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To:	Baldwin, Julie (LARA)
Cc:	Strait Janet-Sue; Mindy Miner; Considine John; Piers Ken; Jonathan Miner
Subject:	A Godeau Comments on MPSC proposal for the DG tariff
Date:	Tuesday, January 9, 2018 9:57:18 AM
Attachments:	A. Godeau - Customer position paper for MPSC (Final) .docx

Good morning Julie

As promised, you will find in attachment a position paper related to the MPSC Staff proposal for the new Distributed Generation Tariff structure.

The document does not specifically address the societal benefits which should be considered in pricing. I understand you are not mandated to address this issue (this is very much needed and would be the right thing to do, given this opportunity). It focuses only on the "cost -of-service" allocation of Utility costs.

My position is that the Inflow/outflow pricing approach is sound and applicable to both DGs and DERs and,as such, is a positive step forward. However, I do not agree with your proposal to price Outflows based on the PURPA rate. In my opinion, this is a convenient “Plug” introduced just to satisfy a self-serving claim made by the Utilities and is counter-productive for the further development of both DG and DER customers.

If you want to discuss or comment on any issue raised in the document, I am at your disposal,

The document will be forwarded to a few citizens representation groups and clean energy businesses and Associations. It is thus possible you might get some feedback from some of them.

For your information, I have been asked to make a presentation at Calvin College in Grand Rapids on December 18th to present and discuss the issues raised in the position paper. A with a wide range of interest groups involved with climate change, renewable energies and citizens lobbying have been invited. This presentation is organized by the Citizen's Climate Lobby of Grand Rapids with the endorsement of Calvin College.

Best regards

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Comments on the MPSC
Distributed Generation (DG) Tariff Proposal

(From a Customer Perspective)

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1. Context

The "Distributed Generation Tariff Workgroup", under the leadership of the "Renewable Energy Section" of the "Michigan Public Service Commission", is mandated by law to complete, by February 2018, a **cost-of-service based tariff process** and to recommend a **DG tariff design structure** with fair and more efficient rates and strong price-signals. This structure should provide fair compensation to small-sized customers who volunteer to self-generate clean-energy (DG) and/or provide valuable overall-system efficiency support-services (DER).

From a customer perspective, the new rates and billing mechanisms should be designed with: 1) a medium to long-term perspective, 2) be applicable to both "DG" and "DER" customers, 3) as much as possible, not require any future major structural modifications when new technologies are introduced and, 4) be flexible enough at the level of the 'billing/credit" price-drivers to evolve as required, when new levels of customer provided support-services to the grid can be reliably implemented.

By definition, a "Distributed Generation Tariff" implies that these customers are interconnected with the power utility grid. The grid provides them with the **"Inflow"** of energy they need when their self-generation capacity is not available or its' capacity is insufficient to meet their real-time load.

The connection to the grid is also necessary to collect the occasional **"Outflows"** of surplus energy when the customer's self-generation exceeds their load (either self-generated surplus in real-time for DG or surplus temporarily stored for later use at a more appropriate peak-time for DER).

2. Distributed Generation Customers (DG)

From a Utility perspective, a DG Customer should be treated like any other regular customer for services provided by the Utility through the distribution grid (Inflows).

- A DG customer with limited self-generation capacity will be perceived by the Utility as a customer with reduced load needs at certain times on sunny or windy days, and with a limited amount of surplus of self-generated energy to be disposed of.
- A DG customer with greater self-generation capacity will have needs as perceived above, but with more frequent and larger volumes of surplus self-generated energy to be disposed of.
- Since none of these customers own any behind-the-meter energy storage capacity, they need the assistance/cooperation of their Utility to absorb **in real-time** their occasional surplus of self-generated energy on sunny days (Outflows).

- As such, a DG customer does not own any of the necessary equipment required to perform any automatic load shifting, from peak to off-peak-time, and would not really benefit from "time-of-use" rate schedules.
- The main contributions of DG customers are ecological and societal, since they contribute to increasing the amount of clean-energy produced in Michigan, to complement that which can be produced by the Utilities.
- However, they pose a grid operation and efficiency challenge to the Utilities because they contribute to the deepening of the consolidated system load demand during sunny periods (Duck Curve Effect).
- The DG Customers can yield a short-term revenue shortfall for the utilities, resulting from a reduced demand for inflows, proportional to the amount of customer self-generated energy.
- Utilities will need to adapt and modify their business model to mitigate such revenue shortfall trend (or even reverse it). It is not the responsibility of customer to suggest upgraded business models but multiple options can be contemplated.

3. Distributed Energy Resources Customers (DER)

From a Utility perspective, a DER Customer should also be treated like a DG customer as well as any regular customer **for their inflows** of energy provided by the Utility through the distribution grid.

The most significant difference between a DG and a DER customer is that a DER has installed some **energy storage** capacity behind his meter and invested in a **smarter in-house inverter** to optimize the timely transfers of energy in and out of his dwelling.

- A DER customer will have the capability to store the occasional surplus of self-generated energy in-house during sunny periods, rather than returning it in real-time to the grid. Stored surplus energy will be used as a buffer to maximize self-generated energy used by the customer and to further reduce inflows from the grid. A small storage capacity will be enough to significantly increase the amount of in-house use of self-generated energy.
- A DER customer, having invested in a greater in-house energy storage capacity and a smarter-inverter, will benefit from the possibility of maximizing the full potential of his storage capacity. This will be achieved by optimizing the amount of energy stored in-house, acquiring more energy from the grid during low-cost off-peak periods than he requires and returning surplus of stored energy to the grid later at a higher price during peak-time.
- The DER Customer would benefit from almost all of his self-generated energy, plus the price differential between the lower cost of Inflows acquired during off-peak time and the higher cost of surplus Outflows returned to the grid at peak-time.
- Another benefit of interconnecting DER customers (with sufficient energy storage capacity) with the grid is the mitigation of the negative "Duck" impact on the system daily load demand when excess solar–energy is stored at source for later use at peak-time, instead of being returned to the grid in real-time. This will allow utilities to efficiently manage greater volumes of clean solar-energy without creating increased system operational problems and instability.
- The DER Customers, for the same reasons as for DG Customer can also yield a short-term revenue shortfall for the utilities. However, contrary to DG customers they offer

multiple supplementary mitigating advantages to the Utility, in terms of overall system operation, stability, efficiency and costs reduction that will benefit Michigan and its citizens.

- DER Customers with high-levels of storage capacity will produce a **significant societal benefit** resulting from the reliable automatic load shifting of their inflows from peak to off-peak periods and the **coincidental** return of surplus outflows at peak-time. It will contribute to the flattening of the daily overall system load-demand curve. This will result in more intermediate power generation units to be able to be run as 24/7 base power plants instead of for shorter periods of operation and a reduced need for peak power generation. This will translate to a downward impact on rates for all classes of customers. It will also result in more system reserve-generation capacity made available to progressively serve increased demand from the transition of fossil-fuel vehicles to electric power.
- **If the rate of DER Customer development is wisely managed by utilities to match the progressive rate of transition to electric vehicles, the net impact on the potential utilities' revenue shortfall will be minimal or even quickly positive.**
- The overall power-system efficiency gains resulting from the interconnection of DER customers with the grid, which could have caused an increase in generation and distribution stranded assets (or over-capacity) will instead free up surplus system capacity. This could facilitate the ability of Utilities to meet the increased demand resulting from transitioning to a carbon-freer transportation eco-system. This could be done, in the short to medium-term, without having to invest in supplementary traditional fossil-fuel generation and upgraded distribution capacity. This will provide more time for further increasing clean-energy capacity development.

To actualize the full potential benefits which can be derived from the bi-directional flows of energy, at different times of day, between DER customers and the grid, a regulated "Time-of-Use" energy metering and billing mechanism will be required.

4. Common Characteristic of "DG" and "DER" Customers

Both DG, as well as the next generation of DER Customers, share a common concern with the negative climatic and environmental impact of human energy-related activities. They are highly motivated and committed to doing whatever they can to mitigate those negative impacts. They are also increasingly aware of the availability on the market of new technologies specifically designed for customer use and now offered at relatively competitive prices. They are eager to contribute to the de-carbonization of the global energy eco-system and are the most likely class of customers to integrate electric cars in their energy consumption profile.

In other words, the DER customers who might contribute to yielding a shortfall in utilities revenues are the same customers who might contribute to a significant increase in their daily load requirement to recharge the batteries of their electric cars and, consequently, mitigate or eliminate the Utilities' revenue shortfall.

For DG customers, the overall cost of their investment and its anticipated economic return over a reasonable time-period are both important considerations, but generally not the most critical factor driving their decision.

These Customers are socially responsible, committed and proactive in implementing a sustainable energy and climate environment for the good of subsequent generations. They are the most likely to quickly adopt and promote a carbon free environment.

They should be fairly treated and adequately compensated for their positive contributions towards a sustainable carbon-free energetic eco-system, whatever their number and the capacity and capabilities of the equipment they own behind their utility-meter.

5. Utilities' Readiness to Implement a "Time-of-Use" Billing Mechanism

Now that the two largest utilities in Michigan have smart-meters in place (the cost of those meters has already been allocated to customers in their bills for many years as eligible regulated assets) they have the **technological means** to incorporate both "time-of-use" and the incremental metering of customer inflow and outflow kWh into their computerized billing system. The decision to invest in the installation of smart-meters several years ago was precisely to provide customers with clear price-signals and was justified on the basis that it would allow for the billing of customers on a "time-of-use" basis. Now that the investment is completed, precisely when a "time-of-use" billing mechanism is essential to incentivize DER customers to modify their energy profile and, when technology is now available to fully capitalize on their capability to provide grid-support and overall system efficiency support-services, **the argument put forward by utilities that they will need to make costly modifications to their billing systems cannot and should not be accepted**.

Also, the MPSC concern about authorizing spending a significant amount of money to modify the utilities' billing system for a small number of customers **is difficult to accept** after having authorized several years ago a costly investment in smart-meter hardware. The decision to invest in smart-meters was made precisely to allow for "time-of-use" billing with the objective of sending the correct price-signals to customers.

More to the point, one reason why the current number of DG/DER customers is still low and growing slowly is precisely because of the current **inefficient energy/distribution rates** which do not provide the appropriate incentives for customers to modify their energy consumption profile and timing of use.

This results in higher power prices for all classes of consumers. In addition, it results in unwanted societal outcomes like lower customer self-generation of clean-energy, lower penetration of "Distributed Energy Resources" (DER) and micro-grids, over investment in traditional generation, transmission and distribution infrastructures, further increase in fossil-fuel generated energy (CO2 + Pollution) and lower electric vehicle adoption. The overall effective productive use of current Michigan power generation, transmission and distribution infrastructures is around 45%. This is far too low and DER can significantly contribute to increasing this ratio through "Load Shifting".

6. Target Customers for DG/DER Development

Implementing more efficient time-of-use rates would promote the growth of DG/DER customers and will result in an increase in the ratio of clean-energy generation. It will also motivate customers to use electricity mainly when generation and distribution capacities are under-used (off-peak) and refrain from drawing energy from the grid during periods when those infrastructures are stressed to their limit (peak-time).

Currently there are close to 6000 DG customers in Michigan. This constitutes a significant starting base for mandated DG/DER experimental projects. They would be ideal targets for upgrading their current-status from DG to DER customers.

This could be realized under the cover of utility-driven experimental projects, fairly incentivized with appropriate price-signals imbedded into a cleverly and fairly designed "Inflows/Outflows" energy billing mechanism, as recommended by the MPSC staff. The key words in the previous statement are **"cleverly and fairly designed"** tariffs.

After an initial 2 to 3 year period of field experimentation and fine-tuning of the DER concept, with the concurrent adjustment of the Utilities' business model to adapt to DER customers penetration, the number of customers volunteering to join the DG/DER class of customers will progressively increase.

7. Utilities Concerns

As previously mentioned, **adopting more efficient power price signals** may yield a short-term revenue shortfall for traditional utilities not having adjusted in time to the rapidly changing energy eco-system driven by the introduction of new technologies (grid sensors, telecommunication, energy storage, smart-inverters and electric transportation vehicles).

For this reason, DG customers, and more specifically DER customers, are still perceived as potential competitors by Utilities, with the potential of eroding their future revenue base. Utilities have recently been pushing the defensive argument that, under the current "Net-Metering", DG customers are not paying their fair share of distribution costs (to the detriment of regular customers). Using this argument, Utilities are putting pressure on the MPSC to modify the current "Net-Metering" pricing mechanism for outflows returned to the grid by DG/DER customers and related distribution costs. **MPSC needs to assess the technical and financial credibility of this argument and make sure the underlying objective of Utilities is not to slow down, or kill, the development of customer-driven provisions for system efficiency support services.**

However, the potential for short-term declining revenue for utilities, if cleverly and timely managed with appropriate price-signals, might never materialize. The sustained transition of the transportation eco-system from fossil-fuel to cleaner electric energy over the past few years presents a rare opportunity for utilities to benefit from a sharp increase in demand for cleaner electric power "Capacity", "Energy" and "Transmission/Distribution".

This has the potential to more than offset the anticipated drop in demand resulting from increased distributed customers' self-generation of clean-energy and overall increased system efficiency.

8. Eligibility to the DG/DER Class of Customers

The eligibility criteria to the DG program under joint consideration by the Utilities and the MPSC **is currently very restrictive**. From a customer's perspective, these restrictions are perceived as being defensive, too regressive and not in the best interest of Michigan, its citizens and the environment. These criteria might be justified in the context of a limited initial experimental program but that model of experimental program has already been successfully implemented in many other States. They allowed to better understand the potential long-term impact and contribution of customer provided grid-support-services rendered at the periphery of the distribution grid.

The current program description seems to address only issues related to "Distributed Generators", "Roof-Top Solar Panels", "Geothermal Heat Exchangers" and "Wind Turbines". The program is currently **totally silent** on issues related to "Distributed Energy Resources", customer-sized "Energy-Storage", "Smart-Inverters", "Electric Vehicles" and in-house energy management and optimization software. **For the long-term benefit of Michigan and all classes of customers most of those restrictions should be lifted as soon as initial DER experimental projects have clearly demonstrated the full value of DER customer's contributions.**

We also believe that customers whose house and/or location are not conducive to installing in-situ clean energy generation equipment, but have signed long-term power acquisition contracts with their Utility or an independent clean-energy power-producer, should also be eligible to

participate in the program. Such Customers should commit to selling their "Renewable Energy Certificates" (RECs) back to their Utility. The cost paid by utilities to acquire those certificates should be categorized as a "regulatory-asset".

9. "Time-of-Use" Metering and "Cost-of-Service" Allocation Requirements

New sensors, electronic communications, storage technologies and smart-inverters allow DER customers to better respond to price-signals with optimized decisions about their energy use. **Time-varying rate designs that introduce dynamic pricing options will be needed to better align private DER customer choices with the best public interest and the most critical system needs** (Optimized dispatch of surplus stored energy at the customer level during peak-periods).

If the new DG/DER rate schedules convey to the customer clear price-signals reflecting what the system operator needs to optimize the overall system performance, it will increase demand during off-peak periods, decrease demand at peak-time, and thus decrease market clearing prices for energy, capacity, and services. This will benefit all residential, commercial and industrial customers in Michigan.

The new rates to be introduced by the MPSC should begin with an easy-to-understand default average tariff (mostly applicable to DG customers only) that does not require in-house sophisticated energy management equipment and software.

Time-of-use tariff schedules, with more refined price-signals, that require active in-house energy management, should be optional and will likely be used mostly by the more sophisticated DER customers equipped with smart-inverters behind the utility meter.

The design of "Residential", "Commercial" & "Industrial" time-of-use rate schedules should fairly reflect the average energy consumption profile of each class of customers. This implies that the seasonal "time-of-use rates schedules" for the residential customer class **will be different** from those used for the commercial or industrial customer classes. The time of day of the peak-time, as well as the peak and off-peak periods duration will be different for each class of customers and the time-incremental rates might be slightly different for each class.

Time-of-use rate schedules should allow for regular redesigns during utilities rate adjustment cases, as technologies and system operations mature.

10. "Inflow/Outflow" Billing Mechanism Vs. "Net-Metering"

Ideally, to provide powerful incentivizing price-signals to the DG customers to upgrade their behind-the-meter equipment and make the move to become DER customers, generation-costs should be recovered through an "Inflow/Outflow" rate design that combines a varying energy "time-of-use" component and a "coincident-demand" charge. This would penalize customers with a peak-load coincidental with system daily peak demand and incentivize customers shifting their daily peak-load to an off-peak period. This is a more sophisticated but balanced billing methodology that can maximize all the DER values and attract smart customer responses that benefit the entire system.

To facilitate a sustainable development of "Distributed Energy Resources", the **Inflows/outflows pricing methodology proposed by the MPSC Staff is more progressive than the current Net-Metering methodology currently in use.** It offers more opportunities for the fair pricing and crediting of extra grid-support services which DER customers will eventually be able to provide the Distribution System Operator in the near-future. It will also allow for optimum benefits which can be derived from the use of "time-of-use" rates and the fair compensation of customer energy-

storage capacity. It clearly separates inflows and outflows and makes it easier to fairly price each independently from the other.

The comparative advantages of the "Inflow/Outflow" conceptual billing mechanism over the current "Net-Metering" is well documented in the MPSC Staff report recommending adopting the "Inflow/Outflow" for Distributed Generators. This is a solid and coherent recommendation and is a welcome move forward. It will be applicable for both DG and DER customers.

1) Pricing of Inflows

For the "Energy" component of costs, the MPSC Staff recommends using the same **"Cost-of-Service"** pricing mechanism to bill the volumetric inflows of energy delivered to DG/DER customers. This approach is the same as for any regular customer in the "Residential" or "Commercial" classes.

Providing costs-of-service are properly and fairly allocated to each class of customer, this proposal does not discriminate between regular (passive) and DG/DER (proactive) customers and is fair to all.

For billing the energy cost to DG and DER customers, the only significant difference will be that DG customers will most likely opt for the "average cost-of-service rate" while DER customers will benefit more from a "time-of-use cost of service rate".

For the "Distribution" component of costs, the MPSC Staff also recommend using the same **"Cost-of-Service"** pricing mechanism to bill DG/DER customers for their use of the distribution grid, proportionally to the volumetric kWh of inflows energy delivered through the grid. For the same reasons as mentioned above, this proposal is also fair and non-discriminatory to all customers.

For the "Capacity" Cost Component of costs, the MPSC Staff does not make any specific recommendation for "Inflows". The current "Net-Metering" billing does not include a capacity charge for residential customers. In-light-of the typical residential customer load profile, imposing a capacity charge to **DG customers** would not provide any meaningful price-signal since they do not dispose of an in-house energy storage capacity they can use to modify their load profile. More to the point, imposing a non-coincident capacity charge on DG/DER customers would be counter-productive, since for rooftop self-generated solar-energy customers, their maximum demand would likely be on a cloudy day, but system peak is typically on a hot sunny day. As a result, solar customers could be overcharged despite low coincident demand or under-credited for exported solar.

A capacity charge might eventually be an option to consider for **DER customers** with large in-house energy storage capacity and/or one or two electric vehicle(s) with a large battery. However, such customers will have the capability to maximize their draw of energy from the grid during off-peak periods, when a capacity charge is not justified, and to limit their consumption during peak periods, which would rather justify a negative capacity charge (credit).

For the "System Access" Cost Component of Costs, the MPSC Staff does not make any specific recommendation for "Inflows". We assume that the current flat $7/month access charge will continue to apply. However, **a token increase** of the system access charge for DG/DER customers may be a convenient option to consider for compensating the Utility for the use of the local distribution wires to dispose of surplus outflows of energies returned to the grid (see "Pricing of Outflows below).

2) Pricing of Outflow Credits

While it is easy to agree with the MPSC Staff on the proposed pricing and billing methodologies for **"Inflows"**, from a customer perspective, there is strong disagreement on the pricing mechanism proposed for crediting **"Outflows"** of surplus energy returned to the grid.

For the "Energy" component of credit, the MPSC Staff recommends using the recently adopted PURPA **"Avoided-cost"** pricing mechanism to credit DG/DER customers for their volumetric kWh Outflows of surplus energy returned to the grid.

The **Public Utility Regulatory Policies Act** (**PURPA)** is a United State Act that was meant to promote energy conservation (reduce demand) and promote greater use of domestic energy and renewable energy (increase supply) when planning for the addition of new power generation capacity.

The PURPA rate is designed to reflect the medium to long-term avoided capacity cost of a reference hybrid-proxy natural gas combustion turbine and the avoided cost of a natural gas combined cycle unit. Under PURPA rules an electric utility is not authorized to pay more than the long-term avoided cost for purchase of energy from a qualified independent power generator willing to build new and more efficient generation capacity to be used in the future. **Since "In" and "Out" transfers of energy between the Grid and the DG/DER customers occurs during the present time and is generated and distributed using currently existing infrastructures, rather than being generated from a more efficient future plant and grid, the PURPA rates are lower than current "Cost-of-Service" rates.** This would have the potential to drastically slow-down or kill the self-generation of clean-energy at the customer level (even with the arbitrary 10% premium on the PURPA rate proposed by the MPSC Staff).

This energy pricing methodology is well suited to provide guidance for negotiating long-term power-purchase-agreements with independent power producers competing to build industrial-sized clean-energy power plants for future use. **It does NOT seem to be appropriate** for pricing small quantities of energy generated, distributed and sporadically returned to the grid in almost real-time for a DG Customer or, within a single day for a DER customer.

Using a commercial **"Cost-of-Service"** tariff for billing **"Inflows"** (reflecting the current consolidated system operating costs of existing infrastructures) concurrently with an **"Avoided-Cost"** tariff for crediting **"Outflows"** (reflecting lower operating costs for a future modern industrial power plant), would result in added revenues for the Utilities, to the detriment of the DG/DER customers from which the Outflows originate.

Under such a billing arrangement inflows of energy acquired in real-time from the grid at a higher retail "Cost-of-Service" price and returned to the grid at a lower PURPA price a few minutes later for a DG (or the same day for a DER) would generate a net loss for the customer. The same amount of Outflow energy bought back by the utility at the lower PURPA rate will be instantaneously absorbed, metered and resold at the higher retail "Cost-of-Service" rate to neighboring customers, generating a net profit for the utility on the outflow buyback transaction.

Utilities might argue that such a rate penalty imposed on the DG/DER customers is justified as a fair compensation for having provided the customer with a convenient mean to commercialize their occasional surplus of energy. We do not believe such an argument can be used for a lateral transfer of energy performed automatically in real-time without any Utility involvement. The use by DG/DER customers of the grid to move their Outflows

from their dwelling to their immediate neighbors will be addressed below under the heading “Distribution Component of Credit”.

Recommendation: For the outflows energy-credit component of the bill, we suggest using the same retail “cost-of-service” rate as for “inflows” and **NOT the lower PURPA rate**. This would make the buyback of outflows financially neutral for the utility. In doing so, the inflow/outflow billing mechanism for energy, would be very close to what is achieved with the current Net-Metering billing method, it would be fair to the DG/DER customers and would have NO detrimental impact on other regular customers.

For the “Distribution-costs” component of credits, the MPSC Staff is currently silent on this matter. From a customer perspective there is, however, an issue at this level which needs to be addressed.

As alluded to above, surplus outflows of energy, occasionally returned to the grid by DG/DER customers, will be merged and absorbed **in real-time** by their neighbors in close proximity, without having to transit through the whole distribution network (except the for the short close-proximity lines interconnecting neighbors at the extreme periphery of the grid).

DG/DER customers have already paid their fair share of the distribution costs, through the “Distribution-Cost-of-Service” charge on their bill, proportionally to the volume of their kWh of **“inflows”**. This “Distribution charge” covers all capital and operation costs of current distribution infrastructures from the point of origin of generation, up to the customers’ dwellings at the end of the distribution grid.

Occasional outflows of energy from a DG customer results from an excess of self-generated solar-energy at certain times of the day. As such, they have not been previously metered as inflows by the Utility and have not been subject to a distribution charge. When these surplus DG outflows are returned to the grid they are instantly accounted for and metered as inflows to nearby neighbors. The corresponding full retail distribution charge will be billed by the Utility to the neighboring regular customers proportionally to their consolidated amount of inflows (DG Outflows + Grid Provided), even though the DG outflows never transited through the whole distribution network to reach the neighbors. In other words, the Utility bills a full retail distribution-costs charge on the lateral transfer of DG outflows. These Outflows never transited through the whole network. This, more than compensates the Utility for the use by the DG customer of the short peripheral distribution lines used to move its Outflows to the neighbors. This is not detrimental to the neighbors since if they did not benefit from the DG Outflows they would have had to acquire an equivalent amount of energy from the grid to meet their load and would have had to pay the same full distribution charge on their consolidated amount of inflows from the grid.

This issue is less straightforward for the Outflows returned to the grid by a **DER Customer**. This is because for them, their occasional surplus of self-generated solar-energy is NOT returned to the grid in real-time but is instead stored in their in-house storage battery pack for use later when the cost of inflows is higher. The DER customers having a larger in-house storage capacity behind their meter will also have the possibility to buy, at low cost during off-peak periods, higher levels of inflows from the grid than they need to meet their residential load. This surplus of inflows will be stored in-house for later use to meet the load during peak-time. The amount of energy stored in the battery and not required to meet the house load during the peak-time will be returned to the grid as outflows released only during peak-time. These outflows will thus be composed of a mix of surplus self-generated solar-energy and surplus Inflows acquired from the grid during off-peak periods. When these outflows are returned to the grid, as described above, they are immediately

absorbed by neighbors and these neighbors are charged the full distribution charge for their inflows. However, the DER Customer was already charged for the full retail distribution rate for the surplus of inflows acquired earlier during the day and later returned to the grid at peak-time. **This results in a double accounting of distribution charges.** Unless the DER customer is credited for the distribution costs included in the "Outflows" of energy returned to the grid, **the Utility would be collecting retail distribution charges twice on outflows, once from the DER customers and a second time from the neighbors to whom the DER outflows are transferred and metered as inflows**.

The rationale presented above, for both the DG and the DER customers, demonstrates that the argument put forward by Utilities, to the effect that DG/DER customers under "Net-Metering" are not paying their fair share of distribution costs, is inaccurate and misleading. **The fact is that they are instead benefiting from a double accounting of distribution-costs recovery charges** applied on outflows of energy from DG/DER customers.

Recommendation: DG/DER customers should NOT be subject to a distribution-costs recovery charge applied on their Outflows of surplus energy and,

DER customers are entitled to some form of credit from the Utility for the distribution-costs recovery charge they have already paid for the portion of surplus inflow of energy bought from the grid during the day, exceeding their in-house load requirements and returned to the grid during peak-time. It may be difficult to quantify precisely the amount of distribution-costs credit the DER customer is entitled to.

The point made above is that the Utilities should not be allowed to claim that DG/DER customers are not paying their fair share of distribution costs when they are indeed the one benefitting from an income they are not entitled to receive.

11. Elimination of the Duck Load Curve Issue and Flattening of the Daily System Load Curve

It is also important to remind the utilities and the MPSC that DER customers having enough in-house energy storage capacity and smart-inverters can also contribute to:

- the elimination of the "Duck-curve" effect and the flattening of the overall system daily load curve;
- provide the Distribution System Operator (DSO) with automated grid stabilization ancillary services;
- provide locational benefits to the grid delaying the need for new grid investments and,
- under pre-agreed conditions, put some of their in-house stored energy at the disposal of the DSO to be dispatched at time of major system distress or to follow the load during peak-time.

