NEPR

Received:

Aug 7, 2026

1:28 AM

GOVERNMENT OF PUERTO RICO
PUBLIC SERVICE REGULATORY BOARD
PUERTO RICO ENERGY BUREAU

IN RE: INTERCONNECTION REGULATIONS	**CASE NO.: NEPR-MI-2019-0009** **CEPR-MI-2018-0008** **SUBJECT**: Supplementary Comments on Distributed Generation and Microgrid Interconnection Regulation - Case No. NEPR-MI-2019-0009

SUPPLEMENTARY COMMENTS OF ROBERT A. GARCIA COOPER PROPOSING A MEASUREMENT METHODOLOGY FOR ACTIVE POWER DISPLACEMENT COMPENSATION UNDER ARTICLE 9 OF THE REVISED PRELIMINARY DRAFT DISTRIBUTED GENERATION AND MICROGRID INTERCONNECTION REGULATION

TO THE HONORABLE PUERTO RICO ENERGY BUREAU:

Attention: Edison Avilés Deliz, Chairman

COMES NOW Robert A. Garcia Cooper, in his individual capacity as state-certified Engineer in Training (EIT, Certificate No. 28591), licensed Expert Electrician (Perito Electricista, License No. 10971), PhD student in electrical engineering at the University of Puerto Rico at Mayaguez, published researcher in energy systems and resilience economics, Senior Member of the Institute of Electrical and Electronics Engineers (IEEE), and former electricity metering technician, Probador Especial de Contadores by its official Spanish title, at PREPA's Electricity Metering Research Center Centro de Estudios de Medición, and Wholesale Metering Districts of San Juan and Bayamón, and respectfully submits these supplementary commentson the Revised Preliminary Draft Distributed Generation and Microgrid Interconnection Regulation published by the Puerto Rico Energy Bureau on July 13, 2026, pursuant to the Resolution and Order issued in the above-captioned proceeding.

On July 18, 2026, the undersigned filed Comments on the Revised Preliminary Draft Distributed Generation and Microgrid Interconnection Regulation, identifying in Section VI the economic consequences of smart inverter functions for prosumer net metering credits and respectfully suggesting that the Energy Bureau consider whether the questions raised therein warrant opening a parallel tariff proceeding to establish a compensation framework before the Technical

Interconnection Requirements are finalized. The undersigned now respectfully submits a specific measurement methodology for the Energy Bureau's consideration.

These supplementary comments propose a compensation methodology for active power displacement caused exclusively by Volt-VAR operation and reactive power export obligations. They do not propose a compensation methodology for Volt-Watt curtailment. The undersigned will explain why a viable Volt-Watt compensation methodology cannot at this time be derived from utility-controlled measurements alone, and will identify the conditions under which such a methodology might be developed in the future. The Energy Bureau is respectfully invited to consider the Volt-VAR proposal on its own merits while noting the Volt-Watt limitation as a separate matter requiring further technical development.

I. THE EXISTING ARTICLE 9 COMPENSATION FRAMEWORK DOES NOT CAPTURE THE FULL SCOPE OF ACTIVE POWER DISPLACEMENT UNDER VOLT-VAR OPERATION

Article 9, Section 9.05 of the Revised Preliminary Draft establishes a compensation framework for exported energy based on bidirectional kilowatt-hour measurement at the prosumer's meter. This framework reflects a determination, embedded in the existing regulatory structure, that exported active energy has a quantifiable economic value to the utility and that prosumers are entitled to compensation at the established net metering rate.

The undersigned does not propose to alter that rate or that framework. The undersigned proposes only to ensure that the measurement methodology captures the full quantity of active power that should be compensated under the rate and framework that already exists.

