Indiana statutes and the same generally accepted ratemaking principles (*i.e.,* the Bonbright principles) that govern utility ratemaking. With respect to other relevant Indiana statutes, IC § 8-1-2-4 specifies that:

> Every public utility is required to furnish reasonably adequate service and facilities. The charge made by any public utility for any service rendered or to be rendered either directly or in connection therewith shall be reasonable and just, and every unjust or unreasonable charge for such service is prohibited and declared unlawful.

Q. Is I&M's "no netting" proposal consistent with long-standing ratemaking principles?

A. No. In his seminal work that defined best practices in utility regulation, Professor James Bonbright enumerated a number of principles of utility ratemaking.[39] These principles have been foundational to determining rate structures that are just and reasonable. I&M's "no netting" proposal fundamentally conflicts with several of these key principles.

First, asking the Commission to approve moving to "no netting" at the same time I&M is implementing a statutorily prescribed reduction in the effective compensation rate does not comport with the ratemaking principle that is often described today as

---

[39] James C. Bonbright, Principles of Public Utility Rates, Columbia Univ. Press (1961), p. 291.

Gradualism.[40] It is an abrupt, two-fold negative impact on prospective DG customers and the Indiana businesses that install solar. The DG Statutes made substantive changes to the treatment of DG customers, perhaps most significantly by reducing the compensation rate from an effective retail rate rollover credit to a credit at the EDG Rider rate. The principle of Gradualism would caution against making additional dramatic changes, such as the "no netting" proposal, at the same time as making these changes to avoid "rate shock" and maintain some level of rate stability. I&M has endorsed and applied in its ratemaking the principle of Gradualism in its recent rate case filing by preventing any rate class from receiving more than a 10% increase or decrease in revenue.[41] As discussed earlier, I see no language in the DG Statutes that require or call for consideration of "no netting" in the EDG framework or that seeks to impose the resulting harsh impact on EDG customers and Indiana's solar industry.

The Kentucky PSC's KPC Order, which retained *monthly netting* while reducing the EDG *rate* for monthly rollover, is instructive in this respect. It noted that:

> [c]ommitting to gradual compensation changes will provide customers and third parties with confidence to operate in Kentucky and, with improved integration, create significant benefits for all ratepayers.[42]

Second, moving to "no netting" violates the ratemaking principle of Simplicity, Understandability, Public Acceptability, and Feasibility of Application.[43] Monthly netting is understandable to, accepted by, and intuitive to customers. In contrast, I&M's "no netting" proposal creates an impossibly complicated compensation scheme for DG

[40] Bonbright, Principle 5 (stating "Stability of the rates themselves, with a minimum of unexpected changes seriously adverse to existing customers. (Compare 'The best tax is an old tax.')")
[41] *E.g.*, Cause No. 45576, Direct Testimony of Jenifer L. Fischer, p. 7 of 26.
[42] KPC Order, Case No. 2020-00174, May 14, 2021, p. 41.
[43] Bonbright, Principle 1.

customers, most of whom lack the capacity and capability to manage their moment-by-moment consumption relative to their generation.

Again, the KPC Order is illuminating on this point. In rejecting a move from monthly netting to two netting intervals within a billing month, the Kentucky PSC found that, "The proposed netting periods also significantly increase the complexity of the [net metering service] rate design, without clear indication of their benefit."[44] I&M's "no netting" proposal is far more complicated than that proposed by KPC, and I&M has asserted no benefit(s) that justifies this unnecessary complexity.

Third, the "no netting" proposal violates the principle that Professor Bonbright described as, "Fairness of the specific rates in the apportionment of total costs of service among the different consumers."[45] As I further describe below, I&M has failed to offer any evidence demonstrating that its "no netting" proposal would recover the costs to serve its DG customers and thereby is appropriately and fairly apportioning costs to DG customers relative to non-DG customers.

Again, the KPC Order is insightful on applying this principle in the context of DG policy. It found that KPC's class cost of service study for DG customers, which was not based on load research on its actual DG customers, was "unreliable and not useful for ratemaking," noting the "lack of appropriate and sufficient data" the utility had on its DG customers, concluding that "[w]ithout such data, claims regarding a subsidy or differentiated load profiles [between DG and non-DG customers] is moot."[46]

[44] KPC Order, p. 24
[45] Bonbright, Principle 6.
[46] KPC Order, pp. 20-21.

Q. Have other utilities used, or have state utility regulators required, that utilities conduct load research on their actual net metering customers to produce an accurate cost of service study prior to significantly modifying DG policies?

A. Yes. Table 1 identifies some examples where other state utility regulators rejected proposed changes to net metering based on cost of service studies that failed to use appropriate load profiles for net metering customers, or where the utility used or planned to use such data to support its proposal to make changes to net metering.

Table 1: Examples of Net Metering ("NEM") Customer Load Research Used or Required in Other Jurisdictions[47]

State	Utility	Summary	Key Excerpts
MT	NorthWestern Energy	In Northwestern Energy's 2018 rate case, its embedded cost of service study used NEM customer load data that intervenors described as artificial and derived through a convoluted series of assumptions and adjustments, rather than load research sample data for NEM customers like it did for all other residential customers in the study. Accordingly, the Montana Public Service Commission denied the utility's request to place NEM customers in a separate rate class and charge NEM customers a demand charge rate design.	"The Commission finds that NorthWestern should **develop load research sample data for NEM customers of comparable quality to that used for the broader residential class** for use in future cost of service studies."[48]
NV	NV Energy	The Public Utilities Commission of Nevada found that NEM ratepayers had unique service and cost characteristics based on the actual net metering class load shapes of NV Energy net metering customers.	"NV Energy states that the **NEM ratepayer class load shapes were developed using all active NEM ratepayers** as of March 31, 2015, for the entire study period of June 2014 through May 2015. Actual generation data was used when available. Missing hourly generation data was estimated using the average of those ratepayers that have at least 95 percent of the necessary 15-minute generation data. The compiled data was then compared to the National Renewable Energy Laboratory's averages for reasonableness."[49]

[47] Key portions of quoted excerpts have been bolded for emphasis. Footnotes from the excerpts have been omitted.
[48] Montana Public Service Commission, Docket No. 2018.02.012, Order, December 20, 2019, p. 63, available at http://psc.mt.gov/Portals/125/Documents/news/NWE%20Rate%20Case/2018212%20FO.pdf
[49] Public Utilities Commission of Nevada, Docket Nos. 15-07041 and 15-07042, Order, December 23, 2015, Paragraph 17, available at: http://pucweb1.state.nv.us/PDF/AxImages/DOCKETS_2015_THRU_PRESENT/2015-7/8412.pdf