This position paper does not address cost-benefits of these potential supplementary services since further research and experimentation is required before they can be reliably implemented. Several years of field experimentation projects will be required to master implementation challenges.

12. Financing of Experimental Projects to Transition from DG to DER

The new tax law just passed at the end of December will result in a significant tax liability reduction for utilities. The new law includes a sharp drop in the tax rate applicable to power utilities and

allows for the amortization of new investments during the year the investment is realized, instead of being distributed over several years.

If tariffs are not adjusted to re-allocate the tax savings back to the customers, the Utilities will generate higher profits than they are legally entitled to and these extra profits may be unduly allocated to dividends paid the shareholders. This should not be authorized by the Commission.

In the current context of serious climate-change challenges, we believe it would more progressive and productive NOT to reduce tariffs to customers and rather to allocate the proceeds of tax savings to a special fund to be used exclusively to finance DG and DER experimental projects.

13. The MPSC Consultation Process is Flawed

I, as well as Rob Rafson from "Charter-House Energy" and independent of each other, asked at a regular "Distributed Generation Tariff Workgroup" meeting in Lansing if there had been any meetings between the MPSC and the Utilities outside of the workgroup. The answer was yes. When asked about the nature of those meetings, it became clear that there were several meetings behind closed doors, covering a range of topics and with groups of staff.

It may very well be appropriate for the MPSC to have technical working sessions with Utilities, mostly to get suitable operational data sets for simulation purposes. However, when such meetings are not reported and properly documented for public disclosure they can easily be perceived as going against transparency and could be interpreted as intending to influence staff and impact the outcomes of the process. This is an issue the MPSC needs to address as a systemic problem that could be interpreted as being tilted in favor of the Utilities. This is especially the case when Utilities send observers to attend the public workgroups but do not participate in the discussion and do not express publicly their concerns and constraints. This does not help to create an environment of trust and collaboration between stakeholders.

Mr. Rob Rafson write: "The DG workgroup is a rare opportunity for the MPSC to enforce tariff and rules which the utilities have to follow and I am worried that the result of the DG tariff may end up creating a tariff that puts the issue back to the utilities to create a structure through a rate case. I believe we need a tariff that implements the legislation by doing a transparent cost-of-service study for each class of customer and then creates average and time-of-use Tariffs based on the typical load profile of each class of customer, each year. This would allow the DG/DER tariffs to adjust to changes in rates when new technologies are introduced".

From:	Rob Rafson
To:	Baldwin, Julie (LARA); Harlow, Jesse (LARA)
Cc:	Alain Godeau; Liesl Clark
Subject:	CHE comments to Staff DG Tariff recommendations
Date:	Tuesday, January 9, 2018 12:16:25 PM
Attachments:	Microsoft Word - CHE Comments on Staff Draft DG Tariff.doc.pdf PastedGraphic-7.tiff

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Rob Rafson, P.E., NABCEP

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January 9, 2018

Ref: Chart House Energy comments on Staff recommendations for DG Tariff

The staff recommendations are not fair or reasonable and do not follow the letter or intent of the DG tariff part of the energy legislation.

1. Existing cost allocation is distributed through existing rate structures. Introducing a new measurement methodology would require new cost allocation and a cost of service study to insure DG and non-DG are treated fairly.
    a. Inflow/Outflow is a change from existing Net Energy Measurement (NEM) monthly measurement to instantaneous measurement and would increase allocated costs and resulting bill to DG customers.
        i. Instantaneous net metering Inflow creates a much larger inflow measurement and thus larger retail rate and distribution fee.
        ii. Solar creates power at peak times creating increased savings for the utility and thus the Solar generation value is higher than retail rates. Time of use and Demand rates are not address in Staff recommendation. Inflow/Outflow as presented does not calculate or include the time of use or Demand charges to DG customers.
        iii. The Outflow must therefore be higher value than retail rate in each class but the presented PURPA rate is much less than retail rate.
        iv. This results in a great increase in costs born by NEM / DG customers. For average near 100% renewable customers this will increase Distribution charges to these customers and thus unfairly burden DG customers with additional allocated costs.
    b. Utilities have not provided data from existing customers to do a cost of service study on customers to determine a fair and appropriate DG tariff under this new methodology.
    c. Either a DG tariff is implemented or new DG rate would have to be implemented and a new cost allocation for all customers and new rate schedule created.
    d. PSCR is not an acceptable mechanism to adjust for discrepancies across all classes and all rates equally. This would unfairly favor non-DG customers because all customers would receive the benefits created by DG systems.

2. DG tariff is supposed to equalize the discrepancies between renewable energy customers (DG) and non-DG customers.
    a. Staff has determined that DG residential customers (RS rate) are being over cost allocated by $106/yr (or $0.016/kWh generated) (we calculate same at $126/yr or $0.018/kWh generated).
        i. We recommend the DG tariff be calculated by taking the cost of service savings divide by the power generated for the average customer.
        ii. This produces a more accurate cost of service allocation because it benefits best the best operated system instead of the biggest system if the DG Tariff credit were on Outflow.

b. Staff's Inflow/Outflow mechanism increases the discrepancy by $300/yr over NEM. This is neither fair nor reasonable. If Inflow/Outflow mechanism were implemented for an average DG RS residential customers would be overcharged $406/yr and a DG Tariff credit of $0.06128/kWh generated would have to be included to make the rates fair and reasonable between DG and non-DG RS residential rate customers.

3 Staff's recommendations fail to present a DG Tariff. The DG tariff methodology must address:
   a. All classes
   b. All rate structures
   c. Savings created to the utility by introduction of solar (DG) including:
      i. Avoided energy generation expense
      ii. Avoided generating capacity
      iii. Time of day of generation
      iv. Time of year of generation
      v. Decreases in transmission losses
      vi. Increase in transmission capacity
      vii. Stabilization of grid support services
      viii. Fuel hedge value
      ix. Increased grid reliability and resiliency
      x. Reduced environmental compliance savings
      xi. Social benefits

4 Cost of service study must be done annually for each of the rate structures in each class for the average DG customer in each class and each rate.
   a. The above listed impacts must be considered for average DG customer and compare them to a similar usage non-DG customer to determine what there resulting DG tariff will balance customers cost of service and cost allocation.
   b. Costs are allocated between energy, demand, and distribution. DG tariff must address each to eliminate cross-subsidization and create proper market signals.

Chart House Energy's opinion

The MPSC should use the existing class and rate structures because the utilities cost allocate through existing rate structures that are uniformly applied to all customers. These existing classes and rate structures are designed to create proper market signals and promote good energy usage behaviors. By using the existing rate structures and properly cost allocation the data already exist to calculate a DG tariff that equalizes cost allocation between DG and non-DG customers in each rate of each class of customer.

Chart House Energy believes that the DG tariff must be developed through an annual cost of service study for each rate of each class for the average DG customer. This will allow for changes in rates, rate structures, cost allocations, average DG customer system size and performance, average DG customer usage size and characteristics as well as utility resources, fuel and labor costs, and all other cost of providing power to the customers.

At present, only average customer hourly usage and average DG customer hourly multi-year averages for production for average DG customer system size are available to apply to existing rates create the initial cost of service study and result in an initial DG tariff. If the utilities want to create rates that use the instantaneous measurement available by the Advanced Metering then it should provide the data to support the use of instantaneous measurement prior to implementation so a cost of service study can be run to create the DG Tariff before implementing this change.

There is an opportunity to combined generation and storage and resulting actual combined impact on the utility and grid. This could ultimately create the most fair and reasonable DG tariff. We recommend that the cost of service study be designed to include customers with storage and that provisions and appropriate Tariff credits be made for grid support that storage provides. DG and DER (storage) customers can be addressed through a DG tariff cost of service methodology resulting in a DG tariff adjustment to rates for each of the metrics (Energy, Demand, Distribution).

Generator meter and smart (bi-directional) meter pair is the correct way to address measurement. The reason is that some of the impacts of solar and/or storage are based upon the system Capacity and the time Energy is delivered to the utility plus the net reduction in energy (DG reduces Energy costs, DER reduces Energy costs through quality, time and cost of energy generation as well as power quality and dependability).

If we only look at the Inflow / Outflow, we miss to total impact to system wide improvements to Peak Demand, Capacity, Peak generation, Power Quality, Fuel Cost risk, and environmental operational savings. Monthly NEM or Instantaneous Inflow / Outflow should be able to measure the other impacts such as net energy usage.

Distribution costs are reduced by DG by decrease line losses, increased capacity of the distribution system and the other line benefits, power quality and stability improvements. It is clear that Outflow should not be charged a distribution cost because the distribution cost are charged by the nearby grid customer who uses the Outflow and the savings to Distribution by Distributed Generation should be factored into the DG Tariff. Instantaneous measurement will increase DG customer distribution cost over monthly NEM and since present cost allocation is based upon monthly NEM. Instantaneous measurement should not be implemented until cost allocation for the system includes the new measurement methodology.

From:	Leah Garner
To:	Baldwin, Julie (LARA)
Cc:	Jamie Lee; Templeton, Mark; Weinstock, Robert; Rebecca Boyd; Jackson Koeppel
Subject:	Comments of Soulardarity on the Michigan Public Service Commission Staff's Draft Distributed Generation Report
Date:	Wednesday, January 10, 2018 5:00:01 PM
Attachments:	Soulardarity Comments on MPSC Staff Draft Report 2018-01-10.pdf

Dear Julie,

The University of Chicago Abrams Environmental Law Clinic submits the following comment on the Michigan Public Service Commission Staff's Draft Distributed Generation Report, on behalf of Soulardarity and other sign-ons.

Will all comments be shared publicly, and do you anticipate that the final report will be released by February 1st?

Please confirm receipt of this email. Thank you.

Sincerely,

Soulardarity and the Abrams Environmental Law Clinic

THE UNIVERSITY OF CHICAGO
ABRAMS ENVIRONMENTAL LAW CLINIC
OF THE UNIVERSITY OF CHICAGO LAW SCHOOL

January 10, 2018

Ms. Julie Baldwin
Michigan Public Service Commission
7109 W. Saginaw Hwy
Lansing, MI 48917
baldwinj2@michigan.gov

Re: Comments of Soulardarity on the Michigan Public Service Commission Staff's Draft Report on the MPSC Staff Study to Develop a Cost of Service-Based Distributed Generation Program Tariff (December 15, 2017)

Dear Ms. Baldwin,

The Abrams Environmental Law Clinic at The University of Chicago Law School, on behalf of Soulardarity, submits these comments in response to the Michigan Public Service Commission Staff's Draft Report on the MPSC Staff Study to Develop a Cost of Service-Based Distributed Generation Program Tariff ("Draft Report").[1]

The following organizations support Soulardarity's comments on the Draft Report:

- Debbie Fisher, Director-HOPE Village, *on behalf of Focus: HOPE*
- Juan Shannon, Founder & Chief Executive Officer, *on behalf of Parker Village, LLC*
- Nick Leonard, Staff Attorney, *on behalf of Great Lakes Environmental Law Center*
- Andrew Sarpolis, Associate Organizing Representative, Beyond Coal Campaign, *on behalf of Sierra Club Regional Field Office – Oakland County, Michigan*
- Darryl Jordan and Siwatu-Salama Ra, Co-Directors, *on behalf of East Michigan Environmental Action Council*
- Guy Williams, Executive Director, *on behalf of Detroiters Working for Environmental Justice*
- Steven Stone, William Held, and Joseph Nagle, Managing Partners, *on behalf of Strawberry Solar*
- Diane Cheklich, Sales Representative, *on behalf of Strawberry Solar*
- Reverend Joan Ross, *on behalf of Storehouse of Hope and North End Woodward Community Coalition*
- Norma Heath, *on behalf of Solar Neighbors Detroit*
- Ali Dirul, Engineering Director, *on behalf of Ryter Cooperative Industries*
- Justin Schott, Executive Director, *on behalf of EcoWorks*
- Bridgett Townsend, Chief Officer, *on behalf of Town Services*
- Constance C. Bodurow, AICP, CUD Director, *on behalf of studio[Ci]*

Soulardarity is a Highland Park, Michigan-based nonprofit (http://www.soulardarity.com/) focused on building energy democracy through education, organizing, and community-owned clean energy. Its primary focuses have been on solar street lighting, solar bulk purchasing, energy education,

[1] www.michigan.gov/documents/mpsc/MPSC+Staff+DRAFT+DG+Report+12+15+2017_608897_7.docx

and expanding access to clean energy to improve the economic condition of low-income communities, and especially low-income communities of color, in southeast Michigan.

Soulardarity believes in energy democracy, the concept that people impacted by energy decisions should have a seat at the table in making them. Unfortunately, historically energy decisions in Michigan have only exacerbated the inequality between socioeconomic groups. Locally undesirable, polluting energy systems have concentrated adverse health and environmental effects and burdened low-income communities and communities of color repeatedly.[2] Those who benefit maintain the status quo, despite the existence of alternative systems that combine efficiency, energy storage, and distributed clean energy, which would provide more affordable and safe power. Meanwhile, Michigan communities struggling with energy poverty, the health impacts of pollution, and diminishing economic opportunity are in the dark and out of the conversation.[3] According to DTE Energy, "roughly 16 percent of Michigan residents live below the poverty line. Approximately 117,500 DTE Energy customers received some kind of energy assistance in 2016."[4]

Soulardarity provided comments on the Michigan Public Service Commission Staff's Proposed Distributed Generation Program Concept Tariff ("Proposed Concept Tariff")[5] in October 2017, which are attached in Appendix A and incorporated herein. We appreciate the Staff's addressing some of the concerns raised in our previous comments regarding the distributed generation ("DG" or "distributed generation") program. However, the Draft Report fails to address many of the concerns we had with the Proposed Concept Tariff's potential impacts on low-income communities and communities of color. These comments highlight the unaddressed issues from our previous comment and the concerns with the Inflow/Outflow Billing Mechanism. We request that the MPSC Staff change the Inflow/Outflow Billing Mechanism and Proposed Concept Tariff to address these concerns.

These efforts must be understood in light of the requirements of Michigan's Public Act 342, which makes it a priority "to promote the development and use of clean and renewable energy resources" to reduce CO_2 emissions, recognizing that clean energy is the unstoppable and essential future.[6] The Commission must ensure all people are treated fairly in addressing CO_2 reduction, pursuant to the mandate in Act 341 to recover "a DG customer's 'equitable cost of service' and 'fair and equitable use of the grid.'"[7] "Fair and equitable" varies based on the ability of the customer to afford energy efficiency measures and distributed generation. We want to emphasize that equity and clean energy growth go hand-in-hand. Equitable use of the grid for all people is integral to the growth of the clean energy sector and overall infrastructure resilience.

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[2] The NAACP reported that "[m]ore African Americans live near coal fired power plants, nuclear power plants, or biomass . . . power plants than any other demographic group in the U.S. . . . Approximately 68% of African Americans live or have lived within 30 miles of a coal-fired power plant. . . . As a result, African Americans are more likely to suffer health problems from the pollution that these facilities produce." NAACP, Just Energy Policies & Practices, http://www.naacp.org/climate-justice-resources/just-energy/.

[3] Comments on MPSC Case No. U-18418 regarding Stakeholder Engagement in the Integrated Resource Planning Process

[4] DTE Energy, 2016-2017 Corporate Citizen Report 29, https://www.newlook.dteenergy.com/wps/wcm/connect/7194e3af-ff7a-4f14-ab1d-601b74a64086/DTE_CCR_PDF_digital.pdf?MOD=AJPERES.

[5] MPSC Staff, Proposed Distributed Generation Program Concept Tariff October 2017.

[6] Michigan PA 342 § 1(2) (2016).

[7] Michigan 2016 Public Act 341 § 11(1).

The Commission should keep in mind that "fair and equitable" requires promoting DG access for all; as will be shown below, the Staff Proposal consistently and needlessly demonstrates an overly narrow and incorrect view of what constitutes "fair and equitable." Without making solar and other renewables accessible, the market will not grow fast enough to address climate change, nor will we distribute that clean energy enough to improve the resiliency of the grid. Equity must be the basis now for the structure of the DG tariff, but it also requires taking into account the future environmental consequences for all.

Overall, the Staff's recommendations have not considered sufficiently either reducing dirty energy usage in Michigan or ensuring that all people are included throughout this process. As we explain in further detail below, we request the Staff conduct a study on how the provisions of the Proposed Concept Tariff and the billing mechanism would impact low-income communities and communities of color. A threshold question for any requirement of the DG program should be whether it limits entry to those who have limited financial and social capital. Our comments highlight some key areas for the Staff and Commission to focus their attention, including transparency of cost, community solar, and customer termination relating to the Inflow/Outflow billing mechanism.

I. Impact on Low-Income and People of Color Communities

In our previous comment, we expressed concern that the Proposed Concept Tariff did not address the potential impact on low-income communities and communities of color, and their ability to access distributed generation and secure energy reliability. Upon review of the Draft Report, we find there has been no discussion or analysis of the issue again.

Neither the Proposed Concept Tariff nor the Draft Report directly address whether the tariff will negatively impact low-income communities and communities of color in general and/or their access to distributed generation. The Proposed Concept Tariff and Draft Report contain a number of embedded and incorrect assumptions; these documents do not consider DG correctly or fully in the context of low-income and people of color communities, including price transparency, homeowners versus renters, and single-family homes versus multi-unit buildings. The Draft Report neither addresses nor analyzes whether the billing mechanism, as structured, will effectively subsidize wealthier DG customers at the expense of other customers, including low-income customers.

One such assumption is that price transparency is sufficient to justify the Inflow/Outflow billing mechanism. The Draft Report states that the Inflow/Outflow billing mechanism "is characterized by a high level of price transparency, resulting in clear and accurate price signals to customers." The MPSC Staff cites transparency as the main advantage of this new billing mechanism. However, the Staff makes the assumption that: (a) all customers will benefit from transparency, (b) costs will be transparent to all customers, and (c) all customers are able to change their behaviors in light of the transparent information.

Transparency of cost is effective only if customers have enough information beforehand (about the program, the DG system, their own electricity usage, etc.) to change their behavior (e.g., level of power production or usage, the time of power production of usage) in accordance with price signals. This assumption cannot be made for all customers. Without investments in technology and informing tenants and building owners about these programs, the assumption of transparency is inaccurate. For example, renters crediting customers in the next billing period for outflow potentially would not benefit renters, who are more transitory and who would lose the benefits of any overproduction in the last period that they occupy the residence. With renters making up 29 percent of the state's residents, the MPSC should

structure the DG program to be accessible to them, regardless of whether one thinks that many of them will participate in the program.[8]

Even with enough information, DG customers may be unable to change their behavior in accordance with price signals. The Staff's reliance on transparency as the primary justification for this billing mechanism falls short. The MPSC must remember their statutory duty is to create a "fair and equitable" tariff. Transparency is necessary but not sufficient.

To understand better low-income consumers and to assess their assumptions, the MPSC Staff should conduct and provide a separate analysis of the impact of this billing mechanism and tariff on low-income customers. Low-income customers have different housing needs, including single-family and multi-family dwellings, and renting versus owning, and consequently use energy differently than wealthier customers.

Regardless of whether a study is conducted, the MPSC Staff should address how the DG program will be structured to lower barriers to entry for and to encourage participation by low-income customers. For example, the MPSC should encourage the development of community solar projects and require utilities to offer on-bill financing for various costs associated with the program. The MPSC needs to ensure that the DG program is accessible to all and that the tariff, to the extent feasible, enables low-income customers to switch to renewable energy without essentially subsidizing wealthier customers.

Similarly, the Proposed Concept Tariff and Draft Report fail to consider the impact on communities of color. If the DG program has the effect of limiting access to renewable energy by communities of color, then the MPSC will perpetuate injustice both via the accessibility of clean energy as well as the disproportionate impact of environmental harm on low-income communities and communities of color. These communities already bear greater burden and costs than more privileged communities in health and economic vulnerability that are necessary for providing energy through centralizing fossil fuel generation.[9] Thus, they provide benefits to the entire system but are not compensated for those costs. The Staff's lack of analysis about environmental justice is endemic to the regulation process and perpetuates this injustice.

To combat this concern, the MPSC Staff should measure the success of the DG program on communities already impacted by pollution and other forms of environmental racism. Addressing the concerns of low-income access and affordability is the more salient approach in the context of designing the DG tariff, but in light of the disproportionate impacts of energy injustice faced by low-income communities and communities of color, the MPSC should apply this additional lens to measuring success of the DG program.

II. Specific Provisions in the MPSC Staff Proposal

1. Customer Billing

i. Inflow (C11.E) and Outflow (C11.F)

The Staff's proposal in the Draft Report to use the Inflow/Outflow billing mechanism in place of true and modified net metering addresses some of our concerns with regard to equitable cost of service to

[8] National Low Income Housing Coalition, Out of Reach 2017: Michigan, http://nlihc.org/oor/michigan (accessed Jan. 7, 2018).

[9] To see statistics on individual communities (i.e., zip code), visit http://scorecard.goodguide.com/. See Robert Bullard, *Anatomy of Environmental Racism and the Environmental Justice Movement* (1993).

all customers, especially low-income customers. By separating power inflow from power outflow, rather than netting the two values, some DG customers will have better price signals, which is preferable to simply netting inflows and outflows.

While separating inflows from outflows may be the right conceptual approach, the impact of such an approach turns on what the rates actually are for the inflow and the outflow.

The Staff's Draft Report emphasizes the transparency of cost this new billing mechanism gives. However, the arguments for transparency rely on the assumption that it benefits everyone, which is not always true. For example, consider the power outflow credit. Even with enough information, DG customers may be unable to change their behavior meaningfully or significantly in accordance with price signals. Generally speaking, at present, if a DG customer has solar panels, she will put power on the grid when the sun is shining, regardless of the price at that time, unless she also has a storage battery or has some other significant variable load within the household that she can control. Consequently, transparency—which sounds nice in theory—may have limited impact in reality.

In addition, at a time when DG and widespread renewable energy use must be encouraged, rather than hindered, the Inflow/Outflow mechanism as manifested in the Proposed Concept Tariff increases costs to all DG customers, which would disproportionately impact low-income DG customers. The Staff recommends in the Draft Report that the power outflow, or excess generation, be credited at the PURPA avoided cost. The Draft Report notes several times that a DG customer under the new mechanism will be charged more than she would have been charged under true or modified net metering. A net-zero residential customer, who would have paid nothing under true net metering, would now be charged approximately $300 per year[10] — the equivalent of $6,000 over the estimated 20-year life of a DG system, a significant sum compared to the cost of such a system. For a thousand potential new DG customers, the MPSC would make the cost of DG rise $25,000 per month or $300,000 per year.

The MPSC, if it implements this new mechanism, will have increased the cost of the DG program for all DG customers, which is especially relevant to low-income DG customers, thereby impeding access and discouraging customers from investing in DG. If the MPSC believes that DG is beneficial to the state and should be encouraged, then using this new billing mechanism without making significant efforts in other areas to lower costs for low-income communities who could be potential DG customers simply goes against the statutory mandate to recover to ensure 'fair and equitable use of the grid."‘

Moreover, the Staff's recommendation regarding using the PURPA avoided cost rate does not ensure that the rate credit will take into account key benefits that DG customers provide to the grid, including generation capacity, ancillary services, and avoided greenhouse gases, to name a few. For this reason, we disagree with the Staff's assertion in the Draft Report that the PURPA avoided cost more accurately reflects the equitable cost of service to a DG customer.

We urge the Staff to reconsider its recommendation to use the PURPA avoided cost to credit power outflows. If the outflow credit is calculated using avoided cost, then the Staff should conduct an analysis of the benefits that DG provides to calculate a comprehensive avoided cost and an equitable rate, particularly regarding low-income housing, renters and community DG. The Environmental Defense Fund and Institute for Policy Integrity filed joint comments in the New York Public Service proceeding

[10] MPSC Staff, *Draft Report on the MPSC Staff Study to Develop a Cost of Service-Based Distributed Generation Program Tariff* 2 (December 15, 2017).

regarding valuing distributed energy resources in April 2016.[11] The comment provided an in-depth analysis of the types of benefits that a DG customer provides to the electric grid. These benefits include:

- Avoided generation capacity,
- Avoided ancillary service costs,
- Avoided distribution capacity costs, and
- Avoided greenhouse gases and criteria air pollutants.[12]

Alternatively, the Staff could use the "value of solar" approach to calculate the outflow credit, or at least to inform the avoided cost.[13] This alternative credit mechanism is calculated using the following value components:

- Guaranteed fuel value,
- Plant operations and maintenance value,
- Generation capacity value,
- Avoided transmission and distribution capacity cost, and
- Avoided environmental compliance cost, including the cost to comply with environmental regulations and policy objectives.[14]

We recommend that the Staff guarantee these benefits, and their value, are incorporated into calculations in individual rate cases. By setting the outflow credit using this total value, the MPSC and its Staff ensure that DG "prosumers" have fair and equitable rates that reflect accurately the benefits and costs of their interactions with the grid.

In addition, predictability of total cost is crucial to encouraging customers — especially low-income customers — to join and stay in the DG program. Because the PURPA rate could change several times and potentially significantly during the lifetime of a DG system, a Proposed Concept Tariff that relies on the PURPA rate makes it harder for a potential customer to know how she will be compensated in the future, especially if prices decline. To ensure that DG customers receive maximum benefits for taking part in the program, the credit rate for power outflow should be guaranteed—or have a floor—for a period of time equal to the life of the average PV panel or other renewable technology. This will ensure predictability and fairness for a potential DG customer.

In addition, there should be a limit on how high a utility can set its Distributed Generation Rate Provision, surcharges, and other inflow costs to the customer.

The Proposed Concept Tariff should clarify that the MPSC has responsibility—prior to implementation—for reviewing these rates and ensuring that they are just and reasonable. It should lay out the factors the MPSC will consider when reviewing these rates and charges, such as the impact on low-income communities, encouraging the expansion of renewable energy, and maintaining transparency with customers.

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[11] Re: Case 15-E-0751 – In the Matter of the Value of Distributed Energy Resources and Options Related to Establishing an Interim Methodology
http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={FE6ED83D-89EB-4C35-A421-124AE1CE3AB5.

[12] *Id.*

[13] In late 2012, "Austin Energy became the first utility in the US to offer a 'Value of Solar Tariff' (VOST) to its residential electricity customers."

[14] Austin Energy, Value of Solar Methodology (May 27, 2014),
http://www.austintexas.gov/edims/document.cfm?id=210805.

2. Application for Service (C11. G)

Regarding an application for service, the Proposed Concept Tariff stated that "in order to participate in the Distributed Generation Program, a customer shall submit a completed Interconnection Application, including application fee of $__ and a completed Distributed Generation Program Application, including application fee of $50 to the Company."[15]

The Staff's Draft Report did not sufficiently address our concern that the Proposed Concept Tariff did not provide an amount for the Interconnection Application fee. Despite the Staff's emphasis on transparency of cost with the new billing mechanism and Proposed Concept Tariff, we still lack numbers that are crucial to knowing the extent to which low-income customers or others will be deterred from participating in the DG program.[16]

The MPSC should ensure that the Interconnection Application fee is specified well in advance of when applications are due and should cap the fee or provide an estimated fee in the meantime so that analysts and those working on behalf of potential customers can comment on the impact of the fee on potential DG customers, especially low-income customers. The MPSC could waive the application fee for potential customers below a certain income level. Alternatively, the application fee could be refundable after a period of time, be subsidized to encourage participation, or be financeable. The MPSC should state that it will review these fees prior to implementation to ensure they are just and reasonable.

