

Impacts of the devaluation of the net metering policy in Puerto Rico

Published by: Solar Energy and Energy Storage Association of Puerto Rico
(SESA)

Introduction

This white paper presents an analysis of the revenue distribution of net-metered solar systems installed in Puerto Rico. The analysis uses zip code-level data from existing net-metered solar installations (99% of which are residential) and the most recent census data, categorized by income levels as defined by the United States Department of Housing and Urban Development (HUD).

Net metering is the most common policy that allows people to install solar panels on their home or business¹. With net metering, solar customers' electric bills are lower because they generate some of their own electricity, and they receive a kilowatt-hour credit at the normal retail energy rate for any solar electricity they put on the electric grid to share with their neighbors. At the urging of the federal government, the Energy Policy Act of 2005 required all states and territories to consider adopting this policy, prompting Puerto Rico to adopt net metering into law in 2007. Puerto Rico's law protects the net metering policy until 2030, and then allows the regulator (the Energy Bureau) to conduct a study and consider continuing or modifying the policy.

Despite the protection of net metering by law, Puerto Rico's Financial Oversight and Management Board is currently urging Puerto Rico to eliminate or devalue its net metering policy by 2030. This white paper includes forward-looking analyses that compare maintaining the current rate of solar energy installation in homes and businesses, with various reduction scenarios if the net metering policy were eliminated or devalued. It seeks to quantify the

¹ <https://www.solarpowerworldonline.com/2017/02/what-is-solar-net-metering/>

impact on various income groups, with special attention to the ramifications for lower-income Puerto Rican families.

Key information

- High rates of solar adoption by lower-income groups: The rates of lower-income households installing solar in Puerto Rico are 27% to 37% higher than the U.S. national averages.
- Rate of Distributed Solar Installations in Puerto Rico: The continuation of solar deployment at a rate of 3,350 homes per month depends largely on maintaining the net metering policy.
- Impact of policy changes: Eliminating or reducing net metering would significantly reduce the adoption of solar and storage, disproportionately harming the most vulnerable families and communities.
- Impact on lower-income families: The elimination or devaluation of net metering would cause between 69,000 and 197,000 fewer families in total to adopt solar energy by 2030 in Puerto Rico, 144,000 of them in lower income categories, according to the three scenarios analyzed.
- Economic consequences: The devaluation of the net measurement would mean between \$2 billion and \$5.7 billion in cumulative economic losses for Puerto Rico in 2030.
- Losses in solar and storage deployment: The devaluation of net metering would result in 398 to 1,137 fewer megawatts of distributed solar and 1,061 to 3,032 fewer megawatt-hours of installed battery storage by 2030.
- Job losses: Between 2,800 and 8,000 jobs would be lost if the net measurement in Puerto Rico were to be devalued.

Summary of Conclusions

Reduction scenario	Impact Description	Number of fewer homes with solar and storage	Economic losses for Puerto Rico	Less solar energy (MW)	Fewer Batteries (MWh)	Jobs Lost
28% Reduction (LMI)	It would predominantly affect the LMI population, reducing their access to solar energy.	68,845	\$2 billion	398	1,061	2,800
59% reduction (LMI and average income)	It would extend the negative impact to both LMI and middle-income populations.	144,352	\$4.2 billion	838	2,236	5,900
80% Reduction (California)	It would impact all of Puerto Rico, with a predominant negative impact on LMI and Middle Income.	197,405	\$5.7 billion	1,137	3,032	8,000

Poverty Levels in Puerto Rico

HUD defines poverty levels as a percentage of median income ("AMI"), and the specific amounts of annual income for that vary by state or territory. Income thresholds are defined as "very low," "low," "moderate," "medium," and "high" incomes, and the categories "very low, low, and middle" are often referred to by the acronym LMI² (Low & Moderate Income).

