

NEPR

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Stakeholder Workshop
LUMA's Positions & Recommendations
Docket No. NEPR-MI-2025-0003

Agenda

What we will cover

- I. **Context & the PREB Order** — why Puerto Rico is different; what the Order asks
- II. **Legal and regulatory foundation** — Act 57-2014, docket history, interconnection overlap
- III. **LUMA's recommended regulatory design** — the model at a glance
- IV. **Positions on PREB's 23 guidance questions** — the core of today's discussion



I • Context & Executive Summary



Executive Summary

LUMA's core position

Community solar (“CS”) in Puerto Rico is, today, largely aspirational — sound in theory, but ahead of the island’s operational, regulatory, and economic readiness.

- Mainland benefits assume stable transmission, mature wholesale markets, and robust interconnection capacity — none of which PR currently has.
 - Compared jurisdictions and programs analyzed include the Minnesota’s Community Solar Garden Program/Xcel Energy, New York State Energy Research and Development Authority/Con Edison.
- The priority must remain stabilizing and hardening the core T&D network before layering on administratively complex CS structures.
- LUMA supports a carefully designed pilot — not a full program — as the responsible first step.
- LUMA also requests regulatory certainty that developers proposing CS projects will pay for the use of the T&D infrastructure assets.



Why Puerto Rico Is Different

Structural gaps in community solar markets

Grid & operational reality

- Aging infrastructure; constrained distribution circuits
- Limited feeder hosting capacity
- High, rapidly rising automatic DER interconnection
- Voltage-violation and system-safeguard concerns

Market & framework gaps

- No organized wholesale market
- No established virtual net-metering framework
- No granular locational/temporal valuation of injections
- Legal framework silent on third-party use of PREPA T&D assets

Key Constraints to Confront First

What must be resolved before scaling community solar

- **Cross-subsidization** — non-participants could bear disproportionate infrastructure and reliability costs
- **Subsidy-dependent economics** — value driven by incentives, not necessarily true avoided cost
- **Supplementary-study fee order** — limits LUMA's ability to evaluate feeder-level DER impacts
- **Inherited PREPA Billing System** — needs major IT and manpower investment to operationalize crediting
- **Open rulemaking dockets** — several currently impede CS development



II • Legal & Regulatory Context



Legal Foundation

Statutory mandate and docket history

- **Act 57-2014** — directs PREB — with the DDEC Energy Public Policy Program and OIPC — to establish a framework for community solar and microgrids
- **NEPR-MI-2025-0003** — commenced for a pilot and subsequent formal rulemaking
- **EPA grant cancellation** — proceeding recommenced after the grant that initially framed the pilot was cancelled
- **Consistency requirement** — any framework must align with the PR rate framework and the documented condition of the T&D system



Docket Overlap & Interconnection Basis

Community solar must align with the active DER interconnection docket (NEPR-MI-2019-0009)

A unified DER-inclusive framework, built on:

- Regulations 8915, 8916, and 9028
- Recognized utility practices
- FERC's Standardized Interconnection framework: Small Generator Interconnection Procedure (SGIP) and Small Generator Interconnection Agreements (SGIA) models
- DOE DER interconnection guidance

Why it carries through to CS:

- CS interconnects export-capable DERs on the same constrained T&D system
- Same feeder constraints, hosting limits, and reliability needs apply
- One consistent rule set avoids gaps and arbitrage between dockets



III • Recommended Regulatory Design



Summary of Recommended Regulatory Design

1 of 2

Issue	Recommended Position	Utility Rationale
Business model	Competitively selected, third-party-owned, tariff-administered CS; limited municipal/nonprofit under the same rules; developers pay interconnection costs	Uses private capital; keeps development risk off ratepayers; preserves LUMA as neutral T&D operator
Governance	PREB-approved tariff; LUMA interconnection/crediting role; OIPC consumer protection; PREB-registered “ESC”	Separates market development from monopoly grid functions; protects customers
Boundaries	Island-wide subscription/crediting within LUMA territory; electrical limits set by feeder/substation hosting capacity	Avoids political-subdivisions (i.e., municipalities) constraints while respecting physical grid limits
Physical configuration	Aligned with interconnection rules; smart-inverter settings activated; storage where needed by study, block, or resiliency claim	Supports reliability without one-size-fits-all cost



