STATE OF INDIANA

INDIANA UTILITY REGULATORY COMMISSION

APPLICATION OF INDIANA MICHIGAN POWER COMPANY, AN INDIANA CORPORATION, FOR APPROVAL OF 20 MW_{AC} CLEAN ENERGY SOLAR PROJECT; FOR APPROVAL OF RELATED ACCOUNTING AND RATEMAKING INCLUDING: TIMELY RECOVERY OF COSTS INCURRED DURING CONSTRUCTION AND OPERATION OF THE PROJECT THROUGH I&M'S BASIC RATES OR A SOLAR POWER RIDER, APPROVAL OF DEPRECIATION PROPOSAL, AND AUTHORITY TO DEFER COSTS UNTIL SUCH COSTS ARE REFLECTED IN RATES; AND FOR APPROVAL OF SALE OF RENEWABLE ENERGY CREDITS.	)	CAUSE NO. 45245

SUBMISSION OF REBUTTAL TESTIMONY OF BRENT E. AUER

Applicant, Indiana Michigan Power Company (I&M), by counsel, respectfully submits the rebuttal testimony and attachments of Brent E. Auer in this Cause.

Teresa Morton Nyhart (Atty. No. 14044-49)
Jeffrey M. Peabody (Atty No. 28000-53)
Barnes & Thornburg LLP
11 South Meridian Street
Indianapolis, Indiana 46204
Nyhart Phone: (317) 231-7716
Peabody Phone: (317) 231-6465
Fax: (317) 231-7433
Email: tnyhart@btlaw.com
jpeabody@btlaw.com

Attorneys for Indiana Michigan Power Company

CERTIFICATE OF SERVICE

The undersigned hereby certifies that a copy of the forgoing was served by hand delivery and or email transmission upon the following this 26th day of August, 2019:

Jason Haas
Office of Utility Consumer Counselor
PNC Center
115 W. Washington St., Suite 1500 South
Indianapolis, Indiana 46204
infomgt@oucc.in.gov.
THaas@oucc.IN.gov

Jennifer A. Washburn
Margo Tucker
Citizens Action Coalition
1915 West 18th Street, Suite C
Indianapolis, Indiana 46202
jwashburn@citact.org
mtucker@citact.org

Jeffrey M. Peabody

Teresa Morton Nyhart (No. 14044-49)
Jeffrey M. Peabody (No. 28000-53)
BARNES & THORNBURG LLP
11 South Meridian Street
Indianapolis, Indiana 46204
Nyhart Phone: (317) 231-7716
Peabody Phone: (317) 231-6465
Email: tnyhart@btlaw.com
jpeabody@btlaw.com

Attorneys for INDIANA MICHIGAN POWER COMPANY

I&M Exhibit _____

INDIANA MICHIGAN POWER COMPANY

CAUSE NO. 45245

PRE-FILED VERIFIED REBUTTAL TESTIMONY

OF

BRENT E. AUER

PRE-FILED VERIFIED REBUTTAL TESTIMONY OF BRENT E. AUER
ON BEHALF OF
INDIANA MICHIGAN POWER COMPANY

Q. Would you please state your name and business address?

A. My name is Brent E. Auer and my business address is Indiana Michigan Power Center, P.O. Box 60, Fort Wayne, Indiana 46801.

Q. Are you the same Brent Auer that previously testified in this Cause?

A. Yes, I am.

Q. What is the purpose of your rebuttal testimony in this proceeding?

A. My rebuttal testimony addresses the positions and recommendations made by Indiana Office of Utility Consumer Counselor (OUCC) witnesses Mr. Wes Blakley and Mr. John Haselden in their testimonies. Specifically, my rebuttal testimony presents reasons why the OUCC's recommendations with respect to (1) cost recovery in annual Renewable Energy Project rider filings; (2) monetizing unsubscribed Renewable Energy Certificates (RECs); (3) capping operation and maintenance (O&M) expenses; and (4) setting a fixed price per KWh for project recovery should be rejected.

Q. Are you sponsoring any attachments to your rebuttal testimony?

A. Yes. I am sponsoring Attachment BEA-1R (supporting pages from I&M's 2018 Performance Metric Report) which were prepared or assembled by myself or under my direction.

