STATE OF RHODE ISLAND
PUBLIC UTILITIES COMMISSION

IN RE: BLOCK ISLAND UTILITY DISTRICT	**:**	
TARIFF ADVICE FILING TO ADD	**:**	**DOCKET NO. 5192**
NET METERING TARIFF	**:**	

PUBLIC UTILITIES COMMISSION'S
FIRST SET OF DATA REQUESTS DIRECTED TO
BLOCK ISLAND UTILITY DISTRICT (BIUD)
(Issued December 23, 2021)

Proposed Cap

1-1. Please explain how BIUD arrived at a cap of 10% of peak based on its operational characteristics.

RESPONSE:

The 10% cap was set to act as a pause to evaluate how well we are managing the system during low-load periods with this level of solar installed. The 10% includes the 4% currently installed, so the additional solar installed prior to this pause would be an additional 6%, or approximately 300kW based on DC nameplate rating, bringing our total net metering installed capacity to 500 kW.

If we add the potential 90 kW from BIUD's roof-top system to this amount, our total island-wide intermittent renewable generation production could reach 550-600 kW. This is a level at which we are concerned with system stability when feeding the island load with our internal generators.

Prepared by: Jeffery M. Wright

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1-2. Based on BIUD's current distribution system characteristics, what is the maximum installed capacity of net metering that could be placed on the system without causing either the need for significant interconnection system modifications and/or without causing reliability issues absent significant interconnection system modifications?

RESPONSE:

While there is no method to calculate the precise level at which we would encounter system instability, we are following the advice from Milton Cat who manufactures and maintains our generators and controls. Milton Cat's advice is that we are at a point where we could experience a problem.

We have not proven this out through operating experience and of course, would not want to unless it was under a controlled environment. For this reason, we proactively disconnect the BIUD rooftop solar when we plan to serve the island on diesel generators.

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1-3. On page 9 of his testimony, Mr. Wright states "BIUD also has the right to limit project size based on location and other interconnection concerns."
   a. Please identify all provisions of the tariff applicable to this limitation.
   b. Please explain whether there are any other criteria upon which BIUD will rely to limit project size based on location and other interconnection concerns.

RESPONSE:

a. On page two of the proposed tariff (shown below), BIUD states that BIUD reserves the right to limit the size of each project based on technical interconnect reasons. This will allow BIUD to ensure that a large project is not built on the end of small distribution that cannot support it. This is normal and usual engineering practice.

> 4. Net Metering Systems are limited in size by the member's annual consumption history (or estimate for new construction). Each new Net Metering System must be sized so that the estimated net metered production is no greater than 125% than the annual consumption of the account that system is connected to. Each Net Metering System will be reviewed on a case-by-case basis. The Utility District reserves the right to limit the size of any proposed project for technical interconnection reasons.

b. There are no additional criteria.

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1-4. What data and analysis was used to reach the conclusion that there is another 100-150 kW of pent-up demand for net metering?

RESPONSE:

BIUD currently has 45 residential projects on a waiting list. The total DC nameplate rating of those projects is 161.92 kW. We also have several small commercial accounts that are contemplating solar but have not sent in an application yet.

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1-5. Regarding the 10% cap included in the proposed tariff, please explain the following:

a. The 10% is based on the 2021 summer peak. Please explain whether the language on page 2 of the proposed tariff, number 6 means that BIUD will recalculate its 10% cap each year if summer peak changes.
b. If the 10% cap will be recalculated each year, please explain the process BIUD will use.
c. How will incremental net metering capacity being added to an existing net metering system be counted, if at all, towards the 10% cap?

RESPONSE:

a. Yes, BIUD will continue to recalculate the cap annually based on 10% of the most recent peak. If at any time the installed DC capacity of net metering in BIUD's system rises above 10% of BIUD's most recent peak, then BIUD will stop accepting new applications. BIUD's rooftop solar will not be included in the 10% cap.
b. Each year on December 31st BIUD will recalculate the net metering cap using the following formula: Cap = Annual Peak X 10%.
c. All incremental capacity added to an existing project will be added into the cap formula. If a member adds capacity to an existing system, the project will be removed from the existing net metering policy and added into the new tariff. At that time, the project will be rewired to include the second meter.