Summary of Recommended Regulatory Design

2 of 2

Issue	Recommended Position	Utility Rationale
Valuation	To be determined	Limit cross-subsidies and duplication of benefits. Any credit allocation mechanism should be designed to comply with existing statutory limitations and avoid duplicative benefits, including those established under Article 5 (Energy Metering) of Act 114-2007 (22 L.P.R.A. § 1015(d)) (e.g., annual excess generation credits are not paid at full value, as 25% is directed to the Department of Education and 75% is retained by the customer).
Consumer protection	Plain-language disclosures; Act 57 complaint process; data privacy; monthly reporting	Subscribers may not understand interconnection; developers are not the utility
Equity	Minimum LMI / disadvantaged participation	Targets benefits to customers who cannot install rooftop solar
Capacity limits	Pilot cap + individual project thresholds; pre-injection screening; performance review	Prevents safety and reliability concerns from DER on a fragile grid

IV • Responses to PREB's Guidance Questions



Q1 · Business Model

Best enhancing affordability, equity, and reliability

Recommended: a PREB-regulated, third-party-owned community solar model, via a tariff/credit structure and standard interconnection agreements.

- Developers finance, own, build, operate, maintain, and insure the facility — and cover all interconnection costs.
- LUMA remains T&D operator and interconnection / credit administrator.
- PREB sets the tariff, crediting rules, reporting, and consumer-protection rules.
- Mobilizes private capital and keeps CS development risk off all ratepayers.



Q1 · Ownership Models & Why Third-Party

The Order identifies several ownership models; LUMA recommends third-party

Ownership models identified

- Utility-owned
- Member / cooperative
- Third-party-owned — recommended
- Municipality-owned
- Non-profit

Why third-party fits Puerto Rico

- Mobilizes private capital amid major T&D funding needs
- Keeps development risk off ratepayers
- Preserves LUMA as a neutral T&D operator
- PREB can still impose affordability & equity conditions
- Limited municipal / nonprofit allowed under the same rules



Q1 · Model Structure & Precedent

How the recommended model works

Structure

- Special-purpose entity owns and operates the facility
- Signs interconnection agreement with LUMA; posts security; pays cost-causer charges
- Subscribers contract with the project owner — not LUMA
- Owner maintains subscriber organization, monthly allocation files, privacy, and PREB/OIPC reports
- LUMA validates eligibility and applies credits; does not guarantee developer performance

Precedent

- Minnesota / Xcel Energy is the clearest private-developer model
- Developers own projects and sell subscriptions
- Subscribers receive bill credits on Xcel bills, by share of production
- New York CDG model cited by others is not recommended for PR
 - NEM and VNEM crediting complexities



Q2 • Governance Structure

Centralized in PREB, operationally distributed

- **PREB** — program rules, tariffs/credits, eligibility, valuation, caps, reporting templates, consumer-protection standards, enforcement
- **LUMA** — interconnection, metering, credit allocation, outage coordination, dispatch/curtailment
- **EPPP & OIPC** — policy coordination; consumer reports and complaint procedures
- **CS entities** — must register as an “Electric Power Service Company” (Act 17-2019 §1.2(c)) — not act as an unregulated utility
- **Enforcement** — include fines and penalties for non-compliance



Q3 · Role of Puerto Rico Public Entities

Clear lines of responsibility

- **PREB — primary regulator** — approves the regulation and tariff; resolves disputed interconnections; sets reporting; enforces penalties
- **PREB — also** — convenes a pilot working group; defines the legal question on third-party use of PREPA T&D assets; converts pilot results into permanent rules
- **OIPC** — protects subscribers; receives escalated complaints
- **LUMA** — retains T&D operational authority per the T&D OMA



Q4 · Geographic / Administrative Boundaries

Preferred boundary

Island-wide subscription eligibility within LUMA's service territory, with electrical limits applied at the point of interconnection.

- Puerto Rico is an integrated island grid — not a set of municipal utilities.
- Political borders don't determine feeder capacity, reverse power flow, voltage, or transformer loading.
- Eligibility: LUMA retail customers in good standing; virtual credit allocation through billing.
- Excluding NEM customers (duplication of benefits).



