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**: Second Supplementary Comments on Distributed Generation and Microgrid Interconnection Regulation - Case No. NEPR-MI-2019-0009

SECOND SUPPLEMENTARY COMMENTS OF ROBERT A. GARCIA COOPER ON PROCEDURAL PATHWAYS, CAPACITY LIMITS, COMMERCIAL FRAMEWORK, AND MICROGRID REGULATORY CONSISTENCY FOR NON-INVERTER-BASED DISTRIBUTED GENERATION UNDER 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 second supplementary comments on 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 identifying measurement infrastructure gaps, smart inverter governance concerns, and equipment risk and liability issues. On August 7, 2026, the undersigned filed Supplementary Comments proposing a measurement methodology for active power displacement compensation under the Volt-VAR

operating condition. The undersigned now respectfully submits a second set of supplementary comments, offered in the spirit of a friend of the proceeding, addressing observations that emerged from a comparative review of the complete interconnection regulatory lineage, including Regulations 7544, 8915, and 8916, and the Regulation on Microgrid Development, Regulation 9028, against the Revised Preliminary Draft. This comparative analysis was not completed within the original comment period. The undersigned submits it now in the hope that it may assist the Energy Bureau in producing a regulation that serves all classes of distributed generation fairly and without unintended gaps.

These comments address four matters verifiable from the regulation and existing regulatory framework without reference to the Technical Interconnection Requirements. A fifth matter, whether the TIR will include adequate technical provisions specific to synchronous and induction generator interconnection, cannot be evaluated until the TIR is published. The undersigned reserves observations on that question for submission following the TIR's publication and stakeholder review.

I. THE ENERGY BUREAU MAY WISH TO CONFIRM THAT THE INTERCONNECTION STUDY PROCESS ADDRESSES THE SPECIFIC GRID IMPACT OF NON-INVERTER-BASED DISTRIBUTED GENERATION

The Revised Preliminary Draft reflects careful and sophisticated work on the interconnection framework for inverter-based distributed energy resources. Section 1.06 establishes broad applicability that encompasses combined heat and power systems, reciprocating engine generators, gas turbines, and other non-inverter-based distributed generation technologies that operate in parallel with the Electric Power System. Section 8.02 acknowledges synchronous generators and induction generators as equipment types within the definition of distributed generation. The undersigned respectfully notes, however, that Section 8.02.A limits the Public Energy Policy Program approval requirement to equipment forming part of a Distributed Generation System based on renewable energy sources. Combined heat and power systems, gas turbines, reciprocating internal combustion engines, and other non-renewable generation technologies are not based on renewable energy sources and therefore fall outside Section 8.02.A. Section 8.02.B provides the broader framework, stating that the EPS Operator allows generators and devices that comply with applicable standards and codes, without specifying what those standards are for non-renewable non-inverter-based technology. The Energy Bureau may also wish to consider whether the definition of Distributed Generation System in Section 1.11 would benefit from explicitly naming non-inverter technology types alongside generators and inverters, to prevent any ambiguity about the regulation's technology-neutral scope.

The undersigned respectfully draws the Energy Bureau's attention to the interconnection study process and its applicability to non-inverter-based distributed generation.

The interconnection processes established in Articles 4 and 5 of the Revised Preliminary Draft, the Simplified Interconnection Notification, Fast Track, Initial Review, and Supplemental Review, do not explicitly exclude non-inverter-based distributed generation from their procedural scope. A combined heat and power system or any other non-inverter technology seeking parallel interconnection could nominally enter these processes. The undersigned notes with appreciation that Section 4.02.B.1 provides that the fifteen percent circuit capacity screen does not apply to a Non-Exporting Distributed Generation System or Non-Exporting Microgrid, which is a helpful recognition that non-exporting systems have a different grid impact than exporting systems. The undersigned also notes that Section 7.09.B establishes reverse power protection requirements for non-exporting systems using utility grade protective relays, which addresses one of the protection scheme elements previously established in Regulations 7544, 8915, and 8916 for synchronous generators operating in non-export parallel mode.

However, the screening criteria within these processes were designed to describe the grid impact of inverter-based resources generating active power during solar peak hours. The hosting capacity analysis and voltage rise assessment are calibrated for the reverse power flow condition that photovoltaic systems create at midday. A non-exporting parallel combined heat and power or other synchronous or induction generation system that displaces facility load without injecting power into the feeder during solar peak hours presents a fundamentally different engineering question from the one the current screening framework is designed to evaluate.