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1-6. Mr. Wright provided an explanation of the calculation of the 3% cap and then discussed the number of facilities included in that 3%. He also indicated there are facilities that are excluded from the calculation and provided a list of all facilities.

a. Please provide the total installed capacity of all net metering facilities, including those originally excluded from the calculation.
b. In your response, please indicate whether the capacity in in AC or DC.
c. If the utility has both AC and DC ratings for the facilities, please provide the alternative rating for the facilities.

RESPONSE:

a. 204.88 kW.
b. DC ratings.
c. We only document the DC ratings.

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System Sizing

1-7. In response to the question posed on line 15 of his testimony, Mr. Wright notes that "if fully subscribed and built out at 10%, 500 kW of net metering plus BIUD's 94.1 kW of rooftop solar would amount to 594.1 kW at full production." By "full production," do you mean generating electricity at a capacity factor of 100%? Please explain.

RESPONSE:

Yes. We have no way to measure the actual solar production at any given time of the projects enrolled in the existing net metering policy because of the consumption behind the meter. For purposes of calculating the cap, we use the DC nameplate data.

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1-8. On page 8 of his testimony, Mr. Wright writes "the total estimated annual output of a net metering system shall not exceed 125% of the member's annual consumption history." Please explain the following regarding the system sizing:

a. How will BIUD establish "annual consumption history" for a member seeking to interconnect a new NEM system, using what consumption data from what time period? Is this different from the current practice?
b. How will BIUD establish "annual consumption history" for a member seeking to interconnect additional capacity to an existing NEM system, using what consumption data from what time period? Is this from the current practice?
c. Through its interconnection process, does BIUD collect information on the DC kW rating of the proposed NEM system, the AC kW rating of the proposed NEM system, or both?
d. Through BIUD's interconnection process, does the interconnection customer-applicant provide BIUD with an estimate of the annual output of their NEM system, or does BIUD develop its own estimate of annual output based on information provided by the applicant? Is that different from the current practice?
e. If the response to part d is that BIUD develops its own estimate of annual output based on information provided by the applicant, explain how BIUD calculates that estimate and with what information? Please provide an illustrative calculation.

RESPONSE:

a. BIUD determines average annual consumption history by totaling the past twelve months of consumption. Our practice will be the same going forward.
b. Determining actual consumption for an existing net metering member is more difficult due to not actually metering all the consumption. For existing systems, we review and use the metered consumption (not net) from the past twelve months and compare that against the incremental increase in capacity.
c. The current net metering application includes both AC and DC nameplate ratings.
d. The solar developer provides the member and BIUD an estimate of annual output which is produced from the software that the developers use to size the system. Our practice will be the same going forward.
e. Not applicable.

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Metering/Crediting

1-9. Please provide a copy of the agreement, policy, or tariff that prohibits BIUD from back-feeding electricity onto the National Grid system when connected to the submarine cable.

RESPONSE:

National Grid provides BIUD with Regional Transmission Services under their Schedule 21 Tariff. National Grid's Schedule 21 does not include exporting generation from Block Island to National Grid. BIUD did not request this as part of the interconnection process and therefore it was not studied by National Grid or the ISO-NE.

There is a reverse power relay (with a time element of 105 seconds at 1,667 kVA which increases or decreases with actual kVA) on BIUD's BI-1 interconnecting circuit breaker that is set at 1,667 kVA. This is designed to prevent BIUD from back feeding into a fault ahead of the breaker but will trip under any condition.