As established in the undersigned's July 18 comments and confirmed by IEEE 1547-2018 Section 5.2, when a smart inverter provides reactive power in response to Volt-VAR activation, the inverter's fixed apparent power ceiling measured in kilovolt-amperes constrains the simultaneously available active power output. The relationship governing this constraint is S equals the square root of P squared plus Q squared, where S is apparent power, P is active power, and Q is reactive power. At unity power factor, where Q equals zero, S equals P exactly, and the inverter's entire apparent power output is available as active power export. When Q is greater than zero, the active power available for export is reduced. The active power the inverter would have exported at unity power factor exceeds the active power it actually exports when reactive power occupies a portion of the apparent power budget. The difference is active power displacement that the current kilowatt-hour-only measurement framework does not capture and therefore does not compensate.

II. THE PROPOSED MEASUREMENT METHODOLOGY FOR VOLT-VAR ACTIVE POWER DISPLACEMENT

The undersigned proposes the following measurement and calculation methodology for estimating displaced active power, denominated P_avoided, using exclusively utility-side metered values. The methodology consists of three components: a metering configuration requirement, a measurement interval requirement, and a calculation sequence performed by the utility's central data infrastructure. An optional implementation pathway that eliminates the load profile retrieval requirement is also described for the utility's consideration. Because the primary methodology depends on infrastructure capabilities that have not been confirmed in this proceeding, the undersigned identifies the specific limitations of the primary methodology within each section as they arise, and presents in Section II.D an optional implementation pathway that addresses those limitations directly.

A. Metering Configuration and Infrastructure Limitations

The revenue meter at each prosumer interconnection point must be configured to measure, log, and display three independent values. The first is active power consumed from the utility grid, which represents the active energy the prosumer draws from the grid during periods when the distributed generation system is not producing or is producing less than the site's consumption. The second is active power exported to the utility grid, which represents the active energy the prosumer's generation system delivers to the grid and which is currently the basis for net metering credit accumulation under Article 9 Section 9.05. The third is reactive power exported to the utility grid, which represents the reactive energy the prosumer's inverter delivers to the grid during Volt-VAR operation.

This third measurement is the addition this methodology requires. It does not require measuring reactive power consumed at the residential site, which would alter the existing tariff structure and is outside the scope of this proposal. It requires only the reactive power export value at the prosumer's point of common coupling.

All three values must be visible on the meter display so that the prosumer can observe and manually record their own meter readings for transparency and independent verification purposes. The meter must be programmed to activate the reactive power export measurement function, to log that value at the defined measurement interval alongside the active power values, and to include it in the data transmitted to the utility's central data infrastructure when the meter is interrogated.

The undersigned respectfully notes the following limitations and uncertainties that the Energy Bureau may wish to address before this methodology is implemented.

First, hardware capability and active measurement configuration are distinct conditions. Historically, a meter with the hardware capability to measure active power export had to be intentionally programmed to activate that measurement function, to display the resulting value on the meter face, and to include it in the data transmitted when the meter was interrogated. During the undersigned's period of service at PREPA, meter reprogramming required physical presence at the meter site or the meter's physical presence in the laboratory, access to an optical coupler, and the use of a manufacturer-specific programming key. At the Centro de Estudios de Medición, possession of that key was restricted to three authorized personnel. Remote reprogramming capability was not available during that period. Whether the current AMI deployment supports remote meter programming, and whether the meters at active prosumer interconnection points have already been programmed to activate reactive power export measurement under whatever process is currently used, are operational questions that cannot be answered from hardware specifications alone and that the utility has not disclosed in this proceeding.