The undersigned respectfully notes that Section V, Article C of Regulation 8915 established a dedicated study process specifically for projects with technologies that are not inverter-based, the Proceso de Estudio en Proyectos con Tecnologías que No Son a Base de Inversor, requiring power flow, short circuit, stability, grounding verification, and power quality studies calibrated to the actual grid impact of rotating machine-based distributed generation. A comparable provision within the proposed regulation's framework, or an explicit confirmation within the TIR that the Supplemental Review process will apply to non-inverter-based distributed generation with study requirements appropriate to their technology class and grid impact, would provide clarity to owners and developers of combined heat and power, gas turbine, and reciprocating engine generation systems navigating the interconnection queue.

II. THE ENERGY BUREAU MAY WISH TO CONSIDER THE CONSISTENCY OF THE PROPOSED REGULATION WITH THE REGULATION ON MICROGRID DEVELOPMENT FOR CHP MICROGRIDS

The Regulation on Microgrid Development, Regulation 9028, promulgated in May 2018 and currently in force, explicitly defines and recognizes combined heat and power as a microgrid generation category. Section 1.03 of Regulation 9028 identifies combined heat-and-power among

the decentralized energy resources the Commission seeks to harness to strengthen grid resiliency. Section 3.03.B establishes specific operational qualification requirements for CHP Microgrids, including thermal energy output minimums and fuel efficiency standards. CHP Microgrids are therefore a recognized, actively regulated technology category with their own classification and requirements under existing Puerto Rico regulatory law.

Section 3.06 of Regulation 9028 provides that microgrids may interconnect with the Electric Power Grid in accordance with applicable regulations or procedures adopted by PREPA, its successor, or the operator of the Electric Power Grid. The proposed interconnection regulation is the applicable regulation for microgrid interconnection. CHP Microgrids registered under Regulation 9028 will therefore interconnect pursuant to the proposed regulation.

The proposed regulation applies to microgrids under Section 1.06 and acknowledges synchronous generators as equipment types in Section 8.02. However, as noted in Section I of these comments, it provides no study process specific to the grid impact of non-inverter-based rotating machine generation, and Section 8.02.A limits the equipment approval requirement to renewable energy-based systems. A CHP Microgrid registered under Regulation 9028 with specific operational qualifications established in that regulation will interconnect under a regulation whose study process, screening criteria, and equipment approval framework do not fully describe or address the technology class it represents.

The Energy Bureau may wish to consider whether any clarification is needed to ensure consistency between the proposed regulation's interconnection framework and the technology categories recognized and regulated under Regulation 9028, so that CHP Microgrids whose development is encouraged by one regulatory instrument are not left without adequate technical guidance in the interconnection instrument that governs their connection to the grid.

III. THE ENERGY BUREAU MAY WISH TO CONSIDER WHETHER THE CAPACITY LIMITS FROM PRIOR REGULATIONS SHOULD APPLY BEYOND THE NET METERING CONTEXT

Regulation 8915 established a maximum installed AC capacity of one megawatt for distributed generation systems interconnecting to the distribution system as a general interconnection limit. Critically, the applicability section of Regulation 8915 stated explicitly that its provisions apply to all DG with maximum installed AC capacity of one megawatt or less interconnecting with the Authority's electric distribution system, and further stated that they apply to both clients who wish to participate in net metering programs and those who do not. Article D of Regulation 8915 Section I confirmed this: the maximum AC power capacity of a DG proposed to interconnect with the Authority's electric distribution system is one megawatt. This was a general interconnection capacity limit independent of net metering participation. Regulation 8916 Article C established the

corresponding limit for transmission and sub-transmission interconnection, covering DG from one megawatt up to five megawatts.

The Revised Preliminary Draft preserves these capacity limits in Sections 9.01, 9.02, and 9.03. The undersigned respectfully notes, however, that in the proposed regulation these limits appear exclusively within the Net Metering sections. Section 9.01.A limits net metering participation to distributed generation systems fueled by Renewable Energy Sources. Non-renewable combined heat and power, synchronous, and induction generation systems are therefore excluded from the commercial compensation framework and the capacity limit provisions the regulation establishes.

The consequence is that the general interconnection capacity limits that previously applied to all distributed generation technologies regardless of net metering participation now appear only in sections from which non-renewable generation technologies are excluded. Table 1 in Section 4.01 establishes Fast Track eligibility size limits based on line voltage without specifying technology type, which is a helpful starting point. However, these are Fast Track eligibility thresholds applicable to export capacity, not general interconnection capacity caps equivalent to those in Regulations 8915 and 8916.