Annual Renewable Energy Rider Filings

Q. Please summarize OUCC witness Blakley's testimony and recommendation in this Cause.

A. The OUCC states a concern that the Commission and OUCC will lose valuable information regarding different generating technologies or between different renewable energy projects if cost recovery occurs within a utility's rate base. Mr. Blakley (pp. 2-3) suggests that renewable energy project costs should be recovered within a rider so that cost data can be analyzed for each type of renewable energy project. Mr. Blakley's testimony further points to a settled Duke Energy Indiana case as an example of a utility that agreed to cost recovery for renewable energy projects within an annual rider. Mr. Blakley discusses the various types of renewable energy resources that are eligible for rate recovery in Indiana. His testimony also notes that within a rider, the Company can receive a return "on" and "of" its investment and that operations and maintenance costs can be reviewed and tracked.

Q. Does Mr. Blakley make a recommendation regarding rider recovery?

A. Yes. Mr. Blakley recommends (p. 6) that the South Bend Solar Project (SBSP) costs be recovered in an annual Renewable Energy Project rider that will provide detailed cost information and kWh generated during the relevant period.

Q. How does the Company's proposal compare to the OUCC's proposal?

A. The Company's proposal is to recover costs associated with the project through a rider until the project can be moved into base rates. I explain this in detail in my direct testimony page 12, lines 13-23 and page 13, lines 1-6.

I&M's proposal in this case is consistent with past practices of establishing a rider to initiate timely recovery and then incorporating those costs and plant in service balances into future base case proceedings. This was the case with I&M's Solar Power Rider that adjusted rates to recognize costs associated with I&M's Clean Energy Solar Pilot Project. If the project can be rolled into base rates, the additional work stream necessary to conduct rider filings for the life of the project would be avoided.

Q. Please comment on Mr. Blakley's recommendation to provide project performance data, such as kWh generated, in an annual rider filing.

A. I view the use of an annual rider filing to provide project performance data as inefficient and unnecessary. I&M currently reports performance data as part of its annual collaborative performance metric reporting process, in which the OUCC is actively involved. I&M's most recent performance metric report, filed June 28, 2019, provides performance data for I&M's solar generating portfolio. I have included an excerpt from this report as Attachment BEA-1R. As shown on Attachment BEA-1R, the performance metric report includes solar portfolio data for capacity rating, equivalent availability factor, net capacity factor, and expected solar energy captured. The performance metrics collaborative forum is an ideal and efficient place for discussion of renewable energy asset performance among the stakeholders. Collaborative meetings are held in advance of the submission of the Company's annual performance metric report.

Q. Has the OUCC changed their position on the use of annual riders for renewable energy projects?

A. Yes. The testimony of Mr. Blakley establishes the OUCC's desire for renewable energy projects to be subject to a long-term annual tracking rider. On page 2, lines 18-21 of his testimony, he states "If renewable energy projects are blended into a utility's rate base, the OUCC is concerned that the Commission and the OUCC will lose valuable cost information regarding different technologies or between different renewable energy projects." He concludes that "…if the Commission approves I&M's request, I recommend I&M's proposed SBSP costs be recovered in an annual Renewable Energy Project rider…" (page 6, lines 17-18).

This represents a shift in the OUCC's view of riders when compared to the testimony of Mr. Michael Eckert in I&M's last basic rate case (Cause No. 44967). For example, in Cause No. 44967, Mr. Eckert's testimony did not oppose the recovery of the I&M Clean Energy Solar Pilot Project in base rates and further stated that "The OUCC recommends the SPR [Solar Power Rider] be discontinued." (page 13, line 21). Further, in that same testimony, page 8, lines 29-33, and page 9, lines 1-23, the OUCC further indicates "the Commission's preference for a more efficient process with fewer trackers and less frequent filings." (page 9, lines 1-2). This demonstrates the OUCC's change in position from what the OUCC previously endorsed and from the Commission's practice of providing for cost recovery via a rate adjustment mechanism until such time as the project may be rolled into base rates.

Q. What is I&M's position regarding the OUCC's recommendation for annual renewable energy rider filings?

A. I&M recommends that the Commission adopt the Company's proposal. The OUCC's recommendation will increase administrative burden and is contrary to Commission practice. The OUCC's desire for renewable energy performance data can be more efficiently addressed through I&M's existing performance metrics reporting process.