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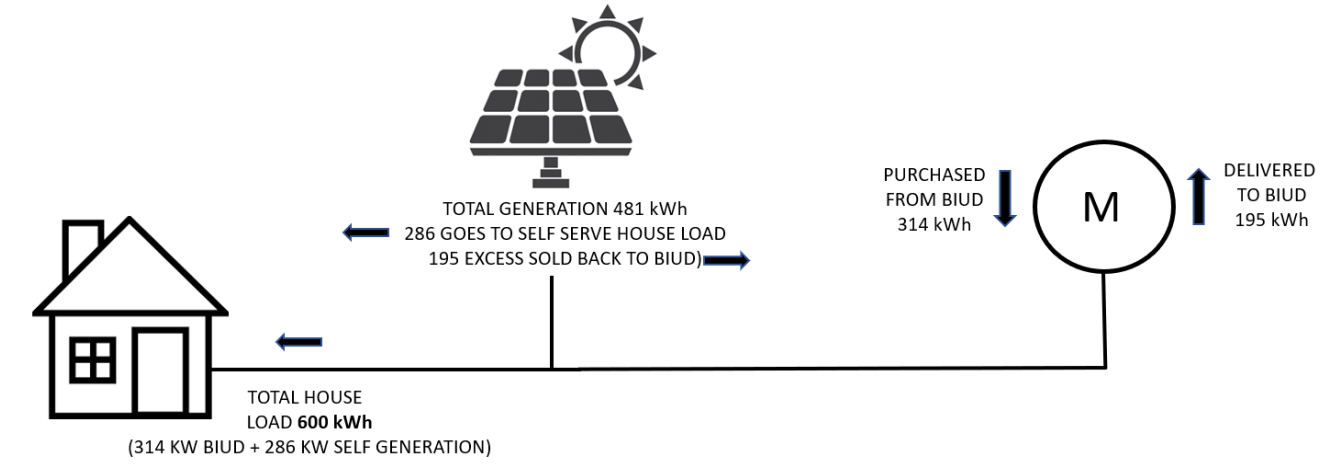
1-10. Please explain the difference in the consumption and production data BIUD will gather as a result of requiring two meters in lieu of one meter with two channels. As part of this response, please provide a more detailed explanation of how the two channels function on the single meter (for example, can the utility see usage separately from consumption; can the utility see the time of usage vs. consumption, can the utility only see the net result of the two (the net), etc).

RESPONSE:

With a single-meter system, BIUD can only measure what electricity flows through the meter. It cannot meter any consumption or generation that does not flow through the meter. Despite having two indexes (Consumed and Delivered) it will not measure solar output that is consumed internally. For example, in the diagram below the home uses 600 kWh during the month. The net metering system served (self-supplied) 286 kWh of the load. BIUD served the remaining 314 kWh which was metered as shown. In addition to self-serving 286 kWh there was 195 kWh of excess generation delivered back to BIUD which is metered as shown and used to offset the member's monthly bill. This demonstrates the "behind the meter" consumption and is an example of how confusing the metering is to the member.



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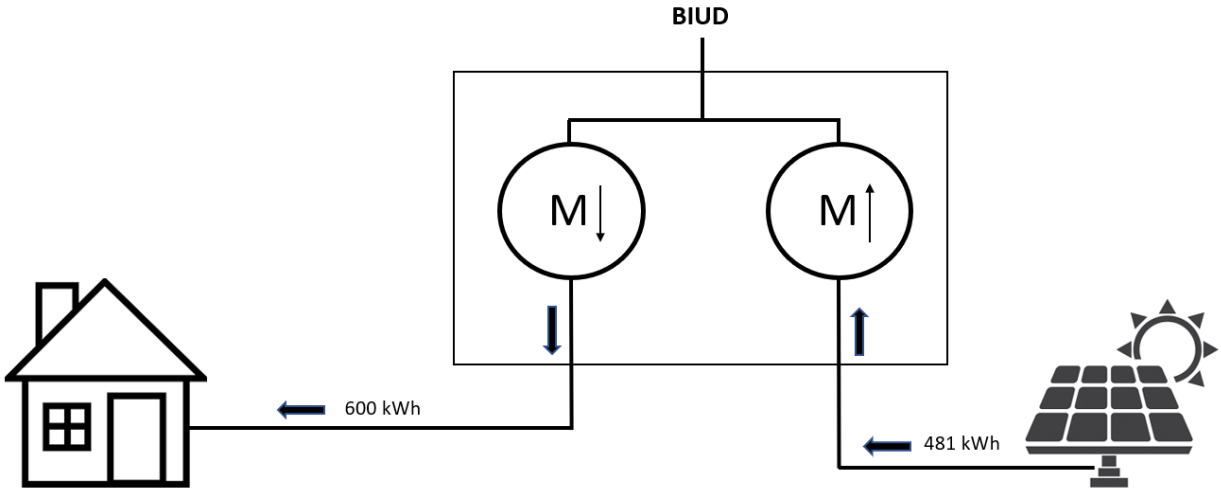
With a two-meter system, BIUD will be able to meter all consumption and all solar output exactly. Using the same example as in the previous illustration, the house load is 600 kWh and the solar output is 481 kWh. In this case, BIUD will bill for 600 kWh of consumption at the retail rate and will then apply 481 kWh of solar credit back towards the bill, netting the two will provide the member's balance due for that month.