State	Utility	Summary	Key Excerpts
NH	Eversource Energy Liberty Utilities Unitil Energy Systems	In its Order adopting an alternative net metering tariff that will be in place "while further data is collected and analyzed, pilot programs are implemented, and a distributed energy resource (DER) valuation study is conducted," the New Hampshire Public Utilities Commission found that "there is little evidence of significant cost-shifting from DG customers to customers without DG," and that additional load research needed to be collected on DG customers.	"…[T]he **utilities should collect and make available load shape data** for individual distribution circuits, or at least for a selected sample of distribution circuits, **as well as customer load data on an hourly or shorter interval basis for at least a representative sample of customers**…Following completion of the value of DER study, and with the availability of the additional customer load and system planning and operations data, the Commission will open a new proceeding to determine whether and when further changes should be made to the net metering tariff structure."[50]
OK	Oklahoma Gas & Electric	The Oklahoma Corporation Commission rejected the proposed separate rate classes with three-part rates for DG customers. The utility's cost of service study using smart meter data on its actual DG customers showed DG customers were not subsidized by non-DG customers.	"In the event OG&E proposes, in the future, a demand charge or any other substantive change to a tariff applicable to customers with distributed generation that OG&E deems necessary to comply with 17 O.S. § 156, the Commission will require OG&E to include as part of its case cost effectiveness tests, such as those performed for the company's demand programs, and make available to the parties detailed cost and benefit data."[51]
SC	Duke Energy Carolinas (DEC) Duke Energy Progress (DEP)	DEC and DEP used actual metered solar production data on its NEM customers to define solar customer's contributions to their cost of service, the same data that they used to calculate costs and benefits. The utilities reached a settlement agreement, approved by the PSC, on its Solar Choice Net Metering tariff that will replace their existing net metering tariffs in the future.	**"[T]he Companies [Duke Energy Carolinas and Duke Energy Progress] utilized the same factors—including utilizing the same underlying data, such as production meter data—in performing a forward-looking evaluation** for the Companies' proposed Permanent Tariffs (as defined below). In this way, the Commission will be able to compare 'apples to apples' when evaluating the Companies' Permanent Tariffs against the Existing NEM Programs."[52]
TX	El Paso Electric (EPE)	EPE began load research studies on DG customers in 2013. The load research was used by the utility in its rate case application to support its proposed DG tariff. The DG tariff was ultimately resolved through an approved settlement agreement with intervenors.	"EPE performed a sample study for the Texas residential customers who have installed rooftop solar. **The study provides data about the different load characteristics of these residential DG customers compared to residential customers (non-DG)** ….As of the end of the Test Year, EPE had 57 customers in its residential DG load study for Texas."[53]

[50] New Hampshire Public Utilities Commission, Order, June 23, 2017, pp. 66 and 72-73, available at: https://www.puc.nh.gov/Regulatory/Docketbk/2016/16-576/ORDERS/16-576_2017-06-23_ORDER_26029.PDF
[51] Oklahoma Corporation Commission, Docket No. PUD 201500273, Order No. 662059, p. 13, March 20, 2017, available at: http://imaging.occeweb.com/AP/Orders/occ5360859.pdf
[52] Public Service Commission of South Carolina, Docket No. 2020-265-E, Direct Testimony of Bradley Harris for Duke Energy Carolinas, LLC and Duke Energy Progress, LLC, November 2, 2020, p. 6, available at ; *See also* Public Service Commission of South Carolina, Docket No. 2019-182-E, Direct Testimony of Bradley Harris for Duke Energy Carolinas, LLC and Duke Energy Progress, LLC, October 8, 2020, p. 6, available at: https://dms.psc.sc.gov/Attachments/Matter/3670a579-5fe0-41c8-82ab-7a4af9f5019b
[53] Public Utilities Commission of Texas, Docket No. 46831, Direct Testimony of George Novela, February 13, 2017, pp. 921-922, available at: http://interchange.puc.texas.gov/Documents/46831_2_929022.PDF (Note: Testimony appears at PDF 4-87 of 100 of that file).

State	Utility	Summary	Key Excerpts
UT	Rocky Mountain Power (RMP)	RMP performed load research on net metering customers in 2015 prior to the Commission adopting a net metering transition program in 2017.	"The magnitude of this subsidy, if it exists, will not be readily apparent if the analysis does not 'drill down' another level and separately allocate costs to net metering customers based on their usage characteristics. Analyzing costs at the customer class level ensures the cost to serve the net metering customers is also recognized. PacifiCorp represents **'[u]sing data from the load research study that is currently underway**, [PacifiCorp] will be able to **create a class profile for residential NEM customers**, in the same manner done for other types of customer classes' and '[t]his will enable [PacifiCorp] to assign costs to the NEM customers based on how they use the utility system.'"[54]

6) I&M's "No Netting" Proposal Is Not Based on the Company's Cost to Serve DG Customers

Q. Is the "no netting" proposal consistent with I&M's cost to serve a DG customer?

A. I&M has provided no evidence that it is, nor has it asserted as much. In fact, it admitted it does not even know what the cost to serve its DG customers is, stating in response to a request for such information that it "does not perform a cost of service for distributed generation customers."[55] It also confirmed that it has not estimated or calculated the financial impact of net metering service on its non-net metered customers, or estimated or calculated potential cross-subsidies.[56] Furthermore, I&M admits it does not even possess the most basic data on its DG customers, confirming that it "does not have net metering specific load profiles"[57] or hourly data on DG customer imports and exports.[58] I&M was also unable to explain how much DG customers contribute to I&M's coincident peak

[54] Utah Public Service Commission, Docket No. 14-035-114, Order, November 10, 2015, p. 10, available at: https://pscdocs.utah.gov/electric/14docs/14035114/27044914035114o.pdf
[55] I&M Response to IndianaDG Data Request No. 2-01.
[56] I&M Response to IndianaDG Data Request No. 2-02.
[57] I&M Response to IndianaDG Data Request No. 2-03.
[58] I&M Response to Citizens Action Coalition Data Request No. 1-03.

demand and how solar affects a customer's contributions to peaks.[59] Based on its testimony and responses to data requests, I conclude I&M neither has assessed whether its proposal is consistent with cost-of-service principles, nor has it collected the data necessary to conduct the analysis necessary to determine what the actual costs to serve DG customers are.

Q. How is a utility's cost to serve a specific set of customers typically determined?

A. To reliably identify the costs to serve a customer segment or class, a utility typically conducts load research and develops a class cost of service study based on that load research for the customer segment in question. In instances in which a utility operates in multiple jurisdictions, it will perform a jurisdictional cost of service study prior to its class cost of service study to determine its jurisdictional revenue requirement.

Q. Why is it important that conclusions about cost of service for a customer segment be supported by a full class cost of service study of that specific group of customers?

A. There are several reasons, but ultimately it amounts to a need for equity and fairness in ratemaking. It is unfair to use one standard of evidence, such as full cost of service study, for customers in general but permit a different standard to be applied to certain customer segments. Likewise, the results of a shoddy or incomplete evaluation could result in unfair rates that charge customers in excess of their cost of service. Nothing in the DG Statutes suggests that the Commission should depart from the typical standards it applies for the establishment of just and reasonable rates, or generally accepted ratemaking principles.

Without a targeted cost of service evaluation, the Commission has no way of knowing at what level DG customers pay for service relative to their cost of service, and

[59] I&M Response to Citizens Action Coalition Data Request No. 1-04.

how that might vary within the class. Not only does that lack of information raise the potential for customers to be overcharged, but it also prevents a more informed evaluation of the options necessary to remedy any issues that are present. For example, the simple fact that a DG customer purchases less electricity from a utility than they would have had they not installed a DG system is insufficient evidence that they are being "subsidized" by other customers.