Second, the communication technology and data retrieval architecture used by the advanced metering infrastructure fleet currently deployed in Puerto Rico has not been disclosed in this proceeding. Advanced metering infrastructure systems generally operate under one of two architectural models. In a store-and-forward architecture the meter logs data internally at defined intervals, stores that record in onboard memory, and transmits it to the utility's central data infrastructure at a scheduled retrieval event, which may be triggered remotely or require physical on-site connection. In a real-time reporting architecture the meter communicates measured values to a local concentrator or directly to the central data infrastructure on a continuous or near-continuous basis. The undersigned has extensive direct professional experience with store-and-forward metering architecture in Puerto Rico's distribution system, where meters logged data internally and retrieval in all cases required physical on-site connection through the meter's optical port. The undersigned is also aware, from a specific example shared during that period of professional service, that real-time reporting capability existed in at least one revenue metering platform deployed in limited areas of Puerto Rico's distribution system. Whether the current mass-deployed AMI fleet operates under a store-and-forward or real-time reporting architecture, and whether that infrastructure is uniformly deployed and operational at all prosumer interconnection points, has not been disclosed in this proceeding and is not known to the undersigned. The choice of architecture has direct implications for the reliability and frequency of data availability, the system's vulnerability to communication interference, its coverage under storm and emergency conditions, and its capacity to handle the additional data volume that five-minute reactive power logging would generate across thousands of prosumer accounts.

Third, the primary methodology described in Sections II.B and II.C depends on the utility's ability to retrieve a stored five-minute interval load profile from the meter once per billing cycle. The meter logs active power export and reactive power export values internally at five-minute intervals and stores that record in onboard memory until it is retrieved. That retrieval occurs once monthly at the normal billing cycle, not at five-minute intervals. The methodology does not require continuous or frequent data transmission between the meter and the utility's central data infrastructure. What it requires is that when the meter is interrogated at the monthly billing cycle, whether remotely or through physical on-site connection, the stored five-minute interval log is successfully retrieved in full. If that retrieval capability is not uniformly available across all prosumer interconnection points, the primary methodology cannot be applied uniformly.

The undersigned respectfully invites the Energy Bureau to require the utility to disclose the communication technology and data retrieval architecture used by the current AMI deployment, the deployment coverage of that infrastructure at prosumer interconnection points, and the current programming configuration of meters at those points with respect to reactive power export measurement and load profile logging. This information is relevant not only to the implementation of this methodology but to the Energy Bureau's broader oversight of the metering and communication infrastructure that underlies all AMI-dependent regulatory functions. Because of the limitations identified above, the undersigned describes in Section II.D an optional implementation pathway that eliminates the dependency on load profile retrieval entirely.

B. Measurement Interval and Mathematical Necessity of Interval-Level Calculation

The primary methodology requires that the utility retrieve a stored five-minute interval load profile from the meter once per billing cycle. The undersigned respectfully suggests that the Energy Bureau consider specifying a measurement interval of five minutes for the energy logging of active power export and reactive power export values used in this methodology. Solar irradiance variability under Puerto Rico's partly cloudy conditions can produce significant changes in inverter output within intervals shorter than fifteen minutes. A fifteen-minute logging interval may mask reactive power export events and the associated active power displacement that occurred within subintervals of that window, producing a P_avoided calculation that either understates or overstates the actual compensation owed during periods of rapidly changing irradiance. A fifteen-minute interval is, from a solar generation perspective, an extended period during which operating conditions may change substantially in either direction.

A five-minute logging interval provides sufficient resolution to capture the relevant variability in both active power export and reactive power export without placing disproportionate demands on the utility's data infrastructure. The undersigned notes from professional experience with Puerto Rico's metering infrastructure that revenue meters with demand profile logging capability have historically supported five-minute interval logging in commercial and industrial applications, with adequate onboard storage for monthly billing cycles at that resolution. Monthly interrogation of the meter, consistent with the existing billing cycle, means the data infrastructure only needs to retrieve and process one month of five-minute interval records per billing period, which is operationally manageable provided the retrieval infrastructure described in Section II.A is in place.

One-minute intervals, while technically more precise, would impose significantly greater demands on meter storage, communication bandwidth, and central processing infrastructure, and are not proposed here. Five-minute intervals represent a reasonable balance between measurement resolution, storage capacity, and infrastructure load, and are consistent with the interval resolution already in use for commercial accounts in Puerto Rico's distribution system. The utility retains discretion over how it computes each logged interval value internally. The undersigned's position is that the reactive power export is logged and used in the calculation at sufficient resolution to produce a result that is neither systematically understated nor systematically overstated.