O&M Expense Cap

Q. What is the OUCC's recommendation regarding capping O&M costs?

A. Mr. Haselden contends (p. 11) that "ratepayers are subject to all O&M risks associated with the SBSP." His testimony further points out transformer failures at the Deer Creek solar facility in 2018 and concludes by making a recommendation that cumulative O&M costs should be capped at $15/KW/year and escalated at an annual rate of 2%. Company witness DeRuntz discusses the transformer failures at Deer Creek in more detail in his rebuttal testimony.

Q. Does I&M agree with the OUCC's recommendation to cap O&M costs?

A. No. I&M considers numerous factors, including industry standards, lessons learned, and manufacturer's recommendations when planning future O&M expenditures for maintaining solar facilities. A certain level of maintenance activities will be required and planned in the future to maintain the SBSP in a state to provide reliable, efficient, cost effective generation. As Mr. Haselden points out, the estimated cost to operate and maintain the SBSP is $15/KW-year in 2018 and escalates at 2% annually. That said, as Mr. Haselden's testimony points out in regards to the transformer failures at Deer Creek, equipment failures do happen in

providing electric service to customers as not all events and maintenance activities can be foreseen. Whether the failure is a transformer at a generation facility, on a distribution pole or any other type of production equipment, I&M needs to have the opportunity to recover the O&M costs incurred for providing service to customers. Utilizing one data point to say that O&M costs should be capped is unpersuasive. Therefore, the Commission should reject the OUCC recommendation to cap O&M costs.

Investment Tax Credits and Property Taxes

Q. Mr. Haselden's testimony (pp. 12-16) discusses what the OUCC sees as "risks" associated with ratemaking treatment of the federal investment tax credit (ITC). Please respond.

A. Mr. Haselden's testimony expresses concern that I&M has not been able to take advantage of the ITC associated with the four solar projects previously approved in Cause No. 44511. Given this, Mr. Haselden goes on to calculate an LCOE estimate without ITC. This concern is overstated for a couple of reasons. First, as explained below and in discovery, I&M is forecasting to be able to utilize ITCs in the future, beginning in 2019. In addition, ITC amortization associated with I&M's solar generation plants has been included in base rates in pending Cause No 45235. Second, if there is a year(s) in the future where AEP does not have sufficient taxable income to utilize the ITCs, I&M will amortize that year's ITC amount over the remaining life of the asset. In other words, the ITC will be an offsetting component of the revenue requirement for the life of the facility.

Q. Does AEP/I&M have a tax appetite for future year ITCs?

A. Yes. While Mr. Haselden states (p. 14) that I&M "will not speculate" about AEP's tax appetite in the near future to take advantage of the ITC, I&M's responses in Discovery Requests 3-18 and 3-19 state that AEP/I&M is expecting that I&M will be able to utilize ITC in 2019 and 2020. See OUCC Attachment JEH-2, pp. 15 and 16. In other words, AEP expects to have sufficient taxable income in both 2019 and 2020 to begin amortizing prior year's deferred ITC related to solar projects. Further, I&M expects to be able to utilize the ITC for the SBSP assuming it is completed prior to the end of 2020. Thus, I view Mr. Haselden's concern as unwarranted.

Q. In Mr. Hasleden's testimony (p. 16) and in the OUCC's Discovery Response 1-8 to I&M, it is stated that if the project is placed into base rates, then ratepayers will not realize the time value of the tax benefits including accelerated depreciation, because they are amortized over a 30-year period in the revenue requirement calculation. Is this an accurate statement?

A. No. In subsequent years, the Company will reflect the benefits associated with the Accumulated Deferred Federal Income Tax (ADFIT) related to accelerated depreciation at a zero cost of capital in the Company's capital structure. This serves to reduce the overall cost of capital for revenue requirement calculations regardless of whether recovery occurs through base rates or through a rider.

Q. Did Mr. Haselden create an estimate for LCOE using his own property tax calculation?

A. Yes. It is unclear why a new property tax amount needed to be calculated. However, in doing so, Mr. Haselden incorrectly recalculates the property tax impact from the SBSP in a number of ways, causing his LCOE estimate to be overstated.