Q. Can you cite to any other examples illustrating this possibility?

A. Yes. In a 2015 general rate case, Oklahoma Gas and Electric ("OG&E") proposed to establish special demand rates for customers that install DG and eliminate *all* compensation for exported generation on the basis that the changes were necessary to eliminate an alleged "subsidy" to DG customers. As it turns out though, OG&E's class cost of service study, which evaluated residential DG customers as a separate class, showed that the residential DG class actually produced a considerably *higher* rate of return than the residential class as a whole (7.23% compared to 5.33%).[60] In other words, residential DG customers were subsidizing non-DG customers to a significant degree. Not surprisingly, the changes sought by OG&E were not adopted.[61]

Q. In what ways could DG affect I&M's cost allocation in its cost of service study?

A. When properly factored into a cost of service study, DG customers can provide a number of benefits to non-DG customers in their class, or to all I&M customers across their Indiana service territory, including, but not limited to, the following examples:

[60] Oklahoma Corporation Commission, Docket No. PUD 201500273. Direct Testimony of Mark Garrett. March 31, 2016, p. 14, available at: http://imaging.occeweb.com/AP/CaseFiles/occ5272383.pdf
[61] Oklahoma Corporation Commission, Docket No. PUD 201500273. Order No. 662059. March 20, 2017, available at: http://imaging.occeweb.com/AP/Orders/occ5360859.pdf

- I&M serves customers in both Michigan and Indiana and allocates costs between jurisdictions using a jurisdictional cost of service study.[62] To the extent DG customers contribute to reducing allocators based on peak demand and energy through a DG systems generation (either consumed behind the meter or exported to the grid), they will reduce the proportion of costs allocated to Indiana customers.
- All of the electricity generated by a DG facility reduces the amount of electricity that a utility needs to generate at its own facilities or through purchases. For instance, I&M states that "the cost of fuel varies by the number of kilowatt hours consumed and, therefore, is allocated based on the proportion of total energy used by a customer class."[63] To the degree DG customers reduce kWh consumed as a result of self-consumption, they will reduce cost allocation to their customer class on a 1:1 basis. In other words, for costs allocated on the basis of energy, there can be no "subsidy" to DG customers.
- Production plant is classified as demand-related and is allocated using the production demand allocation factor, which assigns costs based on the class contribution to the average of I&M's six monthly coincident peaks (June, July, August, December, January, and February).[64] The extent to which DG customers reduce their demand during the six monthly coincident peaks (e.g., by self-consuming or exporting generation during this time) will reduce costs assigned to their class.
- Distribution plant is classified as demand- and customer-related and allocated accordingly. These costs are allocated in one of several ways, such as based on customer class contributions to I&M's six monthly peak demands on the primary distribution system; a combination of each class's 12-month maximum demand and the summation of individual customers' annual maximum demands; or the average number of secondary customers served.[65] DG customers will not impact the allocation of customer-related costs (as simply adding a DG system does not impact the number of customers). DG customers can reduce class contributions to peak demands, however, through generation (both exported and consumed behind the meter) that occurs during peak periods.

Q. But you previously cited SEA 309's sponsor as saying he did not want complicated lengthy ratemaking proceeding. Is a cost of service study, or another type of analysis such as a cost-benefit analysis, actually needed in an EDG case?

A. In general, such studies are not required in an EDG case *when the utility is merely implementing a calculation of the EDG rate* in accordance with the statute; however, if the

[62] IURC Cause No. 45576, I&M Direct Testimony of Jennifer Duncan.
[63] IURC Cause No. 45576, I&M Direct Testimony of Stephen Hornyak, p. 10.
[64] IURC Cause No. 45576, I&M Direct Testimony of Stephen Hornyak, pp. 11-12.
[65] IURC Cause No. 45576, I&M Direct Testimony of Stephen Hornyak, pp. 14-15.

utility is *also* proposing additional, major policy changes not expressly directed in the statute that are a significant departure from important existing policies, such as I&M's "no netting" proposal, then the utility does have a burden to demonstrate these additional changes are just and reasonable.

7) I&M's "No Netting" Proposal Would Undermine Solar Jobs and Economic Development in Indiana

Q. How would I&M's "no netting" proposal impact the Indiana solar industry?

A. Based on my analysis of I&M's proposal and my professional experience, I believe I&M's proposal would significantly harm Indiana's residential and commercial sector solar industry, leading to job losses and reduced economic development benefits for local communities. Overall, the solar industry has created more than 3,300 solar jobs in Indiana, with solar jobs increasing by 114% since 2015.[66] I&M's "no netting" proposal, and the similar proposals filed by other utilities in Indiana, would imperil many of these jobs through the abrupt and substantial decrease in the economic value of customer-sited solar. They would also create a substantial negative outlook and chilling effect for the State in terms of its ability to attract new residential and commercial sector-focused solar companies, and significantly diminish any additional job creation potential at existing companies operating in Indiana. I&M's "no netting" policy will materially harm Indiana solar installation businesses by reducing demand for solar installations. The sum of the negative impacts will be loss of Indiana jobs, loss of economic development, and loss of state and local tax revenues from those companies and their employees.

[66] The Solar Foundation, National Jobs Census 2020, available at https://www.thesolarfoundation.org/national/

8) Monthly netting does not cause harm to I&M and non-DG customers.

Q. Would retaining monthly netting harm I&M or non-DG customers?

A. No. Whereas retaining monthly netting is of utmost importance for the nascent but growing Indiana distributed solar industry, and for Indiana residents that want financially viable on-site solar options, there is little to no imperative to change this policy from I&M's or its non-DG customers' perspective.

In fact, DG customers are likely providing substantial net benefits, as discussed further below, meaning the Commission should exercise its discretion in a manner that encourages the continued growth of DG in Indiana. For instance, the Lawrence Berkeley National Laboratory was commissioned by the Commission in response to a legislative request to provide a detailed analysis of emerging technologies and their impact on generation capacity, reliability, resilience, and rates ("LBNL DER Study"). It concluded that "[i]n general, scenarios with high adoption of rooftop solar PV result in system-wide savings," and "[r]ates tend to go down in the short term for the High PV scenarios."[67] These findings generally echo the results from studies commissioned on net metering or the value of solar in other states, some of which are discussed in more detail in the following section.

Regardless of how the benefits of DG are quantified and considered, it is important to emphasize that the costs of DG are very modest on I&M and non-DG customers. Through the end of 2020, I&M had only 18.8 MW of installed net metering capacity.[68] I&M indicates that the total monthly exported generation on an annual basis was 9,776,245

[67] Indiana 21st Century Energy Policy: Emerging Technologies on the Electricity Distribution System, pp. 55-56, available at https://www.in.gov/iurc/files/2020-Report-to-the-21st-Century-Energy-Policy-Development-Task-Force.updated-min.pdf
[68] Indiana Utility Regulatory Commission, "2020 Year-End (2020YE) Net Metering Reporting Summary," March 2021, available at https://www.in.gov/iurc/files/2020-Year-End-Net-Metering-Required-Reporting-Summary.pdf

kWh in 2020.[69] At the EDG credit rate, this annually equates to a mere $252,325 in credits, a relatively inconsequential amount in I&M's total revenue requirements.