The requirement for interval-level calculation is not merely a precision preference. It is a mathematical necessity arising from the nonlinear relationship between apparent power and its components. Apparent power S equals the square root of P squared plus Q squared is a nonlinear function. The sum of apparent power values calculated at each five-minute interval is not mathematically equal to the apparent power calculated from the accumulated monthly totals of active power and reactive power. At any given interval the ratio of active power to reactive power export reflects the specific operating condition of the inverter at that moment. That ratio varies continuously with solar irradiance, feeder voltage conditions, and Volt-VAR activation state. A numerical example illustrates the structural nature of this error. If at interval one P equals zero and Q equals four, S equals four. At interval two P equals three and Q equals three, S equals 4.24. At interval three P equals four and Q equals zero, S equals four. The sum of the three interval-level S values is 12.24 kilovolt-ampere-hours. If instead the three P values are accumulated to seven and the three Q values are accumulated to seven, and apparent power is then calculated from those totals, S equals the square root of 49 plus 49, which equals 9.90 kilovolt-ampere-hours. The difference between 12.24 and 9.90 is a structural mathematical error of approximately 19 percent, arising solely from applying the nonlinear function to accumulated totals rather than to interval-level values. This error grows with variability in the active power to reactive power ratio, which is precisely the condition present on a feeder where Volt-VAR activation varies with solar irradiance throughout the day.

Calculating apparent power from end-of-month accumulated meter readings rather than from interval-level measurements therefore introduces a structural mathematical error whose magnitude depends on the variability of operating conditions across the billing period. The methodology described in Section II.C requires that S_derived and P_avoided be calculated at each five-minute interval and accumulated, not that P_measured and Q_measured be accumulated first and apparent power derived afterward. These two sequences produce different results and only the interval-level sequence is mathematically correct.

The undersigned respectfully suggests that the Technical Interconnection Requirements, when submitted for the Energy Bureau's approval, specify the measurement interval applicable to reactive power export logging at prosumer interconnection points, and that a five-minute interval be considered as the minimum resolution necessary for the P_avoided methodology to produce accurate and auditable results. Because this methodology depends on load profile retrieval infrastructure whose availability has not been confirmed, the undersigned describes in Section II.D an optional implementation pathway that resolves the mathematical requirement described above without requiring load profile retrieval.

C. Calculation Sequence

Once the active power export value and the reactive power export value are being measured, logged, retrieved, and stored by the utility's central data infrastructure at five-minute intervals, the following calculation sequence is performed by that infrastructure at each measurement interval.

Step one. The central data infrastructure derives S_derived, the apparent power in kilovolt-ampere-hours, from the two measured values using the fundamental apparent power relationship:

$$S\_derived = \sqrt{P\_measured^2 + Q\_measured^2}$$

where P_measured is active power exported in kilowatt-hours and Q_measured is reactive power exported in kilovolt-ampere-reactive-hours at that interval. This calculation is performed within the utility's own systems on utility-received data. Apparent power is never measured directly by the meter and never transmitted as a metered value. It is always a result derived from the two measured inputs.

Step two. The central data infrastructure calculates P_avoided as follows:

$$P\_avoided = S\_derived - P\_measured$$

This quantity represents the active power the prosumer would have exported at unity power factor given the same apparent power output, minus the active power actually exported. It is the active power displaced by the reactive power obligation at that interval. The foundational principle is that at unity power factor, apparent power equals active power exactly, because reactive power is zero and S equals P. S_derived therefore represents what P_measured would have been had the inverter operated at unity power factor. P_avoided makes the gap between what was exported and what would have been exported visible and auditable at the individual service point level.