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1-11. On page 6, lines 9-13, Mr. Wright explains that "Despite metering the 'consumed' and 'delivered' energy separately with two separate indexes under the current net metering policy, the self-supply of energy allows the member to produce and use energy which is not metered. This is referred to as 'behind the meter' and often leads to confusion with the net metering billing questions. The dual meter system avoids that."
a. Please provide further explanation of the customer confusion providing examples.
b. Please explain why the two channels in the current meters do not capture adequate information to address the issues discussed in Mr. Wright's testimony on page 6, lines 9-13, including, but not limited to ratemaking impact of self-supply, and any cost shift.

RESPONSE:

a. As illustrated in my answer to question 1-10, the inability to meter actual internal load or generation makes it difficult to help a member identify a potential billing concern. Questions asked usually lead to the suspicion that the meter is not working correctly when in fact the actual cause is most likely that the member is using more energy. In many cases, it is because the solar output is not what they expect. Whatever the cause, it is difficult to identify and often leads to a lack of trust in BIUD's metering and billing systems.
b. Electric meters will only measure flows through them which does not capture the "behind the meter" usage or generation.

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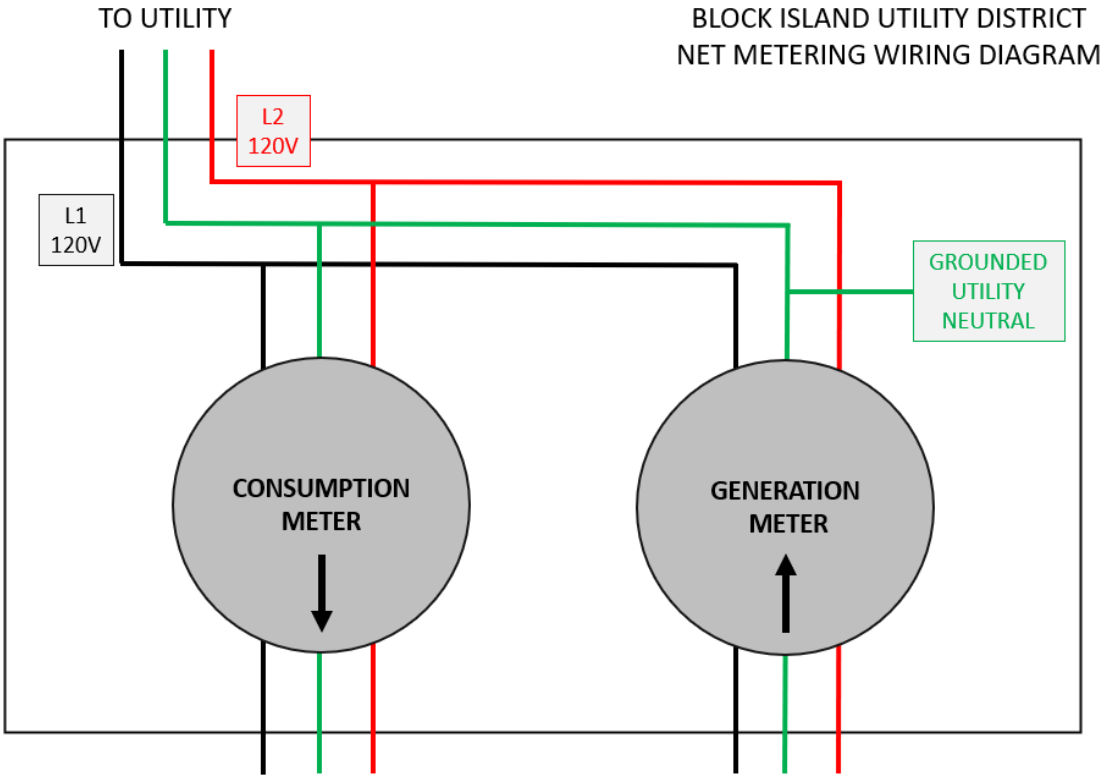
1-12. Will the customer with two meters still be able to use the energy at their home/business to self-supply? If not, how is this proposal net metering?