Q4 · Boundary Alternatives

Preferred: hybrid island-wide / electrical model

Alternatives considered

- (i) Municipal-only
- (ii) Feeder / substation-area
- (iii) Island-wide service territory
- (iv) Hybrid — island-wide with local/LMI credit reservations

Confined to a political subdivision?

- No — not as a general rule
- PREB may authorize municipal-hosted projects for specific resilience or LMI blocks
- Physical grid constraints, not political borders, govern
- PREB verifies municipal financial capability



Q5 · Physical Configurations

Acceptable configurations for community solar

- **Distribution-connected solar PV** — front-of-meter
- **Solar-plus-storage** — where economics or grid needs support it
- **Sited flexibly** — rooftop, canopy, brownfield, landfill, parking lot, or ground-mounted
- **Non-export / limited export** — where appropriate
- **Metered & controllable** — separately metered at the POI; remote monitoring and curtailment capable
- **Prefer low-impact sites** — reduce land-use conflict; interconnect without disproportionate upgrades



Q5 · Ride-Through Inverters & Storage

Reliability requirements on a constrained grid

Ride-through inverters — required

- Required for all export-capable CS projects
- IEEE 1547-2018 / 1547.1; UL 1741 SB or successor
- LUMA/PREB-approved settings; anti-islanding; volt-var/volt-watt; freq-watt; telemetry
- Ride-through is a DER capability — not merely a setting (NREL)

Storage — not universally mandatory

- Determined by developer economics
- Not required at the outset
- Provides grid benefits: manages intermittency and DER-integration impacts



Q6–Q7 · Interconnection Requirements

Follow the active PREB DER framework, with a dedicated CS track

- **Required elements** — application completeness, site control, one-lines, certifications, protection, export capacity, POI, study, upgrades, agreement, commissioning, telemetry, metering
- **Adapt FERC models** — SGIP/SGIA concepts, tailored to PR distribution conditions
- **Parties** — interconnection customer = project owner/SPE; counterparty = LUMA as T&D operator
- **Higher-voltage projects** — Reg 8916 (or successor) applies for sub-transmission/transmission interconnection
- **Cost responsibility** — all interconnection costs covered by developers (cost-causer principle)



Q8 · Role of NEM in Valuation

Retail NEM should not be the default CS valuation

Community solar is off-site generation allocated by virtual credits — not customer-sited self-supply. Full retail NEM would over-credit exports.

- CS credit should be based on avoided cost or a Puerto Rico value-stack methodology.
- NEM can inform transition design and customer-facing simplicity.
- NEM customers should not participate in order to avoid double-counting / cost-shift safeguards, among other reasons.
- Notwithstanding these observations, LUMA recommends NEM customers are not allowed to participate.



The Order on Pricing Injected Power

What the Resolution raises on avoided costs and compensating excess generation

Estimating avoided costs

- Injected power can be priced on a real-time marginal-cost signal or on forecasted avoided-cost prices
- Avoided-cost prices may be time- or location-differentiated
- The Order asks whether current avoided-cost estimates are sufficient to price community solar
- It asks what real-time / locational value information LUMA can provide

Compensating excess power

- Wholesale transactions with LUMA, an aggregator, or a large customer via wheeling
- Selling excess to a third party requires a negotiated price within PREB's wheeling framework
- Retail side: capital-cost-recovery and bill-credit implications vary by business model
- The Order asks which entity will purchase the excess electricity



Q9 • Entity Purchasing Excess Electricity

Defined by tariff; settled within the existing structure

- **Injection & credit** — energy is injected into the LUMA/PREPA system and credited under a PREB-approved tariff
- **Economic buyer** — PREPA or the system supply function — which bears fuel/purchased-power cost
- **LUMA's role** — administers metering and CS credits as agent under PREB-approved rules
- **PREB should designate** — a buyer-of-record / settlement administrator
- **Settlement treatment** — specify interaction with FCA / PPCA mechanisms or a separate CS rider



Q10 • Pricing Options for Injected Power

Range of options PREB could adopt

- **Cost-based** — (i) avoided energy; (ii) avoided energy + capacity
- **Value stack** — (iii) energy, capacity, environmental, distribution, resilience, locational values
- **Market / procured** — (iv) competitively procured fixed price; (v) wholesale marginal-cost proxy
- **Administrative / dynamic** — (vi) set bill-credit rate; (vii) time-varying prices
- **Avoid** — the overly complex NY value-stack; retail-rate crediting absent a specific PREB finding



Q10 · Pricing Data & Real-Time Value

What's available — and what's missing

Puerto Rico's current data is not yet sufficient for a fully dynamic locational marginal distribution price.