For the special case where P_measured equals zero and only reactive power is being exported to the grid, S_derived equals Q_measured exactly, and P_avoided equals Q_measured. The formula produces consistent and physically sound results across all operating conditions without requiring any knowledge of irradiance, nameplate capacity, or inverter operating state.

Step three. The central data infrastructure accumulates P_measured and P_avoided independently across all measurement intervals in the billing period. Both accumulated values are applied to the billing statement at the applicable net metering rate. The billing statement presents two compensation line items: credit for accumulated active power exported, and credit for accumulated avoided active power. This presentation allows the prosumer to observe and verify both components of their compensation independently, in terms they already understand from their existing net metering statement, without requiring familiarity with apparent power or complex power concepts.

The Energy Bureau may note that the sum of accumulated P_measured and accumulated P_avoided is mathematically equal to accumulated S_derived, because P_measured plus P_avoided equals S_derived by construction at every interval. The prosumer is therefore being compensated for the apparent power they exported expressed as its active power equivalent at unity power factor. The billing presentation achieves that result in a form that is transparent, auditable, and understandable to the prosumer without requiring any change to the existing net metering compensation rate or tariff structure.

No new rate is required. No new tariff structure is required. The compensation is computed and applied within the existing billing process, building upon the methodology that the existing framework already reflects without adding new burden to the utility or the regulator.

D. Optional Implementation Pathway: Direct Apparent Power Logging

Because of the limitations identified in Sections II.A and II.B, specifically the uncertainty regarding load profile retrieval capability and the mathematical necessity of interval-level apparent power calculation, the undersigned presents the following optional implementation pathway for the utility's and the Energy Bureau's consideration.

If the deployed meter hardware includes firmware capable of directly measuring and logging apparent power as a fourth accumulated value, the meter performs the interval-level nonlinear apparent power calculation internally at each five-minute interval and accumulates the result continuously. Under this pathway the meter would be programmed to measure, log, and display four accumulated values: active power consumed from the utility grid, active power exported to the utility grid, reactive power exported to the utility grid, and apparent power exported to the utility grid.

At monthly billing interrogation the utility retrieves four accumulated monthly totals. No load profile retrieval is required. No interval-level data transmission is required. The mathematical correctness established in Section II.B is preserved because the nonlinear apparent power derivation was performed at the interval level within the meter itself, not applied retroactively to accumulated monthly totals. The P_avoided calculation then reduces to the single arithmetic operation:

P_avoided = S_accumulated - P_accumulated

This result is mathematically correct regardless of whether the monthly meter read is performed remotely through the AMI communication infrastructure or through physical on-site connection to the meter's optical port. The dependency on load profile retrieval capability is eliminated entirely.

A standard monthly meter read of four accumulated register values is all the data collection this pathway requires.

For this reason, if the deployed meter hardware and firmware support direct apparent power logging, the four-value pathway is the operationally preferable implementation of this methodology. It resolves the two principal limitations of the primary methodology without sacrificing measurement accuracy, utility-side data control, or mathematical correctness.

The three-value methodology described in Sections II.A through II.C remains the primary proposal of these supplementary comments. The four-value pathway is offered as an optional efficiency measure subject to confirmation that the hardware and firmware of the deployed fleet support direct apparent power logging. The undersigned respectfully invites the Energy Bureau to require the utility to disclose whether direct apparent power logging capability exists in the deployed meter fleet, as the answer determines which implementation pathway is more operationally practical and informs the Energy Bureau's broader understanding of the metering infrastructure underlying AMI-dependent regulatory functions.

III. THE METHODOLOGY RELIES EXCLUSIVELY ON UTILITY-CONTROLLED METERED DATA, IS SUPERIOR IN ACCURACY TO ANY INVERTER-BASED ALTERNATIVE, AND ELIMINATES THIRD-PARTY LIABILITY EXPOSURE

The measurement inputs for this methodology, active power exported and reactive power exported, come exclusively from the utility's revenue meter. The utility owns the meter, installs the meter, seals the meter, programs the meter, reads the meter, and maintains the meter under its own metering standards program. The entire compensation calculation is derived from data that is wholly within the utility's control and wholly independent of any third-party system, manufacturer platform, or inverter-reported value.