RESPONSE:

Yes. The members enrolled in the new double-meter tariff will still be able to self-supply their own load despite it being metered separately. The illustration below shows both meters are housed in the same enclosure which will be owned by the member. The member will also own the service conductors beyond the meter socket to where it attaches to the BIUD facilities located on the pole.



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1-13. Please explain Mr. Wright's statement on page 5, lines 15-16, "This is not a true avoided cost because certain fixed interconnection charges in the transmission rate have not been excluded."
   a. Please explain why the (DAF/kWh plus BITS/kWh plus BIUD Interconnect/kWh charges) are excluded from the net metering credit.
   b. Please explain how this is relevant to the need for two meters.
   c. Based on the current rates, what is the monetary difference between the current Net Metering Policy credit and the proposed Net Metering Tariff credit.

RESPONSE:

   a. The DAF, BITS, and Interconnect charges are fixed (non-bypassable) charges billed to BIUD monthly and not kWh based. BIUD does not feel it appropriate to include these in the credit because they are unavoidable costs.
   b. The two are unrelated.
   c. The rate that has been applied in the past has been either our Power Supply + Transmission rate or our fuel rate "FAC" if we are serving our load from the generators.
      The current and proposed rates as shown below:
      - Current = $0.1592 (Power Supply $0.0740 + Transmission $0.0852)
      - Proposed = $0.1260 (Detail from Schedule DGB-1 shown below)

Calculation of FY 2022 Net Metering Credit — Schedule DGB-1
Block Island Utility District

	Costs	Est Sales per Settlement Schedule-1	Cost per MWH	Cost per KWH
Power Supply Costs per Settlement Schedule-1	1,114,007	13,069	$ 85.24	$ 0.0852
BIUD interconnection per Settlement Attachment-2	(45,542)	13,069	$ (3.48)	$ (0.0035)
Power Supply Service portion of Net Metering Credit	1,068,465			$ 0.0818
Transmission Costs per Settlement Schedule-1	967,572	13,069	$ 74.04	$ 0.0740
DAF Costs per Settlement Attachment-1	(338,136)	13,069	$ (25.87)	$ (0.0259)
BITS Costs per Settlement Attachment-2	(51,000)	13,069	$ (3.90)	$ (0.0039)
Transmission portion of Net Metering Credit	578,436			$ 0.0443
Total Net Metering Credit				$ 0.1260