When looking at residential net metering specifically, net metering customers exported 3,152,009 kWh in 2020, which is only about 0.07% of I&M's 2020 residential sales (4,254,798,150 kWh).[70] If all exported residential EDG was compensated at I&M's weighted average Residential Electric Service retail rate (inclusive of trackers) of $0.1313/kWh, then I&M would have provided a mere $413,708 in credit compensation for this EDG. I&M averaged 443,215 residential customers in 2020,[71] meaning that at full retail rate offset the cost burden to residential non-DG customers would have totaled $0.08 per month at the most in exchange for the diverse benefits customer-owned EDG provides. These values reflect a gross cost, and not the net cost after considering the benefits of the EDG, such as the lower generation and purchased power costs resulting from the EDG. Needless to say, even under these conservative assumptions and assuming no value is provided by EDG, it would only amount to a *de minimis* "subsidy" or cost shift to non-DG customers that would not justify the major policy change being proposed by I&M.

This is a relatively inconsequential sum for a utility currently seeking a $104 million annual revenue increase, including a $5 *per month* increase in the fixed charge residential customers pay.[72] I&M's approved annual requirement in its last rate case was approximately $1.63 billion.[73] I&M's own rate design proposals in its pending rate case do not seek to immediately and abruptly eliminate all identified cross-subsidies in rates.

[69] I&M Supplemental Response to IndianaDG Data Request 1-09.
[70] I&M Response to IndianaDG Data Request 2-06.
[71] I&M Response to IndianaDG Data Request 2-06.
[72] IURC Cause No. 45576.
[73] IURC Cause No. 45235.

Instead, I&M applied the principle of Gradualism to limit tariff class increases in total revenues to between 0% and 10%.[74] In fact, I&M's proposal in that case *increases* the current 34% cross-subsidy paid by the Street Light class to mitigate the rate increase to (i.e., to subsidize) other customer classes.[75] Any claim that I&M is appropriately responding to a "subsidy" in rates in this proceeding rings hollow in this broader context given the abrupt, severe impact I&M's proposals would have on DG customers. The high-end estimate of the residential compensation under monthly netting and offset at the full retail rate is $413,708, or about 0.025% of I&M's annual revenue requirement. Under the EDG Rider, the rollover credit rate will be reduced from the retail rate to the EDG credit rate, further reducing the I&M revenue impact.

Q. What if DG adoption continues to grow, causing the credit amount to also grow?

A. The revenue requirement for the EDG credit is so small that there would have to be unprecedented and abrupt growth in DG adoption rates for it to be a legitimate concern. Indiana's solar DG adoption rates are relatively modest to date, and there is no indication that such dramatic growth is likely. Utilities are permitted to recover the costs of EDG credits under the plain language of Section 15 of the DG Statutes. Also, focusing only on growth in the annual EDG credit fails to account for offsetting associated benefits customer-sited DG provides, and these benefits would need to be holistically and comprehensively analyzed on a forward-looking basis to fairly evaluate whether the existing policy is causing a net benefit or a net cost to Hoosier residents.

---

74 Direct Testimony of Jenifer Fischer, p. 9; Attachments JLF-2, pp. 2-4.
75 Direct Testimony of Jenifer Fischer, Attachments JLF-2 page 2, column 6, row "SL".

E. The Benefits of Retaining Monthly Netting

Q. What factors help explain why monthly netting policies have been popular and widely adopted in the U.S.?

A. Monthly netting offers a number of key advantages that have contributed to it becoming widely adopted, popular among customers, and effective at growing DG:

- **Understandable to customers.** Monthly netting makes sense to consumers. The simplicity of netting of kWh exports against kWh imports over the duration of a billing period is intuitive and understandable to customers, who are accustomed to the monthly character of typical billing.
- **Ability to estimate financial benefit of DG investment.** Monthly netting allows solar installers to provide reasonably accurate estimates of the financial viability of a distributed solar facility, whereas no netting policies add substantial complexity and uncertainty to these estimates. Monthly netting allows customers to make informed decisions about a potential solar investment that is sized to generate electricity sufficient to meet their expected annual electricity usage. Smaller systems (e.g., those designed to only offset a customer's minimum usage and never export electricity) typically have higher per-kW costs that can substantially erode the solar value proposition.
- **Technologically simple**. It does not take new or expensive metering equipment, such as advanced metering infrastructure, to implement monthly netting. Monthly netting can be implemented using existing metering equipment.
- **Fair compensation.** The full crediting of DG exports against imports from the grid over the duration of a billing period is generally perceived and accepted as a fair compensation rate by customers. In addition, numerous studies from across the country have shown this crediting rate is a reasonable approximation of the value provided by rooftop solar during a month, particularly at low levels of rooftop solar deployment like in place in Indiana.
- **Benefits non-DG customers.** By facilitating DG growth, monthly netting produces greater systemwide DG benefits that flow to all grid users. The LBNL DER Study found that the estimated incremental economic impact on power system investment and operation in its High PV scenario relative to its Base case was $265.2 million in savings by 2025 and $549.2 million in savings by 2040.[76]
- **Bill certainty and stability.** Since compensation for excess generation takes the form of kWh credits, future changes to the utility's underlying kWh rates do not impact the economics of the system, as the customer continues to fully offset their electricity exports and imports during the month, giving a customer additional "peace of mind" about their financial investment.

---

[76] Indiana 21st Century Energy Policy: Emerging Technologies on the Electricity Distribution System, pp. 55-56, available at https://www.in.gov/iurc/files/2020-Report-to-the-21st-Century-Energy-Policy-Development-Task-Force.updated-min.pdf

- **Local and State economic development.** Monthly netting policies have proven effective at transforming nascent rooftop solar markets into significant job creators. Rooftop solar installer jobs are inherently local jobs and cannot be outsourced.

Q. Have states studied the costs and benefits of policies with monthly netting, or the value provided by DG solar net metering systems?

A. Yes, there have been numerous studies in recent years that have examined the costs and benefits of such policies or the value of solar DG or other distributed energy resources more broadly.

Q. What have these studies found regarding the costs and benefits or the value of solar DG?

A. As shown in Figure 2 below, these studies have generally found that policies that employ monthly netting frameworks result in net benefits to all customers or only small net costs, prior to taking into consideration larger policy objectives and difficult-to-quantify benefits (*e.g.,* local economic development). Similarly, studies calculating the value of solar DG have often found the total value *exceeds* the current retail rate. One recent review found that 14 out of 24 value of solar analyses conducted in 2012-2018 calculated that the value of solar was at or above the retail rate, and only one analysis calculated a value that was below 50% of the residential retail rate (Figure 3). For comparison, I&M's EDG Rate is 22.5% of I&M's Residential Electric Service base energy charge (i.e., exclusive of riders or trackers) for the first 900 kWh of consumption.[77]

There is considerable variation across these studies in the methodology used, the categories of costs and benefits or values included, and the entity performing the study, which can all significantly impact the conclusions reached. Therefore, it is important that

[77] Calculated by dividing the EDG Rate of $0.02581/kWh by the Tariff R.S. energy charge rate of $0.11482/kWh.