This distinction matters for three independent reasons.

First, measurement accuracy. IEEE 1547-2018 Section 4.4 and Table 3 establish the minimum measurement accuracy requirements for distributed energy resource systems. For active power and reactive power, the standard requires manufacturer-stated measurement accuracy of plus or minus 5 percent of rated apparent power in steady state, applicable only within the range of 0.2 per unit to 1.0 per unit of rated output, and only under conditions where voltage total harmonic distortion is below 2.5 percent and individual voltage harmonics below 1.5 percent. Under higher harmonic conditions the standard provides no accuracy requirement.

Puerto Rico's electric utility has historically procured revenue meters to ANSI C12.20 standards. ANSI C12.20 establishes two accuracy classes: Class 0.5, with a load performance tolerance of plus or minus 0.5 percent, and Class 0.2, with a load performance tolerance of plus or minus 0.2

percent. Class 0.5 tolerances are ten times more accurate than the IEEE 1547-2018 minimum accuracy floor of plus or minus 5 percent of rated apparent power. Class 0.2 tolerances are twenty-five times more accurate. Whether the prosumer's interconnection meter is a Class 0.5 or Class 0.2 device, a compensation methodology derived from ANSI C12.20-grade utility meter measurements is demonstrably more accurate than any methodology relying on inverter-reported values meeting only the IEEE 1547-2018 minimum accuracy floor.

Second, data integrity and third-party risk. Even if inverter measurement accuracy were comparable to utility meter accuracy, the data would still require transmission from the inverter through the manufacturer's communication infrastructure to the utility's billing system. That transmission chain introduces risks that utility-side measurement eliminates entirely: communication failures creating gaps in the compensation record; incompatible data formats across the multiple inverter manufacturers whose equipment is approved for interconnection in Puerto Rico; and the regulatory and audit exposure that arises whenever a compensation amount is derived from data provided by a party with a financial interest in the outcome. The utility would have no independent means, absent additional infrastructure investment, to verify inverter-reported data against a standard it controls. It has complete authority over data generated by its own ANSI C12.20-grade revenue meters.

Third, regulatory and contractual liability. When a utility bases a compensation payment on data reported by a third party with a financial interest in the outcome, and that data is later found to be inaccurate, manipulated, or unverifiable, the utility faces regulatory exposure it cannot adequately defend. By contrast, when the compensation calculation is derived entirely from the utility's own ANSI C12.20-grade revenue meters, programmed, sealed, and read by the utility's own personnel under its own metering standards program, the utility's position in any audit or regulatory review is unambiguous. The measurement was made by an instrument the utility owns and controls. The calculation was performed by the utility's own data infrastructure. The result is auditable at every step under the same revenue metering standards that govern every other component of the billing process. No third-party data dependency exists and no third-party liability exposure arises.

The proposed methodology eliminates all three categories of risk by construction.

IV. THE METHODOLOGY IS SELF-LIMITING AND IMPOSES NO COMPENSATION OBLIGATION ON UNCONSTRAINED FEEDERS

The P_avoided formula is self-regulating with respect to feeder conditions. On a feeder with no voltage violations and no Volt-VAR activation, reactive power export is near zero, apparent power approximately equals active power, and P_avoided approaches zero. No meaningful compensation obligation arises. The formula only produces a material P_avoided value when significant reactive power is being exported to the grid, which only occurs when smart inverter functions are actively managing a voltage condition on a constrained feeder.