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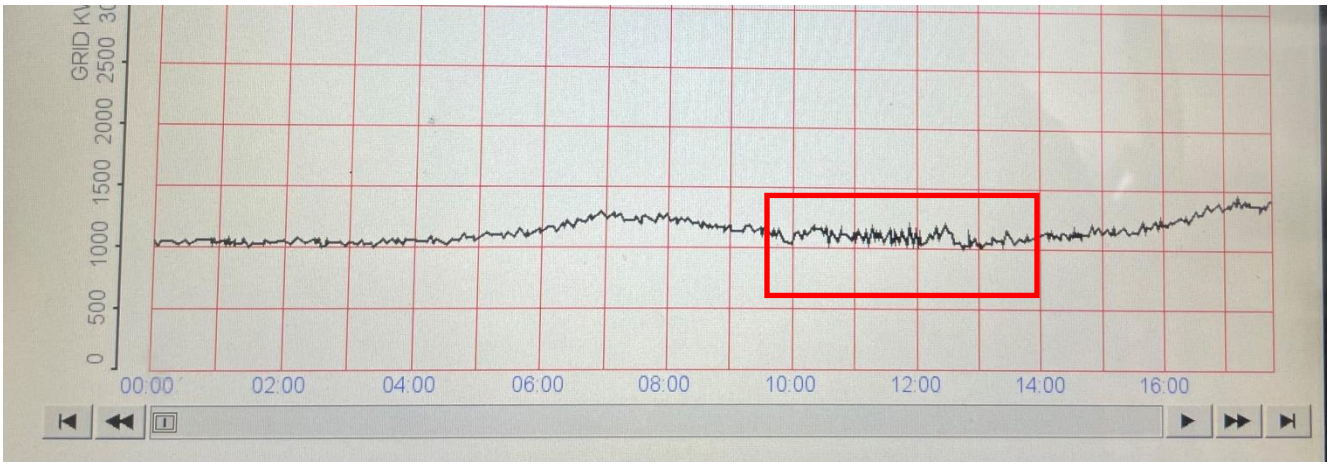
1-14. Is the primary purpose of requiring two meters for system balancing or proper crediting of facilities? Please explain.

RESPONSE:

The primary purpose of the second meter is to allow BIUD to shut off intermittent renewable generation during times that BIUD is serving its load from the diesel generators. The crude photo below shows the National Grid interconnection flows on a day when there are partly cloudy skies, and the solar output is intermittent.

The photo below is taken from BIUD's control room where real-time National Grid deliveries are monitored. The small variations in deliveries in hours 00:00 through 10:00 is a normal load profile that varies with demand. That load profile is reduced by net metering generation as it increases during the morning hours. Between 10:00 and 11:00, the clouds filled in and the net metering generation became very intermittent. The reaction to this is in shown in the dramatic variation in National Grid deliveries. If BIUD had been serving its load from the diesel generators, this would cause system instability as the generator controls would not have had the ability to respond quickly to this variation. The result would have been uncontrollable frequency and most likely would have resulted in generators tripping. At approximately 13:00 the clouds either filled in or cleared out and the deliveries returned to a normal state of variation.



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This is not a problem when we are connected to the ISO-NE grid as the impacts are minimal to the bulk transmission system. Likewise, during times where BIUD's load is higher, this would be unlikely to cause problems. During light load periods though, this will lead to system instability and must be addressed if BIUD is going to connect more intermittent net metering generation. This will become a bigger issue as we expand our net metering capacity to levels that we hope to reach.

Secondarily, the second meter allows for the exact metering of the net metering facilities and will allow BIUD to accurately credit the net metering members a credit based on BIUD's avoided cost to ensure we minimize any cost shift to members who do not net meter.

If the system stability concerns were not an issue, we would have considered proposing a simpler tariff that included a larger customer charge, or a grid connection fee, for net metering members.

Block Island is really cutting new ground by encouraging this level of net metering with such a small load during the shoulder months. BIUD's large swings in load profile between winter and summer are very challenging in many aspects, both financially and from an engineering standpoint. This is a great example of BIUD's willingness to tackle those challenges for the benefit of its members.

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1-15. If the primary purpose of requiring two meters is for system balancing, what other options did BIUD consider to achieve the same result (e.g., direct inverter controls, storage, etc.)?

RESPONSE:

BIUD has been investigating utility-scale storage since 2019. Frequency regulation and load smoothing could be accomplished using storage but to date BIUD has not been able to negotiate an economically feasible proposal.