As defined by HUD, the annual income thresholds for LMI (80% of AMI) and

LMI + median income (families earning less than 120% of AMI) are as follows, as of May 2024³:

Household Classification	% of Area Median Income
Very Low Income	0-30%
Low Income	30-50%
Moderate Income	50-80%
Middle Income	80-120%
High Income	>120%

LMI

Límites de ingresos para el 2024 para todas las áreas de Puerto Rico ajustados por la pauta federal de pobreza para 4 personas

		Límites de ingresos ajustados			
		1 persona	2 personas	3 personas	4 personas
Ingresos muy bajos	Límites de ingresos del 30 por ciento	\$13,100	\$15,000	\$16,850	\$18,700
	LMI Límites de ingresos del 80 por ciento	\$34,950	\$39,950	\$44,950	\$49,900
	LMI + Medio Límite de ingresos del 120 por ciento	\$52,450	\$59,950	\$67,450	\$74,900

² <https://www.nrel.gov/docs/fy21osti/78756.pdf>

³ <https://www.hudexchange.info/resource/5334/cdbg-income-limits/>

Income Distribution Analysis

Analyses show that there are almost no rooftop solar systems installed in the homes of people in the very low-income category in Puerto Rico (0.1% of existing homes with solar energy). However, there is a large percentage of installations in households of low-income (10.9%), moderate (16.9%), and middle-income (30.6%) families. The results of the analysis, conducted by SESA Puerto Rico with census data provided by the Connecticut Green Bank, are as follows, showing existing distributed solar installations by income bracket:

Income Category	Percentage
Very low income (<30% of AMI)	0.10%
Low income (30-50% of AMI)	10.90%
Moderate income (50-80% of AMI)	16.90%
Average income (80-120% of AMI)	30.60%
High revenues (>120% of AMI)	41.50%

The following graph shows existing distributed solar installations cumulatively up to HUD-defined revenue thresholds:

Income Categories	Income thresholds	Percentage
Very low	Up to 30% AMI	0.10%
Very low and low	Up to 50% AMI	11.00%
Very low, low and moderate	Up to 80% AMI	27.90%
Very low, low, moderate and medium	Up to 120% AMI	58.50%
All		100.00%

It should be noted that in Puerto Rico the vast majority (58.5%) of existing Net Metering systems are located in households classified as LMI and middle-income.

High rates of solar adoption by lower income groups

A comprehensive study by Berkley National Labs⁴ found that nationwide in the U.S. In the U.S. (not including Puerto Rico), 22% of solar adopters are LMI, and 43% are LMI + median income. The graph below shows the comparison with Puerto Rico's income distribution.

	USA.	Puerto Rico	Higher % in Puerto Rico
LMI	22%	28%	27%
LMI + Renta media	43%	59%	37%

Surprisingly, even with Puerto Rico's poverty rate by far the highest in the entire United States (more than double the poverty rate of Mississippi, the poorest state of the 50 states), a significantly higher percentage of Puerto Rico's low-income population is investing their own money, or financing through loans or leases. to install solar energy compared to the national level. Another important difference is that nearly 100% of residential solar installations in Puerto Rico also include battery storage, compared to less than 10% nationally⁵.

This indicates that while the devaluation of net measurement would likely have a regressive impact anywhere in the U.S., the negative impact on the low-, moderate-, and middle-income population in Puerto Rico would be much more pronounced than the national averages. And because blackouts are much more frequent on the island, this means that less net-metering solar would result in not only fewer solar-powered families but also fewer low-income families lives protected by battery backup.