The compensation burden therefore follows the feeder condition proportionally. Feeders operating within normal voltage parameters generate no compensation obligation. Feeders experiencing voltage conditions that require continuous reactive power support generate a compensation obligation proportional to the degree and duration of that support. The methodology requires no feeder-specific modeling, no load flow analysis, and no avoided cost estimation. The measurement does the work.

The undersigned further notes that this methodology does not attempt to quantify the system-level avoided costs of reactive power provision, including avoided losses in upstream conductors, avoided reactive compensation infrastructure investment, or avoided transformer loading. Those questions belong in a separate proceeding and require feeder-specific engineering analysis. The methodology proposed here addresses only the narrower and more directly compensable question of what active power the prosumer lost due to the reactive power obligation, computed from the utility's own metered data, and compensated at the rate the existing framework already establishes.

The methodology is further self-differentiating at the individual service point level, which the following example illustrates. Consider a radial secondary circuit with five prosumers, each with a distributed generation system. Due to the voltage conditions on the circuit at a given moment, one prosumer may be exporting reactive power only, with P_measured equal to zero and Q_measured equal to the full apparent power output, resulting in a P_avoided equal to Q_measured. A second and third prosumer may be exporting a mix of active and reactive power, each receiving a P_avoided value that reflects the specific proportion of their apparent power ceiling occupied by reactive power at that service point. A fourth prosumer may be exporting predominantly active power with minimal reactive obligation, receiving a small P_avoided. And a fifth prosumer, whose local voltage happens to be within acceptable limits due to the distance from the injection points and the associated line losses, may be exporting purely active power at unity power factor, receiving a P_avoided of zero.

No feeder-level modeling is required to produce these differentiated results. No allocation algorithm is required. No determination of each prosumer's relative contribution to the feeder voltage condition is required. Each meter reports its own measured values and the formula responds proportionally and independently at each service point. The prosumer bearing the greater reactive burden receives greater compensation. The prosumer operating at or near unity power factor receives none. The compensation follows the physics at each individual meter automatically, producing results that are both equitable and fully auditable without any feeder-level coordination between service points.

The transparency of this result extends to the individual prosumer's billing statement. As described in Section II.C, the billing statement presents two compensation line items: credit for accumulated active power exported, which the prosumer already recognizes from their existing net metering statement, and credit for accumulated avoided active power, which represents the active power the prosumer would have exported at unity power factor had the reactive power obligation not been present. Both line items are derived exclusively from values measured by the utility's own ANSI C12.20-grade revenue meter at the prosumer's service point. The prosumer can verify both components independently against their own meter readings, which display active power consumed from the utility grid, active power exported to the utility grid, and reactive power exported to the utility grid. No proprietary data, no manufacturer platform, and no third-party system is required for the prosumer to understand or verify what they are being compensated for and why. The methodology is therefore transparent not only to the regulator and the auditor but to the prosumer whose economic interest it is designed to protect.

V. VOLT-WATT CURTAILMENT COMPENSATION CANNOT AT THIS TIME BE DERIVED FROM UTILITY-CONTROLLED MEASUREMENTS ALONE

The undersigned respectfully advises the Energy Bureau that the methodology proposed in Sections II through IV above does not apply to Volt-Watt curtailment and should not be extended to that function.

When the Volt-Watt function activates, active power is curtailed. Quantifying that curtailment requires knowing what the inverter would have converted and exported at that specific moment absent the Volt-Watt activation. That counterfactual depends on the available solar irradiance at the specific inverter location at the specific moment of curtailment. No utility-controlled measurement currently captures that value. Estimating it would require irradiance measurement infrastructure at each secondary circuit or distribution transformer serving interconnected systems. That infrastructure is not economically feasible to deploy at the scale of Puerto Rico's distribution system.

Any alternative that relies on irradiance data or power conversion data reported by the inverter or a third-party monitoring platform reintroduces the data integrity, accuracy, and liability problems the Volt-VAR methodology is specifically designed to avoid. The utility cannot independently verify irradiance data or inverter-reported power conversion data provided by a third party, and any compensation derived from such data carries the same audit and regulatory exposure the proposed Volt-VAR methodology eliminates.