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1-16. On page 7 of his testimony, Mr. Wright writes "in many cases, the existing meter will need to be relocated closer to where the generation will be metered, on or near the structure/building which will result in additional costs borne by the member. To respond to this, BIUD is proposing to reimburse the net metering member up to $1,000 to help defray the cost of the second meter." Please explain the following:

a. Why would the existing meter need to be relocated closer to the generation meter?
b. Please clarify what "the cost of the second meter" means in this context: the cost of relocating the existing meter closer to the generation meter, or the cost of generation meter?
c. How did BIUD arrive at $1,000 as the appropriate maximum amount at which to reimburse members for the "cost of the second meter"? Please provide all supporting data and calculations.
d. Describe the process through which BIUD plans to reimburse a member for the "cost of the second meter." In your response, note who (the member or BIUD) will propose the dollar amount for reimbursement and what supporting documentation will be required by BIUD to approve the reimbursement.
e. What is the source of the funding for "up to $1,000" reimbursement of the second meters?
f. What is the expected total cost?
g. If BIUD is going to reimburse up to $1,000 for a new meter, why wouldn't this simply be a requirement to remain in the net metering program?

RESPONSE:

a. In many cases, the existing consumption meter is located up to 500 feet from the building/dwelling. The meter location is normally on or near the closest electric pole and then a secondary conductor is run underground to the building/dwelling. To avoid having to run the solar feed that same distance to the point where it can be connected on the utility, or line side, of the consumption meter. In many cases, the existing meter sockets need to be replaced due to the harsh salty air environment and it would be easy to bypass the existing consumption meter and install a two-position meter socket on or near the building/dwelling.

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b. The cost I referred to in my testimony is the cost to perform the work in my previous response.
c. BIUD consulted with RI OER who worked with National Grid on a similar project and also based on our experience of pricing service/meter work.
d. BIUD would review the project with the BIUD member and their developer/electrician and would advise and agree on the method to perform this work. Once the work is complete, BIUD will require a copy of the invoice for this specific work and reimburse the member up to $1,000.
e. The $1,000 would come from rates as part of our overhead or underground line O&M budget.
f. If we estimate that 75% of the projects on the waiting list will require this work at the full cost of $1,000, the total cost could exceed $33,000.
g. One of the biggest concerns raised with the second meter by a local solar developer was the cost associated with the second meter. BIUD considered this concern and the Board of Commissioners recommended we reimburse up to $1,000 to address the concern.

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1-17. Referencing Mr. Wright's testimony on pages 6-7 related to remote disconnect of facilities and to page 4 of the proposed tariff related to disconnection during operating emergencies, please respond to the following:
   a. What constitutes an operating emergency?
   b. Is there a set of criteria upon which BIUD will base its decision to curtail? If so, please provide.
   c. Will BIUD's on-site solar array be curtailed first before other facilities?
   d. How will BIUD prioritize net metering facilities for curtailment?
   e. How will BIUD notify customers of curtailment periods?
   f. How much notice will customers have prior to curtailment?

RESPONSE:

   a. An operating emergency can be caused by many things but primarily would be a service interrupting threat. As it relates to net-metering, an operating emergency would occur if BIUD were serving its load by diesel generator on a partly cloudy day and the generator(s) began exhibiting signs of not being able to react to the large variations in net metering generation output. In this case, BIUD's only available action would be to disconnect all interruptible net metering generation by using the remote-disconnect meters.

      Another scenario could also be if BIUD was connected to National Grid and reached a point in which it began to serve all of its load with internal generation and the possibility of back-feeding into National Grid was imminent. In this case, BIUD would disconnect net metering generation using the remote disconnect meters.
   b. If an operating emergency occurs, BIUD will curtail all solar that has remote disconnect meters which would include BIUD's rooftop solar. Until BIUD obtains some operating experience to determine what level of intermittent solar could be connected without causing system instability, we would be conservative and disconnect all that was available to us.
   c. BIUD's rooftop solar will be disconnected at the same time the others are.
   d. BIUD will not have to prioritize meters to disconnect as we will disconnect and reconnect all at the same time.
   e. BIUD will clearly communicate this when new net metering members apply to be connected. In a real-time emergency, there would not be enough time to communicate with the affected members. We will make it clear to all members enrolled in this new

program that BIUD will make every attempt to not curtail their generation, but may have to during certain operating emergencies.

f. BIUD will not provide advanced notice of a curtailment but will communicate after the event is over.