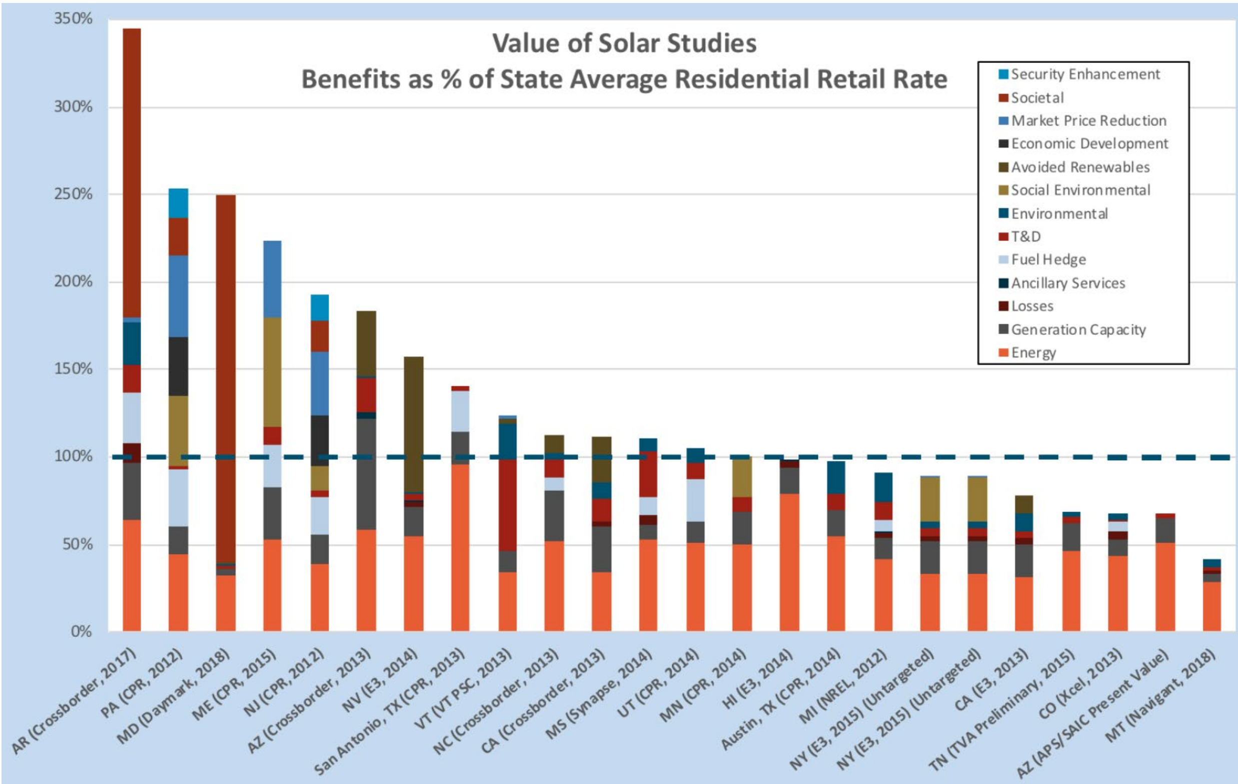
the specific context of a utility or state be fully evaluated in a rigorous and transparent way by an independent or neutral entity to determine what the impacts of net metering are in a specific jurisdiction.

Figure 2. Summary of State Cost-Benefit Study Results[78]

State	Year	Prepared by	Principal Findings
NEM Cost-Benefit Analysis			
Arkansas	2017	Crossborder	Benefits of residential distributed generation (DG) exceed the costs; do not impose a burden on other ratepayers.
Nevada	2016	E3	Cost-shift amounts to a levelized cost of $0.08/kWh for existing installations.
Louisiana	2015	Acadian	Costs associated with solar NEM installations outweigh their benefits.
South Carolina	2015	E3	NEM-related cost-shifting was *de minimus* due to the low number of participants.
Mississippi	2014	Synapse	NEM provides net benefits under almost all of the scenarios and sensitivities analyzed.
Vermont	2014	PSD	NEM results in "close to zero" costs to non-participating ratepayers, and may be a net benefit.
VOS/NEM Successor			
District of Columbia	2017	Synapse	Utility system VOS is $132.66/MWh (2015$); cost-shifting remains relatively modest.
Georgia	2017	Southern Company	Provides a methodology for assessing costs and benefits; no specific estimate is produced.
Hawaii	2015	CPR	Provides a methodology for assessing costs and benefits. Preliminary results suggest a net benefit.
Maine	2015	CPR	Value of distributed PV is $0.337/kWh (levelized).
Oregon	2015	CPR	Provides a methodology for assessing costs and benefits; no specific estimate is produced.
Minnesota	2014	CPR	Provides a methodology for assessing VOS; no specific estimate is produced.
Utah	2014	CPR	VOS is $0.116/kWh levelized.
DER Value Frameworks			
California	2016	CPUC	Provides a methodology for assessing costs and benefits; no specific estimate is produced.
New York	2016	NY DPS	Provides a methodology for assessing costs and benefits; no specific estimate is produced.

[78] ICF International, "Review of Recent Cost-Benefit Studies Related to Net Metering and Distributed Solar" (May 2018).

Figure 3. State Value of Solar Study Results[79]



Q. What do you conclude based on your review of these studies?

A. I conclude that monthly netting has been one of the key factors enabling the growth of DG in the U.S., and that DG has been shown in numerous studies across the country to provide substantial value that all customers benefit from. Approving I&M's "no netting" policy would harm the growth of DG, and the corresponding benefits it can provide to both DG and non-DG customers alike.

[79] Kush Patel, "Act 236: Version 2.0," Energy+Environmental Economics, August 7, 2018, http://energy.sc.gov/files/Act%20236%20Follow%20Up%20-%20Stakeholder%20Meeting%2008.07.18_Final.pdf

F. Other Netting Periods

Q. Has the Commission previously stated it has discretion in EDG proceedings to determine the appropriate netting period?

A. Yes, the Commission previously determined that it may "exercise its expertise and discretion in determining the reasonableness of a utility's proposed netting period for EDG."[80] As I will discuss further later, longer netting periods (e.g., daily, weekly, or monthly netting) rather than no netting or netting on a short time interval (e.g., 15-minute or hourly netting), are fairer to EDG customers. But again, I see no language in the DG Statute that requires or invites a change from monthly netting.

Q. What netting period is most consistent with producing just and reasonable rates in this case?

A. As explained previously, monthly netting is most consistent with the plain language in the relevant provisions of the applicable statutes and long-standing ratemaking principles.

In addition, retaining monthly netting also represents a "no regrets" policy option for the Commission in this case. Adopting monthly netting for the time being would allow the Commission to monitor the impacts of the transition to the EDG Rider and avoid a hasty move to a "no netting" policy that would further compound the negative impacts of the EDG Rider rate on future DG growth. If the Commission believes it has discretion to adjust the netting period, then there is little or no risk from preserving monthly netting for the time being, while reserving the right to move away from monthly netting in the future, should a compelling case based on actual facts, data and analysis be made for that significant policy change.