Q. Please explain the errors Mr. Haselden made in his calculation of property taxes.

A. Mr. Haselden's calculation contains several errors:

1. Incorrect assessment methodology: Mr. Haselden calculates the SBSP as if it is a standalone project. The solar project will be classified as production plant equipment and would therefore be taxed as part of the unit value of I&M.[1] Treating the SBSP as a standalone project results in the use of a higher property tax beginning basis and high depreciation rates. This results in Mr. Haselden's calculation of property taxes over the life of the project as being too high.
2. Wrong section of Indiana code: He incorrectly refers to and uses 50 IAC § 4.2-4 (Valuation of Depreciable Tangible Personal Property). He should have used section 50 IAC § 5.1 (Public Utility Assessment), and in particular 50 IAC § 5.1-4-1 (Tentative Assessment). Mr. Haselden is not properly

[1] 50 IAC § 5.1-4-1(a) states "… the state board shall determine the true tax value by first determining the approximate **unit value** of each public utility company" (emphasis added). 50 IAC § 5.1-1-9 defines "Distributable property" as "that property used to furnish the public utility service….It may consist of the public utility company's transportation system, **production plant**, transmission system, and/or distribution system" (emphasis added). 50 IAC § 5.1-1-34 defines "Unit Value" to mean "the total value of all of the property of a public utility company determined under this article…"

classifying the SBSP as public utility property, which invalidates his calculations.

3. Wrong depreciated basis: Mr. Haselden used a "Depreciated Basis" of $31,442,017 which is closer to the original cost of the personal property, not the federal tax basis. The Company estimated federal tax basis to be 42% of the estimated original cost of $30,878,010. This percentage was based on historical cost and federal income tax filing information.[2] The Company's estimate results in a much lower tax basis, and hence, much lower anticipated property taxes.

4. Incorrect depreciation and not using the Minimum Value: Mr. Haselden improperly uses the Pool #4 table in 50 IAC § 4.2 to calculate depreciation on the solar project as if it stood alone. This is incorrect because the solar project is rolled into the total unit value of the Company. Currently, and after completion of the solar project, the Company's depreciated value is, and will continue to be, less than the "Minimum Value". The Company properly used 30%, not the depreciation factors from Pool #4, to calculate the True Tax Value of the solar project.[3] Mr. Haselden's incorrect use of "40% for the first year, rising to 63% in the third year, and decreasing to 30% by year eight" clearly overstates the depreciated taxable values in years one through seven.

[2] 50 IAC § 5.1-6-7 Valuation specifies in Sec. 7(a) that "The value of depreciable personal property is the depreciated value of the depreciable personal property **as computed for federal income tax purposes"** (emphasis added).

[3] 50 IAC § 5.1-6-9 Minimum Value specifies in Sec. 9(1) that "The total value of the depreciable personal property cannot be less than thirty percent (30%) of the adjusted cost of the distributable personal property".

5. Land: I&M did not increase the land value, unlike Mr. Haselden, because it is not known and estimable at this point in time. There is a likelihood that it will increase toward the sale price over time, but historically land is not assessed at the sale price.

6. Tax Due Calculation: The timing of Mr. Haselden's calculations of "Tax Due" shows when the taxes are paid (one year in arrears). The Company will accrue and expense those taxes in the year of assessment, so assets taxable at 1/1/2021 (when the lien attaches) are expensed monthly during 2021. The liability exists until it is paid in 2022, but from an income statement view, the tax exists and is incurred in 2021.

Q. Based on these errors in Mr. Haselden's property tax calculation, do you believe the OUCC's LCOE estimates presented in Table JEH-2 to be accurate?

A. No. The "OUCC Estimate Corrected for Property Taxes" of $90.00/MWh as shown in witness Haselden's Table JEH-2 in his testimony should be dismissed due to the errors in assumptions and calculation as stated above. These errors and misuse of information are similar in nature with the misapplication of information for making LCOE conclusions that Company witness DeRuntz notes in his testimony.

Renewable Energy Certificates

Q. Mr. Haselden's testimony (p 18) suggests that the Company's proposed treatment of RECs generated from the SBSP is not clear. Please respond.

A. I disagree that the Company's proposed treatment of RECs generated from the SBSP is unclear. It is the intent of I&M and Notre Dame that 40% of the RECs

generated by the SBSP will be sold to Notre Dame. This is confirmed in the executed Alliance Agreement (Company witness Lucas Attachment DAL-1R). The compensation (excluding the program administrative fees) from Notre Dame will be used to offset the cost of the project for the benefit of all of I&M's customers. The compensation received from Notre Dame will be flowed through the Fuel Cost Adjustment Rider, which will provide a timely credit to all customers for the revenue received and thus reduce the fuel rates charged to all customers. In other words, the agreement with Notre Dame serves to lower the revenue requirement impact for all other customers.