Prepared by: Jeffery M. Wright

STATE OF RHODE ISLAND
PUBLIC UTILITIES COMMISSION

IN RE: BLOCK ISLAND UTILITY DISTRICT :
TARIFF ADVICE FILING TO ADD : **DOCKET NO. 5192**
NET METERING TARIFF :

PUBLIC UTILITIES COMMISSION'S
FIRST SET OF DATA REQUESTS DIRECTED TO
BLOCK ISLAND UTILITY DISTRICT (BIUD)
(Issued December 23, 2021)

1-18. On page 7 of his testimony, Mr. Wright writes "we have been advised by our engineers to turn off the BIUD solar array when on local diesel generation during light load periods." Explain the following:

a. Has BIUD actually "turned off" its solar array in response to system conditions at any point during the past 3 years? If yes, please list the times it has done so, and in response to what system conditions.
b. If the answer to part a is yes, please provide an estimate of the total annual curtailed generation (kWh) for each year in which BIUD "turned off" its solar array in response to system conditions.

RESPONSE:

a. Yes. BIUD has turned its roof-top solar off once since it was installed in July 2020. During hurricane Henri we disconnected the solar in anticipation of a cable outage so that we could transfer to diesel generators without concern. In that instance, we did not disconnect the small array on the office building.
b. The daily totals prior to, during and after the hurricane are shown below. The total curtailment is estimated to be less that 200 kWh.

DAILY PRODUCTION	8/19/21	8/20/21	8/21/21	8/22/21	8/23/21	8/24/21
Truck Garage	80.00	158.00	163.00	0.00	77.00	115.00
Old Building Engines 24/25	20.00	46.00	37.00	0.00	27.00	46.00
New Building Engines 23/27	96.00	233.00	175.00	0.00	0.00	0.00
Office Building	22.00	16.00	39.00	28.00	17.00	22.00
TOTALS	218.00	453.00	414.00	28.00	121.00	183.00

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1-19. On page 5 of his testimony, Mr. Wright writes "we have calculated BIUD's true avoided cost and will apply that rate to both the existing net metering policy and the proposed tariff, if approved." Please clarify whether BIUD intends to apply the new avoided cost rate (as described on pages 9-10 of Mr. Wright's testimony) to only those systems enrolled under the new tariff, or to all systems regardless of whether they enrolled under the existing tariff or the new tariff?

RESPONSE:

BIUD plans to apply the new rate of $0.1260 to all net metering members regardless of what program they are enrolled in. Each year, as we reconcile our power supply and transmission expense, we will adjust the rate accordingly.

This rate will apply to all net metering members and BIUD's roof top solar project which generates revenue for capital upgrades.

Prepared by: Jeffery M. Wright

STATE OF RHODE ISLAND
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1-20 If the answer to PUC 1-19 is yes, please explain the ratemaking (not policy) rationale for applying two different crediting mechanisms and values to different customers who have the same installed facilities but for the existence of one versus two meters.

RESPONSE:

Not applicable.

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1-21 On page 4 of the proposed tariff, the utility suggests that if a credit is maintained for more than two years, the member will forfeit the credit balance. Please respond to the following:
a. How will BIUD identify credits that have been maintained for more than two years?
b. How will BIUD execute the member forfeiture of that credit balance?

RESPONSE:

a. The only scenario that this could occur in is with an inactive account. Because the credit is applied to members' bills the following month, it would be unlikely to ever exceed the month's energy usage if sized properly.
b. If BIUD ever has to execute the forfeiture of the credit balance, the credit would be removed from the member's balance only after two years of account inactivity.

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1-22 Has BIUD ever applied a zero-credit value to net metering credits that exceed 125% of usage under the current policy?

RESPONSE:

BIUD has no record of this ever occurring.

Prepared by: Jeffery M. Wright