We appreciate that the Staff maintained that the Application fee is refundable if the customer withdraws the application prior to commencing service.

However, without knowing the amount of the Interconnection Application fee and how it is calculated, we do not know the extent to which the Interconnection Application fee will deter low-income customers or others from participating in the DG Program.[17] The Staff's Draft Report did not sufficiently address our concerns. Therefore, we recommend specifying the Interconnection Application fee and how it was calculated.

3. General Requirements (C11.H)

The Proposed Concept Tariff requires that "Eligible Electric Generator(s) must be located on the customer's premises, serving only the customer's premises."[18] In our comment to the Proposed Concept Tariff, we showed that such language is not required by the statute; however, the Staff failed to change this language in the Draft Report. The Staff also does not address the issues that it creates: needlessly excluding community solar, and more broadly limiting the DG program to owner-occupied buildings that have immediate access to significant financial resources and are able to sustain rooftop solar or other renewable systems. It would not be "fair and equitable" —and could well be illegal—for the MPSC to create a restriction without a statutory basis.

Community solar provides great benefits to participating communities, including low-income communities, and should be encouraged, not barred, by future regulation. A report published by the National Renewable Energy Laboratory of the U.S. Department of Energy defines community solar "as a

[15] *Id.* at 5 (C11.G Application for Service).
[16] *Id.*
[17] *Id.*
[18] *Id.* at 5 (C11.H Generator Requirements).

solar-electric system that . . . provides power and/or financial benefit to, or is owned by, multiple community members."[19]

Community solar is especially important to low-income customers, particularly renters, people who live in subsidized housing, and those who cannot install solar panels on the buildings in which they live, to benefit from distributed generation.

The Proposed Concept Tariff does not define "premises," leaving ambiguity as to whether this provision applies to those who own the property or those who occupy the property (e.g. renters). In addition, it does not specify whether multi-unit buildings are covered, such as apartment complexes and condominiums. The provision is ambiguous once one considers anything other than a single unit, single owner home that can effectively utilize renewables. Many buildings housing low-income customers and communities of color are in urban areas and inaccessible to rooftop solar. By not encouraging community solar, the Staff's Draft Report severely limits the expansion of distributed generation and chills the use of clean energy. It is important to emphasize that neither Michigan law 2016 PA 341 nor PA 342 specifies where the eligible electric generator must be located, nor do they limit service to only the customer's premises.

Additionally, all low-income people (homeowners or renters) face a heightened risk of displacement for a variety of reasons. While a land owner can elect whether to install a DG system on his or her property, renters have less (or no) say in whether a premise can participate in the distributed generation program. Given that, as of 2008, "only 22% to 27% of residential rooftop area is suitable for hosting an on-site [PV] system . . . community options are needed to expand solar power to renters, those with shaded roofs, and those who choose not to install for financial or other reasons."[20] To encourage, rather than prevent, participation by renters and low-income customers, the MPSC Staff should craft the Proposed Concept Tariff to not only allow but actively promote community solar.

We appreciate that the Staff maintained that the customer "need not be the owner or operator of the eligible generation equipment" that allows for innovative financing and ownership models, which supports greater access for DG customers.

Therefore, we recommend eliminating the requirement that the Eligible Electric Generator be located on the customer's premises and serve the customer's premises.

4. Generator Interconnection Requirements (C11.I)

In the Draft Report, the Staff failed to address our concerns from our Proposed Concept Tariff comment with regard to interconnection costs. The Proposed Concept Tariff requires that "the customer . . . pay actual interconnection costs associated with participating in the Distributed Generation Program, subject to limits established by the Michigan Public Service Commission."[21]

However, the proposal does not stipulate interconnection costs associated with participating in the DG Program. It also does not prohibit utilities from imposing prohibitive interconnection costs to deter

[19] Northwest Sustainable Energy for Economic Development, A Guide to Community Solar: Utility, Private, and Non-Profit Project Development at 2, developed for the National Renewable Energy Lab, U.S. Department of Energy (Nov. 2010) https://www.nrel.gov/docs/fy11osti/49930.pdf.

[20] *Id.* at 2–3.

[21] *Id.* at 4 (C11.I Generator Interconnection Requirements).

customers from partaking in distributed generation. No matter the interconnection cost, it will discourage participation in the DG program to some degree.

To ensure utilities do not hinder access to distributed generation, the MPSC needs to establish clear limitations. For example, Appendix E to the Draft Report notes that California has a one-time interconnection fee varying between $75-$150 depending on the incumbent utility and the system type. The MPSC could look to other states as benchmarks for setting appropriate interconnection fees. The MPSC should oversee utilities to ensure that they do not impose prohibitive interconnection costs and limit how much a utility can charge for interconnection.

In addition, the proposal does not detail who will choose the installer for interconnection and what criteria will be considered when choosing. If the utility chooses, then customers are denied the opportunity to find the optimal installer for them. This issue is especially salient when considering low-income customers, who may want the lowest-priced installer, but might be prevented if a utility has a contract with another installer.

Installation and interconnection could be an opportunity to create jobs in low-income communities and communities of color. Other Midwestern states have shown this can be done, such as the Illinois Future Energy Jobs Act.[22] For example, the MPSC should require or incentivize utilities to train independent contractors on installation and maintenance of renewable technologies (such as PV panels) or the interconnections themselves. In turn, the MPSC or the respective Companies could recommend these contractors as preferred installers to DG program participants.

5. Customer Termination from the Distributed Generation Program (C11.L)

We continue to take issue with several aspects regarding customer termination, including re-enrollment, termination, and notice of termination.

i. Reenrollment

The Staff did not address our concern that reenrollment requirements threaten to undermine the DG program, especially if the program proves to be attractive to new DG customers. The proposal states that "[i]n the event that a customer who terminates participation in the Distributed Generation Program wishes to re-enroll, that customer must reapply as a new program participant, subject to program size limitations, application queue and application fees."[23]

If property ownership changes, the language seems to indicate that the property would be removed from the DG program and a new property owner would have to re-apply and pay application fees, even though the previous property owner had successfully completed this process. Requiring re-application is particularly problematic due to 2016 PA 342 § 173(3), which allows an electric utility to limit its DG program to "1% of its average in-state peak load for the preceding 5 calendar years."[24] A property that used to participate may be barred from re-entering due to the utility having already reached its 1% cap. Utilities have the choice to not put in place this barrier to entry by electing not to implement the voluntary 1% cap.

Thus, the reapplication requirement might deter property owners from investing in distributed generation because the average life of a DG system (and the financing for it) is longer than the average

[22] http://www.futureenergyjobsact.com/
[23] *Id.* at 6 (C11.L Customer Termination from the Distributed Generation Program).
[24] Michigan 2016 Public Act 342 § 173(3).

length that a person is in his/her home. Note that this concern is even more salient following the Draft Report, where the Staff acknowledges that it could take nearly five extra years for a customer to realize her return on investment for a solar system under the new Inflow/Outflow billing mechanism. Such a requirement could gut the demand for the DG program before it even begins.

To counter this, when there is a change of property ownership, the Proposed Concept Tariff must ensure that the property is not removed from the DG Program due a requirement to re-enroll. We recommend that an application to join the DG program be specific to the property, not the customer. This allows for change of ownership without removing new owners from the DG program.

In addition, for lower-income customers, re-application fees may be cost-prohibitive; therefore, the MPSC should ensure that re-application fees be reasonable or even waived.

ii. Termination

The proposal states, "The Company may terminate a customer from the Distributed Generation Program if the customer fails to maintain the eligibility requirements, fails to comply with the terms of the operating agreement, or if the customer's facilities are determined not to be in compliance with technical, engineering, or operational requirements suitable for the Company's distribution system."[25]

Setting aside for the moment the question of whether a utility should ever be allowed to terminate a customer for reasons other than an imminent threat to public safety, this language gives the Company overly broad authority to terminate a customer for a variety of reasons; however, it is not detailed enough to provide sufficient notice to potential customers about why they might be terminated in the future. For example, the proposal does not indicate whether a customer will be held liable for a problem with a third party's installation of solar panels and/or interconnection equipment, nor does it discuss whether a customer gets a chance to cure and/or appeal a termination.

To address this concern, the DG program must expand and clarify conditions required to terminate a customer, specifically defining "eligibility requirements," "fails to comply with the terms of the operating agreement," and "customer's facilities are determined not to be in compliance with technical, engineering, or operational requirements suitable for the Company's distribution system." Even if those changes are made, the customer must still have a reasonable opportunity to cure and to appeal the Company's decision prior to termination.

iii. Notice of Termination

According to the Proposed Concept Tariff, "The Company will provide sixty days' notice to the customer prior to termination from the Distributed Generation Program, except in situations the Company deems dangerous or hazardous. Such notice will include the reason(s) for termination."[26]

The current language does not indicate the level of required detail in a notice of termination, nor does it define "dangerous" or "hazardous." The proposal omits an appeal process for customers given notice of termination.

To address this issue, the notice of termination should expand and clarify the reasons for termination. A customer should have an opportunity to address reasons for termination within sixty days following a notice of termination and no less than thirty days prior to actual termination, i.e. a period to

[25] *Id.*
[26] *Id.*

cure. Even if other provisions in the state's public utility laws provide such a process, those protections should be reiterated here so that it is clear that they would apply to DG customers with DG systems, lest an argument be made that the omission of such provisions here indicate that DG customers do not have these protections.

III. Statutory Concerns

We recognize that Michigan 2016 PA 341 and 342—the bills that require the MPSC to promulgate this regulation—limit the scope and impact of this regulation. However, we have concerns with certain statutory provisions that the MPSC Staff should take into account when constructing and overseeing the DG program and that the Michigan legislature should revise in the future.

1. 1% Cap

2016 PA 342 § 173(3) allows an electric utility to limit its distributed generation program to "1% of its average in-state peak load for the preceding 5 calendar years."[27] The statute mandates a specific allocation for that 1%, which the MPSC Staff's Proposed Concept Tariff clarifies:

- 0.5% to Category 1 customers (including all "Eligible Electric Generators with an aggregate nameplate capacity of 20 kWac or less")
- 0.25% to Category 2 customers (including "Eligible Electric Generators with an aggregate nameplate capacity greater than 20 kWac but not more than 150 kWac")
- 0.25% to category 3 customers (including "methane digesters with an aggregate nameplate capacity greater than 150 kWac but not more than 550 kWac")[28]

PA 342 § 1(2) makes it a priority "to promote the development and use of clean and renewable energy resources."[29] The 1% cap effectively limits the number of customers who have the opportunity to participate in a utility's program, directly working against the goal articulated in § 1(2) of expanding access to renewable energy in Michigan.

In the future, the legislature should lift the cap. In the meantime, the MPSC should remind utilities that they have the option to exceed their 1% cap.[30]

In addition, the utilities and the MPSC should inform low-income and people of color communities early on about how to participate in the DG program to ensure they do not lose the opportunity to access the program due to potential gaps in the amount of information available to low-income communities and communities of color relative to other consumer groups. Soulardarity has provided comments to the MPSC before on how to engage low-income communities and communities of color in MPSC programs. Below we provide a condensed list of some of these recommendations from comments regarding stakeholder engagement in the Integrated Resource Planning (IRP) process (MPSC Case No. U-18418).

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[27] Michigan 2016 Public Act 342 § 173(3).
[28] Michigan Public Service Commission, Proposed Distributed Generation Program Concept Tariff (Oct 2017).
[29] Michigan PA 342 § 1(2) (2016).
[30] Michigan PA 342 § 173(3) states that "[a]n electric utility or alternative electric supplier is not required to allow for a distributed generation program that is greater than 1% of its average in-state peak load for the preceding 5 calendar years."

A strong stakeholder engagement process should:

- Have specific focus on demographics most impacted by energy decisions - particularly low-income communities, communities of color impacted by environmental racism, rural communities harmed by resource extraction and energy poverty, and other impacted communities;
- Provide education to stakeholders to understand how the IRP process works and how to make impactful comment by working through community organizations that work directly with impacted communities to ensure culturally appropriate and effective engagement;
- Be accessible by providing multiple venues and times for engagement and translation services;
- Ensure that the input from these sessions is directly conveyed to the MPSC; and
- Setting binding requirements around how stakeholder engagement will impact the process.[31]

2. Generation Capacity

2016 PA 342 § 173(2) limits an electric customer's "generation capacity . . . to 100% of the customer's electricity consumption for the previous 12 months."[32]

The primary concern with this provision is that it makes community solar projects more difficult. If a customer can produce only as much electricity as she or he consumed in the last year, she or he would not be able to power multiple properties, which would be essential for meaningful community solar projects. Given that the statute already places this roadblock in front of the development of community solar, the MPSC must take care to not limit access via other means, as described above.

While we believe that the legislature should eliminate this cap in the future, in the meantime, community energy projects must have flexibility to add additional customers. Given that the statute is silent on the issue of community energy projects, the generation capacity requirement is not applicable to community solar projects. The statute only references a single customer's requirement to limit her generation capacity, rather than a group of customers inherent in a community project. Community energy projects require flexibility to add additional customers to meet Michigan's statutory mandate "to promote the development and use of clean and renewable energy resources."

In addition, the statutory language seems to bar new home owners from participating because they will not have data of previous electricity consumption in their home. If the new home owner is to use their consumption from a previous home, assuming one exists, then the MPSC must make that interpretation clear to utilities so that more customers are not systematically barred from utilizing DG. Alternatively, the MPSC should heed our recommendation above regarding applications of tying participation in the DG program to the property rather than the customer. Then the relevant value in this scenario would be the electricity consumption of the property in the previous 12 months.

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[31] https://d3n8a8pro7vhmx.cloudfront.net/soulardarity/pages/102/attachments/original/1508524450/17_%28Final_Draft%29.pdf?1508524450

[32] Michigan 2016 Public Act 342 § 173(2).

Conclusion

We applaud the state and the MPSC's efforts to keep reduction of CO_2 emissions in energy usage a top priority. Our comment honors that commitment and seeks to provide helpful perspective in achieving this goal through the tariff. The Distributed Generation Program has the potential to increase renewable energy usage amongst communities that previously did not participate, especially low-income and people of color communities.

However, the MPSC Staff's Draft Report and Proposed Concept Tariff, as written, place several roadblocks in the way of these communities gaining access to the DG program. It fails to account for the challenges that low-income and people of color customers face when trying to take advantage of this opportunity.

There are a number of instances where the statute is silent, leaving the MPSC opportunities to fill in the gaps. For example, PA 341 and 342 do not require that the DG program be limited to those whose Eligible Electric Generators serve only the customer's premises, yet the Staff's proposal creates this barrier. In doing so, it effectively cuts out community solar options. The MPSC need not add more complications and barriers as the legislation is limiting enough.

By requiring the MPSC to promote clean energy and to set a tariff that is "fair and equitable," the law requires the MPSC to encourage, not prevent, more customers joining the DG program through this tariff, including allowing the use of community solar and ensuring that customers are not left behind when a property changes ownership. Consumers and their advocates need information now and prior to investment so that they can understand, express concerns about the costs, and make meaningful decisions regarding participation in the DG program. Moving forward, the MPSC and its Staff must keep these concerns in mind at every stage of this process and should make an effort to keep costs low to incentivize greater participation.

Sincerely,

Leah Garner, Clinic Student

Jamie Lee, Clinic Student
Mark Templeton, Clinic Director
Robert Weinstock, Clinic Fellow
Rebecca Boyd, Legal Consultant

Appendix A

November 3, 2017

Re: Comments of Soulardarity on Michigan Public Service Commission's staff's Proposed Distributed Generation Program Concept Tariff (October 2017)

Dear Ms. Baldwin,

The Abrams Environmental Law Clinic at the University of Chicago submits these comments on behalf of Soulardarity.

Soulardarity is a Highland-Park, MI-based organization (http://www.soulardarity.com/) focused on building energy democracy through education, organizing, and community-owned clean energy. It works on solar street lighting, solar bulk purchasing, energy education, and expanding access to clean energy to improve the economic condition of low-income communities, and especially low-income communities of color, in southeast Michigan.

Soulardarity provides these comments in response to the Michigan Public Service Commission's staff's Proposed Distributed Generation Program Concept Tariff (October 2017).[1] The proposal fails to address potential impacts on low-income and people of color communities and opportunities to improve their access to distributed generation (DG) in Michigan. Our comment highlights general concerns that should inform the Commission's design of the tariff, and identifies several specific pieces of language that limit access to solar by potential customers, especially by those in low-income and people of color communities. We recommend that the Commission use these concerns to inform changes to the Concept Tariff, and we offer specific changes to some provisions.

I. Impact on Low-Income and People Of Color Communities

The Workgroup Process and the Proposed Concept Tariff itself have not addressed the potential impact on low-income communities and their ability to access distributed generation and to secure energy justice. To the best of our knowledge based on our review of the materials, no significant discussions have occurred about the potential impact of the various distributed-generation-program structures on low-income consumers and consumers of color. The Proposed Concept Tariff itself and the staff's presentation about it do not address the potential impact on low-income communities. For example, if the tariff has the effect of subsidizing the purchase and installation of DG, and if the average owner of a DG system is wealthier than the average customer, then a tariff structured as a subsidy would transfer wealth from average customers (including lower-income ones) to wealthier DG owners.

To address this concern, the MPSC staff should conduct and provide an analysis of the impact of this tariff on low-income customers. In addition, the MPSC staff should address how the DG program will be structured to lower barriers to entry for and to encourage participation by low-income customers in DG. For example, the MPSC should allow the development of community solar projects, and it could require utilities to offer on-bill financing for various costs associated with the program. The MPSC needs to ensure that the DG program is accessible to all and that the tariff, to the extent feasible, enables low-income customers to switch to renewable energy without subsidizing wealthier customers at the expense of low-income consumers.

Similarly, the proposed tariff fails to consider the impact on communities of color. If the DG program has the effect of limiting access to renewable energy by communities of color, then the MPSC will perpetuate injustice toward communities of color. To combat this concern, the MPSC staff should

measure success by impact on communities already impacted by pollution and other forms of environmental racism. Addressing the concerns of low-income access and affordability is the most salient approach in the context of designing the DG tariff, but in light of the disproportionate impacts of energy injustice faced by low-income communities of color, the MPSC should apply this additional lens to measuring success of the DG program.

II. Specific Provisions in the MPSC Staff Proposal

1. Customer Billing

i. Inflow (C11.E)

Regarding customer billing on inflow, the proposed language reads: "[T]he customer will be billed according to the Distributed Generation Rate Provision . . . plus surcharges, and Power Supply Cost Recovery (PSCR) Factor. . . ."[2]

The Proposed Concept Tariff lacks specific numbers for the Rate Provision, surcharges, and PSCR Factor. Without this information, a potential customer cannot calculate the cost of joining and staying in the DG program.

To resolve such concerns, the MPSC should guarantee that all costs and surcharges will be made available to potential customers well in advance of their applying to the DG program, and that these numbers are specific, or, at a minimum, are close approximations. To ensure that DG customers receive maximum benefits for taking part in the program, the Rate Provision and other charges should be guaranteed—or capped—for a period of time equal to the life of the average PV panel or other renewable technology. This will ensure predictability and fairness for a potential DG customer.

In addition, neither the Draft Report nor the Proposed Concept Tariff provides the factors that will be considered when setting the rates, nor the entity that will consider these factors and set charges.

The Proposed Concept Tariff should clarify that the MPSC has responsibility—prior to implementation—for reviewing these rates and charges and ensuring that they are just and reasonable. It should lay out the factors the MPSC will consider when reviewing these rates and charges, such as the impact on low-income communities, encouraging the expansion of renewable energy, and maintaining transparency with customers. In addition, there should be a limit on how high a utility can set its Distributed Generation Rate Provision, surcharges, and other inflow costs to the customer.

ii. Outflow (C11.F)

The proposed language states:

> The Outflow Credit will be reviewed by the Commission in the Company's biennial avoided cost review cases pursuant to Case No. U-_____.
>
> Outflow Credit: $____/kWh (Based on the utility's avoided cost case.)[3]

We understand that the MPSC staff had intended to release an Outflow Credit calculation November 1; however, as of November 3, 2017, we learned that MPSC staff does "not have a final order

in any of the pending utility avoided cost cases and actual numbers are not yet available.[33] When they are available, [MPSC staff] will provide the calculations and proposed numbers."

While recognizing that the Outflow Credit is calculated according to individual Companies' avoided cost cases, the proposal provides no benchmark. Without an example case and number, analysts and those working on behalf of potential customers are unable to calculate the net benefit to a potential DG Program customer. A low Outflow Credit might discourage potential low-income DG customers (and all potential DG customers) from investing in DG systems.

The Concept Tariff must lay out the factors the MPSC will consider when setting the rates, such as encouragement of the expansion of renewable energy, impact on low-income and people of color consumers, and maintenance and improvement of transparency. The proposal should affirm that the MPSC sets the rates, as opposed to the individual utility, and it should ensure that these rates and charges will be reviewed to be just and reasonable prior to implementation.

The Outflow Credit rate should be made available to potential customers well in advance of their applying to the DG program, and a minimum Outflow Credit should be guaranteed for a period of time equal to the life of the average PV panel or other renewable systems. This will ensure predictability for a potential DG customer.

2. Application for Service (C11. G)

Regarding application for service, the proposed language states that "in order to participate in the Distributed Generation Program, a customer shall submit a completed Interconnection Application, including application fee of $__ and a completed Distributed Generation Program Application, including application fee of $50 to the Company."[4]

Without knowing the amount of the Interconnection Application fee and how it is calculated, we do not know the extent to which the Interconnection Application fee will deter low-income consumers or others from participating in the DG Program.[5]

The MPSC should ensure that the Interconnection Application fee is specified well in advance of when applications are due and should cap the fee or provide an estimated fee in the meantime so that analysts and those working on behalf of potential customers can comment on the impact of the fee on potential DG customers, especially low-income customers. The MPSC could waive the application fee for potential customers below a certain income level. Alternatively, the application fee could be refundable after a period of time, be subsidized to encourage participation, or be financeable. The MPSC should state that it will review these fees prior to implementation to ensure they are just and reasonable.

3. General Requirements (C11.H)

The proposed language states, "The Eligible Electric Generator(s) must be located on the customer's premises, serving only the customer's premises."[6]

The Proposed Concept Tariff does not define "premises," leaving ambiguity as to whether this provision applies to those who own the property or those who occupy the property (e.g. renters). In addition, it does not specify whether multi-unit buildings are covered, such as apartment complexes and condominiums. The provision is ambiguous once one considers anything other than a single unit, single

[33] As an update to our November 2017 Comment, we note that the MPSC has issued a final order for Consumers Energy Company on November 21, 2017. Case No. U-18090.

owner home. It is important to emphasize that neither Michigan law 2016 PA 341 nor PA 342 specifies where the eligible electric generator must be located, nor do the statutes limit service to only a customer's premises.

Thus this language seems to eliminate needlessly and unwisely the possibility of community solar programs by limiting the eligible electric generator location and service area. A report published by the National Renewable Energy Laboratory of the U.S. Department of Energy defines community solar "as a solar-electric system that . . . provides power and/or financial benefit to, or is owned by, multiple community members."[7] Community solar provides great benefits to participating communities, including low-income communities, and should be encouraged, not barred, by future regulation. In addition, the proposal does not address or define community solar or other multi-user renewable-energy systems.

Therefore, we recommend eliminating the requirement that the Eligible Electric Generator be located on the customer's premises and serve the customer's premises. Alternatively, an exception for community solar could be implemented in which groups of customers are not required to serve only their premises, but instead can serve several properties if these customers and DG systems meet certain reasonable requirements.

By eliminating the possibility of community solar, the Draft Report effectively eliminates access to distributed generation for renters, who make up a large portion of the low-income population. Additionally, all low-income people (homeowners or renters) face a heightened risk of displacement for a variety of reasons. While a land owner can elect whether to install a DG system on his or her property, renters have less (or no) say in whether a premise can participate in the distributed generation program. Given that, as of 2008, "only 22% to 27% of residential rooftop area is suitable for hosting an on-site [PV] system . . . community options are needed to expand solar power to renters, those with shaded roofs, and those who choose not to install for financial or other reasons."[8] To encourage, rather than prevent, participation by renters and low-income customers, the MPSC staff should craft the Concept Tariff to allow and encourage community energy projects.

4. Generator Interconnection Requirements (C11.I)

The Proposed Concept Tariff requires that "the customer . . . pay actual interconnection costs associated with participating in the Distributed Generation Program, subject to limits established by the Michigan Public Service Commission."[9]

However, the proposal does not stipulate interconnection costs associated with participating in the DG Program. It also does not prohibit utilities from imposing prohibitive interconnection costs to deter customers from partaking in distributed generation. No matter the interconnection cost, it will discourage participation in the DG program to some degree.

To ensure utilities do not hinder access to distributed generation, the MPSC needs to establish clear limitations. The MPSC should oversee utilities to ensure that they do not impose prohibitive interconnection costs and limit how much a utility can charge for interconnection.

In addition, the proposal does not detail who will choose the installer for interconnection and what criteria will be considered when choosing.

Installation and interconnection could be an opportunity to encourage job creation for low-income communities. For example, the MPSC could require or incentivize utilities to train independent contractors on installation and maintenance of renewable technologies (such as PV panels) or the

interconnections themselves. In turn, the MPSC or the respective Companies could recommend these contractors as preferred installers to DG program participants.

5. Customer Termination from the Distributed Generation Program (C11.L)

We take issue with several aspects regarding customer termination, including re-enrollment, termination, and notice of termination.

i. Reenrollment

The proposal states that "[i]n the event that a customer who terminates participation in the Distributed Generation Program wishes to re-enroll, that customer must reapply as a new program participant, subject to program size limitations, application queue and application fees."[10]

For lower-income customers, re-application fees may be cost-prohibitive; therefore, the MPSC should ensure that re-application fees be reasonable or even waived.

Moreover, if property ownership changes, the language seems to indicate that the property would be removed from the DG program and a new property owner would have to re-apply and pay application fees, even though the previous property owner had successfully completed this process. Requiring re-application is particularly problematic due to 2016 PA 342 § 173(3), which allows an electric utility to limit its DG program to "1% of its average in-state peak load for the preceding 5 calendar years."[11] A property that used to participate may be barred from re-entering due to the utility having already reached its 1% cap. Thus, the reapplication requirement might deter property owners from investing in distributed generation because the average life of a DG system (and the financing for it) is longer than the average length that a person is in his/her home. Such a requirement could gut the demand for the DG program before it even begins.