Q. Please respond to Mr. Haselden's recommendation regarding the sale of RECs from the SBSP?

A. I find Mr. Haselden's apparent support for selling RECs from the SBSP to be at odds with what I understood to be the OUCC's general view on renewable energy. The OUCC has indicated that they are supportive of renewable, green energy on one hand. But on the other hand, they recommend that I&M sell excess RECs from the SBSP, which will result in the following:

- I&M no longer being able to claim green energy generation;
- I&M's customers no longer being able to claim they receive green energy; and
- RECs will not be available to use to recruit additional customers to locate in the area.

Q. Please explain further.

A. Mandating that I&M monetize (sell) RECs in the open market would not be in the best interest of our customers. By not monetizing unsubscribed RECs (RECs not sold to Notre Dame or to customers through the Renewable Energy Option or Green Power Rider), I&M and its customers are able to recognize that certain

amounts of generation and energy consumption are carbon free. I&M's customers expect and I&M is committed to provide a diversified mix of energy resources that includes renewable energy. The SBSP, along with I&M's other renewable resources, helps meet this expectation and commitment. If I&M were to monetize the unsubscribed RECs, then I&M and its customers would no longer be able to make a claim that part of their generation came from carbon free energy sources. When RECs are sold, the right to claim the environmental attributes is sold as well.

Q. Is this how the RECs sold to Notre Dame will be treated?

A. No. In the case for Notre Dame, I&M will sell RECs to Notre Dame and I&M will retire them on Notre Dame's behalf. This provides Notre Dame with the ability to recognize that they are using green energy. This is unlike the OUCC proposal to sell RECs on the open market, which may result in I&M and its customers being unable to claim green energy generation and usage. With respect to the sale of RECs, it is important to recognize that I&M cannot actually sell SBSP RECs *into* the Pennsylvania market as a solar REC. The Pennsylvania solar REC market was used solely to determine a pricing basis for the solar RECs *bought* by customers under the GPR. It is <u>not</u> a price at which I&M can *sell* RECs from its Indiana project. In this Cause, I&M is proposing to use the pricing of New Jersey Class 1 RECs as the basis for selling RECs to Notre Dame. Again, I&M cannot sell RECs generated by the SBSP (or any of I&M's existing solar facilities) *into* the New Jersey market. Only solar RECs generated within the State of New Jersey can be sold into that market. Since Indiana does not have a market supported by a Renewable Energy Portfolio Standard, I&M has reasonably looked outside of the state for the pricing of RECs under the GPR and Notre Dame Agreement. But this

does not mean that the SBSP RECs could be sold into those markets at those rates. Finally, I would emphasize that the pricing of the RECs sold to Notre Dame will be based upon market conditions and these RECs will be retired on Notre Dame's behalf, meaning that the benefit of green energy will remain in Indiana.

Q. What other assertions does Mr. Haselden claim in regards to RECs?

A. On page 19, lines 4-5 of his testimony, he states that I&M retires RECs pursuant to customer participation in I&M's IM Green Program. To be clear, the IM Green Program is proposed in I&M's current base case proceeding (Cause No. 45235) and is not currently approved. Mr. Haselden appears to be referencing the Renewable Energy Option and the Green Power Rider. Further, he states that I&M's current inventory of RECs is worth approximately $[redacted]M. This appears to be calculated by taking the product of approximately [redacted] million RECs in inventory and the recent $6/MWh market price for New Jersey Class 1 RECs.

Q. Does Mr. Haselden overstate the market value of I&M's current REC inventory?

A. Yes. Mr. Haselden's calculation grossly overstates the value of I&M's RECs in inventory because it erroneously assumes that RECs with a vintage date of 2019 are equal in value to those with earlier vintage dates. RECs that are produced today have a greater market value than RECs produced several years ago. This is due to the longer lifespan recent RECs have that can be sold into the market.