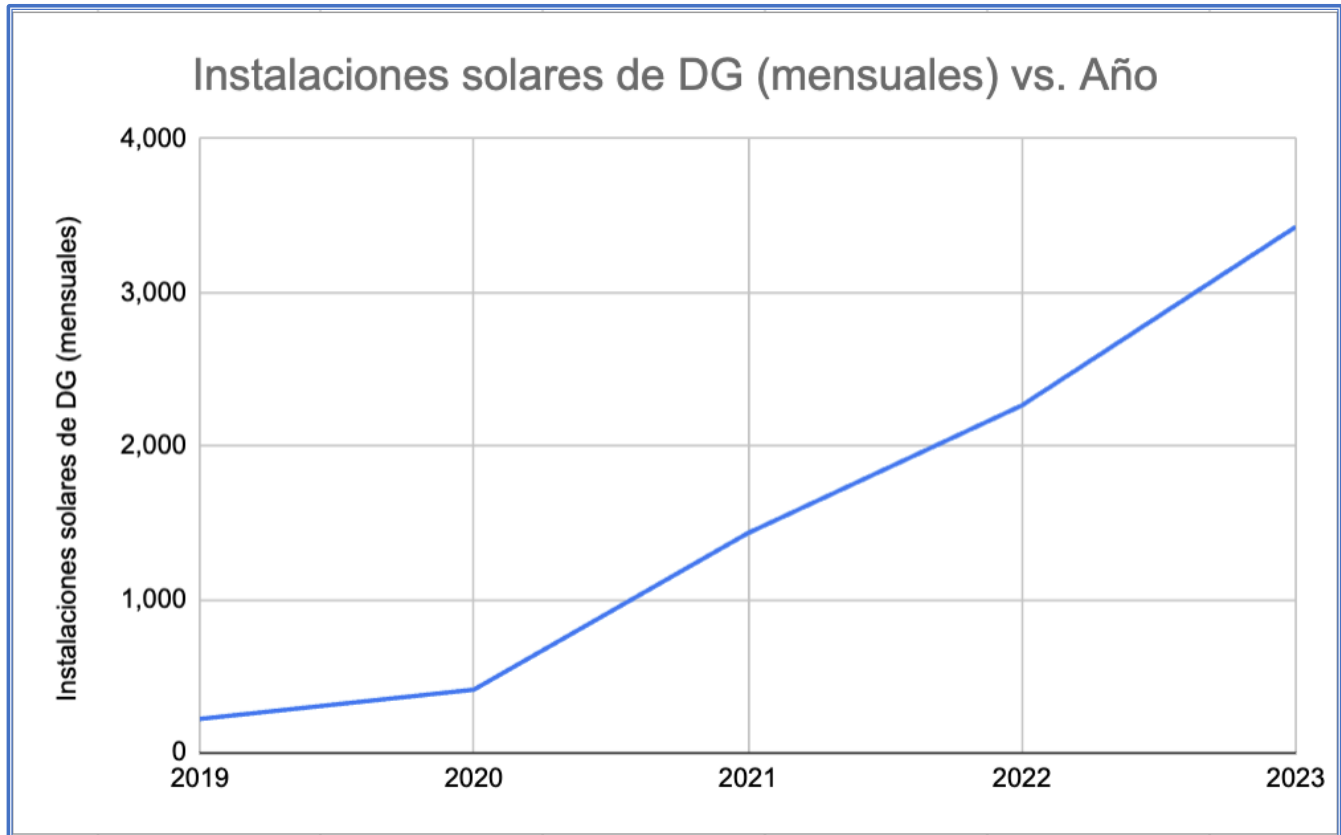
⁴ <https://emp.lbl.gov/publications/residential-solar-adopter-income-1>

⁵ <https://www.utilitydive.com/news/residential-solar-storage-installations-berkeley-lab/696070/>

Rate of Distributed Solar Installations in Puerto Rico

- An average of 3,350 homes install solar energy each month in Puerto Rico, a figure that has not stopped growing in recent years. Commonly known factors for this include:
 - Fear of another widespread blackout, like the longest in United States history caused in 2017-2018, when Hurricane Maria knocked out power to the entire island. All residents were without power for several months, and some for a year or more.
 - A system of transmission, distribution and generation of electricity is still very fragile, with frequent blackouts that cause the need for reliable backup power in homes and businesses.
 - The high cost of electricity tariffs, around \$0.25 per kWh, the second highest in the United States.
 - A mature solar and storage industry, with hundreds of companies vying for the business.
 - Dozens of financing options available, including more than 35 local credit unions with solar-specific loans, Sunrun and Sunnova offering 25-year leases, and Banco Popular and Oriental Bank also with solar loan products.
 - The simplicity, widespread understanding and effectiveness of the net metering policy.
- Despite all these factors, going forward, the continued deployment of solar energy at a rate of 3,350 homes per month is highly dependent on maintaining the net metering policy.