To counter this, when there is a change of property ownership, the Proposed Concept Tariff must ensure that the property is not removed from the DG Program due a requirement to re-enroll. We recommend that an application to join the DG program be specific to the property, not the customer. This allows for change of ownership without removing new owners from the DG program.

ii. Termination

The proposal states, "The Company may terminate a customer from the Distributed Generation Program if the customer fails to maintain the eligibility requirements, fails to comply with the terms of the operating agreement, or if the customer's facilities are determined not to be in compliance with technical, engineering, or operational requirements suitable for the Company's distribution system."[12]

This language gives the Company broad authority to terminate a customer for a variety of reasons; however, it is not detailed enough to provide sufficient notice to potential customers about why they might be terminated in the future. For example, the proposal does not indicate whether a customer will be held liable for a problem with a third party's installation of solar panels and/or interconnection equipment, nor does it discuss whether a customer gets a chance to cure and/or appeal a termination.

To address this concern, the DG program must expand and clarify conditions required to terminate a customer, specifically defining "eligibility requirements," "fails to comply with the terms of the operating agreement," and "customer's facilities are determined not to be in compliance with technical, engineering, or operational requirements suitable for the Company's distribution system." Even if those changes are made, the customer must still have a reasonable opportunity to cure and to appeal the Company's decision.

iii. Notice of Termination

According to the Proposed Concept Tariff, "The Company will provide sixty days' notice to the customer prior to termination from the Distributed Generation Program, except in situations the Company deems dangerous or hazardous. Such notice will include the reason(s) for termination."[13]

The current language does not indicate the level of required detail in a notice of termination, nor does it define "dangerous" or "hazardous." The proposal omits an appeal process for customers given notice of termination.

To address this issue, the notice of termination should expand and clarify the reasons for termination. A customer should have an opportunity to address reasons for termination within sixty days following a notice of termination, i.e. a period to cure.

III. Statutory Concerns

We recognize that Michigan 2016 PA 341 and 342—the bills from which this regulation is promulgated—limit the scope and impact of this regulation. However, we have concerns with certain statutory provisions that the MPSC staff should take into account when constructing and overseeing the DG program and that the Michigan legislature should revise in the future.

1. 1% Cap

2016 PA 342 § 173(3) allows an electric utility to limit its distributed generation program to "1% of its average in-state peak load for the preceding 5 calendar years."[14] The statute mandates a specific allocation for that 1%, which the MPSC Staff's Proposed Concept Tariff clarifies:[15]

- 0.5% to Category 1 customers (including all "Eligible Electric Generators with an aggregate nameplate capacity of 20 kWac or less")
- 0.25% to Category 2 customers (including "Eligible Electric Generators with an aggregate nameplate capacity greater than 20 kWac but not more than 150 kWac")
- 0.25% to category 3 customers (including "methane digesters with an aggregate nameplate capacity greater than 150 kWac but not more than 550 kWac")

By effectively capping the number of customers who may participate in a utility's program, many potential customers may not have the opportunity to join the program, which works against the goal of expanding access to renewable energy in the state. In the future, the legislature should lift the cap; in the meantime, the MPSC staff should inform low-income and people of color communities early on about how to participate in the DG program to ensure they do not lose the opportunity to access the program due to potential gaps in the amount of information available to low-income communities and people of color communities relative to other consumer groups.

2. Generation Capacity

2016 PA 342 § 173(2) limits an electric customer's "generation capacity . . . to 100% of the customer's electricity consumption for the previous 12 months."[16]

The primary concern with this provision is that it makes community solar projects more difficult. If a customer can produce only as much electricity as she or he consumed in the last year, she or he would not be able to power multiple properties, which would be essential for meaningful community solar

projects. Given that the statute already places this roadblock in front of the development of community solar, the MPSC staff must take care to not limit access via other means, as described above.

IV. Conclusion

The Distributed Generation Program has the potential to increase renewable energy usage amongst communities that previously did not participate, especially low-income and people of color communities. However, the MPSC Staff's Proposed Concept Tariff, as written, places several roadblocks in the way of these communities gaining access to the DG program. It fails to account for the challenges that low-income and people of color customers face when trying to take advantage of this opportunity. The MPSC should aim to encourage, not prevent, more customers joining the DG program through this tariff, including allowing the use of community solar and ensuring that customers are not left behind when a property changes ownership. Consumers and their advocates need information now and prior to investment so that they can understand, express concerns about the costs, and make meaningful decisions regarding participation in the DG program. Moving forward, the MPSC and its staff must keep these concerns in mind at every stage of this process and should make an effort to keep costs low to incentivize greater participation.

Sincerely,

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[1] http://www.michigan.gov/documents/mpsc/DG_concept_tariff_603573_7.pdf.

[2] *Id.* at 4 (C11.E Customer Billing on Inflow).

[3] *Id.* at 4 (C11.F Customer Billing—Outflow Credit).

[4] *Id.* at 5 (C11.G Application for Service).

[5] *Id.*

[6] *Id.* at 5 (C11.H Generator Requirements).

[7] Northwest Sustainable Energy for Economic Development, A Guide to Community Solar: Utility, Private, and Non-Profit Project Development at 2, developed for the National Renewable Energy Lab, U.S. Department of Energy (Nov. 2010) https://www.nrel.gov/docs/fy11osti/49930.pdf.

[8] *Id.* at 2–3.

[9] *Id.* at 4 (C11.I Generator Interconnection Requirements).

[10] *Id.* at 6 (C11.L Customer Termination from the Distributed Generation Program).

[11] Michigan 2016 Public Act 342 § 173(3).

[12] *Id.*

[13] *Id.*

[14] Michigan 2016 Public Act 342 § 173(3).

[15] Michigan Public Service Commission, Proposed Distributed Generation Program Concept Tariff (Oct 2017).

[16] Michigan 2016 Public Act 342 § 173(2).

From:	Wayne Appleyard
To:	Baldwin, Julie (LARA); Harlow, Jesse (LARA)
Subject:	comments on DG report
Date:	Monday, January 8, 2018 2:47:25 PM
Attachments:	Comments on DG report.doc

Julie and Jesse,
Attached for your amusement are my comments on the report. Although the concepts are sound some of the numbers are guessed and my understanding of what all goes into figuring distribution charges is limited, at best.

Hope you both are well and recovering from the DG meeting.

Happy New Year.

Wayne

Comments on:
"REPORT ON THE MPSC STAFF STUDY TO DEVELOP A COST OF SERVICE-BASED DISTRIBUTION GENERATION PROGRAM TARIFF"
December15, 2017 Draft

First I want to commend the staff for developing the plan and working so well with the various parties involved. This is a complex issue with many facets and was not made easier by the language of the legislation. Past groups working on the "value of solar" ended with a very large discrepancy between how the utilities valued solar and what the solar industry and the national research figures were. It is important for staff to present a strong case to the Commission in order to insure that solar doesn't get short changed as has been attempted in the past.

General Comments:

In general the concept of using the Inflow/Outflow method has merit and the use of the PURPA rates for solar as a measure outflow value is good as base. I agree that the method is better than a basic grid fee or other options like buy all/sell all or charging more for the inflowing electricity. Just as getting a better refrigerator reduces ones electric bill doesn't get one charged an additional fee, inflow reduction should be charged at the same rate as everyone else. Using an already established value such as PURPA simplifies things but as it now stands with it being re-evaluated on a more short term basis provides less certainty to the net-meter customer that they will get the return that they expect on what they put into the grid. The utility gets a guaranteed set return in the long term on their investments and perhaps the PURPA rate at time of installation should be set as a "minimum base" that that installation. It would increase the complexity of billing a bit, but would provide more value return stability to the net-meter customer.

There are some distinct differences between a for profit, larger scale, sell all PURPA supplier and a "net metering customer". With a sell all PURPA supplier their scale means that the energy they produce uses much more of the distribution grid causing additional costs to the utility than it sees when it typically will travel from the net-meter house to one two or three hundred feet down the street. I commend staff for recognizing this and adding a line-loss value on top of the PURPA value. I do believe that this is still not enough. When the electrons go down the street and into the neighbor's house, the neighbor pays the full "distribution charge" on those electrons, while almost none of the distribution grid is impacted by those electrons. The Utility and/or its other customers are receiving a bonus value for this short distribution flow. Instead of merely adding the "line-loss value" it would be more correct to add most if not all of the distribution charge to the Outflow value.

Since the Report Concept Tariff breaks down into the three categories(less than 20kW, 20 to 150 kW and greater than 150kW and the Category 1 is limited to .5% perhaps¸ due to the difference in actual distribution usage(the larger the array the farther it is likely to travel on the grid), different rates could be established for the different

categories with Category 1 getting the full distribution charge value and a smaller value for Categories 2 and 3.

It may be important to put these numbers in perspective. The difference between current net-metering and the proposed inflow/outflow PURPA plan is between $300 and $600 per net metered customer annually, is significant, but the saving by the change to the non-net-metered customer currently is probably be less than $.10/year(using the $300 figure). When will it become significant? Although the latest MPSC report for 2016 shows a 28% annual increase in so installed solar the latest report by SEIA shows a leveling off of solar installations nation wide so it is probably better to use a straight line rate of increase as opposed to a logarithmic one. At that rate it will take about 15 years to get to 50% of the Category 1 cap which then might add $4 per year to the non-net-metered customer. (a logarithmic increase would still take 5 years to reach the 50% category 1 level). The point here is that although the revision is significant to the Category 1 customer it is not to the non-net-metered customers.

Specific Report Comments:

1) Page 2 *"new cost-based Inflow/Outflow billing mechanism approach(vis-à-vis NEM) is approximately $25/month or $300 annually."*

I think this needs more clarification for several reasons. First this number appears to have been arrived at by using an average current net-meter account. Thesize of net-meter arrays has been going up as the cost of solar has dropped. It would be better to have a range of from a minimum array size, say 2kW to the net-meter ceiling of 20kW. Additionally although net-zero in the report refers to zeroing out your electric bill, historically it has been merely zeroing out one's current use of electricity. This is changing, due to the drop in solar costs more are converting their entire home including heating over to electric and going true net-zero for their entire home's energy usage. This will mean that more and more systems will be closer to the 20kW size. This will at least double the monetary loss to the net-meter customer than the number on page 2.

Summary

Just as the size of the array changes how net-metering has been set up in the past I think it would be wise to consider, because of distribution issues and other factors that there be separate outflow tariffs for each Category of DG with Category 1 receiving outflow values equal to PURPA plus distribution charge and Categories 2 and 3 getting less of a distribution credit. It is also must request that the PURPA amount credited upon signing on to the DG program be set as a base level never to be lowered for any installation in that particular year for the life of their system. It is very unlikely that the PURPA values will go down over time because the base cost of the fossil fuel option is bound to go up faster than the number of installations will go up causing a lowering value of the grid fed electricity, but this will provide some assurance to the DG subscriber that their return will be at least what they planned on.

I submit these comments totally on my own and they are not to be in any way construed to represent those of the Ann Arbor Energy Commission, of which I am the current Chair.

Sincerely,

Wayne Appleyard
Architect LEED AP

From:	Douglas Jester
To:	Baldwin, Julie (LARA)
Cc:	Becky Stanfield; Charles Griffith (charlesg@ecocenter.org); Bradley Klein (bklein@elpc.org); Margrethe E. Kearney (MKearney@elpc.org)
Subject:	Comments on Draft DG Tariff Report
Date:	Wednesday, January 10, 2018 2:58:52 PM
Attachments:	Comments on Staff Draft DG Tariff Report.pdf

Julie,

Thank you for your diligent efforts to complete the DG Tariff report to the Commission and for your engagement with us and other stakeholders in this effort.

Attached please find comments on your draft from 5 Lakes Energy, The Ecology Center, Environmental Law and Policy Center, and Vote Solar. We trust that you will find these useful as you revise your report for submission to the Commission.

Douglas Jester

5 Lakes Energy

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COMMENTS OF 5 LAKES ENERGY, THE ECOLOGY CENTER, ENVIRONMENTAL LAW AND POLICY CENTER, AND VOTE SOLAR CONCERNING THE DECEMBER 15, 2017 DRAFT "REPORT ON THE MPSC STAFF STUDY TO DEVELOP A COST OF SERVICE-BASED DISTRIBUTED GENERATION PROGRAM TARIFF"

We appreciate the opportunity to comment on the draft of this important report.

It is important that the Commission carefully consider the context of this report. The Michigan legislature directed in 2016 PA 341 that this report be prepared by the Michigan Public Service Commission. The legislature further directed that the resulting tariff be implemented by each utility in the first general rate case filed by the utility after June 1, 2018.

These provisions resolved a dispute concerning net metering that had been a significant issue in the legislative development of 2016 PA 341. 2008 PA 295 had established a statewide net metering policy. In the development of 2016 PA 341 and 2016 PA 342, utilities had argued to eliminate or substantially restrict net metering, arguing that it imposed an unfair cost shift to other utility customers. Proponents of net metering argued that net metering was at least "rough justice" that approximately reflected the value of behind-the-meter generation to the electric system. The legislative result was to task the Commission to "**conduct a study on an appropriate tariff reflecting equitable cost of service for utility revenue requirements for customers who participate in a net metering program or distributed generation program ...**". Thus, the purpose of this study is to ensure that all customers, with and without distributed generation, are treated equitably in future rate cases. It is not to compare the tariff benefits of distributed generation to the cost for the utility to provide power in lieu of "behind-the-meter" generation by customers. It is not to discourage distributed generation to protect utility revenue. Nor is it to protect other customers from presumed cost shifts due to decisions by some customers to engage in distributed generation.

The Commission already deals regularly with cost shifts amongst customers due to actions taken by customers. Such cost shifting is inherent in a regulatory system that seeks to provide the utility with its "required revenue" by allocating costs to customers. As a result the Commission has evolved a regulatory practice, guided by legislation, that accommodates cost shifts due to changes in economic activity, implementation of energy efficiency practices by customers with or without utility assistance, changes in household demographics, special rates for low-income customers, and other changes in the amounts that some customers contribute to the utility's revenue. The Commission and its Staff must

therefore approach this study as an exercise in allocation of revenue responsibility, which must then be rendered into rates and tariffs.

In addressing the question of distributed generation, the legislature did not direct the Commission to treat the allocation of costs based on the effects of distributed generation differently than the Commission generally treats the allocation of costs. Indeed, by directing the Commission to "study … an appropriate tariff reflecting equitable cost of service", the legislature clearly placed this issue squarely within the Commission's normal cost of service responsibilities and practices. Our comments on this draft report are based on this understanding of the intent of the study.

- Our organizations maintain that net metering remains, for now, the most appropriate inflow-outflow mechanism for Michigan distributed generation customers. It is both easy to understand for all market actors, and its reliance on retail rates for outflows represents a fair approximation of the full stack of values those outflows provide to the electric system and to society.
- To the extent that the Commission decides it must move away from net metering, it must also assign reasonable value to the system and societal benefits provided by distributed generation customers, which are not reflected in the PURPA avoided cost rates.
- While assessing those values may take time and effort by the Commission and stakeholders, there is no apparent emergency that would foreclose the option of taking the time to conduct all of the appropriate analyses to ensure fairness and accuracy. The Commission's recent update of net metering uptake demonstrates that while interest in distributed generation is growing, the level of penetration remains low at just .024 percent of load.[1]
- We reiterate our November comments which noted that, in fact, the Commission's most recent PURPA avoided cost order in case U-18090 declined to assess those system benefits as part of that docket in anticipation that this analysis would be performed in this present inquiry.[2]
- The Commission staff have received comments on three ways to ensure fairness toward distributed generation customers in this new tariff. The first is to maintain retail net metering. The second, is to conduct a more traditional value of solar (VOS) analysis. The third, more fully described herein, is to treat distribution system

[1] http://www.michigan.gov/documents/mpsc/net_metering_report_2017_2016data_Final_609593_7.pdf

[2] U-18090 at p. 29: "The Commission also finds that ELPC's recommendation that a VOS analysis be undertaken is potentially duplicative, given the directive under the new energy legislation, which requires the Commission to create a distributed generation program and examine costs associated with distributed generation and net metering. MCL 460.1173 and MCL 460.6a(14). Accordingly, the Commission anticipates that VOS issues, as well as other avoided costs associated with distributed generation generally, will be examined as part of these proceedings, which will be completed before the next PURPA review."

benefits of distributed generation as a negative cost of serving customers who have invested in those systems as part of a cost of service analysis.

- Rather than undertaking either the VOS or the full COSS analyses, Commission staff have asserted the view that both methodologies are time consuming and contentious, and have therefore recommended ignoring the broader system benefits of distributed generation until an unspecified future proceeding, thereby effectively assigning them a value of 0. In the interim, staff proposes designing a tariff that will credit outflows from distributed generation systems only for the energy and, potentially, the capacity they provide. Our strong view is that this recommendation does not fulfill the legislative mandate for the Commission to develop a tariff that is equitable.

THE INFLOW-OUTFLOW MECHANISM, GENERALLY

In drafting this report, Commission Staff have focused heavily on use of an inflow-outflow mechanism in establishing a tariff for distributed generation. Our organizations have been open to the use of this mechanism in the tariff treatment of distributed generation. In its most general form, the use of the inflow-outflow mechanism is just an identification that the tariff must use billing determinants that measure inflow of electricity to the customer and outflow of electricity from the customer. It stands in contrast to what is sometimes called a "buy-all, sell-all" approach in which billing determinants are based on the customer's total electricity consumption and total electricity production. Buy-all, sell-all undermines a customer's right to self-service and invites utility efforts to protect monopoly and revenue. Thus, some form of inflow-outflow could be a viable basis for a distributed generation tariff.

If Staff is to recommend an inflow-outflow mechanism, there are three key questions that must be answered: the measurement interval for inflows and outflows, the metrics of inflow and outflow that provide the billing determinants used in the rate, and unit rates to be applied to those billing determinants.

Net metering can be understood as an instance of the inflow-outflow mechanism in which the measurement interval for inflows and outflows is the billing period, the metrics are those used in the retail rate of the customer class, the unit rates for inflow are the same as for non-distributed-generation customers, and the unit rates for outflow are the same as the unit rates for inflow.

If the unit rates for inflow are time-varying and the measurement interval for inflows and outflows is the pricing period, then the inflow-outflow mechanism is the practice that is commonly called "net billing" because the netting in the monthly bill is in money rather than kWh or other billing determinants.

Thus, the Commission's resolution of the questions of measurement interval, billing determinants, and unit rates are of paramount importance.

INFLOW AND OUTFLOW MEASUREMENT INTERVALS

In considering measurement intervals for use in the inflow-outflow mechanism, the Commission should focus on the effects of the measurement interval on the accuracy of the tariff in allocating cost of service to individual customers and on the practical effects of the measurement interval on the customer, distributed generation technology seller, and the utility.

It is possible with advanced metering to measure inflow and outflow on an instantaneous basis, so that every flow of electricity to the customer is integrated into the inflow measurements and every flow of electricity from the customer is integrated into the outflow measurements. Such fine measurements will generally be incomprehensible by customers, will make it virtually impossible for sellers of distributed generation technologies to provide potential customers with a reasonable pro forma of the effects of distributed generation on utility bills, and will require that utilities determine rates and costs of service on bases entirely different than is done for all other customers. The Commission should simply reject instantaneous measurements of inflow and outflow as the basis for a tariff.

Utility cost of service studies are based on statistics such as annual energy, summer on-peak energy, summer off-peak energy, winter on-peak energy, winter off-peak energy, hourly integrated demand in the highest hour of each month, and hourly integrated demand in the class peak hour of the year. Mathematically, net inflow or outflow on any smaller interval, such as an hour, will add up to a net over some larger interval such as a month that is equal to netting instantaneous inflow and outflow over the larger interval, so there is no purpose to disputing whether the initial netting is done on some smaller interval such as an hour or on the larger intervals used in the cost of service study.

In designing a tariff based on inflow and outflow statistics, inflow-outflow measurement intervals that are finer than those used in the cost of service allocators will be a false precision that cannot be reasonably thought to improve the accuracy of the tariff. Thus, the Commission should be very wary of a rate design that uses inflow and outflow measurements integrated over any intervals other than the intervals that are already used in either cost of service analysis or retail tariffs.

We are convinced that the Commission should generally be moving toward well-designed time-of-use rates for all customers that include appropriate customer protections, with at least some customers subject to variable peak pricing, and perhaps some customers using dynamic pricing on hourly intervals so that they can respond to day-ahead price signals. Such pricing will both provide price signals to customers that will reduce the utility's total cost of service and more accurately allocate costs to customers within a class. Using net inflow or

outflow integrated over finite periods as the basis for a distributed generation tariff, with some temporal variation in rates is appropriate and can be the basis for rate designs. The Commission should continue to work with stakeholders to conduct thorough analysis of the effects of this approach on customers with and without distributed generation.

APPLYING THE COST OF SERVICE STANDARD

Regardless whether the Commission chooses to use the inflow-outflow mechanism as the basis for rate design, the Commission's clear instruction from the legislature is to develop a tariff that that reflects "equitable cost of service". The Commission also is mandated more broadly to establish rates that reflect cost of service. 2016 PA 3241, Section 11 reads in part…

> **"Sec. 11. (1) Except as otherwise provided in this subsection, the commission shall ensure the establishment of electric rates equal to the cost of providing service to each customer class. In establishing cost of service rates, the commission shall ensure that each class, or sub-class, is assessed for its fair and equitable use of the electric grid. If the commission determines that the impact of imposing cost of service rates on customers of an electric utility would have a material impact on customer rates, the commission may approve an order that implements those rates over a suitable number of years. The commission shall ensure that the cost of providing service to each customer class is based on the allocation of production-related costs based on using the 75-0-25 method of cost allocation and transmission costs based on using the 100% demand method of cost allocation. The commission may modify this method if it determines that this method of cost allocation does not ensure that rates are equal to the cost of service."**

Over time, the Commission has established practices designed to satisfy this mandate, which are routinely applied – and disputed – in rate cases. It would be unwise, and arguably contrary to law, for the Commission to apply different principles of cost allocation for the sub-class of customers who have distributed generation within each class than it applies to the entire question of cost allocation.

The draft report leaps past the question of cost-of-service by recommending rate design consisting of (1) applying standard retail rates for the entire customer class to the inflow of the distributed generation sub-class and (2) applying PURPA avoided cost rates to the outflow from the distributed generation sub-class. Such a rate design cannot be adopted without establishing that this results in "electric rates equal to the cost of providing service". The draft report fails to establish that result and thus cannot stand as the basis for distributed generation tariffs to be adopted in future rate cases.

The Commission's current practice regarding cost-of-service studies admittedly does not explicitly address the correct treatment of distributed generation that results in outflow. However, the fundamental logic of the cost-of-service study points clearly to the best approach. In the cost-of-service study, each of the utility's cost categories is allocated to customer classes based on metrics that are intended to reflect cost causation. Simplifying somewhat,

- Fuel, purchased power, and other variable expenses of generation are allocated to classes based on their energy consumption
- Power plant ownership costs are allocated to 4CP demand (after a split intended to reflect whether plant investment is for efficient energy production or availability of capacity at peak demand).
- Transmission is allocated to monthly peak demands (12CP)
- Distribution is allocated to class peak demand, with secondary distribution costs allocated only to secondary distribution customers, primary distribution costs allocated to primary and secondary distribution customers, and subtransmission costs allocated to subtransmission, primary, and secondary distribution costs
- Customer interconnection to distribution is allocated to customer count.

Although the particular basis for allocation varies amongst these cost pools, the general principle is that customers in a class pay for the class's share of those parts of the utility system that the customers in the class use.

Inflow to a customer with distributed generation looks like inflow to any customer and can be reasonably allocated on the same basis. The novelty in the study of an appropriate tariff for distributed generation customers is the outflow from the customer. Outflow from a customer with distributed generation directly reduces the power plant fuel and other variable expenses and/or the power that must be purchased to serve the class to which the customer belongs; the class responsibility for these "energy" expenses is therefore proportional to net energy, with outflow subtracted from inflow. Outflow from a customer with distributed generation at the time of 4CP demand clearly reduces the 4CP demand of the class to which the customer belongs; the class responsibility for these generation capacity expenses is therefore proportional to net demand during the 4CP hours.

It is possible to imagine a degree of distributed generation in which outflow causes a reverse flow in transmission, primary distribution or secondary distribution and the question of responsibility for costs under such circumstances is more complex than under the present circumstances with very low levels of participation in distributed generation. Furthermore, the existing interconnection standards will not allow distributed generation interconnection on circuits where outflow will exceed the load on the circuit.

- Under present conditions, the appropriate allocation of transmission and distribution costs remains simple to reason about. Outflow from a secondary customer almost certainly flows from the customer's service drop to the secondary system conductor.

- If there is another customer that is electrically downstream of the distributed generation customer, the distributed generation customer's outflow flows to that customer, only uses a fraction of the secondary conductor that is normally used to serve the downstream customer, and reduces the use of the secondary conductor upstream of the distributed generation customer, reduces use of the line transformer, and reduces use of the upstream primary, subtransmission, and transmission systems by the full amount of the outflow. It therefore reduces usage of almost all of the distribution system.
- If there is not another secondary customer downstream of the distributed generation customer, the distributed generation customer's outflow will flow upstream on the secondary conductor. If there is another secondary customer upstream of the distributed generation customer but downstream of the line transformer, then the outflow reduces the use of the secondary conductor to that upstream neighbor, reduces the use of the line transformer, and reduces the use of the primary, subtransmission, and transmission systems by the full amount of the outflow.
- If there is not another secondary customer on the same conductor segment as the distributed generation customer but there are other customers connected to the same line transformer, then the outflow will pass through the transformer posts to the other secondary lines but will not flow through the windings of the transformer and the outflow directly reduces flows through the line transformer, and the primary, subtransmission, and transmission systems by the full amount of the outflow.
- If there is no other customer connected to the line transformer, then the outflow will flow through the line transformer onto the primary distribution system, where will almost certainly contribute to the flow downstream to other customers, reducing the flow from the substation to the line transformer on the primary distribution system, and the flows on the subtransmission and transmission systems by the full amount of the outflow.

Therefore, it is virtually impossible that outflow from a distributed generation system sized to produce annual generation less than or equal to annual consumption of a customer will cause reverse flows in any other portion of the grid. Simply put, outflow reduces the responsibility of the class to which the distributed generation customer belongs for almost all of the distribution system except secondary conductors and some line transformers. Just as primary customers are not allocated costs of the secondary system because they do not use it, outflow should not be allocated costs of generation, transmission, subtransmission, or primary distribution that it does not use and must therefore be credited with avoiding those costs.

It is clear that, aside from customer costs such as service drop, metering, billing, and customer service, outflow is properly treated as a negative value in the aggregation of

statistics that are used to allocate costs in the cost-of-service study. Further, it is clear that if the cost-of-service study were further decomposed to individual customers, this would still be true. Thus, the determination of equitable cost of service for distributed generation customers will allocate customer costs to these customers on the same basis as for other customers and will allocate all other costs on the net inflow minus outflow contribution of the distributed generation customers to all other allocation statistics.

This is the method applied in the presentation by Douglas Jester to the DG Tariff stakeholder group on August 15, 2017.

RETAIL RATES OF THE CLASS LIKELY DO NOT ACCURATELY MEASURE THE COST OF SERVICE FOR INFLOW TO DISTRIBUTED GENERATION CUSTOMERS

Current retail rates of Michigan utilities generally are not based on time of use and therefore do not accurately reflect cost of service amongst customers with different time patterns of usage. In recent testimony in cases U-18255 and U-18322, Douglas Jester showed that approximately 20% of all residential class revenue provided cross-subsidies between customers within the class.