[80] IURC Cause No. 45378, Final Order, April 7, 2021, p. 38.

A comparative analysis of the impacts of various netting methodologies is described in the following section.

G. Analysis of Impacts

Q. How would I&M's "no netting" proposal affect residential DG customer bill savings?

A. I estimate that it would reduce residential customer bill savings by roughly 47% for a solar DG facility sized to produce an approximate 100% load offset on an annual basis (*i.e.,* 7.8 kW) compared to monthly netting where EDG is credited at the EDG credit rate. I arrived at this estimate by developing a solar production profile for a DG system located in Fort Wayne, Indiana, using the default assumptions in, and the output from, the National Renewable Energy Laboratory's ("NREL") PVWatts Calculator. I then applied this hourly production profile to a typical residential load profile that was provided by I&M, and scaled up the size of the DG facility so that it offset approximately 100% of the customer's annual electricity consumption.[81] This estimation was necessary because I&M provided no calculation of its own of the impacts of its proposal and its responses to data requests submitted by IndianaDG made clear that it does not possess the data on its DG customers that would be needed for a more a robust analysis.

Using *hourly* production and load figures as opposed to more granular data means that this analysis will understate the actual amount of exported electricity (*i.e.,* my analysis is akin to using an *hourly* netting interval instead of the *no netting* measurement proposed). Therefore, the reduction in customer bill savings produced by this method is a conservative estimate, and the actual reduction to bill savings will be more drastic.

[81] I&M Response to IndianaDG Data Request 3-03.

Due to I&M's data limitations, it is not possible to calculate the impact of I&M's "no netting" proposal. However, to develop a reasonable estimate of the additional reduction in value from moving from an hourly netting to a "no netting" policy, I used the same deduction calculated in direct testimony by Joint Intervenors' witness William Kenworthy in Vectren's EDG case (IURC Cause No. 45378). Mr. Kenworthy reasonably estimated that the annual bill for an average customer under the Dual-channel Billing methodology ("no netting") would be approximately 12% more than the average customer would pay under his Hourly Net Billing methodology.[82]

Finally, I also analyzed an alternative netting policy that would allow netting of imports against exports on a *daily* basis, which offers another alternative to I&M's "no netting" proposal. The results of my analysis indicate daily netting is substantially better than either no netting or hourly netting. Specifically, no netting and hourly netting results in a 53.1% and 47.4%, respectively, value diminishment in the value of solar produced by a DG system relative to the current net metering policy, and a 47.0% and 40.5% value diminishment relative to monthly netting with EDG credited at the EDG Rider rate. Daily netting, on the other hand, results in only a 17.3% value diminishment of DG generation compared to the current net metering policy, and a 6.5% value diminishment relative to monthly netting with EDG credited at the EDG Rider rate. As shown in Table 2, the total value of DG generation (i.e., on-site consumption plus exported generation) in the first year after installing a solar DG facility is estimated to range from a high of $1,352 under net metering to a low of about $634 under I&M's no netting proposal, with the other policy

[82] IURC Cause No. 45378, Direct Testimony of William Kenworthy, p. 19.

options analyzed reflecting a less significant reduction in total value. The results of this analysis are presented in Table 2.

Table 2. Annual Value Diminishment to Residential Solar Customer under Alternatives to Net Metering

Compensation Category	No Netting	Hourly Netting	Daily Netting	Monthly Netting (EDG Credit)	Net Metering (Retail Rate)
On-Site Value	*Unknown*	$554.80	$554.80	$554.80	$554.80
Export Credits Value	*Unknown*	$156.78	$563.69	$641.82	$797.30
Total Value	$634.42	$711.59	$1,118.49	$1,196.62	$1,352.10
Value Diminishment Compared to Net Metering (Retail Rate)	**53.1%**	**47.4%**	**17.3%**	**11.5%**	--
Value Diminishment Compared to Monthly Netting (EDG Credit)	**47.0%**	**40.5%**	**6.5%**	--	--

While there will be a fair amount of variation between individual customers with respect to their hourly load profiles, my estimates are reasonable comparisons. Customers with lower daytime loads would produce a greater quantity of exports than those with higher daytime loads and, consequently, forfeit more value due to excess daytime generation being compensated at the low EDG Rider rate, instead of the volumetric retail rate compensation that the customer would receive under monthly netting. Second, system orientation and other site characteristics would influence the solar production shape and, correspondingly, the amount of hourly exports. However, I believe my estimate is reasonable for a typical residential customer taking service from I&M and provides a useful illustration of the financial impacts of I&M's proposal on such a customer installing a solar DG system.

The daily netting results further demonstrate just how financially disastrous I&M's no netting proposal would be on prospective solar DG customers compared to more reasonable alternatives. Even allowing solar customers to retain their export credits for a day yields a 16.7% diminishment in customer value compared to a 51.2% diminishment from no netting relative to net metering.

My analysis of potential impacts of I&M's proposals in this case was limited by the lack of data I&M was able to provide with respect to its DG customers. I&M's inability to provide meaningful data in this case illustrates how impossible it will be for many prospective DG customers to have sufficient information to make reasonable estimates about their financial viability and then manage their generation and consumption effectively once a DG system is installed to maximize their financial benefits.

Q. How would I&M's "no netting" proposal affect residential DG customer payback periods?

A. I calculate that the payback period for a 7.8 kW system costing a residential customer \$3.05/watt,[83] or a total upfront cost of \$23,790, would be 25.8 years under I&M's "no netting" proposal, compared to 12.4 years under the current net metering policy, or 14.0 years under monthly netting with EDG credited at the EDG Rider rate (Table 3).[84] I&M's proposals in the case would more than double the payback period for a typical residential customer DG investment, to the point where it no longer would save a customer money over a 25-year life of the system.

[83] Energy Sage, https://www.energysage.com/local-data/solar-panel-cost/in/ (Showing that "[a]s of July 2021, the average solar panel cost in Indiana is \$3.05/W.")
[84] If the average price of Indiana solar installation were to decline, for example, to \$2.50/watt, the payback period under I&M's EDG proposals would still be more than 21 years .

Table 3. Payback Period of a 7.8 kW Residential Solar Facility in I&M's Service Territory

DG Compensation Policy	Payback Period (Years)
Net Metering (Current)	12.4
Monthly Netting (EDG Credit for Excess Distributed Generation)	14.0
Daily Netting	14.9
Hourly Netting	23.1
No Netting	25.8

Q. Would non-residential customers be similarly impacted?

A. Yes. Schools, churches, governments, and businesses would likely see a similar, negative impact on their potential bill savings from installing a DG system designed to meet their annual electricity usage under I&M's proposed "no netting" policy. The specific magnitude of the impacts would depend on the customer's rate schedule and usage characteristics.

Q. Will federal subsidies for DG technologies like solar make up for I&M's dramatic reduction in compensation under its "no netting" proposal?