Q. Do you have any other observations regarding Mr. Haselden's testimony regarding RECs?

A. Yes. Mr. Haselden's testimony (p. 8) refers to the "higher cost of solar RECs approved in Cause 44511." It should be recognized that the $19.80/MWh REC

value in I&M's current Green Power Rider (GPR) is inflated by over 50% due to the inclusion of marketing costs in the GPR as proposed by the OUCC in Cause No. 44511. As shown in I&M's 30 day filing to the Commission on 9/28/2018, the breakdown of I&M's current monthly GPR rate is:

50 kWh Block Monthly Rate = 52-week Average SREC Price ($9.70)/20 = $0.49

Marketing cost for the GPR for subscriptions during 2019 = $0.50

Total proposed per block Monthly Rate = $0.99

I would also note that when testimony was originally filed, Mr. Haselden included an additional comparative discussion of the pricing in I&M's Green Power Rider, I&M's Renewable Energy Option (REO) and Pennsylvania solar REC prices. On August 22, 2019, Mr. Haselden deleted this discussion from his testimony without explanation. His supporting workpaper was not withdrawn and remains part of the information submitted to the Commission. This workpaper is flawed for the reasons discussed above.

Administrative Fees

Q. Next, Mr. Haselden recommends (p. 21) that expenditures in excess of the 20% administrative fee paid by Notre Dame not be recovered from other customers. Does I&M agree?

A. Yes and this is what I&M proposed in its filing. As I&M works with Notre Dame to provide educational prospects, research opportunities, sharing of information, signage, etc., Notre Dame will pay a 20% administrative fee to cover the customer specific aspects of the arrangement. If in any year the costs incurred due to this arrangement with Notre Dame exceed the amount of the 20% administrative fee that I&M collects, I&M will not seek recovery of those excess costs from other customers.

Fixed Price Recovery

Q. Mr. Haselden recommends (p. 22) that a fixed price per kWh be set and recovered through an SPR tracker "such that ratepayers receive the time value of the federal investment tax incentives…" Mr. Haselden suggests that the price should be no higher than a flat $50/MWh. Does I&M agree with this proposal?

A. No. First, the proposal fails to recognize the time value of money over the life of the project. At $50/MWh, in the early years of the project, I&M would not be recovering its revenue requirement due to the high undepreciated value of the solar facility. This is true for any plant investment and this ratemaking construct would significantly disadvantage and disincentive a utility from making such investments to serve customers. In other words, I&M's return on and off its investment would be unreasonably delayed.

It is interesting to note that this proposal is in direct conflict with the testimony of OUCC witness Blakley. Witness Blakley states "Cost recovery through a tracker strikes an appropriate balance between providing a customer benefit in the form of an annual reduction in revenue requirement, while also not harming I&M because the return "on" and "of" will still be matched with its renewable plant investment." (page 6, lines 9-12). The OUCC is sending contradictory messages. On one hand, they propose to recover costs in a tracker where I&M can earn a fair return on and of its investment. But on the other hand, they propose to cap I&M's annual recovery, which impacts I&M's opportunity to earn a fair return on and of its investment. Second, the $50/MWh proposal also assumes that a certain level of production from the SBSP is achieved. This is also

unreasonable because events outside of I&M's control may impact SBSP production. For example, an unpredictable amount of lake effect snowfall each year can impact the output of the solar facility. It is unreasonable to penalize I&M for matters that are outside of I&M's control.

Q. Do you have any final comments?

A. Yes. As discussed above, the OUCC's proposals to require cost recovery in an annual rider filing, monetizing unsubscribed RECs, capping cumulative O&M expenses, and setting a market fixed price per kWh for recovery are unreasonable, unjustified, and should be denied.

Q. Does this conclude your pre-filed verified rebuttal testimony?

A. Yes.

VERIFICATION

I, Brent E. Auer, Regulatory Analysis & Case Manager for Indiana Michigan Power Company, affirm under penalties of perjury that the foregoing representations are true and correct to the best of my knowledge, information and belief.

Date: 8/26/19

Brent E. Auer

Brent E. Auer

IV. GENERATION

I&M uses a portfolio of nuclear, hydroelectric, wind, solar, and coal-fired generating resources to provide low-cost energy to its customers.

The company's Cook Nuclear Plant ratings in the Nuclear Regulatory Commission's Revised Reactor Oversight Process are of the highest acceptable level. The plant receives the lowest level of Commission oversight due to its satisfactory performance.

Electric generation portfolio

The table below indicates the electric capacity ratings of I&M's generating resources. Unforced Capacity (UCAP) represents the amount of capacity available to meet PJM generation obligations.