In Douglas Jester's presentation on August 15, 2017, slide 18 columns NZ A shows the cost-of-service calculations for inflow and outflow of a Consumers Energy residential customer with net zero energy flows over the year, based on Consumers Energy's cost of service study as filed in U-18322. In the inflow column, total cost is $790.29 and total annual inflow is 5208.3 kWh. However, this cost includes all customer costs, which in the retail rates are partly recovered through $7 per month access fees. Thus, the net cost to be recovered through kWh charges would be $706.29 or 13.56 cents per kWh. Consumers proposed residential kWh charges in that case are 14.98 cents per kWh for the first 600 kWh per month in summer, 18.31 cents per kWh above 600 kWh per month in summer, and 14.98 cents per kWh in winter. Thus the retail rates proposed in that case all exceed the cost-of-service of inflow, with an annual average excessive charge of almost 2 cents per kWh.

It should be noted however, that a time-of-use rate design that accurately reflects cost of service would result in an inflow cost that would approximately equal inflow cost of service.

PURPA AVOIDED COSTS DO NOT MEASURE THE EQUITABLE ALLOCATION OF COST OF SERVICE TO OUTFLOW FROM DISTRIBUTED GENERATION CUSTOMERS

PURPA avoided costs are just that – avoided costs. They are therefore logically based on the incremental costs of the next increment of generation of a utility. Cost-of-service allocation, on the other hand, is based on assignment of responsibility for embedded costs. Incremental costs per unit of capacity and energy based on a future plant will generally not be the same

as the average cost per unit of capacity and energy based on an existing, or existing and projected, plant. It is therefore conceptually inappropriate to base the cost of service for outflow on PURPA avoided costs unless the Commission also changes its cost-of-service practices generally so that they are based on forward-looking incremental costs.

In Douglas Jester's presentation on August 15, 2017, slide 18 columns NZ A show the cost-of-service calculations for inflow and outflow of a Consumers Energy residential customer with net zero energy flows over the year, based on Consumers Energy's cost of service study as filed in U-18322. In the outflow column, the cost-of-service credit for outflow is $544.92 and the annual outflow is 5208.3 kWh. Thus the net credit per kWh is 10.46 cents per kWh. This value is similar in magnitude to the PURPA avoided cost determined by the Commission for Consumers Energy in U-18090 but in circumstances where, pursuant to its order in U-18090, the Commission determines that Consumers does not need capacity and therefore need not pay for capacity, the avoided cost calculation will produce a radically lower value for outflow than would be determined through a cost-of-service approach. In Case U-18491, Consumers Energy has already requested exemption from making capacity payments in PURPA contracts.

THE COMMISSION SHOULD STUDY NET BILLING AS AN ALTERNATIVE TO INFLOW-OUTFLOW IN A MORE UNDERSTANDABLE WAY

Under Staff's proposed inflow-outflow mechanism, inflows would be billed at rates that are nearly constant except that summer on-peak rates would be higher. PURPA avoided cost rates are similarly structured so that there is a natural peak period of 2-5pm ET in June through August, corresponding to MISO's method for crediting solar capacity, and either uniform or on-peak/off-peak energy rates depending on the method chosen by the qualifying facility. There are thus very broad periods in Staff's proposal where per unit rates are uniform, and mathematically, inflow and outflow can be rolled up to those periods and the appropriate rate applied to the aggregate.

The Commission should work with the stakeholders represented in the work groups to-date to explore the implications of moving to net billing as an alternative to inflow-outflow. There is some evidence to suggest that net billing can replace net metering and provide a billing mechanism that is virtually identical to the inflow-outflow mechanism. Further, there is reason to believe that time-of-use rates based on cost-of-service allocations, if properly constructed, will result in virtually the same rates applying to both inflow and outflow in a given period but will still closely match cost of service on an annual basis. Thus, net billing based on time-of-use rates may be able to fully satisfy the standard of 2018 PA 341 that the distributed generation tariff reflect equitable cost of service. It would be worthwhile to hear from the utilities, the distributed generation industry and interested customers whether this mechanism would provide a transparent, equitable and practical way forward.

Thus, net billing can replace net metering and provide a billing mechanism that is virtually identical to the inflow-outflow mechanism.

SUMMARY AND CONCLUSION

We remain open to the use of an inflow-outflow mechanism to construct a tariff for customers with distributed generation. The use of such a mechanism, however, does not of itself satisfy the requirements of 2016 PA 341 and may present practical difficulties in the distributed generation marketplace.

Most importantly, the Commission cannot satisfy the requirement that a distributed generation tariff reflect "equitable cost of service" without anchoring the tariff in the explicit analysis of cost of service for distributed generation customers using the same logic and methods by which it makes that determination for all other customers.

From:	Michael A Williams
To:	Baldwin, Julie (LARA)
Cc:	Sarah A. Jorgensen; Jim Ault
Subject:	Comments
Date:	Wednesday, January 10, 2018 3:59:38 PM
Attachments:	Joint Utility Comments on Staff"s Draft DG Report.pdf

Julie,

Attached are the combined comments of Consumers Energy, DTE Electric, and the Electric Members of the Michigan Electric and Gas Association on Staff's Draft DG Report.

Thank you,

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Combined Comments of Consumers Energy Company, DTE Electric Company, and the Electric Members of the Michigan Electric and Gas Association Regarding MPSC Staff's draft "Report on the MPSC Staff Study to Develop a Cost of Service-Based Distributed Generation Program Tariff" Issued for stakeholder comment on December 15, 2017.

Consumers Energy Company, DTE Electric Company, and the electric members of the Michigan Electric and Gas Association ("the Utilities") appreciate the opportunity to comment on the Michigan Public Service Commission Staff's (Staff) draft report approach issued on December 15, 2017 to develop a cost of service based distributed generation (DG) tariff.

The following comments of the Utilities are organized by sections listed in the report, followed by specific comments related to the concept DG tariff.

Executive Summary

Utility customers are demonstrating a growing interest in renewable energy and participating in opportunities to help advance clean renewable energy. Customers who wish to install solar panels and other renewable generation have the option to do so, but exercising that option should not add to the cost burden of those customers who either choose not to participate or cannot afford such systems. Customers adding renewable generation should pay their fair share of costs to run and maintain the electric system and any compensation they receive should be based on a fair set of cost-based rules. Preventing subsidies for distributed generation is an important principle that should be adhered to as potential DG tariffs are designed and debated.

Prior to PA 341, customers who installed rooftop solar and participated in Net Metering received the full retail rate for the electricity they produced, avoiding the obligation to make a fair contribution to services provided by the utility grid, nor contributing fairly to the costs for the capacity that is in place at all times to provide service when their systems are not generating power. The Utilities believe it is important to use a cost based approach and rate design that properly assigns fixed-cost responsibility to all customers who rely on the grid, thus avoiding the creation of subsidies and allowing for proper price signals to all customers.

A new DG tariff should ensure reliability, affordability, and fairness to all customers by doing the following:

- Recognize that program participants rely on and require the distribution grid and standby generation for reliability, even at times when the DG source is providing excess energy to the grid,
- Eliminate cross subsidization of costs related to distribution and standby generation from non-participating customers,
- Ensures that rate design recovers an appropriate level of fixed costs from both DG and non-DG customers, and
- Provides for a fair level of compensation for excess generation for DG customers that reflects the value of the energy at the time it is provided.

The Utilities appreciate the efforts of the Staff in developing its methodology and willingness to accept comments. We view the concept DG tariff proposed by the Staff as developing general guidance for DG tariffs to be filed in contested rate cases after June 1, 2018, without limiting the potential terms and conditions of the tariffs filed for approval in those rate cases.

Section I – Statutory Mandates related to a Cost of Service based Distribution Generation Tariff

In this section of the report, Staff supports the authorization provided in PA 341 for the Commission to undertake efforts in which utilities are to establish new tariffs related to distributed generation which should reflect equitable cost of service for utility revenue requirements. The Utilities appreciate Staff's efforts throughout the workgroup process to create an open forum in which all parties were provided opportunities to present their views.

On page 4, Staff introduces its inflow/outflow "tariff", or pricing approach which Staff believe satisfies section 6a (14) of PA 341. In support of this claim, Staff quotes PA 342 Sec. 175 (5), stating, "*A charge for net metering and distributed generation customers established pursuant to section 6(a) of 1939 PA 3, MCL 460.6a, shall not be reduced by any credit or other ratemaking mechanism for distributed generation customers*." Staff goes on to state their proposed inflow/outflow method does not conflict with this provision because no "grid charge" would

exist under the inflow/outflow method[1]. Staff apparently believes this section of PA 342 only applies to pricing mechanisms in which fixed grid charges are assessed. The Utilities disagree with this conclusion. Staff claims all costs emanating from a DG customer's fair and equitable use of the grid would be fully recovered in the distribution charges applied to inflow. However, under Staff's inflow/outflow proposal, the distribution charges (except for the service charge) could be reduced, or completely offset by outflow credits, which is in clear violation of the PA 342 Section 175(5) language quoted above. The offsetting of both transmission and distribution charges is in violation of both PA 342 Sect. 175 (4) and (5), in which (4) states that *"distributed generation customers shall not receive credits for electric utility transmission or distribution charges*". Nowhere does PA 342 state that Section 175 (4) or (5) is applicable only to a certain type of charge, like a grid charge. Staff's position that outflow credits could at times equal or exceed inflow charges, proves the point that if DG customers are allowed to offset the distribution portion of their bill, then they would not be paying a fair and equitable use of the grid. Billing on metered inflow for DG customers (as Staff's method does) does not adequately recover costs of the distribution system, under many of the standard volumetric rates in use today, particularly for residential and small nonresidential customers.

Staff's report states, "since standby charges, under Act 295/Act 342 are associated with the modified NEM billing method, such charges would not be applicable to the Inflow/Outflow billing mechanism." (p 2) However, Staff appears to provide no explanation on why standby charges should not apply, or more importantly, why they believe standby charges do not represent a real aspect of service that has a cost that customers should be responsible for. Utilities invest in their electrical systems and capacity requirements to adequately meet their obligations to provide service to customers, including standby and supplemental service to DG customers. The Utilities have an obligation to be ready and able to supply power to DG customers when their on-site generation cannot meet their needs or isn't operating. The Utilities recommend a rate design approach in which all customers, including DG customers, pay for their use of the grid. The rates for DG customers should reflect the standby service provided by utilities as part of the equitable cost of service.

[1] PA 342 Section 175(5) arguably could be interpreted to mean that Act 3 Section 6a(14) was intended to result in an additional charge for DG customers in order to ensure DG customers support their use of the electric system and grid.

Section II – DG Program Workgroup Process to Obtain Input on the Staff Study

As stated above, the Utilities appreciate the efforts of the Staff throughout this process, and the opportunity to comment on its concept tariff and draft report.

Section III – Interim Distributed Generation Program

The Utilities agree with the Staff that current net metering tariffs will be in effect until a new cost based tariff applicable to DG customers is approved by the Commission in rate cases filed by utilities sometime after June 1, 2018. The Utilities note that provisions of net metering established in PA 295 related to program size in PA 342 Section 173(3) are still in place (even though pricing related to net metering is set to expire 10 years from the date of customer enrollment per PA 342, Section 183).

Section IV – Inflow/Outflow Billing Mechanism Analysis

In this section, Staff further explains the inflow/outflow tariff method and recommends it be submitted by regulated utilities in any general rate case filed after June 1, 2018. Although the Utilities have several concerns with the inflow/outflow method (as further discussed below), with modifications to ensure compliance with PA 341 and 342, it may be an appropriate pricing method and meet the language established in PA 341 and PA 342. The Utilities will continue to evaluate pricing methods between now and when rate cases are filed after June 1, 2018, and each utility will submit a tariff it believes meets PA 341, section 6a (14) for an appropriate tariff reflecting equitable cost of service for utility revenue requirements.

The Staff believes its inflow/outflow method is simple, accommodates a wide variety of future rate designs, is transparent and provides accurate pricing signals. The Utilities believe that other methods of DG pricing (for example fixed charges, demand charges, or charges based on total site usage) hold the same advantages and thus these advantages are not unique to the inflow/outflow method.

On page 9 Staff's report states, "Because the billing determinants are consistent with cost causation, the Inflow/Outflow billing mechanism itself can provide equity of cost recovery." However, billing determinants for intermittent loads do not properly identify

the level of fixed costs that should be allocated to these customers. In general, fixed costs should not be recovered on a on volumetric inflow basis, and therefore an adjustment to rate design may need to be made to adequately recover the cost of facilities in place to serve the customer. For example, fixed monthly charges or demand based rates could improve the recovery of fixed costs. These rate mechanisms could help ensure that DG customers with reduced or negligible volumetric energy use, but still depend on grid support, contribute appropriately to the fixed costs and avoid being subsidized by other customers. Installing onsite generation can have significant impact on customers' energy inflow from the utility, however, the cost of the distribution system is not reduced and in fact must remain in place to provide back-up service to meet the customer's full load requirements. DG customers rely on the grid when they inflow power from the utility, during times of generation (in rush current) and for outflow to the grid for excess power. As the Staff has currently designed its inflow/outflow method, the Utilities do not believe it ensures DG customers will pay their fair and reasonable use of the grid.

The Utilities agree with Staff that only a retail rider, which includes separate terms and conditions for DG customers, is necessary.

Section V – Credits for DG Customer Power Outflows

The Staff is supporting an outflow credit based on the approved avoided cost filings from utilities under the Public Utilities Regulatory Policy Act (PURPA). The Utilities disagree that the outflow credit should be equal to the PURPA avoided cost rate. DG customers will presumably not have the same obligations as a PURPA qualifying facility. PURPA facilities, which receive avoided cost payments, are intended to support the grid power supply and many of the facilities provide dispatchable, rather than intermittent, generation. DG customers are primarily interested in minimizing their use of grid power and avoiding as much cost as they can, while making no commitments to provide a specified level of grid support for planning purposes. Unlike PURPA customers, DG customers are limited in the capacity of their systems to a level of generation equivalent to their annual kWh use. Furthermore, setting the credit to the PURPA avoided cost rate could result in credits exceeding the retail rate for some rate schedules, given the methodology the Commission has proposed to impose on the Utilities to use to calculate

the PURPA avoided cost rate, which essentially negates the remedies that the DG Program was intended to correct. In addition, Staff's report claims that in "aggregate" DG customers can be considered a virtual power plant. However, the Utilities have no control over these resources or their care and maintenance, and at any time an individual customer's generation could perform under expectation (or cease to perform entirely.) The Utilities are also concerned with respect to using PURPA as the mechanism for outflow credit as Staff mentioned at the December 19 meeting that compensating DG customers using PURPA was a good incentive to further develop solar DG. This statement is not supported by PA 341 or 342 as the Michigan legislature did not provide any language in the bills to provide for DG incentives. The Utilities believe the laws creating the DG program were enacted to ensure that DG customers pay an "equitable cost of service". PA 341, section 6 (a) (14)[2].

The Utilities are exploring various fair crediting mechanisms; for example, a crediting mechanism could be based on MISO hourly LMP for excess energy, which provides a fair compensation for the energy at the time it was generated, plus a fair amount for generation capacity.

The Utilities agree with Staff that creating separate cost of service (COS) customer classes for every rate class with customers eligible for the distributed generation program would not be appropriate given the lack of diversity in the residential class, as well as it creates many new COS classes that are very small, which would result in heightened complexity, and could result in a wide variance of results from case to case given the load impact of just a few customers. Adopting separate rate schedules for DG customers based on separate cost studies is a complex process and in most cases, sends inaccurate pricing signals due to relative small size of the class.

[2] In addition, in Appendix F of its draft report Staff seems to suggest that PURPA avoided cost is related to a "value of solar", including components such as "hedge value" and "reduced air emissions and environmental compliance cost". The Utilities disagree that an avoided cost calculation should include such components, and disagree with the suggestion that "value of solar" and PURPA avoided cost should mean the same thing. In addition, FERC is considering whether to reform the current PURPA regulations, and NARUC has expressed support for such an undertaking.

The Staff's report notes that using outflow as a "negative allocator" in the COSS could be a viable valuation method that can be incorporated into an Inflow/Outflow rate design, but then goes on to list some downsides of doing so. The Utilities agree with these downsides, and do not believe there is sufficient data to support using outflow as a "negative allocator" to deem it a viable valuation methodology.

Staff's report states, "Staff determined the most viable path to implement a COSS approach to establish DG customer inflow and outflow rates is to substitute computer models (e.g. DOE *System Advisor Model*, NREL-*PVWatts*) to predict inflows and outflows on an 8760 hour basis. This will allow regulatory experts to perform a COSS that allocates costs/credits to the unique DG subclass, and to quantify rates under the Inflow/Outflow billing mechanism." Similar to the issues discussed earlier surrounding the weakness of using volumetric determinants to determine cost of service for intermittent loads, the Utilities do not believe the substitute computer models will be instructive to identifying the cost of service provided to DG customers.

Section VI – Commission Staff Cost of Service Analysis – 2014 NEM as a Distinct Customer Class

Staff supports a cost of service study which would allocate distribution costs based on the energy inflow. Staff states that based on its 2014 COSS evaluation both production and distribution cost responsibility would be lower for a DG customer versus a non-DG customer. The Utilities are not aware of any COS the Staff has produced supporting its contention regarding distribution costs. Furthermore, the COS analysis performed by DTE on distribution using only total inflows (a method the Utilities do not agree with but was performed by DTE in response to Staff's request) showed that DG customers have more cost responsibility than a non-DG customers. This appeared to be because the 2014 customer data showed that DG customers had a higher kWh usage (inflow) than non-DG customers. This suggests that on average DG customers are higher than average use customers, to such a degree that even with owned on site generation that their usage still exceeds the average customer. Regardless, this shows that if they were broken out in to a separate COS class for distribution, as suggested by Staff, that their distribution cost on a

per customer basis should be higher than non-DG customers, even when considering only total inflow (which again, the Utilities argue is inappropriate.)

Section VII – Concerns with the Ability of NEM to be able to Recover Costs for Customers; "Fair and Equitable Use of the Grid"

The Utilities agree with the Staff that current true net metering does not recover the fair and equitable use of the grid. This issue has been reviewed and discussed in many states.

Staff's report on page 19 states that "modified net metering can be thought of as a midway point between true net metering and the Inflow/Outflow billing mechanism." The Utilities note there is no evidence to support this statement, and further that, based on Staff's apparent intended implementation of its inflow/outflow method, that it could result in a reduced contribution to their cost-of-service compared to what modified net metering customers contribute today.

Staff states that adding a fixed grid charge at approximately $25 per month per customer may satisfy the requirements under PA 341 section 6 a (14). The Utilities do not know how the Staff determined its amount of $25. Any use of a fixed fee should be evaluated along with overall fairness of the DG compensation method.

Section VIII – Metering and Billing for an Inflow/Outflow Billing Mechanism Exclusions for Small Utilities

The Staff's report notes that, under its proposed method, customers will not need generation meters. The Utilities state that the option to require generation meters for DG customers should be retained. This would be based on the circumstances of an individual utility considering cost-effectiveness, the existing system capabilities, and other factors. If generation meters are required, some rate design issues would be eliminated, as the level of standby service provided to DG customers could be based on total site usage, similar to non-DG customers. Additionally, it would allow utilities to understand actual customer loads and DG system generation for proper system planning. If generation meters are not required, then the Commission might consider requiring all future DG

customers to have a demand meter placed to measure inflow, similar to large commercial and industrial customers.

The Utilities support Staff's recognition of the importance of cost-effective metering and billing and the low level of customer participation in net metering programs of some utilities. All utilities should have the flexibility to propose tariffs in consideration of the these circumstances.

Specific Comments on Appendix A - Concept Tariff

Section A - This case reference should refer to individual rate cases filed after June 1, 2018. The Utilities view the working group process as developing general guidance for DG tariffs to be filed in contested rate cases after June 1, 2018, without limiting the potential terms and conditions of the tariffs filed for approval in those rate cases.

Section B – (5) and (6) The intervals at which metered inflow and outflow are measured at should be an issue that is further explored, or something that utilities should be given the option to address in rate cases filed after June 1, 2018.

Section C - It should be made clear that "the program size is equal to 1.0% of the Company's average in-state peak load for Full-Service customers during the previous 5 calendar years," applies to both the current net metering program and the new distributed generation program. That is, that there is not two separate 1% caps for the programs.

Section E – The tariff states, "The customer is billed according to the distributed generation provision shown on their retail rate schedule for metered inflow…" This statement does not comport with Staff's report, which suggests that rates will not vary for DG customers. (See page 9 of report: "…separate and distinct rate schedules for DG customers are not needed…")

Section F – As stated in its comments above, the Utilities do not agree with the outflow credit calculation using PURPA avoided costs. The statute identifies two potential methods for valuing credits for excess generation. In addition, the language in Staff's tariff states that "The credit shall be applied to the current billing month and shall be used to offset total utility charges on that bill." This does not follow PA 341 / 342 as transmission and distribution costs cannot be offset (PA 342 Section 460.1175 (4)) and charges established pursuant to the new tariff via PA 341 cannot be reduced by any credit or other ratemaking mechanism (PA 342 Section 460.1175(5)). In addition, even Staff's report indicates that the monthly customer charge will not be offset.

Section G - The DG application fee should not be refundable if a customer withdraws the application prior to commencing service, as the time and cost that a utility incurs to process the application will still have occurred. The Utilities also suggest that if a customer does not act or correspond on an application for over 6 months when some action is required by the customer, that the application can be considered void.

The Utilities disagree with Staff's language that customers "need not be the owner or operator of the eligible generation equipment." The DG program will be a tariff between the utility and its customer, thus the customer should have to own the eligible generation equipment. Language from 2008 PA 295, as amended by PA 342, also infers that customers must own the generation; for example, (emphasis added):

460.1173 (2): Except as otherwise provided under this part, an electric customer of any class is eligible to interconnect an eligible electric generator with the customer's local electric utility and operate the eligible electric generator in parallel with the distribution system.

460.1177(1): Electric meters shall be used to determine the amount of the customer's energy use in each billing period, net of any excess energy the customer's generator delivers to the utility distribution system during that same billing period.

460.1183(2): Subsection (1) does not apply to an increase in the generation capacity of the customer's eligible electric generator beyond the capacity on the effective date of this section

Section H - The sentence in Staff's concept tariff which reads "The aggregate capacity of Eligible Electric Generators shall be determined by the aggregate projected annual kWh output of the generator(s)", should read, "The allowed capacity of Eligible Electric Generators shall be determined by the name plate capacity of the generator(s)."

Section I - The Utilities recommend the following language be included in any DG tariff, "The Company must approve in writing any subsequent changes in the interconnection configuration before such changes are allowed. Operating in parallel with the Company's system without the Company's written approval of the interconnection and written approval of any subsequent changes to the interconnection will subject the Customer's equipment to disconnection."

In addition, IEEE1547-2017 is an updated standard that was revised to specifically address issues seen in California, Hawaii and for New York. It addresses many failings of prior IEEE1547 versions and greatly improves compliance and control capabilities. Thus, IEEE1547-2017 should be adopted for all categories of DG.

From:	John Freeman
To:	Baldwin, Julie (LARA)
Cc:	Dave Konkle
Subject:	Distributed Generation Program Comments
Date:	Wednesday, January 10, 2018 6:20:13 AM
Attachments:	GLREA DG Ltr 1.8.18.docx

Julie,

Attached is a Letter from GLREA commenting on the Program Proposal.

Thank you for being so open with receiving feedback.

All the very best,

John

_____
John Freeman

Executive Director
Great Lakes Renewable Energy Association (GLREA)
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Jfreeman13@comcast.net
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Ms. Julie Baldwin
Michigan Public Service Commission
7109 W. Saginaw Highway
PO Box 30221
Lansing, MI 48909

January 9, 2018

Dear Ms. Baldwin:

This letter is being sent in response to the request from Michigan Public Service Commission Staff (PSC) for comments on the December 15, 2017 'Report on the MPSC Study to Develop a Cost of Service-Based Distributed Generation Program Tariff.'

As stated in our November 3, 2017 Letter, the Great Lakes Renewable Energy Association (GLREA) is a trade association of renewable energy businesses that install or provide component parts of renewable energy systems, mainly solar, wind and geothermal. The vast majority of our members are small business that have been servicing this steadily growing market for renewable energy systems.

Growth of Renewable Energy

Across Michigan and the United States, a dramatic shift is occurring where carbon generated electricity is being replaced with clean renewable energy, mainly wind and solar, and that homeowners, farmers and business are now investing in their own distributed generated energy systems because it saves money and therefore more cost effective. This ability to save money and promote a clean environment is driving the market for distributed generated energy. The business model of producing electricity as represented by a state regulated public utility is changing and the Michigan Public Service Commission, as representing the citizens of Michigan and their public interest, must not undercut the new options available to people to invest in their own distributed energy system.

Under the current Net Metering Program, homeowners, farmers and business have been able to make an economic analysis as to the financial and environmental benefits of investing in a renewable energy system, prior to making that decision to make the investment. The current system has worked well in that distributed energy users have been treated fairly by the fact that what they pay for energy from a utility is the same price that they receive from a utility when they put their own generated electricity on the grid that the utility can then re-use and charge other customers for. This system has fostered the growing market for distributed energy in Michigan, which has provided many benefits in addition to lower costing energy, including job creation and increased economic development.

Concerns with the New Distributive Generated Energy Program

We have two overriding concerns with moving to a new Distributed Generation Tariff Program.

First, that the new system doesn't artificially distort the market for distributed generated energy by undervaluing and therefore undercutting the price of electricity that is exported to the grid. If this is done then the market for distributed energy might collapse and the Public Service Commission will have failed in their job in representing the Michigan Public and their 'public interest' in having a viable option of purchasing renewable energy. As GLREA member, Rob Rafson stated, "this is a watershed moment for the MPSC, who has been given a rare opportunity to pave a path forward to a more sustainable future…"

Second, that the proposed new Program and the corresponding prices for purchasing and for exporting electricity be accurate and stable so that people and businesses can continue to make an economic analysis as to whether it makes financial sense to invest in an distributed energy system.

In-Flow Out-Flow Framework Concerns

Staff's proposed Distributed Generation Tariff is based on an Inflow-Outflow methodology, under which Staff proposes to charge distributed generation customers for purchasing electricity, or In-Flow, at the utility residential retail rate and to credit the exporting of electricity to the grid, or Out-Flow, at the PURPA Avoided Cost Rate for each utility, to be determined in proceedings held every two years.

Staff indicated that in the case of Consumers Energy this PURPA Avoided Cost Rate would be about 9.5 cents per kWh and further indicated at the December 19th Workgroup Meeting that this PURPA rate should be bumped up to 10 cents to factor in the benefit to the utility of a reduction in line loss.

This methodology could work but only if the inflow retail rate and the outflow credit together meet the operating legislative principle of "reflecting the *equitable cost of service* for utility revenue requirements for customers who participate in a distributed generation program." The definition of *equitable* is being "fair to all parties as dictated by reason and conscience."