A. No. The federal investment tax credit ("ITC") has been a factor in customer payback periods since it started. To say the existing ITC credit – even if it is extended by Congress – is a cure or reduction to the financial harm that would be caused by I&M's "no netting" proposal would be false. The ITC for solar is currently being phased out. The ITC currently provides a 26% tax credit for solar systems on residential (under Section 25D) and commercial (under Section 48) properties. In 2023, or only six months after I&M's EDG Rider is scheduled to go into effect, the ITC will step down to a 22% tax credit. Beginning in 2024, the commercial ITC drops down to 10%, and the residential ITC will be eliminated for new systems.[85] The "no netting" proposal in combination with the dramatic reduction in compensation rate for EDG and the end or significant reduction in the ITC over the coming years would have a large, negative impact on the financial benefits a solar DG customer could otherwise realize from such an investment.

It is also important to note that entities without federal income tax liability like churches and municipal governments cannot benefit from current federal ITC. This means that solar sited at government buildings, public schools, and nonprofit organizations in Indiana are generally unable to benefit from the ITC. Third-party power purchase agreements ("PPAs") are a financial mechanism that has been widely used in many other states, which allows entities without federal income tax liability to still benefit from the federal ITC. However, this financing mechanism has not been explicitly authorized so its legal status is unclear in Indiana. As a result, Indiana taxpayers are paying for the ITC (to the extent all U.S. taxpayers bear the costs of federal tax credits) for solar PPAs that other state regulators have expressly allowed as part of their DG policies, meaning Hoosiers bear the costs but are not getting their fair share of the benefits of the ITC associated with solar PPA financing models.

Q. What would be the impact of the "no netting" proposal on the adoption rate of technologies like distributed solar and the type of customer that would be able to make such an investment in I&M's service territory?

A. Simply put, as a result of the large reduction in potential savings for installing DG, I&M's "no netting" proposal would have a devastating impact on the adoption rate of DG

[85] Solar Energy Industries Association, "Solar Investment Tax Credit (ITC)," available at https://www.seia.org/initiatives/solar-investment-tax-credit-itc.

technologies like solar by preventing most customers from being able to install such a DG system based on the economics. For example, a rooftop solar system can have an upfront cost (prior to applying the federal ITC) of roughly $15,000 to $25,000, depending on system size and other factors.[86] If I&M's "no netting" proposal is approved, solar companies will likely struggle to attract new customers and will be less likely to be able to offer financing arrangements like leasing, which can make rooftop solar economically viable for families that cannot afford the upfront costs of a solar system, because such leasing services are usually made available on the basis of demonstrating a net cost reduction to customers. Without a reasonable opportunity to save money from a solar investment, most customers are unlikely to install a system.

Only customers who are not sensitive to the economics of such a large investment would be able to make such an investment. Unfortunately, this leads me to conclude that I&M's "no netting" proposal would likely mean that primarily high-income Hoosiers and perhaps some larger businesses would be able to afford to invest in on-site DG technologies like rooftop solar, making solar out of reach for the average Hoosier household, small business, or school. In contrast, trends in rooftop solar adoption across the country show that the median household income for solar adopters is falling over time.[87]

I&M's proposal is a step backwards in improving equity and access to the benefit of DG solar.

[86] The median price for residential solar in the U.S. in 2019 was $3.76/watt, according to Lawrence Berkeley National Laboratory's "Tracking the Sun" data, available at https://emp.lbl.gov/tracking-the-sun. More recent data suggest the price in Indiana is currently around $3.05/watt: https://www.energysage.com/solar-panels/in/.
[87] Lawrence Berkeley National Laboratory, "Residential Solar-Adopter Income and Demographic Trends: 2021 Update," available at https://eta-publications.lbl.gov/sites/default/files/solar-adopter_income_trends_final.pdf.

Q. Couldn't customers mitigate the adverse impacts of the "no netting" proposal by adding battery energy storage to their DG facilities or taking other actions to reduce the amount of exported electricity?

A. While some customers might be able to undertake actions to reduce their exported electricity, the reality is that these options (e.g., battery energy storage systems) are generally expensive and burdensome to DG customers.

While battery energy storage is an extremely promising resource that can provide customers and the grid with many benefits, they are typically too expensive for individual customers to install and should not be *de facto* mandatory for participation in a DG program. For instance, one 5.8 kW / 13.5 kWh Tesla Powerwall costs $7,000, and that is before consideration of supporting hardware that can cost about $1,000, sales tax, plus installation costs that can run into thousands of dollars.[88] Most residential solar installations would need to be paired with multiple batteries for the customer to fully serve their entire load on an annual basis without importing or exporting any electricity. I&M offers no proposal to mitigate the upfront cost of customer investments in battery energy storage systems, or innovative proposals that would help customers and the grid benefit from batteries' capacity located on the customer's premises. Instead, I&M seeks to impose the most restrictive EDG paradigm possible, which will result in many customers not being able to install solar. The DG Statutes plain language does not require DG customers to install battery storage, and it would be unfair, unjustified, and unreasonable to impose a policy that would require such a financial burden on I&M EDG customers.

[88] Energy Sage, "The Tesla Powerwall home battery complete review," April 29, 2021, available at https://news.energysage.com/tesla-powerwall-battery-complete-review/

Also, DG customers do not generally have the ability or the capacity to monitor their instantaneous minute by minute electricity usage and generation, meaning customers are limited in their capability to respond to the "price signals" under "no netting." Similarly, residential customers of Indiana investor-owned utilities are not exposed to real-time wholesale market price fluctuations and are instead served under rate schedules that use flat energy rates, block rates, or TOD rates with a limited number of time periods.

Furthermore, only a portion of electricity usage is discretionary and can be shifted across time. Many customers will have limited ability to do so and maintain those behaviors, which further limits the customer's ability to avoid exporting generation by using the DG output behind the meter for on-site consumption.

Finally, as discussed above, there is no reason customers should be discouraged from exporting EDG in the first place, particularly given that it will tend to overlap with I&M's on-peak period in the summer and shave peak demand during these times.

Q. If a customer were to install battery storage, would a "no netting" policy provide a good price signal for maximizing the value that the battery can provide to the grid?

A. No. No netting or limited duration netting policies (e.g., hourly netting) prompt customers to use the battery to avoid exports, since those exports have a diminished value relative to electricity consumed on-site. This results in the battery charging during daylight hours, and discharging when solar production is not available at night. Discharge is limited to the customer's load at any given point in time.

By contrast, maximizing the value of a battery to the larger grid is achieved by maximizing discharge during the peak periods irrespective of on-site load. This characteristic is reflected in the "Bring Your Own Device" ("BYOD") battery storage grid services framework that is becoming increasingly common. For instance, in a recent proposal for a home battery program, Consumers Energy in Michigan proposed such a design for dispatch of enrolled batteries based on findings from a preliminary test deployment where "the Company learned that the usable battery energy was reduced when only offsetting customer home load – and it would be more efficient to maximize battery discharge beyond the customer home load during system peak conditions.[89]

In other words, the greatest benefits to the grid accrue when exports, either from on-site solar alone or battery storage, are maximized during peak conditions. Devaluing exports during peak periods as I&M proposes does exactly the opposite. It sends exactly the wrong signal to customers from the standpoint of maximizing the value of a DG system.