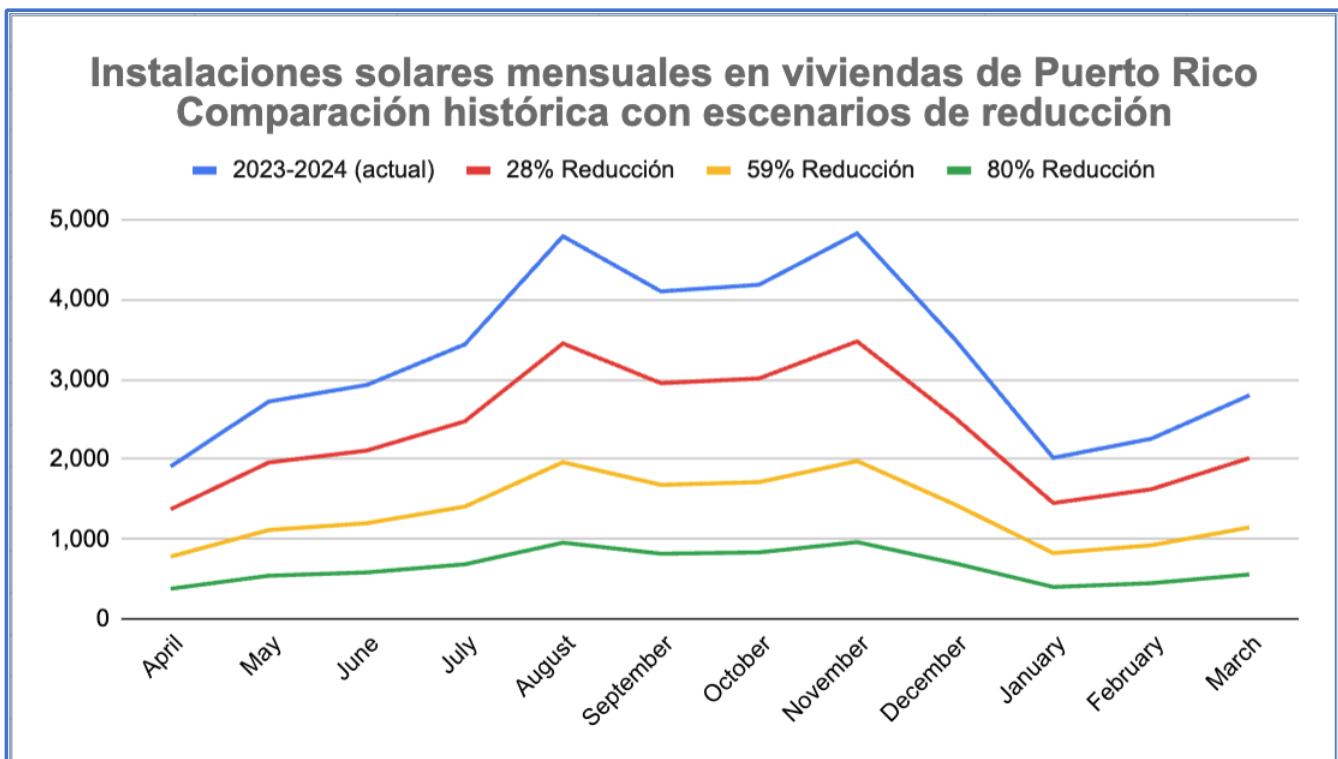
The graph below shows the increase in monthly net-metered solar installations in Puerto Rico in recent years.



Comparison of reduction scenarios

The data analyzed includes the actual monthly solar installations of the previous year (from April 2023 to March 2024), ⁶compared to scenarios of reductions of 28%, 59% and 80%, modeling the potential results if the Net Metering in Puerto Rico were to be devalued.