But this presents a problem. Stakeholders are being asked to comment on a Proposed Distributed Generation Program Tariff, when we don't know what the exact numbers will be for either the in-retail rate for in-flow or the out-flow credit. Both of those will be determined precisely during rate proceedings for each regulated utility that are filed after June 1, 2018.

Therefore we won't know whether this DG Program meets the legislative test of reflecting the 'equitable cost of service' until the completion of the rate proceedings for each regulated utility. Stated another way, the debate whether the current retail rate truly reflects the equitable cost of service to DG customers or whether the proposed PURPA out-floor rate really factors in all the benefits to the utility, will be put off to another proceeding.

Applying the Equitable Cost of Service Test

But there is already evidence that the current retail rate will fail this 'equitable cost of service' test. Staff's production cost of service analysis concludes that distributed generation customers are 16% less costly to serve than non-distributed generation residential customers due to lower contribution to peak capacity needs. Indeed, production, distribution and transmission costs must all be considered with respect to a distributed generation customer to adequately reflect the cost of service.

And with the Michigan Legislature using the word 'equitable' as the bright-line legislative intent test, then negative costs (benefits) to the utility must be factored in. This must apply to both the in-flow retail rate as well as the out-flow rate. The current residential retail rate was never calculated with having to factor in negative costs (benefits) to the utilities from distributed generated energy.

Calculating Costs and Benefits

The Staff Program Proposal in essence assumes that the benefit that a distributed generated energy customer receives will simply result from purchasing less energy from the utility (less in-flow) and getting the PURPA rate for exporting energy or out-flow to the grid. Clearly, a DG customer will benefit from purchasing less electricity from the utility but it is our contention that whatever amount of in-flow electricity that a DG customer ends up purchasing, that retail rate should also reflect the reduce cost of service to a DG customer as compared to a non-distributed energy customer who buys the exact same amount of electricity from the utility.

GLREA understands when Staff state that "the use of approved PURPA rates for the DG Program credits is administratively efficient," but it is not clear that using the PURPA avoided cost will meet the equitable cost of service test.

One of the true benefits of solar energy is that it is most productive during the long summer days when demand for energy from the utility is the highest. Excess solar energy that is generated and exported to the grid, should therefore be credited based upon the time of day and/or year produced. The savings to the utility through the direct reduction of fuel, labor and other costs during peak summer months of high demand reduces costs for the entire system and should therefore be allocated to the DG customers that generate those savings.

And what is the benefit to the utility if DG Customers were encouraged to install their solar panels in a southwest direction so more power is generated later in the day and therefore reducing the demand peak for a longer period of time? Shouldn't this out-flow credit reflect this higher value to the utility?

In addition, we are also concerned about pegging the out-flow credit to the PURPA rate, because the PURPA rate could change several times during the lifetime of a distributed generation system. A out-flow credit that relies on the PURPA rate makes it harder for a potential customer to predict how they will be compensated in the future and this might have the opposite effect of having clear market signals that Staff suggest this Program will provide.

These questions will have to be answered in the rate proceedings that will be begin after June 1, 2018 and using the PURPA avoided cost rate may not be appropriate for the out-flow credit.

And frankly if PSC Staff want to use the PURPA avoided cost for its out-flow credit, then shouldn't the PSC factor in the intent of PURPA as public policy of encouraging 3rd party generation of electricity? The PURPA avoided cost of 9.5 to 10 cents may be good for encouraging utility scale solar but it may not be good for supporting the economics of investing in solar on a residential, small business or family farm scale. Staff acknowledge that costs will go up for residential solar but the staff analysis really doesn't speak to the impact on the market for small solar installations.

Conclusion
Since 2008 Michigan has had a public policy framework of encouraging the development and growth of clean renewable energy both on a utility scale but also on a small residential level. Homeowners, farmers, business and even units of government are investing in clean renewable energy to save money, foster a clean environment and promote better public health outcomes.

GLREA believes it is duty and obligation of the Michigan Public Service Commission to craft a distributed generation tariff program that meets the intent of the Michigan Legislature to encourage the use of renewable energy. The Distributed Generation Program will be key to continuing the transition to increased renewables and should therefore be structured in a way that continued growth is encouraged.

We acknowledge the importance of maintaining the grid and that all energy users should help pay for it. But this does not mean that a distributed generated energy tariff program should be instituted that undercuts the market for distributed energy.

As was stated in our previous comments on November 3, 2017, figuring out the real costs and benefits to both the utility as well as the distributed generation customer is the key in whether the PSC Staff Program Proposal meets the standard established by PA 341 and 342 of a tariff that reflects the "equitable cost of service…"

We will continue to work with the Michigan Public Service Commission to find the best approach that captures and factors in all the costs and benefits of distributed generated energy so that we have a policy framework that supports the maintenance of the grid and promotes the development and growth of renewable energy.

We appreciate the opportunity to comment on this Distributed Generation Program Proposal.

Very truly yours,

David Konkle
President, Great Lakes Renewable Energy Association

From: Brit Satchwell (tenureme@comcast.net)
To: Baldwin, Julie (LARA)
Subject: Grid-Access Fee: Reimbursement Rate for Renewable Energy
Date: Sunday, January 7, 2018 11:40:08 AM

Ms. Baldwin,

I am an active member of the Sierra Club of Michigan and thoroughly agree with the points they make (below) in support of retaining (or increasing!) reimbursement rates for power sent to the grid by the solar panels of private individuals and businesses. One point they do not make, however, involves the prohibitive indirect costs to the public associated with ***not*** supporting solar. For example, the environmental costs of fracking natural gas which is touted as a "clean(er)" resource. I would like to add the prohibitive environmental costs of burning any and all forms fossil fuels to the debate. In this regard, I am including this short video on the current state of climate science by 350.org for your consideration. It hits the key points simply and directly; I am sure that you have access to the more detailed and peer-reviewed studies that support 350's sense of urgency regarding the elimination of fossil fuels except for extraordinary purposes... the planet is well past the point of "business as usual" historically practised by public utilities.

Here are the points that the Sierra Club makes, each of which I support wholeheartedly and recommend to you:

The reduced pricing suggested by the MPSC is significantly lower then what other states have determined is fair reimbursement. States like Oregon, Minnesota, New York and others have gone through the process of establishing all the costs and benefits of distributed generation, and all have determined distributed solar is worth more than other sources. Even Mexico's national electric company has determined solar power is worth more than traditional sources for power.

How could solar power be worth more than other power?

- *Upwards of 50% of our state's power generation capacity is used for about 90 hours a year. Because utility companies are guaranteed a profit, we rate payers are paying the utility company's 110.3% of the cost to build more power plants to meet this 'peak time' energy usage. A one billion dollar power plant nets over one hundred million dollars in utility company profits*
    - *The 'solar window' of power production is during the time when this 50% of our generation capacity is stoked up to meet this temporary need. With distributed solar power, we would not need 50% of our power production facilities to be built, saving ALL rate payers billions of dollars. Of course the utility companies would lose their guaranteed 10% profit on the construction of these facilities.*
        - *NOTE – Most of the new power generation facilities being built are natural gas plants. Natural gas is at a 14 year low because of the supply exceeding*

demand as a result of fracking. Once the demand for natural gas increases the cost of natural gas will return to their highs. The utility companies are guaranteed a profit so our electrical rates will skyrocket. However, with solar power the cost of fuel is always free.

- *The centralized design of our grid loses a significant amount of power through line losses and voltage drop to get power from where it is produced to where we need it. At times, it requires generating a few kWh's to get one kWh to your home for you to use. With distributed generation solar, the power you cannot consume at the time of production goes through your meter and to the neighbor's house for them to use.*
- *If your neighbor is on time-of-day rates they could be buying electricity from the utility company at the peak rate, which could be 300% more than the cost of the power you pull off the grid at night when the sun goes down. DTE's own website states, "Did you know that it costs DTE Energy $1 – $3 per kWh to buy electricity from outside the state when energy demand exceeds our supply?". If you are guaranteed a profit why change?*
- *Computer network administrators learned a couple decades ago that they needed to switch to a distributed network since a centralized network exposed them to unnecessary risks from equipment failures and natural or man-made disasters. If you feel this is overstated please Google – 'CIA power grid warning' and 'San Jose substation terrorist attack'.*
    - *NOTE – In order to transition from a centralized grid to a distributed grid it would require one of the following three things;*
        - *Billions of dollars in tax payer dollars*
        - *Billions of dollars in rate payer dollars*
        - *Pro net metering policy to let the market transition us*

- *NOTE – The utility companies will argue that the peak production of solar is slightly earlier than the peak demand on the grid. This is because our current policies incentivize panels facing south. If panels face southwest then they would peak at the exact same time. Some utility companies in other states have started incentivizing generators to face their panels to the southwest.*

Thank you,

Robert Satchwell

2172 Spruceway Ln

Ann Arbor, MI 48103

734-972-9374 cell

Ms. Baldwin,

I am an active member of the Sierra Club of Michigan and thoroughly agree with the points they make (below) in support of retaining (or increasing!) reimbursement rates for power sent to the grid by the solar panels of private individuals and businesses. One point they do not make, however, involves the prohibitive indirect costs to the public associated with ***not*** supporting solar. For example, the environmental costs of fracking natural gas which is touted as a "clean(er)" resource. I would like to add the prohibitive environmental costs of burning any and all forms fossil fuels to the debate. In this regard, I am including this short video on the current state of climate science by 350.org for your consideration. It hits the key points simply and directly; I am sure that you have access to the more detailed and peer-reviewed studies that support 350's sense of urgency regarding the elimination of fossil fuels except for extraordinary purposes... the planet is well past the point of "business as usual" historically practised by public utilities.

Here are the points that the Sierra Club makes, each of which I support wholeheartedly and recommend to you:

The reduced pricing suggested by the MPSC is significantly lower then what other states have determined is fair reimbursement. States like Oregon, Minnesota, New York and others have gone through the process of establishing all the costs and benefits of distributed generation, and all have determined distributed solar is worth more than other sources. Even Mexico's national electric company has determined solar power is worth more than traditional sources for power.

How could solar power be worth more than other power?

- *Upwards of 50% of our state's power generation capacity is used for about 90 hours a year. Because utility companies are guaranteed a profit, we rate payers are paying the utility company's 110.3% of the cost to build more power plants to meet this 'peak time' energy usage. A one billion dollar power plant nets over one hundred million dollars in utility company profits*
    - *The 'solar window' of power production is during the time when this 50% of our generation capacity is stoked up to meet this temporary need. With distributed solar power, we would not need 50% of our power production facilities to be built, saving ALL rate payers billions of dollars. Of course the utility companies would lose their guaranteed 10% profit on the construction of these facilities.*

        - *NOTE – Most of the new power generation facilities being built are natural gas plants. Natural gas is at a 14 year low because of the supply exceeding demand as a result of fracking. Once the demand for natural gas increases the cost of natural gas will return to their highs. The utility companies are guaranteed a profit so our electrical rates will skyrocket. However, with solar power the cost of fuel is always free.*
    - *The centralized design of our grid loses a significant amount of power through line losses and voltage drop to get power from where it is produced to where we need it. At times, it requires generating a few kWh's to get one kWh to your home for you to use. With distributed generation solar, the power you cannot consume at the time of production goes through your meter and to the neighbor's house for them to use.*
    - *If your neighbor is on time-of-day rates they could be buying electricity from the utility company at the peak rate, which could be 300% more than the cost of the power you pull off the grid at night when the sun goes down. DTE's own website states, "Did you know that it costs DTE Energy $1 – $3 per kWh to buy electricity from outside the state when energy demand exceeds our supply?". If you are guaranteed a profit why change?*
    - *Computer network administrators learned a couple decades ago that they needed to switch to a distributed network since a centralized network exposed them to unnecessary risks from equipment failures and natural or man-made disasters. If you feel this is overstated please Google – 'CIA power grid warning' and 'San Jose substation terrorist attack'.*
        - *NOTE – In order to transition from a centralized grid to a distributed grid it would require one of the following three things;*
            - *Billions of dollars in tax payer dollars*
            - *Billions of dollars in rate payer dollars*
            - *Pro net metering policy to let the market transition us*
- *NOTE – The utility companies will argue that the peak production of solar is slightly earlier than the peak demand on the grid. This is because our current policies incentivize panels facing south. If panels face southwest then they would peak at the exact same time. Some utility companies in other states have started incentivizing generators to face their panels to the southwest.*

Thank you,

Robert Satchwell

2172 Spruceway Ln

Ann Arbor, MI 48103

734-972-9374 cell

From:	Larry Ward
To:	Baldwin, Julie (LARA)
Cc:	E Rivet
Subject:	MCEF Submitted Comments; DG Tariff - DUE 1.10.18
Date:	Wednesday, January 10, 2018 4:45:22 PM
Attachments:	MPSC DG Tariff Comments; MCEF 1.10.18.pdf image001.png

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Julie,

Attached are the Michigan Conservative Energy Forum (MCEF) comments related to the DG Tariff/Workgroup.

Please let us know if any additional information is needed. As always – we are looking forward to working together on this issue in 2018.

Larry J. Ward
Executive Director, MCEF
LWard@micef.org
Cell: 517.203.9896

January 10, 2018

Ms. Julie Baldwin
Michigan Public Service Commission
7109 West Saginaw Highway
Lansing, MI 48909

Re: Distributed Generation Tariff – Inflow/Outflow PURPA concept

Dear Ms. Baldwin,

The Michigan Conservative Energy Forum (MCEF) appreciates the opportunity to provide comments regarding the Michigan Public Service Commission's (MPSC) proposal for a net energy metering (NEM)/distributed generation (DG) tariff per the requirements of Public Act 341 of 2016. We also appreciate the opportunity we have had to participate in the DG workgroup throughout 2017. MCEF is a 501c3 non-profit public education organization dedicated to promoting comprehensive, forward-thinking policy in Michigan that will promote energy that is reliable, affordable, and abundant. While we are consistent advocates of a diverse energy portfolio, we place a strong emphasis on advancing clean and renewable energy through fair, reasonable, and market-based policies.

We will be frank in our comments regarding the current MPSC staff proposal to essentially create a new rate structure based on an inflow/outflow model, where inflow is being evaluated consistent with a cost of service approach, while outflow is proposed to be calculated under a PURPA-based avoided cost model. Subsection 6a (14) of PA 341 states:

> "*Within 1 year after the effective date of the amendatory act that added this subsection, the commission shall conduct a study on an appropriate tariff reflecting equitable cost of service for utility revenue requirements for customers who participate in a net metering program or distributed generation program under the clean and renewable energy and energy waste reduction act, 2008 PA 295, MCL 460.1001 to 460.1211.*"

MCEF entered the DG workgroup meetings with the expectation that MPSC staff would engage in a very straightforward process. Namely, and per the plain language of the statute, we expected the Commission to 1) conduct a standard cost of service study, 2) determine if NEM customers are being overcompensated for their actual cost of service to the utility by receiving a kWh-for-kWh credit for energy outflow (i.e. if NEM customers are being "subsidized" by non-NEM customers), and if the Commission found that NEM customers *are* being subsidized for use of the grid, then the Commission would 3) establish an "appropriate tariff".

We are deeply concerned that, to date, a more complex and incomplete process than what the legislation called for has taken place, with the result being an inadvisable approach: substituting a simple tariff instead with the proposed inflow/outflow model that applies different rates to the two directions of energy flow – retail rates for inflow, PURPA avoided costs for outflow.

MCEF was deeply engaged in education and working with other stakeholders throughout the legislative process that produced the language of subsection 6a (14). The language, the legislative record established during debate on PA 341, and the intent of the Legislature are clear in providing direction to the Commission and staff. The statute does not authorize replacement of NEM/DG with a new, complex rate structure. It states that "the commission ***shall conduct a study*** on an appropriate tariff reflecting equitable cost of service for utility revenue requirements…" It is our belief that this mandate has only been half completed.

At the August workgroup meeting, the staff presented calculations on the inflow side demonstrating that residential solar DG customers have a lower cost of service than non-DG customers, approximately 16% lower. If this were the "end all" of the process, the Commission and staff would instead need to recommend, per the statute, that DG customers be assessed a credit rather than a tariff (or perhaps it would be called a "negative tariff"). Despite this finding, the staff recommendation at the December meeting appears to require DG customers to pay full retail rates for inflow, with no mechanism (credit, negative tariff, or otherwise) to capture the positive value DG customers provide to the grid.

But the overriding point remains that the mandated cost of service study has not been completed on the outflow side. By proposing the PURPA-based avoided cost model for outflow as an alternative to a standard cost of service study, the Commission is not fulfilling the statutory requirement. It is safe to say that the Legislature expects a full cost of service study to be completed. Likewise, it is difficult to explain how the clear direction of subsection 6a (14) to recommend a tariff based on an equitable cost of service study comes back to the Legislature as a completely new, bi-furcated rate structure that would eliminate net metering as the body understood it when the law was passed, with no recognizable tariff included.

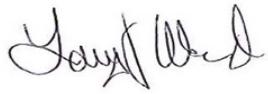
There is a myriad of concerns about moving to this dual-rate inflow/outflow model that were expressed during the workgroup meetings and in written comments submitted to the Commission by numerous stakeholders. MCEF will not restate them here. These concerns only multiplied with the staff's proposal at the December meeting to use the PURPA rate as the foundation for outflow compensation. PURPA producers and residential DG customers are so structurally different and regulated under substantially distinct sections of laws, rules, and regulations, that equating them for rate purposes is difficult to justify. Based on comments, data, and analysis provided to the Commission over these many months, the result of using PURPA rates will undoubtedly be the ***inequitable*** treatment of DG customers. Our view is that the PURPA route should be abandoned.

Despite the nature of these comments, MCEF remains confident that the Commission can readily address these concerns by focusing its immediate efforts on completing the "other half" of the cost of service study as it relates to outflow. The outcome of that study will provide the information and clarity needed for the Commission to fulfill its obligation under PA 341. An incredible amount of good work has

been done through the workgroup process. Completing the cost of service study will allow that work to be brought to its best result.

We look forward to our continued collaboration with the MPSC and we thank you again for the opportunity to submit comments on this matter.

Sincerely,



Larry J. Ward
Executive Director
Michigan Conservative Energy Forum

Ed Rivet
Leadership Council Member
Michigan Conservative Energy Forum

From:	Charlotte Jameson
To:	Baldwin, Julie (LARA)
Cc:	Harlow, Jesse (LARA)
Subject:	MEC Comments on MPSC Staff Study_Distributed Generation Tariff
Date:	Wednesday, January 10, 2018 4:28:37 PM
Attachments:	Michigan Environmental Council Comments_ MPSC Staff Study_ Distributed GenerationTariff.pdf

Dear Ms. Baldwin,

Please find attached Michigan Environmental Council's comments in regards to the report on the MPSC staff study to develop a cost of service-based distributed generation program tariff. We look forward to working with staff and the Commission in the development of this tariff.

Best,
Charlotte

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Charlotte Jameson
Michigan Environmental Council
charlotte@environmentalcouncil.org
(c) 919-215-7133; (o) 517-487-9539

January 10th, 2018

Julie Baldwin, Manager, Renewable Energy Section
Michigan Public Service Commission
7109 W. Saginaw Hwy., Lansing, MI 4891

Re: Comments on the Report on the MPSC Staff Study to Develop a Cost of Service-Based Distributed Generation Program Tariff

Dear Ms. Baldwin,

The Michigan Environmental Council appreciates this opportunity to provide feedback on the proposed Distributed Generation Program Tariff being developed by the Commission. One guiding principle for the Michigan Environmental Council as we move forward is to recognize the variety of values that distributed resources will provide to Michigan and ensure the tariff encourages continued growth in this important area.

In the draft report on the MPSC Staff Study to Develop a Cost of Service-Based Distributed Generation Program Tariff, Michigan Public Service Commission staff (staff) propose using an inflow/outflow billing mechanism for distributed generation (DG) customers and using the underlying retail sales rate to price inflows and crediting outflows at the PURPA avoided cost rate established by the Commission for each regulated electric utility. Further the staff discussed "grossing up" the base PURPA rate for the outflow to account for line loss benefits DG customers provide.

The legislature under Sec. 6a (14) of Act 341 of 2016 directed the commission to both study and approve a tariff for DG customers with the requirement that the tariff be "equitable" in the recovery of the "cost of service." Staff correctly recommended against adding a fixed-grid charge to Michigan's current net metering billing as a method of recovering cost of service. However, the draft inflow/outflow tariff proposal fails to reflect the "equitable cost of service" because it does not fully account for the actual costs or benefits of a DG customer to the grid as required by Act 341 of 2016. We would encourage staff to make a reasonable effort to quantify and incorporate a wider consideration of DG benefits in particular those benefits not currently accounted for in the PURPA avoided cost methodology including reduced transmission costs, reduced air emissions and environmental compliance costs, and hedging value. In addition we would encourage the staff to clarify the fixed or flexible nature of the outflow rate and timeline for revision to the outflow rate.

1. Quantifying and Incorporating DG Benefits into Outflow Rate

Distributed generation provides a number of benefits including avoided carbon emissions, reduced criteria air pollutant emissions, avoided compliance costs with environmental regulations and renewable portfolio standards, offsets to investments in generation; transmission; or distribution, reactive power supply, increased system reliability, and hedging fuel risk.[1]

These various short term and long term benefits Michigan DG customers provide are, however, not fully accounted for in the proposed outflow credit. The PURPA avoided cost methodology in Michigan does not measure for a number of benefits associated with DG. In its order in U-18090 the Commission found that "except for line losses, there was insufficient evidence in this record to quantify other avoided costs including reduced transmission costs, reduced air emissions and environmental compliance costs, and the hedging value resulting from QF power."[2] Further in the draft DG tariff report staff stated that they did "not include reactive power support, or additional environmental benefits" in its updated VOS estimate, but indicated interest in calculating "these components in future biennial avoided cost cases."

Staff discussed in the draft tariff report including an adder on the PURPA avoided cost to account for line loss reduction benefits of DG. We concur with the idea that the PURPA avoided cost should be grossed up to include benefits of DG not currently factored into the PURPA avoided cost methodology, but including only an adder for line loss is insufficient. Instead of delaying the calculations of avoided transmission and distribution costs, reduced fuel-price risk, avoided environmental compliance and reduced emissions to future avoided cost cases, the Commission should quantify those benefits as part of this process and treat those benefits in a similar manner to line loss- as an adder to the base outflow rate.

A white paper by the University of Michigan Dow Sustainability Fellows Program in December of 2014 included an analysis of three externalities related to solar DG- fuel price hedge, environmental benefit, and reactive supply and voltage control.[3] The white paper placed the value of fuel price hedge of solar DG at $0.019 kWh and the value of environmental benefits at $0.023/kWh.[4] The report used an annual avoided carbon emissions value as a proxy for environmental benefits from DG. That pricing of environmental benefits round $0.02/kWh falls

[1] Rocky Mountain Institute, A Review of Solar PV benefit & Cost Studies, 2nd Edition, 2013, https://rmi.org/wp-content/uploads/2017/04/eLab_DERBenefitCostDeck_Report_2013-1.pdf
[2] Michigan Public Service Commission Order, Case No. U-18090, November 21, 2017 http://www.michigan.gov/documents/mpsc/U-18090_11_21_2017_606668_7.pdf
[3] University of Michiga Dow Sustainability Fellows Program, Valuing Distributed Solar Generation in Michigan, December 2014, http://www.michigan.gov/documents/mpsc/LaRoy_Valuing-Distributed-Solar-Generation-in-Michigan_UofM-Dow_605404_7.pdf
[4] Ibid, University of Michigan Dow Sustainability Fellows Program

in line with analysis conducted in other states. For example, Austin Energy Value of Solar calculation puts environmental benefits at $0.02/kWh and a Minnesota study conducted by the Institute for Self-Reliance puts environmental benefits of solar DG in that state at $0.031/kWh.[5] We note the National Renewable Energy Laboratory calculated a $0.138/kWh VOS in 2014 for Michigan that incorporated reactive power support, loss savings, transmission and distribution, capacity, environmental benefits, and energy and generation components of PV value.[6]

Reasonable estimates could be used as an interim stand-in adders if insufficient information exists now to develop a robust outflow rate with all externalities quantified and accounted for. Based on the information noted above we urge the Commission to include an adder of $0.025/kWh to the "enhanced" PURPA rate proposed by staff to recognize these benefits. Alternatively the Commission could use the full retail rate as an interim outflow value until the value of the wider array of DG benefits is calculated.

2. Long Term Certainty Needed for DG Customers

While the cost of DG technology like solar continues to decline there is still a significant upfront cost required to install these resources. Individual customers must be able to easily calculate the impact of DG on their energy costs versus the upfront capital investment needed in order to determine if an investment in those resources is wise. In addition to rate simplicity long term certainty in export credits is important for individual customers to gauge the length of the payback period for DG installations. Regularly revising inflow/outflow rates undermines long-term certainty and complicates the ability of individuals to determine the impact of DG resources on their energy bills.

Additionally, DG solar can act as a hedge against uncertain fossil fuel prices given that once solar is installed the costs of electricity generated is known over the equipment's lifetime. Increasing the volatility of the outflow credit by varying it frequently however undermines some of the long-term certainty associated with solar resources.

In the current draft of the DG tariff proposal it appears that by pegging outflow rates to the PURPA avoided cost the staff is recommending that outflow rates be re-evaluated and potentially revised every two years as PURPA avoided costs are revisited. Under this scenario an individual interested in installing DG would only know for a period of 2 years what his/her

[5] Green Tech Media, Austin Energy's Value of Solar Tariff: Could It Work Anywhere Else?, 2013, https://www.greentechmedia.com/articles/read/austin-energys-value-of-solar-tariff-could-it-work-anywhere-else#gs.u3v0Szk; Institute for Local Self Reliance, Minnesota's Value of Solar: Can a Northern State's New Solar Policy Defuse Distributed Generation Battles?, April 2014, http://ilsr.org/wp-content/uploads/2014/04/MN-Value-of-Solar-from-ILSR.pdf

[6] National Renewable Energy Laboratory, White Paper: The Value of Grid-Connected Photovoltaics in Michigan, January 2012, http://www.michigan.gov/documents/mpsc/120123_PVvaluation_MI_394661_7.pdf

outflow credit might be. We ask staff to clarify in the final report the intervals for revisions to the outflow rate and that an option be included for new enrollees to "lock in" to an outflow rate for at least ten years at the time of installation of a DG resource.

3. Impacts of Undervaluing DG Resources

Accurate pricing in the DG market is critical to ensuring the continued growth of this sector. In fact, in making their case for moving towards an inflow/outflow model staff echo the understanding that accurate price signals to customers is a foundational principle that informs customer investments, stating "rate designs that provide transparent and accurate pricing signals are a prerequisite for the fair monetization of the value of customer participation in demand response and load control programs and can help in providing a measure of a customer's financial payback for investment in technologies that allow for participation in such programs."

If the Commission undervalues DG resources, as we believe is the case in the proposal put forward in the draft report, that undervalued price signal will greatly impact customer behavior in the DG space. In particular it will likely move individuals towards battery storage and away from full grid integration of their DG generation. As the price of batteries has declined and continues to decline combining DG resources with storage capabilities is a very realistic option for a growing number of customers. The movement of DG customers to battery storage would reduce or in some cases eliminate the benefits to the grid and all ratepayers that DG customers provide.