I&M and AEP Generating Company co-own and co-lease Rockport units 1 and 2, respectively. The I&M share represents the amount of energy available to I&M.

	ICAP (MW)	*I&M Share of ICAP (MW)*	*UCAP (MW)*
DC Cook Unit 1	1084	1084	1003
DC Cook Unit 2	1194	1194	1119
Rockport Unit 1	1320	1122	1083
Rockport Unit 2	1300	1105	1052
Solar	14.7	14.7	7.4
Hydro	22	22	16.3
Fowler - Phase 1 (PPA)	100	100	12.7
Fowler - Phase 2 (PPA)	50	50	6.5
Headwaters (PPA)	200	200	26
Wildcat (PPA)	100	100	12.8
Notes			
ICAP = Installed Capacity (Nameplate Output)			
I&M Share of ICAP = I&M Portion of the generator's ICAP			
UCAP = Unforced Capacity			

2018 Over sixty percent of I&M's generated energy was emission-free.

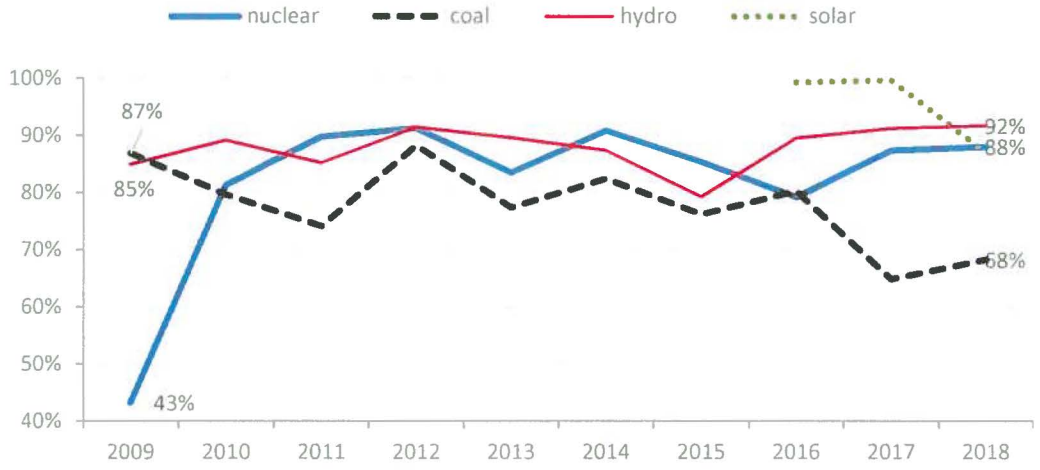
Equivalent availability factor (EAF)

Percent of time a unit was available to generate power if called upon by the market.

$$EAF = \frac{(total\ hours - forced\ outage\ hours - maintenance\ hours - derated\ hours)}{total\ hours}$$

A generating unit's ability to produce power is decreased when it is forced offline, taken offline for planned maintenance, or derated (when the operator intentionally decreases its energy production for non-economic reasons). Extreme air and water temperatures, certain maintenance operations such as slag blowing, or minor equipment failure can all cause an operator to derate a generating unit.

Equivalent availability factor



2009 A turbine failure forced Unit 1 at the Cook nuclear plant offline for 15 months. This event is discussed in Cause No. 38702 FAC-62, S1.

2017 Rockport 1 was offline for fifteen weeks to install Selective Catalytic Reduction technology necessary to reduce the plant's nitrogen oxide emissions.

2018 Cook Nuclear Unit 2 was taken offline for refueling on March 1 and was brought back online on May 7. Prior to refueling, the unit had been operating for 423 days.