Q. Does monthly netting require the utility to serve as the EDG customer's battery?

A. No. The utility is neither acting as nor providing services comparable to a battery. Electricity exported by a DG customer flows onto the grid and is used by other customers. The utility charges those customers the retail rate for that electricity and credits the DG customer for the electricity provided. The utility does not store the solar electricity generated by the DG customer and provide that electricity back to the customer when the DG customer needs it. Monthly netting is a compensation framework that provides fair compensation to a DG customer for excess generation they provide to the utility and to the benefit of other customers.

Battery storage provides distinguishable and separate services compared to the utility's grid, including as a back-up power source for when the utility experiences a grid

[89] Michigan Public Service Commission, Docket No. U-20963, Direct Testimony of Priya D. Machi at 6:9-12, March 1, 2021.

outage, a method for a customer to manage their demand, and a means for the customer of storing electricity generated on-site for future use. DG customers, like non-DG customers, can use electricity provided by the utility when they need it under the terms of their rate schedule and in line with the utility's obligation to serve all customers in its service territory. I&M is not an EDG customer's battery under monthly or any other netting method.

III. OTHER ISSUES WITH I&M'S EDG RIDER

A. EDG Credits at End of Service

Q. Does I&M's EDG Rider allow the full amount of EDG credits to be carried forward?

A. No. I&M would confiscate any credits remaining when the customer discontinues service. Rider EDG states that:

> If the credit for energy procured from the customer exceeds the current charges in the billing period, any excess credit shall be carried forward and applied against future charges to the customer as long as the customer receives retail electric service from I&M at this meter location on the customer premises. Any unused credit shall revert to the Company.[90]

This practice would deprive departing customers of earned EDG credits without any clear justification.

Q. Is this provision fair and consistent with the language of the DG Statutes?

A. Section 18 of the DG Statutes provide that:

> An electricity supplier shall compensate a customer from whom the electricity supplier procures excess distributed generation (at the rate approved by the commission under section 17 of this chapter) through a credit on the customer's monthly bill. Any excess credit shall be carried forward and applied against future charges to the customer for as long as the customer receives retail electric service from the electricity supplier at the premises.

[90] Rider EDG. ("Any unused credit shall revert to the Company.")

The language in the DG Statutes does not expressly specify how unused credits should be treated when a customer no longer receives retail electric service from the utility.

Q. Do other jurisdictions allow DG customers to cash out unused credits?

A. Yes. In my experience, it is common for states to allow net metering customers to cash out unused net metering credits, such as on an annual basis for any credits that accrued over the year, or at the end of service. For instance, in 2016, Iowa regulators directed utilities to allow unused credits to be banked monthly and cashed out at the end of the year at the utility's avoided cost rate under net metering tariffs.[91]

I am not aware of any negative impacts that these customers have experienced as a result of such policies.

Q. What do you recommend?

A. I recommend that earned EDG credits be refundable to customers upon service termination. If the customer moves but remains an I&M customer, they should receive their EDG credits on their subsequent I&M bill. They earned it, and it should be theirs to keep.

An unused credit represents electricity a DG customer has generated through their investment in a DG system and provided to the utility to the benefit of its customers. The utility effectively sells EDG provided by a DG customer to other customers at the retail rate. Confiscating unused EDG credits takes the economic value of exported electricity provided by DG customers, but provides no compensation to the DG customer for that benefit.

[91] Iowa Utilities Board, Docket No. NOI-2014-0001, Order, July 19, 2016.

B. External Disconnect Switch

Q. Are there any other provisions of the EDG Rider that raise concerns?

A. Yes. I&M's EDG Rider includes a term that requires all EDG customers to install a disconnection device, at their expense. I&M's EDG Rider provides that:

> A disconnecting device must be located at the point of common coupling for all interconnections. For three-phase interconnections, the disconnecting device must be gang operated. The disconnecting device must be accessible to Company personnel at all times and be suitable for use by the Company as a protective tagging location. The disconnecting device shall have a visible open gap when in the open position and be capable of being locked in the open position. The cost and ownership of the main disconnect switch shall reside with the customer.

Q. Why is this term problematic?

A. My understanding is that external disconnect switches are not necessary for isolating a small, inverter-based DG facility. For instance, Vectren's approved EDG tariff does not require Level 1 interconnections to install an external disconnect switch.[92] Other states have also moved away from requiring external disconnect switches for small, inverter-based DG systems. For example, New York's Standardized Interconnection Requirements do not require a disconnect switch for inverter-based DG system sizes 25 kW or less.[93] Since modern inverters that are installed as part of distributed solar facilities and other DG technologies can safely isolate the DG system from the grid in the event of an outage, and because installing an external disconnect switch can be expensive and burdensome to DG customers, this provision in I&M's EDG rider is unnecessary, unfair, and unjustified.

[92] IURC Cause No. 45378, Final Order, April 7, 2021, p. 41.
[93] New York Department of Public Service, available at https://www3.dps.ny.gov/w/pscweb.nsf/all/dcf68efca391ad6085257687006f396b

Q. What do you recommend?

A. I recommend the Commission direct I&M to clarify in its EDG Rider that disconnect switches are not required for Level 1 interconnections.

IV. CONCLUSION

Q. Please summarize your recommendations to the Commission.

A. I recommend that the Commission reject I&M's EDG Rider to the extent it would implement a "no netting" or "instantaneous" methodology for measuring EDG. I&M's case in chief in my view has failed to prove its case and has not demonstrated that this major policy change would produce rates that are just and reasonable. As my testimony demonstrates, there are many good reasons for the Commission to reject this radical departure from past methodologies and maintain the longstanding, widely adopted, and commonsense monthly netting framework for measuring EDG as it transitions away from net metering through implementation of the EDG Rider.

To the extent the Commission disagrees with my recommendation to maintain monthly netting under the EDG Rider, I recommend it consider alternative netting methodologies to the "no netting" policy I&M has proposed, such as daily netting.

If the Commission approves I&M's filing as proposed or with limited modifications, I recommend that the Commission direct I&M to provide additional consumer information and education regarding its Tariff COGEN/SPP to ensure all eligible DG customers have access to and are fully informed of this rate option, which my analysis shows would be significantly better than the EDG Rider as proposed.

I also recommend that the Commission direct I&M to modify its calculation methodology for the EDG Rider credit rate as described in my testimony to recognize the fact that solar is producing and exporting generation during daylight hours and should be compensated accordingly.

I also recommend the Commission to ensure that all DG customers are provided fair terms and conditions under the EDG Rider. I recommend the Commission reject certain provisions of the EDG Rider with respect to the external disconnect requirement and taking without just compensation for any EDG credits remaining at the end of a customer's service, as described above. These terms are unjustified and would further harm EDG customers by imposing additional, unnecessary costs or take away benefits to which DG customers are entitled without providing fair compensation.

Q. Does this conclude your testimony?

A. Yes, at this time. I may need to supplement this testimony in the future.

VERIFICATION

I, Benjamin Inskeep, affirm under penalties of perjury that the foregoing representations are true and correct to the best of my knowledge, information and belief.

Benjamin Inskeep

July 13, 2021