In addition to the wide array of benefits of DG already discussed in these comments, the advent and increased use of smart inverters and the benefits that DG when paired with a smart inverter provide to the grid should also be noted. According to the National Renewable Energy Laboratory smart inverters combined with high solar adoption can support the grid in the following ways: capability to "ride through" minor disturbances of frequency or voltage, capability to inject or absorb electricity into or from the grid, capability to provide a "soft start" after power outages.[7] As Michigan reaches higher levels of DG solar uptake the increased potential benefits from smart inverters to our grid present a great opportunity. However, if that higher adoption of DG solar is instead routed towards battery storage we stand to lose out on the benefits of smart inverters to renewable energy integration and to the overall resiliency of our grid.

Michigan Environmental Council urges the Commission and staff to further analyze the full scope of costs and benefits associated with DG in Michigan and include adders to the outflow

[7] National Renewable Energy Laboratory, Smart Grid, Smart Inverters for a Smart Energy Future, December 2017, https://www.nrel.gov/technical-assistance/blog/posts/smart-grid-smart-inverters-for-a-smart-energy-future.html

rate in order to more accurately and equitably reflect the benefits of distributed generation. We would also caution staff to tread carefully as undervaluing distributed generation would negatively impact Michigan's nascent residential solar industry and potentially deprive all customers in Michigan of benefits from DG resource integration into the grid. At a minimum, based on calculations in Michigan and in other states of the VOS, we feel that an adder of $0.025/kWh should be included in the "enhanced" PURPA rate proposed by staff as a reasonable estimate of the DG benefits not currently included in the avoided cost calculation. If insufficient information exists at this time to determine a tariff that will be truly "equitable" in the recovery of the "cost of service," we would encourage staff to recommend using the retail rate as the outflow compensation until such a time that all necessary calculations can be made. This would cause the least interim disruption to the market.

We appreciate the opportunity to comment on the draft report and look forward to working with staff and the Commission in the development of the DG tariff.

Sincerely,

Charlotte Jameson
Energy Policy Director
Michigan Environmental Council

James Clift
Policy Director
Michigan Environmental Council

From:	Laura Sherman
To:	Baldwin, Julie (LARA)
Cc:	Liesl Eichler Clark
Subject:	MiEIBC Comments: DG staff report
Date:	Wednesday, January 10, 2018 4:25:01 PM
Attachments:	image001.png 18.01.10-Michigan EIBC_Comments on staff DG report_Final.pdf Solar Energy in Michigan_Final Report.pdf

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Hi Julie,

Michigan EIBC would like to submit the attached comments to the DG staff report. Also attached please find a recent report from the Institute for Energy Innovation that Michigan EIBC submits as an Appendix.

Please let us know if you have any questions.

Best,

Laura

(This is my new MiEIBC email address)

****

Laura Sherman, Ph.D. | Vice President of Policy Development
Michigan Energy Innovation Business Council
laura@mieibc.org | 607-592-3026
http://www.mieibc.org

January 10, 2018

Julie Baldwin
Michigan Public Service Commission Staff
7109 West Saginaw Highway
Post Office Box 30221
Lansing, MI 48909

Re: Report on the MPSC Staff Study to Develop a Cost of Service-Based Distributed Generation Program Tariff

Dear Ms. Baldwin:

The Michigan Energy Innovation Business Council (Michigan EIBC) is pleased to submit comments to inform the Michigan Public Service Commission's implementation of 2016 PA 341 and PA 342 involving the treatment of new distributed generation (DG) projects in Michigan. Comprised of a membership of more than 100 companies doing business in Michigan, Michigan EIBC's mission is to grow Michigan's advanced energy economy by fostering opportunities for innovation and business growth and offering a unified voice in creating a business-friendly environment for the advanced energy industry in Michigan.

On December 21, 2016, Governor Rick Snyder signed the PA 341 and PA 342 into law. As he said in a statement, "The bills protect our environment by making it easier for Michigan to develop its own energy sources, instead of buying coal from various states. Our energy will be more affordable, more reliable, and more green."[1] It is important that the legislation is executed in such a manner that we are able to follow through on this promise and foster the growth of renewable energy in Michigan. Specifically, subsection 6a(14) of PA 341 states: "Within 1 year after the effective date of the amendatory act that added this subsection, the commission shall conduct a study on an **appropriate tariff reflecting equitable cost of service for utility revenue requirements for customers who participate in a net metering program or distributed generation program** under the clean and renewable energy and energy waste reduction act, 2008 PA 295, MCL 460.1001 to 460.1211."[2] The Michigan EIBC and its members have been participating, along with other stakeholders, in the Commission's workgroup process to determine an appropriate DG tariff. Although the Michigan EIBC is pleased that the Commission is

[1] Statement of Governor Rick Snyder, December 15, 2016. http://www.michigan.gov/snyder/0,4668,7-277-57577_57657-399751--,00.html

[2] MCL § 460.6a(4). http://www.legislature.mi.gov/(S(onkt5gfc2v4wq1tthjcjjzp0))/mileg.aspx?page=getObject&objectName=mcl-460-6a

conducting an open and transparent stakeholder process, we are concerned with the staff's proposed DG program tariff.

The staff report proposes to replace net energy metering (NEM) with a new approach to billing called the Inflow/Outflow billing mechanism. Under this rate design, staff propose that customers would pay retail rates for electricity that they use ("inflow") and would be credited for any excess on-site generation at the PURPA avoided-cost rate ("outflow"). As outlined below, the Michigan EIBC has a number of concerns with this approach.

Net Energy Metering

As argued in previous comments, Michigan EIBC members have found that NEM policies are easily explained to customers, readily understood by those customers, and provide a simple method for calculating expected cost savings of a new DG system. In contrast, the proposed rate design would be confusing, difficult to explain, produce uncertain economic results, and overcharge customers. Because the cost of inflow and value of outflow, as proposed, would be regularly revised and because the accounting depends significantly on customer characteristics, Michigan EIBC member companies may not be able to provide customers with an accurate determination of the economic benefits or payback period for DG systems. It would be difficult to demonstrate the value of investing in solar DG systems under such conditions. Adopting a new rate design at this stage in the development of the State's solar industry puts that industry in jeopardy.

PA 341 does not require the Commission to end NEM or establish an entirely new rate design. However, the staff report asserts that true NEM does not recover the fair and equitable use of the grid. The report also states that even modified net metering sends the "incorrect price signals and [lacks a] cost of service basis." However, these assertions are not well supported in the report. Analyses presented during the DG workgroup meetings suggests that NEM, on balance, may recover the fair and equitable use of the grid. For example, as modeled by Chart House Energy, a Michigan EIBC member, DG customers are allocated higher costs as compared to non-DG customers for all rate classes and rate structures.[3] Based on these calculations, DG customers should be allocated an additional negative tariff (i.e., credit), and NEM should be left in place. In addition, according to modeling by Douglas Jester, full net-zero DG customers likely incur only a small net cost of service. Customers with smaller solar DG systems (i.e., smaller than that required to fully meet their annual electricity needs) likely have more similar loads to non-DG customers except that they use less electricity during peak daytime hours. As a result, it is likely that these non net-zero DG customers have a much lower net cost of service and are likely overpaying under NEM.

[3] Staff confirmed this determination in their report for the residential rate class.

Cost of Service Study

As the Michigan EIBC has argued in previous comments, it is illogical to propose a new rate design (the Inflow/Outflow method) prior to fully completing cost of service studies. By continuing to do so, the Commission staff are proposing to solve a problem that may not exist in a manner that is not statutorily warranted. Not only is this an illogical approach, it contravenes a process the statute arguably requires the Commission to follow under PA 341: (1) determine cost of service and (2) if inequitable, create appropriate tariff.

Instead of completing a full cost of service study, staff did a partial cost of service study (only regarding the cost of inflow and only for residential customers) based on DTE's 2014 NEM data. Based on these data, residential DG customers should be responsible for a lower total revenue requirement than equivalent non-DG residential customers. This is true both for production costs (allocated based on summer month system peaks) and distribution costs (allocated based on all 12 system peaks). In addition, the staff assert that the effect of solar DG would be to decrease the costs to the distribution system as well (allocated based on non-contingent peaks).

It is clear, even based on this limited study, that residential DG customers are responsible for much lower costs than other non-DG residential customers. It follows then that residential DG customers may already be paying their equitable share or more than their equitable share of grid costs under NEM. However, the staff report does not follow these data to their conclusion and complete the cost of service study. In addition, the staff report does not describe cost of service studies for commercial or industrial DG customers. Instead, the report concludes that DG is just one of many attributes that cause variability among the residential class and therefore that there is no need to separate out residential DG customers into their own class.

According to the National Association of Regulatory Utility Commissioners, in determining whether to create a separate DG class, Commissioners should consider whether DG customers display significantly different load profiles, especially at the time of the system peaks, from non-DG customers. If the load profiles of DG customers are distinct from non-DG customers in the same rate class, it is justifiable to separate these customers into a separate class or sub-class. It is clear that Michigan's DG customers display very different load profiles from non-DG customers. For example, Michigan's residential DG customers use less energy during peak hours than non-DG customers, especially during the summer months. As a result, it would be appropriate to separate DG customers into a separate sub-class within the larger rate class to which they would otherwise belong.

Michigan EIBC argues that PA 342 additionally obliges the Commission to do so. The law requires the Commission to "conduct a study on an **appropriate tariff reflecting equitable cost of service for utility revenue requirements for customers who participate in a net metering program or distributed generation program**." It is not relevant that there are a very limited number of DG customers currently in Michigan or that to conduct such a study would be time consuming and complex. If an appropriate cost of service and equitable rate design are established, there are likely to be many more DG customers in Michigan in the future. The staff report states that if that happens, cost of service studies may allocate costs to specifically identified DG classes with unique rate schedules. It is imperative that these unique rate schedules and specifically identified DG sub-classes be established now, as required by law and as warranted by the distinct load profiles and lower cost of service requirements for these customers.

Additionally, without a full cost of service study, it is not accurate to assume that current retail electricity rates represent the equitable cost of inflow for DG customers. These rates, instead, represent the cost of inflow electricity for the larger customer class. However, as demonstrated by the limited cost of service study conducted by Commission staff, residential DG customers have much lower costs than the residential class as a whole. It is therefore illogical and contradictory to the law to equate retail rates with the equitable cost of service for DG customers.

Use of Avoided Cost

In addition to equating DG customer inflow costs with residential retail rates, the staff report proposes to compensate DG customers for outflow at the PURPA avoided cost rate. The Michigan EIBC urges the Commission to instead complete a determination of inflow costs and outflow value based on cost of service principles. The use of PURPA avoided cost appears to be a matter of convenience but is not one that follows from the law nor is fair and equitable.

In addition, although the Michigan EIBC was pleased with many aspects of the Commission's recent updates to Michigan's PURPA regulations, that decision still does not fully reflect all of the avoided costs for a utility or the additional benefits of solar energy to the grid. The Michigan Institute for Energy Innovation (IEI) recently released a report detailing the benefits of solar DG,[4] which the Michigan EIBC submits as an Appendix to these comments. In the report, IEI examined meta-analyses evaluating more than 40 solar studies across the country plus nine more recent studies published since 2015. These studies determined additional benefits of solar not included in the MPSC's recent PURPA avoided cost valuation including: avoided distribution system line losses, avoided transmission and distribution capacity, grid support services, avoided risk of increased fuel prices, grid reliability

[4] Institute for Energy Innovation, *Solar Energy in Michigan: The Economic Impact of Distributed Generation on Non-Solar Customers, 2017.* https://www.instituteforenergyinnovation.org/impact-of-dg-on-nonsolar-ratepayers.

and resiliency, environmental and health benefits, and societal benefits. Although some of these benefits can be more difficult to monetize, value of solar studies conducted across the country have effectively and quantitatively taken them into consideration.[5,6,7,8,9,10,11] By valuing outflow of electricity produced by DG customers at the PURPA avoided cost rate, the Commission would be ignoring these significant and well-documented benefits of solar to the grid, to utilities, to customers, and to the broader society. The Commission needs to take into account the full value of distributed generation. Otherwise, the Commission would be reimbursing customers for less than the full value of the electricity both to the utility and to the larger community.

In addition, the Commission should consider that there may be income tax implications if outflow of electricity is valued at the PURPA avoided cost rates. Although the IRS has ruled that NEM is essentially self-service of electricity (and therefore not subject to taxation), if customers are producing electricity and being paid for that production, there may be income taxation implications.

AMI Data

The Inflow/Outflow billing mechanism would require the use of Advanced Metering Infrastructure (AMI). It would also require utility billing systems that are capable of making and reporting those data. However, current NEM customers have experienced significant difficulty in accessing those raw data through their utility service providers. Members of the Michigan EIBC are concerned that Michigan's utilities may not be prepared to utilize the deployed AMI to its full capacity and may not be sufficiently customer focused. Any future billing/metering systems and data portals must be user friendly and customer focused.

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Demand charges

Throughout the staff report, the given examples describe the possibility of future demand charges (e.g., on pages 7 and 9). Demand charges would be extremely harmful to DG programs and these references are unnecessary. Residential customers are extremely diverse in their use of electricity. Because there is no valid statistical relationship between an individual residential customer's peak demand and cost of service, demand charges essentially amount to a random fixed charge.[12] In addition, demand charges are complicated and difficult for customers to understand. The Michigan EIBC strongly recommends against using demand charges as an example.

Additionally, non-residential DG customers with current demand charges are even more significantly overcharged than customers without demand charges. Commercial, industrial and agricultural customers with solar produce only a small fraction of their electricity needs and solar offsets little of their demand because these customers have a much more uniform usage. This means that costs are being allocated to these customers without proper credit for the value afforded to the utilities. These demand charges for non-residential customers should be taken into account in the determination of an equitable DG tariff for these customers.

Conclusion

Michigan EIBC urges the Commission to adhere to the plain language of the statute – and the legislative intent behind it – in developing the DG program. We ask that the Commission completes a full cost of service study for each class of customer and accordingly create a DG tariff based on cost of service principles that accurately includes all of the benefits of DG. Our organization – and the over 100 companies doing business in Michigan that we represent – look forward to continuing close engagement with the Commission.

Thank you for the in-depth work of the staff on this very important issue.

Respectfully submitted,

Liesl Eichler Clark
President
Michigan EIBC

[12] Chernick et al. 2016. *Charge Without a Cause? Assessing Electric Utility Demand Charges on Small Customers*. http://5lakesenergy.com/wp-content/uploads/2016/07/Charge-Without-a-Cause-Final-7-18-16-002.pdf

Solar Energy in Michigan: The Economic Impact of Distributed Generation on Non-Solar Customers

Executive Summary

On April 20, 2017, Michigan's new Clean and Renewable Energy and Energy Waste Reduction Act and revisions to Michigan's general public utilities act (Public Acts 341 and 342 of 2016) took effect. Among other things, the new laws require the Michigan Public Service Commission ("MPSC" or "Commission") to "conduct a study on an appropriate tariff reflecting the equitable cost of service for utility revenue requirements for customers who participate in a net metering program or distributed generation program" within one year. (1)

This new statutory provision reflects the rapid growth in the installation of solar distributed generation (herein referred to as "solar DG"[1]) systems, and concerns regarding the impact of net energy metering (NEM) policies on ratepayers and utilities. Opponents of NEM argue that giving net metering customers full retail credit for the surplus energy they generate overvalues both the capacity and energy that solar DG systems provide. As a result of this pricing structure, opponents assert that net metering customers are able to avoid paying for the grid support services on which they rely and are, therefore, being subsidized by non-solar customers. Establishing a new tariff that reflects the equitable cost-of-service is a means to ensure fairness for both for those ratepayers who have installed solar DG systems and those who have not.

Rather than endorsing additional costs on non-solar ratepayers, however, a majority of studies conducted to date have concluded that the utilization of NEM for solar DG offers net benefits to the electric system as a whole, including non-solar customers. Rather than shifting costs to other ratepayers, the growth of solar DG systems in most cases helps to reduce overall costs and represents a net benefit to all utility customers.

This report by the Institute for Energy Innovation (IEI) is intended to (1) summarize the national data related to evaluating the "value of solar" (VOS) to the overall grid; and (2) to outline "best practices" for compensating net metering customers. Through this report, IEI seeks to inform

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[1] There are a variety of terms used to describe small-scale energy resources. Distributed energy resources (DER) or distributed generation (DG) is often used to refer to a broad set of technologies located on the distribution grid, often close to a customer's premises. DER can include solar, small-scale wind, geothermal, combined heat and power, battery storage, demand response, electric vehicles, and energy efficiency, among other technologies. In this report, we specifically focus on solar distributed generation and use the more narrow term "solar DG" herein.

discussions regarding net energy metering (NEM) across Michigan, and ensure that the aforementioned study being conducted by the MPSC accurately reflects the true costs and benefits of solar DG in Michigan.

Part I of this report considers the growth of solar DG across the country, as well as the increasing controversy over NEM policies that is driven, in large part, by concerns that non-solar ratepayers are effectively subsidizing those who install solar DG systems.

Part II reviews the dozens of recent studies comparing the value of solar and NEM policies. While there is substantial variability between studies in terms of the assumptions and methodologies employed, a majority of these studies conclude that NEM represents a net benefit to ratepayers – even those that are not enrolled and who have not installed solar DG systems. It also outlines a standard comprehensive methodology developed by the Interstate Renewable Energy Council (IREC) to address the variability between studies in order to enable "apples-to-apples" comparisons between value of solar calculations.

Part III offers a series of recommendations for the MPSC to consider in crafting the study on an appropriate distributed generation tariff as required under MCL 460.6a.

IEI's Key Findings:

- The majority of studies conducted to date find that customers participating in net metering programs represent a net benefit to the grid.

- While NEM customers receive credits that reduce or eliminate their monthly utility bills, solar DG provides measurable and monetizable benefits to the power system that should be considered when evaluating the true impact of solar DG and NEM on all ratepayers.

- Solar DG both reduces demand for power from the utility and provides power to the grid when the systems generate more power than is used at a residential or commercial site. This surplus power is generated at or near peak times when the cost to the utility of procuring additional power is most expensive.

- Net energy metering represents an attempt to balance the true costs and benefits of the energy being produced and that which is consumed in a way that is simple, fair, and convenient for both the utility and its customers. Therefore, any tariff should fully compensate solar DG customers for the value their systems provide.

- Adopting a transparent, comprehensive standard valuation methodology such as the IREC model can help ensure full accounting of both the costs and benefits of solar DG. While the calculations necessary to develop a value of solar differ from those needed to assess the cost to serve solar DG customers, IEI specifically endorses the Commission's

intent to include a VOS study as part of its examination of the costs and benefits associated with distributed generation and net metering.[2]

- Because locational factors can affect solar valuations, access to location-specific utility data should be made available to stakeholders as part of the development of new tariff mechanisms.

[2] Indeed, in its May 31, 2017 Order involving the method and avoided cost calculation for Consumers Energy Company to comply with the Public Utility Regulatory Policies Act in Case No. U-18090, the Commission noted that a VOS analysis as part of the PURPA review would be "potentially duplicative, given the directive under the new energy legislation, which requires the Commission to create a distributed generation program and examine costs associated with distributed generation and net metering MCL 460.1173 and MCL 460.6a(14). Accordingly, the Commission anticipates that VOS issues, as well as other avoided costs associated with distributed generation generally, will be examined as part of these proceedings." (2)

PART I: Rapid Growth of Solar Distributed Generation: The Growing Concern Over Cross-Subsidization

Driven by declines in the cost of solar components, greater competition among solar installers, and growing familiarity with solar DG and its benefits, national solar DG has expanded by more than 50 percent annually over the last four years, with 2,158 MW of solar DG added in 2015 (2) and 2,583 MW installed in 2016 (3). In Michigan, solar DG systems installed through NEM programs grew 20 percent from 2014 to 2015, adding 2570 kW in 2015 (4).

This growth has been facilitated by the expansion of state-based NEM programs. As of 2016, 41 states, the District of Columbia, and four US territories had NEM policies (Figure 1) (5). These programs allow customers who deploy solar DG systems to directly offset their electricity usage and receive a credit for any excess electricity they generate. These credits may be applied to "net" out electric bills, essentially allowing these customers to run their meters backward during periods of surplus generation. The National Association of Regulatory Utility Commissioners (NARUC) concludes that NEM policies are simple, easily understood by ratepayers, and the least expensive means by which a utility can implement a compensation methodology for a distributed energy resource (6).

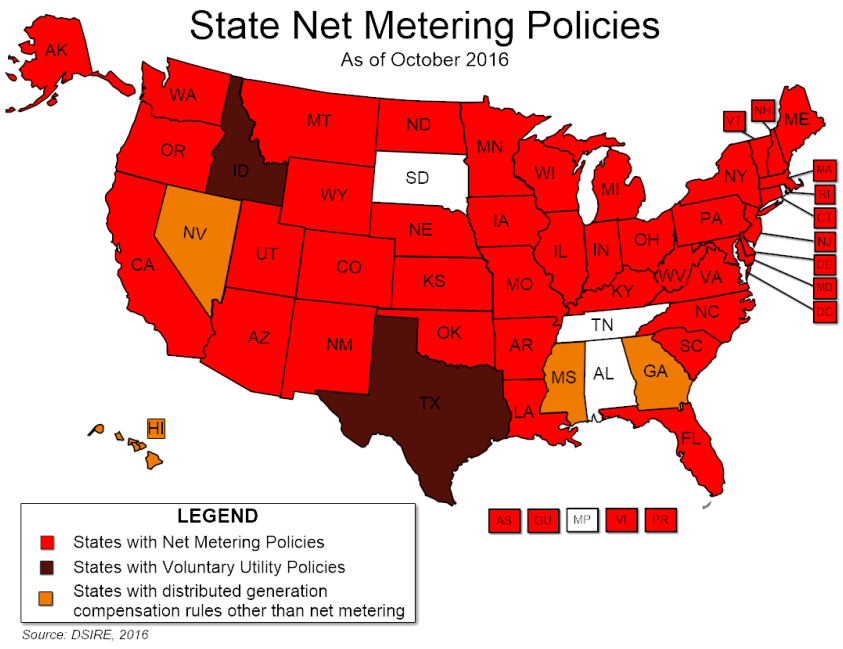

Figure 1. State net energy metering policies

Concerns Over Potential Cost-Shifts and Cross Subsidization

There is growing concern among utilities and some others that customers participating in NEM programs reap economic advantages over non-participating customers. As more customers take advantage of NEM, utilities are confronted with loss of revenue and a concern that the fixed

costs for maintaining and administering the power system will be spread among a declining number of non-NEM ratepayers. Under this view, customers who install solar DG systems and take advantage of NEM avoid paying other costs associated with operating and maintaining the electric power system, including costs for backup power, transmission and distribution. In addition, opponents argue that customers with installed solar DG systems do not pay their fair share of billing, metering and administrative services. Some utilities assert that "cross-subsidization" occurs because NEM customers continue to use the electric grid to receive power when their systems are not producing, but the credits they receive for sending their excess power back to the grid allow them to avoid paying their share of the fixed costs. Acting on these concerns, a total of 212 state and utility-level distributed solar policy and rate changes were proposed in 2016 (7), with Indiana recently rolling back its NEM program.

While it is true that NEM customers receive credits that reduce or eliminate their monthly electric bill, solar DG provides measurable and monetizable benefits to the power system – benefits that should be considered when evaluating the true impact of solar DG and NEM on ratepayers and society as a whole.

Solar DG both reduces demand for power from the utility and provides power to the grid when the systems generate more power than is used at a residential or commercial site. Typically, solar DG systems produce power during periods of the day when electricity is more expensive and demand is starting to peak. When this electricity is exported to the grid, the utility does not have to generate that electricity at more distant power plants, purchase power during times it is most expensive, or deliver it using the transmission and distribution system. Under NEM, customers supplying excess power receive a bill credit to offset their demand, which is often used at off-peak times when power is relatively cheap. As such, NEM represents an attempt to balance the true costs and benefits of the energy being produced and consumed in a way that is simple and convenient for both the utility and its customers.

In addition, while NEM policies may affect the economic returns for both ratepayers and utilities, the total impact of these policies is no more, and sometimes significantly less, than other factors that influence ratepayer bills and utility revenues. The Lawrence Berkeley National Laboratory (LBNL) and National Renewable Energy Laboratory (NREL) conducted an analysis of the financial impact of increasing amounts of solar DG on both ratepayers participating in and those not participating in solar DG (8). The study concluded that:

- Cross-subsidies, wherein a customer pays more or less than their allocated share of embedded costs, are pervasive and in some cases intentional within traditional rate design.

- Customers who install solar DG systems sometimes pay considerably more than their allocated share of embedded costs.

- Cost-shifting and cross-subsidies are not the same thing. The alleged cost-shift on which utilities and others focus their critiques of NEM may actually serve to reduce what, in the absence of NEM, would have been an even larger cross-subsidy. This is because many

solar DG customers tend to be relatively high-use customers who already pay more than their allocated share of embedded utility costs. In these cases, the supposed cost-shift only serves to slightly decrease the subsidization of costs for non-solar DG customers.

- Energy efficiency programs implemented over the past two decades have reduced U.S. retail electricity sales by roughly 4.3 percent through 2014. This is roughly 15 times larger than the cumulative impact from all solar DG systems installed nationwide.[3]

Efforts to Address Cross-Subsidization Concerns

Policymakers, utilities, public utility commissions and customers have an interest in understanding the actual costs imposed on the power system by solar DG as well as the value of the benefits solar DG provides. Determining the "real value" provided by solar DG to the electricity system is fundamental to establishing rates and tariffs that are just and reasonable. Determining the value of solar is also central to integrated resource planning exercises, particularly as distributed energy resources begin to supplant energy and capacity traditionally provided by central base load plants.

To address the many issues involved in valuing the exchange of energy between solar DG systems and the grid, NARUC recently released a manual (9) to guide the process of how distributed energy resources (DER), including solar DG, should be compensated. NARUC acknowledges that it is the responsibility of utilities to fairly value these resources in servicing their customers, and to ensure such valuations fully reflect the grid and societal benefits DER provide. The NARUC manual finds that:

> *"…a growing number of parties involved in the DER debate acknowledge DER can provide material benefits beyond just those enjoyed by the customer behind whose meter the DER is sited… Some jurisdictions, utilities, researchers, and advocates have also concluded or posited that responsible encouragement of other types of DER adoption leads to positive cost benefit results. In this respect, when using the traditional model for rate design, which does not compensate (or charge) particular customers for producing particular benefits (or costs) for the grid… a regulator would be missing that portion of the cost benefit analysis for DER… At the very least, neglecting DER benefits could represent a lost opportunity to meet customer needs on a more cost-effective basis. To put it another way, if a regulator conducted a detailed planning process beyond the distribution grid using today's technology, theoretically, some level of DER (beyond [energy efficiency]) could be used in a targeted basis throughout the grid to reduce costs.*

[3] There are two lessons to draw from the comparison to energy efficiency. First, those installing energy efficiency upgrades reduce utility revenues by decreasing the number of kilowatt hours sold. This is similarly true for those installing distributed generation systems. It is unclear why the loss of sales – and subsequent spreading of fixed grid costs – is treated differently between those who use less utility-generated power through conservation versus those who use less utility-generated power by generating a portion of their own power on site. Second, reducing energy use is proven to have broad benefits for all ratepayers, including those customers who do not install efficiency upgrades themselves, by delaying or in some cases eliminating the need for costly new generation. As customers continue to spend their own money to install distributed generation systems, in the long-term, ratepayers as a whole will similarly see savings associated with the reduced need for new utility-generated power.