The undersigned acknowledges, as noted in LUMA's own Section 4.0 of their June 11, 2026 filing, that Volt-Watt activates only after Volt-VAR has been fully utilized. The Volt-VAR operating condition is therefore the primary and more prolonged source of active power displacement. Volt-Watt represents a subsequent and more acute grid stress condition. In the absence of a viable measurement methodology that relies solely on utility-controlled data, the prosumer on a feeder experiencing Volt-Watt activation bears a residual grid reliability cost that is currently unquantifiable through utility-controlled measurements alone.

The undersigned respectfully suggests that the Energy Bureau note this limitation as a matter requiring further technical development, and that any future Volt-Watt compensation methodology be evaluated against the same standard applied here: that it must rely exclusively on utility-controlled measurements and must not introduce third-party data dependency into the compensation calculation.

VI. METERING AND DATA INFRASTRUCTURE DISCLOSURE REQUEST

The undersigned respectfully consolidates here the infrastructure disclosure requests raised in Section II. Those requests are offered not as conditions precedent to the methodology's validity but as information the Energy Bureau may find useful in evaluating how the methodology would be implemented in practice. The Bureau is better positioned than any individual commentator to obtain and evaluate this information directly from the utility, and the undersigned respectfully offers the following observations in the hope that they assist the Bureau in framing any inquiry it may find appropriate.

With respect to communication and data retrieval architecture, it may assist the Bureau's evaluation to understand what communication technology the advanced metering infrastructure currently uses to retrieve meter data, including whether power line communication, radio frequency transmission, fiber optic connection, or some combination of these is employed, and what the geographic and account-level coverage of that infrastructure is at prosumer interconnection points across the distribution system.

With respect to meter programming, it may assist the Bureau's evaluation to understand whether the reactive power export measurement function has been activated at active prosumer interconnection points, whether that value is currently being logged at a defined measurement interval, and whether it is being transmitted to the central data collection system when the meter is interrogated.

With respect to implementation pathway selection, it may assist the Bureau's evaluation to understand whether the deployed meter hardware and firmware support direct apparent power logging as an accumulated register value, as the answer would determine which of the two implementation pathways described in Section II.D is more operationally practical.

With respect to load profile retrieval and remote reprogramming, it may assist the Bureau's evaluation to understand whether load profile data retrieval is currently performed remotely through the AMI communication infrastructure or requires physical on-site connection, and whether remote reprogramming of meter measurement functions is currently supported.

The undersigned does not suggest that the Bureau is unaware of these questions. They are raised here because the answers bear directly on how the methodology proposed in Section II would be implemented in practice, and because the Bureau's authority to require this disclosure is broader and more direct than that of any individual participant in this proceeding.

VII. DECLARATION

In compliance with applicable Energy Bureau procedural requirements, the undersigned declares as follows:

A) No party or attorney in this proceeding assisted in drafting these comments.

B) No party or attorney in this proceeding contributed funds or any other type of resource for the preparation or submission of these comments.

C) No person other than the undersigned contributed funds or any other type of resource for the preparation or submission of these comments.

Respectfully submitted,

In San Juan, Puerto Rico, on August 7, 2026.

Robert A. Garcia Cooper

EIT | PMP | CEM | IEEE Senior Member

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CERTIFICATE OF SERVICE

I hereby certify that on August 7, 2026, a copy of these Comments was filed with the Puerto Rico Energy Bureau under the title Comments on Distributed Generation and Microgrid Interconnection Regulation, Case No. NEPR-MI-2019-0009, addressed to the attention of Edison Avilés Deliz, Chairman, and submitted electronically through the Energy Bureau's electronic filing tool at https://radicacion.energia.pr.gov/.

Robert A. Garcia Cooper