The Energy Bureau may wish to consider whether establishing explicit interconnection capacity limits for non-net-metering distributed generation at each voltage level, within the interconnection process sections of the regulation or within the TIR, would provide greater regulatory clarity and continuity with the prior framework for owners of combined heat and power, gas turbine, and reciprocating engine generation systems.

IV. THE ENERGY BUREAU MAY WISH TO CONSIDER INCLUDING BRIDGE LANGUAGE DIRECTING NON-RENEWABLE DISTRIBUTED GENERATION TO THE APPLICABLE COMMERCIAL FRAMEWORK AND CLARIFYING THE EXPORT PATHWAY QUESTION

The Revised Preliminary Draft appropriately limits net metering participation to distributed generation systems fueled by Renewable Energy Sources under Section 9.01.A. Non-renewable combined heat and power, synchronous, and induction generation systems are therefore excluded from the commercial compensation framework the regulation establishes.

The undersigned respectfully notes that the prior regulatory framework addressed this matter through explicit language. Regulations 7544, 8915, and 8916 each stated that parallel interconnection does not grant the customer the right to use their system for the distribution or sale of energy to other customers of the Authority outside of net metering programs. This explicit statement provided regulatory clarity about the commercial scope of parallel interconnection. The Revised Preliminary Draft, by excluding non-renewable DG from net metering in Section 9.01.A

without restating this clarification or providing a reference to the applicable commercial framework, creates an ambiguity where the prior regulations had explicit clarity.

The undersigned does not suggest that the proposed regulation must establish a commercial export mechanism for non-renewable distributed generation. That is appropriately a matter for the EPSC regulatory framework and related proceedings. However, the undersigned respectfully raises a question for the Energy Bureau's consideration: whether the absence of a clearly defined commercial export pathway for non-renewable generation systems below five megawatts is a deliberate policy choice or an unintended gap.

The proposed regulation does not explicitly prohibit export for non-renewable distributed generation. Section 7.09 establishes both non-exporting and limited export operating modes for all distributed generation systems without restricting them by fuel type or technology class. However, Section 9.01.A excludes non-renewable DG from net metering. The Regulation for the Evaluation and Approval of Agreements with Electric Service Companies exempts Power Purchase Agreements for less than five megawatts from its review and approval requirements under Section 1.04.D.1. The combination of these three provisions creates a circumstance in which a non-renewable generation system below five megawatts that wishes to export excess generation to the grid has no clearly defined commercial pathway in any regulatory instrument, not because export is prohibited but because no pathway for it has been established.

If this outcome is by deliberate policy design, a statement to that effect would provide regulatory certainty. If it is not by design, the Bureau may wish to identify the appropriate regulatory instrument in which to address it.

A sentence within the proposed regulation directing non-renewable distributed generation systems that do not qualify for net metering under Section 9.01.A to the applicable regulatory framework governing commercial power sales arrangements, and confirming that export under five megawatts requires a specific regulatory pathway yet to be established, would assist interconnection customers in understanding the commercial landscape following their interconnection approval.

V. A FIFTH MATTER IS RESERVED PENDING PUBLICATION OF THE TECHNICAL INTERCONNECTION REQUIREMENTS

The regulation incorporates IEEE 1547-2018 under Section 8.01.C and provides that where conflicts exist between the standard and the regulation, the regulation and the TIR shall take precedence. IEEE 1547-2018 Section 4.1 explicitly states that its technical specifications and performance requirements apply to distributed energy resources including synchronous machines and induction machines, as noted in footnote 25 of that section. The standard also contains

synchronization requirements in Section 4.10.4 directly applicable to synchronous generator interconnection.

Whether the TIR will include adequate technical provisions specific to synchronous and induction generator interconnection, in addition to those applicable to inverter-based resources, cannot be evaluated until the TIR is published and made available for stakeholder review. The undersigned notes that Regulations 7544, 8915, and 8916 each contained explicit protection relay requirements for synchronous and induction generators, including the synchronism check relay essential for safe parallel operation and the directional power relay specifically designed for non-export parallel systems. Whether equivalent provisions will appear in the TIR is a question the undersigned respectfully reserves for comment following the TIR's publication.

The undersigned respectfully requests that the Energy Bureau ensure that the TIR publication and stakeholder review process provides sufficient opportunity for parties with experience in rotating machine-based distributed generation to evaluate and comment on the technical provisions applicable to their technology class before the TIR takes effect.

VI. THE REGULATORY LINEAGE CONFIRMS THE CONTEXT FOR THESE OBSERVATIONS

The undersigned has reviewed Regulations 7544, 8915, 8916, and 9028 and offers the following observations about how the prior regulatory framework addressed the matters raised in these comments, for the Energy Bureau's reference as it finalizes the proposed regulation.