For example, several states are exploring how to use DER to avoid infrastructure investments."

In December 2016, Michigan Governor Rick Snyder signed into law the Clean and Renewable Energy and Energy Waste Reduction Act and updates to the state's general public utilities act, which took effect on April 20, 2017. Among other things, the laws begin to address how solar DG should be valued by requiring that the MPSC conduct a study to determine the appropriate tariff for distributed generation to ultimately replace current NEM policy. The new law requires an examination of the cost of service for distributed generation using standard ratemaking principles.

PART II: Determining the True Value of Solar

At the heart of any effort to develop "an appropriate tariff reflecting equitable cost of service for utility revenue requirements for customers who participate in a net metering program or distributed generation program," as required by MCL 460.61(14), is an understanding and analysis of the various costs and benefits solar DG provides to the grid. Identified solar DG benefits include:

- **Avoided energy**: The value of energy (including fuel and operation/maintenance costs) and displacement of peak load that would otherwise need to be produced without solar DG. This calculation is based on the estimated present value of the avoided cost of generation levelized over 30 years from the generation source most likely to be displaced. It should include fuel, operation, and maintenance costs, and should be made with reference to the time-of-day value of energy.
- **Avoided generation capacity**: The value of displacing additional generation needed to meet peak loads and reserve capacity. Despite being intermittent, solar DG allows a utility to avoid acquiring a certain amount of additional capacity.
- **Avoided transmission and distribution system losses**: The value of avoided electricity losses from transmission and distribution lines conveying electricity. System line losses average 7 percent, but losses are higher during periods of peak demand. Because solar DG electricity production correlates with periods of peak demand, value of solar calculations should reflect the added value of these decreased marginal line losses.
- **Transmission and distribution capacity**: The value of eliminating or deferring the need for additional transmission and distribution capacity as well as the value of relieving congestion. Solar DG is usually located in close proximity to load, thereby reducing the use of the transmission and distribution system. The reduction in use results in avoided or deferred capital, operation, and maintenance costs as well as reduced congestion. This value may take into account the avoided costs of upgrades to wiring, transformers, voltage-regulation devices, and control systems.
- **Grid support services**: The value of providing ancillary services including reactive supply and voltage control, frequency regulation, and balancing supply and demand.

Solar DG will provide increasingly valuable grid support services as its use increases with the deployment of smart inverters and energy storage systems (10).

- **Fuel hedge value**: The value of reduced reliance on fuel-based generation, including natural gas, coal, and diesel fuels that are susceptible to market price volatility (11). Solar DG provides electricity at a long-term fixed cost, reducing financial risk from exposure to fuel price volatility.
- **Price suppression**: The value of reducing the demand for electricity from the grid and lowering the market price of electricity. Solar DG, like wind energy and utility-scale solar energy, reduces overall load, which suppresses the wholesale cost of electricity (12).
- **Grid reliability and resiliency**: The value of improving the performance of the grid in terms of reduced number and duration of outages.
- **Environmental and health benefits**: The value of an array of quantifiable and monetizable environmental benefits. These include a) reducing the cost of environmental compliance and environmental controls; b) reducing greenhouse gas emissions (e.g., carbon dioxide); c) reducing criteria air pollutant emissions (e.g., particulates, nitrogen oxides, sulfur dioxide); d) reducing the costs associated with negative health impacts and higher mortality rates; e) assisting in the attainment of renewable portfolio requirements; and f) water savings.
- **Societal benefits**: The value solar DG provides through the implementation of broad, consensus-based social and political goals as well as direct and indirect benefits to the economy. According to the U.S. Department of Energy, the solar workforce grew by 25 percent in 2016, adding around 73,000 new jobs (13). More than half of these new jobs involve primarily installing residential solar DG systems.

Solar DG can also trigger additional costs, including:

- **Utility revenue loss**: The loss of sales of electricity.
- **Administrative costs**: Includes utility accounting, metering and billing services that must be adjusted to accommodate programs to compensate solar DG customers.
- **Interconnection costs**: Only relevant if the solar DG customer does not pay the full cost of interconnection.
- **Integration costs**: The expenditures a utility incurs to integrate solar DG into the overall grid.
- **Rebate and incentive costs**: The costs of program offerings by utilities for solar DG customers that reduce net revenue.

While monetizing some costs and benefits – such as avoided energy fuel and capacity costs – is straightforward, establishing the value of other costs and benefits – such as increased resiliency, environmental and health savings, and social benefits – can be more difficult. As a result of this variability, it is sometimes difficult to compare the growing number of value of solar studies that have been published in recent years. It is possible, however, to draw general conclusions regarding the value of solar and the impact of NEM on ratepayers. Looking at more than 30 recent studies, IEI found that a preponderance of these studies - whether by public utility commissions, utilities, national laboratories, or firms specializing in energy accounting –

conclude that the value of solar is higher than NEM rates. This indicates that the economic benefits of NEM outweigh the costs to the utility and that, rather than imposing a net cost, NEM is in most cases a net benefit.

Examining Value of Solar Studies

In seeking to develop general principles on the value of solar, IEI examined three recent meta-analyses evaluating a total of more than 40 solar studies from across the nation.[4] In addition, IEI itself reviewed nine additional studies published since 2015 and not included in any of the previous meta-analyses.

In general, the majority of the studies conclude that the total value of the benefits solar DG provides exceed the retail cost of electricity to ratepayers, and that the value of solar is greater than the compensation to solar DG customers under NEM policies. In other words, customers deploying solar DG and participating in NEM programs are actually cross-subsidizing non-participating customers. In contrast, the limited number of studies that calculate the value of solar to be less than retail electricity rates typically do not include a full and complete measurement of solar benefits. These studies are often conducted by or for utilities (15).

The following value of solar meta-analyses were surveyed for this report:

1. **Brookings Institution, 2016** (16)

The developing national literature on the costs and benefits of NEM conclude that the economic benefits of NEM outweigh the costs and impose no significant additional costs on ratepayers who do not install solar DG systems. This analysis surveyed studies conducted by regulators in ten states between 2013 through 2015 in addition to less-formal studies conducted by other states and those by nonprofit organizations, think tanks, and universities. The authors conclude that "[far] from a net cost, net metering is in most cases a benefit – for the utility and for non-solar ratepayers." The analysis notes that while the value of solar DG will decline at much higher levels of penetration due to the reduced value of peak energy production, at existing levels of penetration (i.e., less than 1 percent), both solar DG ratepayers participating in NEM and ratepayers without solar DG experience economic benefits.

2. **Environment America Research and Policy Center, 2016** (17)

This meta-analysis reviews 16 value of solar studies. Twelve of the studies conclude that residential and commercial customers who deploy solar DG provide more services and deliver more benefits to the electricity grid and to society than they receive through NEM. These benefits are in the form of avoided energy costs, reduced line losses, avoided capital investments, reduced price volatility, increased grid resiliency, avoided environmental compliance costs,

[4] A meta-analysis is a method for systematically synthesizing pertinent qualitative and quantitative data from multiple studies to develop a single conclusion that has greater statistical power (14).

avoided greenhouse gas emissions, reduced air pollution, and local economic development (Figure 2).

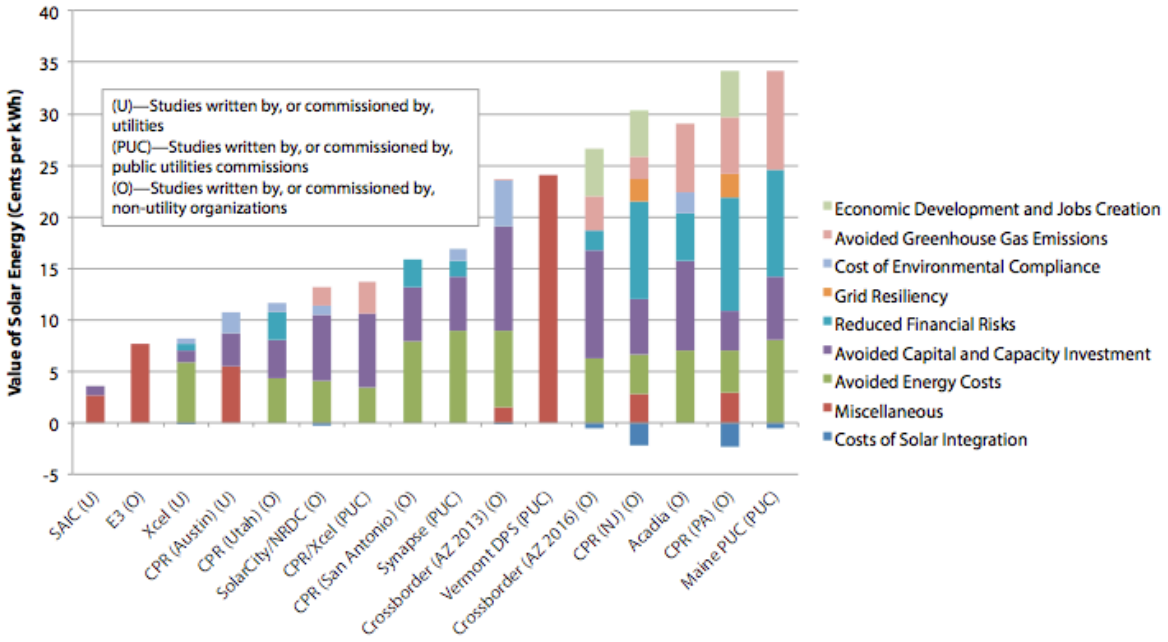

Figure 2. Components of value of solar studies surveyed by Environment America Research and Policy Center.

The studies found that the value of solar ranged from 3.56 cents per kWh to 33.60 cents per kWh, depending on which costs and benefits were included, as well as location-specific differences such as electricity prices and energy markets. Notably, three of the four studies that found that the costs of solar DG outweighed its benefits were commissioned by utilities and did not include many of the environmental or societal benefits of solar DG. Those studies are:

a) A 2013 study by Science Applications International Corporation (SAIC) for the Arizona Public Service Company, an investor-owned utility, valued avoided capacity investment costs for generation, distribution and transmission at 2.7 cents per kWh and added 0.8 cents per kWh for other avoided costs. No other benefits of solar DG were considered.
b) A 2013 study by Xcel Energy, an investor-owned utility, analyzed 59 MW of solar DG deployed in Colorado in 2012 and 81 MW of solar DG that would be installed by the end of 2014. The study valued avoided energy costs, avoided capacity costs, reduced financial risks, and avoided compliance costs at 8.04 cents per kWh. More recently, Xcel Energy participated in value of solar proceedings in Minnesota and calculated a higher value of solar (12.75 cents per kWh) due to the inclusion of avoided greenhouse gas emissions.
c) A 2013 study by Clean Power Research for Austin Energy, a municipal-owned utility, valued avoided energy costs, capital investments, capacity costs, and environmental compliance costs at 10.7 cents per kWh – only slightly below the retail price of electricity.

3. **Rocky Mountain Institute, 2013** (18)

This meta-analysis by the Electricity Innovation Lab at the Rocky Mountain Institute (RMI) involved utility, regulatory and industry experts who reviewed 16 value of solar studies published between 2005 and 2013 to better understand the "categorization, methodological best practices, and gaps around the benefits and costs" of solar DG. Similar to the Environment America analysis, the RMI study found a value of solar ranging from 3.56 cents per kWh to 33.93 cents per kWh. This variability was primarily attributable to the number of identified benefits of solar DG that were monetized and included in the studies. RMI found that although there is general agreement on the approach taken to estimate the energy and capacity benefits of solar DG, there is significantly less agreement on the ways to estimate the benefits provided to grid support services, decreased financial and security risk, and environmental benefits.

4. **Institute for Energy Innovation, 2017**

In addition to considering existing meta-analyses, IEI also surveyed more recent studies to update existing value data. The recent studies reviewed by IEI include:

- 2015: Maine. Submitted to the Maine Public Utility Commission (19)
- 2015: Tennessee Valley Authority (20)
- 2016: Arizona. Submitted to the Arizona Corporation Commission by Crossborder Energy for The Alliance for Solar Choice (21)
- 2016: Nevada. Submitted to the Public Utilities Commission of Nevada by Energy + Environmental Economics (E3) (22)
- 2016: Nevada. Conducted by SolarCity and the Natural Resources Defense Council (23)
- 2016: Texas. Austin Energy 2016 update (24)
- 2016: Minnesota. Submitted to Minnesota Public Service Commission by Xcel Energy (25)
- 2015: Michigan. Submitted to Traverse City Light and Power 2015 by Utility Financial Solutions (26)
- 2016: Michigan. Submitted to Marquette Board of Light & Power by Utility Financial Solutions (27)

Similar to the range of studies included in the other meta-analyses, the studies reviewed by IEI reveal a wide array of differing assumptions and methodologies, yielding solar valuations that ranged from 6.64 cents per kWh to 33.7 cents per kWh. As in the other studies, there was a correlation between the number of benefits identified and monetized and the calculated value of solar. The two Michigan value of solar studies, for example, failed to include a number of solar benefits included in many other studies, including grid services, hedge value against fuel price inflation, market price suppression value, and environmental benefits.

Monetized Benefits and Calculated Net Value of Solar for Recent Studies

Monetized Benefit	ME 2015 MPUC	TVA 2015	AZ 2016 Crossborder	NV 2016 E3	NV 2016 Solar City/ NRDC	TX 2016 AE	MN 2016 Xcel	TCL&P 2015 UFS	MBLP 2016 UFS
Cost of solar integration									
Avoided energy generation									
Avoided generation capacity									
Avoided transmission/ distribution capacity									
Avoided transmission/ distribution losses									
Grid services									
Fuel price hedge									
Market price suppression									
Reliability/resiliency									
Avoided environmental compliance costs									
Avoided carbon dioxide emissions									
Avoided criteria pollutant emissions									
Avoided water pollution and use									
Societal benefits/ economic development									
Net Value of Solar (cents per kWh)	**33.7**	**7.2**[5]	**28**	**Negative**[6]	**12.9**	**10.9**[7]	**12.75**	**6.7**	**6.64**

[5] Initial estimates that included other benefits and savings placed the value of solar at 13.11 cents per kWh.
[6] Energy + Environmental Economics determined there was a cost-shift in Nevada from non-NEM customers to NEM customers.
[7] Austin Energy recalculates and reestablishes its value of solar tariff annually.

Establishing a Uniform System of Valuation for Solar DG

As is evident, there is considerable variability in the methods used to undertake value of solar calculations. While locational factors influencing markets and energy pricing will always vary and must be taken into account, a standard methodology would make these studies much more valuable to regulators, utilities, and other interested parties. Such an approach would enable "apples-to-apples" comparisons, inform energy resource planning efforts, and increase customer confidence.

> *"Accuracy in resource and energy valuation is the cornerstone of sound utility ratemaking and a critical element of economic efficiency." - IREC*

An increasing number of efforts seek to address the variability of between studies and encourage greater consistency, particularly in terms of the costs and benefits included and the value imputed to those costs and benefits. In 2014, for example, NREL published a study classifying the costs and benefits of solar DG systems into seven categories and described the methods, data, and tools that could be applied within these categories to calculate the value of solar (28). These categories include energy, transmission and distribution losses, transmission and distribution capacity, generation capacity, ancillary services, fuel price hedging and market price suppression, and environmental considerations.

IREC Value of Solar Methodology

The Interstate Renewable Energy Council (IREC) extrapolated a set of best practices based on its review of 16 recent VOS studies, resulting in a standard valuation methodology for regulators to consider when conducting value calculations (29). IREC also recommends that regulators consider both the value of solar (to utilities, customers, and society) as well as the impact of solar DG and NEM on electricity rates of non-solar customers. Use of the IREC methods would support growing efforts among states to determine avoided costs, undergo integrated planning efforts, and appropriately design rates. A model approach would also mitigate the potential for process criticism by providing a transparent approach rather than using proprietary, specialized designs offered by utilities and consultants.

IREC's report describes the costs and benefits of solar DG. These benefits include, as described above, avoided energy costs, avoided additional generation capacity, avoided transmission and distribution system losses, avoided additional transmission and distribution capacity, grid support services, reduced financial risk, electricity price suppression, improved grid reliability and resiliency, environmental benefits, and societal benefits. IREC also identifies baseline assumptions critical to the analysis and offers the following recommendations:

- **Timeframe:** A 30-year lifecycle analysis period. Solar DG technology has an expected service lifetime of 30 years. IREC argues, therefore, that the measure of costs and benefits should be levelized over that entire 30-year period.

- **Discount rate**: A discount rate close to the rate of inflation for solar DG (i.e., less than 6 percent). Typical utility discount rates are 6 to 9 percent. These higher discount rates may favor fossil fuel generation because much of the cost is incurred over the lifetime of the generator (e.g., for fuel and operation and maintenance costs). In contrast, solar DG technologies are capital intensive, but involve no continuous fuel costs. A lower discount rate is more appropriate for resources with high initial costs and low continuing or end-of-life costs.
- **Amount of generation**: Monetize only the value of electricity exported to the grid.
- **Technology cost comparison**: Conduct cost comparisons to either a natural gas simple-cycle combustion turbine or a more efficient combined-cycle gas turbine with natural gas prices forecasted 5 to 10 years forward.
- **Hourly load shapes**: Match hourly system loads with hourly output from solar DG.
- **Line losses**: Marginal line losses should be included because they are higher during times of system peak load and may be more fully avoided by solar DG systems than other load reduction mechanisms like energy efficiency or demand response.
- **Solar DG penetration**: The effects of solar DG should be considered at various levels of penetration because the value of solar DG is likely to be reduced at high levels of solar DG utilization.

Adopting a transparent, comprehensive standard valuation methodology such as the IREC model can help ensure full accounting of both the costs and benefits of solar DG. This is particularly important as the lack of methodological consistency between studies may impede the penetration of solar DG by obscuring and rendering uncertain the full value of the positive social, economic, environmental and health attributes of solar DG.

PART III: Developing an Appropriate Distributed Generation Tariff

In conducting a study on an appropriate tariff as required under Michigan's new energy law, IEI recommends that the Commission use, as a starting point, the fact that the majority of studies conducted to date have found that solar DG customers participating in net metering programs represent a net benefit to the overall grid. Solar DG both reduces demand for power from the utility and provides power to the grid when the systems generate more power than is used at a residential or commercial site. This surplus power is generated at or near peak times, when the cost to the utility of procuring additional power is most expensive.

Indeed, because the value of the credits provided under net metering programs is typically less than the value of the solar energy provided to the grid, a majority of the studies done to date have concluded that net metered customers are effectively subsidizing those without solar DG, helping to keep rates for all customers lower than they otherwise would be. As such, rather than being a subsidy for those who install solar, NEM represents an attempt to balance the true costs and benefits of the energy being produced and that which is consumed in a way that is simple, fair,

and convenient for both the utility and its customers. Any tariff, therefore, should fully compensate solar DG customers for the value their systems provide.

Finally, while the calculations necessary to develop a value of solar differ from those needed to assess the cost to serve solar DG customers, IEI endorses the Commission's intent to include a VOS study as part of its examination of the costs and benefits associated with distributed generation and net metering. To ensure consistency and allow for accurate comparison with other VOS studies, IEI further recommends that the Commission conduct this VOS analysis using IREC's methodology that includes the full range of energy, capacity, grid services, financial, and environmental benefits.

Finally, because locational factors can affect solar valuations, access to location-specific utility data should be made available to stakeholders as part of the development of new tariff mechanisms.

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From:	Mark Hagerty
To:	Baldwin, Julie (LARA)
Cc:	Mark Hagerty
Subject:	MSS Position on MPSC Staff Report
Date:	Tuesday, January 9, 2018 8:59:11 AM
Attachments:	MSS Reply to MPSC Staff Report RE DG Replacing NEM R1.pdf

---

Hi Julie,

Hope you are well.

Please accept the attachment which outlines our position on the MPSC Staff Report regarding replacing NEM with DG.

Thank you!

Sincerely,

Mark Hagerty

President

Michigan Solar & Wind Power Solutions

248-520-2474

www.michigansolarsolutions.com

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January 8th 2018

509 Sherbrooke Commerce Twp., MI 48382
Business: 248-520-2474 – Fax: 248-232-8908

Julie Baldwin
Michigan Public Services Commission
7109 West Saginaw Highway
Post Office Box 30221
Lansing, MI 48909

RE: MPSC Staff Report on Developing a Cost of Service-Based DG Program Tariff

Dear Ms. Baldwin:
The MPSC has allowed publicly regulated utility companies to charge customers peak and off-peak rates for several years. Many of their customers are paying as much as 300% more for power that is bought during peak times than power that is being bought during off peak times. I would hope this is because the MPSC has determined, like many other Public Service Commissions in other states, that peak power is worth much more than off-peak power. In fact DTE's own website goes into detail explaining that at times peak power can cost them over $1.00 a kWh. Solar power is predominately peak power.
During the day NEM customers deliver power to their utilities, during peak rate times, that is worth up to 300% more than the value of the power they pull off the grid at night when off-peak rates kick in. This power could flow to the neighbor, with near zero line losses, and be sold for 300% more than the NEM customer is being reimbursed. This leaves about 8.6 cents a kWh in the hands of the utility for each kWh net metered. If the MPSC mandated these monies to be directed to maintenance on the grid, and not allowed to flow through to the utility companies profit column, then net metering customers would contribute more for maintenance of the grid than any other class of rate payer. This is a journal entry issue, not a fairness issue.
Currently the utility companies are allowed to meet increasing peak load demands with natural gas peaker plants. Natural gas costs are at a multiyear low because of excess supply. With these peaker plants being built, vehicle fleets switching to natural gas, the US starting to export natural gas and more homes/buildings using natural gas this excess supply will be eaten up and the cost of natural gas will go back to historical norms, then higher. Since the utility companies are guaranteed a profit this fuel cost increase will result in large profit increases for their shareholders while the rate payers will be guaranteed large rate increases.
In the 1980's computer network managers realized a distributed network was far more secure than a centralized network. A centralized network could experience major interruptions due to equipment failure, human failure or malice intent. We find ourselves with warnings from the director of the CIA about our centralized grid being our Achilles heel. At the same time we continue to place obstacles in the way of a market solution to transition from a centralized grid to a distributed grid. We have three options in how we can make this transition; spend billions of tax payer dollars, spend billions of rate payer dollars or fairly compensate NEM customers for the peak power they send to the utility companies.
We sincerely hope the MPSC will reconsider the direction they are headed on this issue and follow the direction many other states and our neighboring countries have taken and do what is best for the citizens of this state and not the utility companies.

Sincerely,

Mark Hagerty

President
Michigan Solar Solutions

Cc: file

From:	Troy Bracke
To:	Baldwin, Julie (LARA)
Subject:	Solar Reimbursement Rates - please do not decrease
Date:	Tuesday, December 26, 2017 8:54:42 AM

Julie,

It is my understanding that the MPSC is considering lowering the reimbursement rate grid-tied solar array owners receive from the utility companies. As a solar professional and an array owner, I would like you to deny this course of action. I believe the results of this anti-renewable energy decision will include:

- An immediate decrease in the number of homeowners projected to install solar. This is due to the fact that their long term savings will be eliminated.
- Homeowners that have invested in solar already, won't realize the projected long term savings they took into consideration when making the decision for renewable energy. (A grandfather clause of 10 years should be increased to 20 years, if you decide to change the reimbursement rate.)
- Hundreds of jobs in the solar industry in Michigan will be lost. This includes business owners, project managers, sales people, electricians, installers and administrative staff

Please consider the following facts about residential solar in Michigan:

- This pricing suggested by the MPSC is significantly lower than what other states have determined is fair reimbursement. States like Oregon, Minnesota, New York and others have gone through the process of establishing all the costs and benefits of distributed generation, and all have determined distributed solar is worth more than other sources. Even Mexico’s national electric company has determined solar power is worth more than traditional sources for power.

<!--[if !supportLists]-->- <!--[endif]-->Upwards of 50% of our state’s power generation capacity is used for about 90 hours a year. Because utility companies are guaranteed a profit, we rate payers are paying the utility company’s 110.3% of the cost to build more power plants to meet this ‘peak time’ energy usage. A one billion dollar power plant nets over one hundred million dollars in utility company profits

<!--[if !supportLists]-->o <!--[endif]-->The ‘solar window’ of power production is during the time when this 50% of our generation capacity is stoked up to meet this temporary need. With distributed solar power, we would not need 50% of our power production facilities to be built, saving ALL rate payers billions of dollars. Of course the utility companies would lose their guaranteed 10% profit on the construction of these facilities.

<!--[endif]-->NOTE – Most of the new power generation facilities being built are natural gas plants. Natural gas is at a 14 year low because of the supply exceeding demand as a result of fracking. Once the demand for natural gas increases the cost of natural gas will return to their highs. The utility companies are guaranteed a profit so our electrical rates will skyrocket. However, with solar power the cost of

fuel is always free.

<!--[if !supportLists]-->- <!--[endif]-->The centralized design of our grid loses a significant amount of power through line losses and voltage drop to get power from where it is produced to where we need it. At times, it requires generating a few kWh's to get one kWh to your home for you to use. With distributed generation solar, the power you cannot consume at the time of production goes through your meter and to the neighbor's house for them to use.

<!--[if !supportLists]-->- <!--[endif]-->If your neighbor is on time-of-day rates they could be buying electricity from the utility company at the peak rate, which could be 300% more than the cost of the power you pull off the grid at night when the sun goes down. DTE's own website states, "Did you know that it costs DTE Energy $1 - $3 per kWh to buy electricity from outside the state when energy demand exceeds our supply?". If you are guaranteed a profit why change?

<!--[if !supportLists]-->- <!--[endif]-->Computer network administrators learned a couple decades ago that they needed to switch to a distributed network since a centralized network exposed them to unnecessary risks from equipment failures and natural or man-made disasters. If you feel this is overstated please Google – 'CIA power grid warning' and 'San Jose substation terrorist attack'.

<!--[endif]-->NOTE – In order to transition from a centralized grid to a distributed grid it would require one of the following three things;

<!--[if !supportLists]-->· <!--[endif]-->Billions of dollars in tax payer dollars

<!--[if !supportLists]-->· <!--[endif]-->Billions of dollars in rate payer dollars

<!--[if !supportLists]-->· <!--[endif]-->Pro net metering policy to let the market transition us

<!--[endif]-->NOTE - The utility companies will argue that the peak production of solar is slightly earlier than the peak demand on the grid. This is because our current policies incentivize panels facing south. If panels face southwest then they would peak at the exact same time. Some utility companies in other states have started incentivizing generators to face their panels to the southwest.

I am asking you to please maintain existing reimbursement rates for grid-tied solar arrays. If you do drop the rate, I believe this will decrease future stability in our electrical grid by eliminating the ability of the citizens of the state of Michigan to deploy solar. It would continue to force higher and higher electric rates for the masses, and will eliminate hundreds of jobs in this growing sector.

Thank you for your time and consideration,

Troy Bracke
Operations Manager
Michigan Solar Solutions

O: 989.833.5333
C: 517.599.6217

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