- Available inputs: FCA/PPCA filings, avoided-cost data, resource planning, rate-case evidence, hosting-capacity, locational reliability.
- Avoided-cost estimates: fine for a pilot, insufficient for a permanent program — update regularly and unbundle components.
- LUMA provides technical/operational data; PREB sets the methodology — LUMA should not set market prices unilaterally.
- Require a data roadmap before adopting real-time CS pricing.



Q11–Q13 · Accounting, Crediting Basis & Vehicle

Auditability and protection of non-participants

Accounting must distinguish

- Project metered kWh and export kWh
- Subscriber allocations and credit rate
- Customer charges offset
- Unallocated energy
- Admin fees and cost recovery

Crediting basis & vehicle

- PREB-approved tariff credit
- Consider existing NEM structure and financial constraints
- Contracts: interconnection agreement, subscriber disclosure, data-sharing, reporting template, complaint & cure procedures
- Respect system liquidity constraints



Q14–Q15 · Subscriptions & Participation

Sizing and enrollment

- **Threshold model** — subscribe to ~100–120% of the most recent 12-month consumption
- **Why cap it** — prevents credits that exceed consumption and require cash-out, carryover, and administrative burden
- **System impact** — over-subscription would further stress the electrical system financially
- **Enrollment** — participation should be opt-in
- **Why opt-in** — protects LUMA and PREB from disputes over unauthorized enrollment and mistaken crediting



Q16–Q17 · Reporting

Cadence balancing oversight with administrative burden

Project owners report

- Generation and subscriber allocations
- Subscriber class and LMI participation
- Pricing, savings, complaints, cancellations
- Credit reversals, outages, curtailments, unallocated energy

Reporting flows to

- PREB — all regulatory reports
- OIPC — consumer protection & complaints
- LUMA — operational, allocation & interconnection data
- Public versions posted with confidential / CEII redactions



Q18–Q20 · Consumer Protection

A triangular relationship: subscribers, developers, utility

- **The core risk** — customers may think they are buying power from LUMA when they buy a subscription from a third party
- **Required protections** — clear disclosures, no unfair exit fees, portability, cancellation rights, data privacy, standardized marketing, complaint escalation, penalties for deceptive conduct
- **Authority** — PREB over service companies, tariffs, rules, and enforcement; OIPC as specialized consumer advocate
- **If authority is insufficient** — condition eligibility on voluntary PREB jurisdiction, bonding/registration, standardized contracts — legislative clarification via Assembly/Governor if needed



Q21–Q22 · Equity & LMI Set-Asides

Narrowing the cost-and-reliability gap — questions PREB should resolve

- **The equity problem** — income disparity drives differential reliability — those who can self-supply (solar + storage) vs. those who depend on the grid
- **Design goal** — minimum LMI / disadvantaged participation; targeted benefits for customers who cannot install rooftop solar
- **Public-housing customers** — how to treat customers who are on a fixed rate
- **Qualification** — what mechanisms determine set-asides
- **Public entities** — whether they qualify in bulk or case-by-case



Q23 · Capacity Limits

Essential for a pilot and for reliability

A reasonable starting point: ~25 MW aggregate pilot, with individual projects up to 5 MW — revisited after LUMA provides operational data.

- Individual caps depend on voltage level, feeder/substation capability, export profile, storage/control, and upgrades.
- Aggregate caps tied to rate impact, interconnection performance, locational diversity, reliability, and readiness.
- Revisit after hosting-capacity, queue, billing-system, and operational data.
- Set and revise caps in line with RPS and IRP goals.



La gente primero.
La seguridad siempre.