Regulation 7544, promulgated in August 2008, defined cogeneración as a recognized distributed generation technology and established specific protection relay requirements for synchronous and induction generators, including the synchronism check relay essential for parallel operation and the directional power relay specifically designed for non-export systems. These requirements applied within the same interconnection framework that governed all distributed generation connected to the distribution system.

Regulation 8915, promulgated in February 2017, preserved and expanded these provisions. Its applicability section explicitly stated that its provisions apply to all DG with maximum installed AC capacity of one megawatt or less, applicable to both clients who wish to participate in net metering programs and those who do not. Section V, Article C established a dedicated study process for non-inverter-based technologies with its own study types, application requirements, and evaluation criteria. Section VI, Article B, Item 7 established specific protection relay requirements for synchronous and induction generators with capacity of 500 kW or more. The one

megawatt distribution interconnection capacity limit applied to all distributed generation technologies regardless of fuel type, technology class, or net metering participation.

Regulation 8916, promulgated in February 2017, governed interconnection at sub-transmission and transmission voltages, covering DG from one megawatt up to five megawatts. Its protection requirements for synchronous and induction generators mirrored those in Regulation 8915. The five megawatt sub-transmission interconnection capacity limit applied to all distributed generation technologies. The regulation explicitly acknowledged that power quality study requirements applied to synchronous generators, induction generators, and wind turbines using equipment not certified under IEEE 1547 and UL 1741.

Regulation 9028, promulgated in May 2018, established the Regulation on Microgrid Development and explicitly recognized combined heat-and-power as a microgrid generation category with specific operational requirements. Section 3.06 of Regulation 9028 defers microgrid interconnection to applicable regulations or procedures, making the proposed interconnection regulation the governing instrument for CHP Microgrid interconnection.

All three prior interconnection regulations also contained explicit language stating that parallel interconnection does not grant the customer the right to distribute or sell energy to other customers outside of net metering programs, providing regulatory clarity on the commercial scope of parallel interconnection that the proposed regulation does not replicate.

The observations raised in these comments reflect areas where the proposed regulation's framework may benefit from complementary provisions before taking effect. The undersigned offers these observations in the spirit in which they are intended, as observations grounded in direct professional experience with Puerto Rico's distributed generation and metering infrastructure, offered to assist the Energy Bureau in producing a regulation that serves the full range of distributed generation technologies within its applicability scope.

VII. FOUR OBSERVATIONS FOR THE ENERGY BUREAU'S CONSIDERATION

The undersigned respectfully offers four specific observations for the Energy Bureau's consideration as it finalizes the regulation.

First, the Energy Bureau may wish to consider whether the Supplemental Review process or the TIR should include study requirements specific to the grid impact of non-inverter-based distributed generation, particularly non-exporting parallel combined heat and power, synchronous, and induction generation systems, consistent with the study process that existed in Section V, Article C of Regulation 8915.

Second, the Energy Bureau may wish to consider whether explicit interconnection capacity limits for non-net-metering distributed generation at each voltage level, consistent with those that existed as general limits applicable to all technologies regardless of net metering participation in Regulations 8915 and 8916, would provide greater regulatory clarity and continuity for owners of non-renewable parallel generation systems.

Third, the Energy Bureau may wish to consider whether any clarification is needed to ensure consistency between the proposed regulation's interconnection framework and the technology categories recognized and regulated under Regulation 9028 on Microgrid Development, so that CHP Microgrids whose development is encouraged by that regulation are not left without adequate technical guidance in the interconnection regulation that governs their grid connection.

Fourth, the Energy Bureau may wish to consider including a provision within the regulation directing non-renewable distributed generation systems that do not qualify for net metering to the applicable commercial regulatory framework for power sales arrangements, and clarifying whether the absence of a commercial export pathway for non-renewable generation below five megawatts is a deliberate policy choice, so that interconnection customers have regulatory certainty about the commercial landscape following their interconnection approval.

VIII. DECLARATION

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

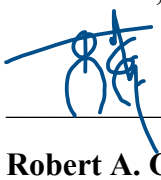
A) No party or attorney in this proceeding assisted in drafting these comments.

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 September 2, 2026.



Robert A. Garcia Cooper

EIT | PMP | CEM | IEEE Senior Member

PhD Student, Electrical Engineering (Power and Energy Systems)

Email: rgarcia.accuracy@gmail.com

Phone: 939-588-8161

CERTIFICATE OF SERVICE

I hereby certify that on September 2, 2026, a copy of these Comments was filed with the Puerto Rico Energy Bureau under the title Second Supplementary 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