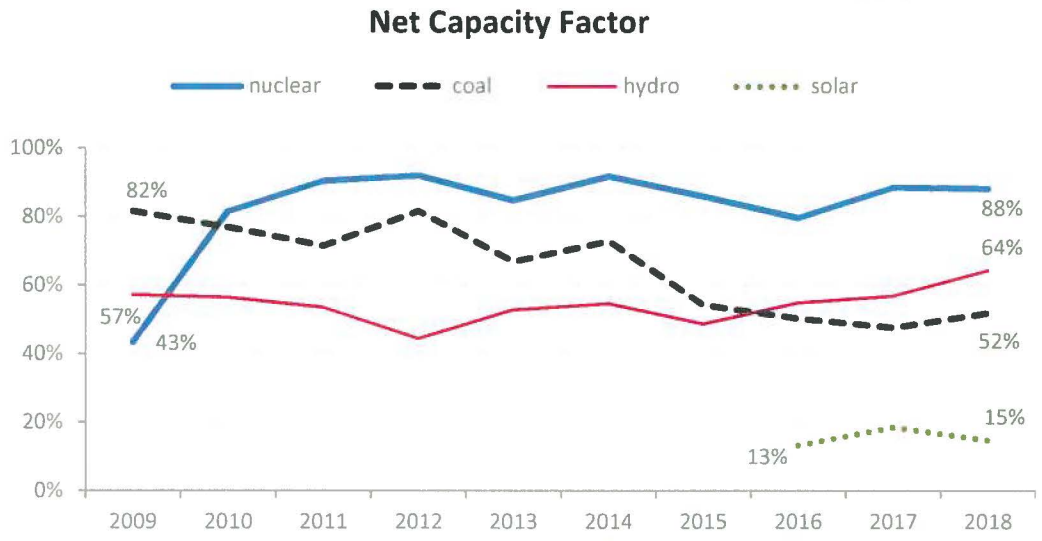
A dry-type transformer at the Deer Creek solar site failed in February. When a second transformer of the same type failed in July, the company took the site offline. I&M has ordered and will install different transformers at Deer Creek based on this experience. Long lead-time and poor weather has hindered the replacement efforts.

I&M's other three solar sites do not use the type of transformers that failed at Deer Creek.

Net Capacity Factor (NCF)

A unit's NCF is equal to the percent of its maximum capacity it produced during a period. The difference between a unit's NCF and its EAF is the percentage of time it was available to produce but was not selected to produce by a transmission operator.

NCF = net generation / (hours x net maximum capacity)



2009 The turbine failure that caused the low nuclear NCF is discussed in the EFOR metric.

2018 Rockport continued to be impacted by market conditions, due to the low price of natural gas. The decrease in solar NCF is discussed in the EAF section.

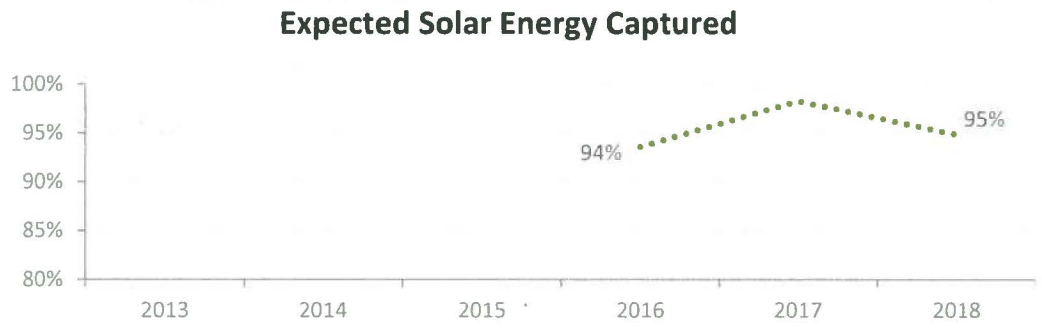
The Cook nuclear plant performed impressively, resulting in a capacity factor 0.23% greater than its availability factor (due to favorable Lake Michigan water temperatures).

2019 *Unit 1 at the Cook Nuclear Plant was brought offline in March for a refueling outage after 463 consecutive days of operation at a capacity factor of 102%. This was Unit 1's second straight "breaker-to-breaker" run. The refueling team also successfully completed I&M's multiyear effort to replace the unit's baffle bolts. The unit was brought back online in May.*

Expected Solar Energy Captured

This metric identifies the actual amount of solar generation as a percentage of expected generation.

I&M owns and operates four solar farms: Olive, Watervliet, Deer Creek, and Twin Branch. Solar energy production is dependent upon the age of a solar farm's arrays, the shade from trees and buildings, and environmental factors such as clouds, snow, and frost.



2016 Because the Olive and Watervliet solar sites did not come online until late in the year, after the period of peak insolation, their average daily production was lower than it will be in future years.

2018 Data from the Deer Creek solar site is not included in the 2018 percentage. The effect of the transformer failures at Deer Creek can be seen in the NCF metric.