The 80% reduction scenario is a real-world data reference for California, which devalued its Net Metering policy in April 2023 such that there was an immediate and continuous 80% drop⁷ in the rate of residential solar system sales and installations.



⁶ LUMA data from the April 2024 report on file with the Office of Energy, https://energia.pr.gov/numero_orden/nepr-mi-2019-0016/

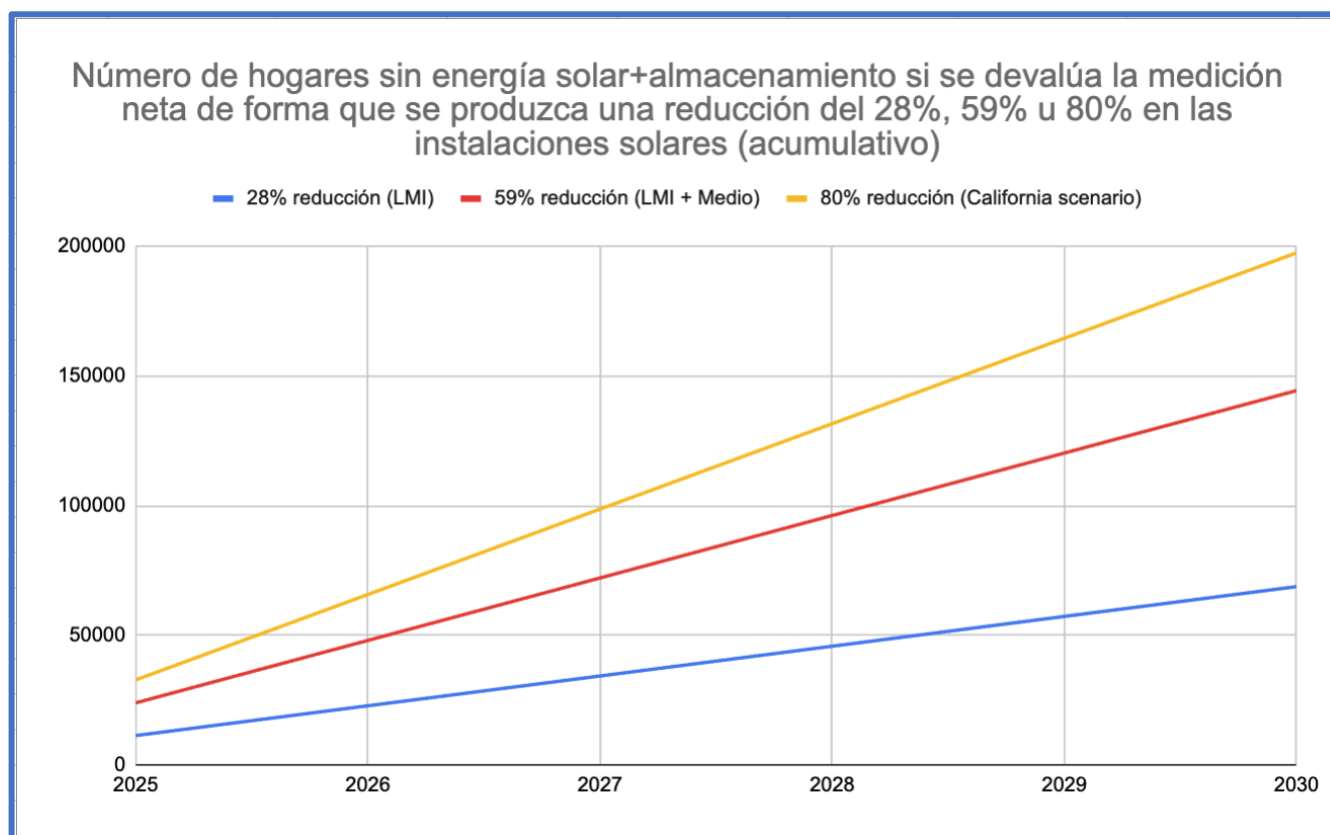
⁷ <https://www.pv-magazine.com/2023/12/04/california-rooftop-solar-installations-drop-80-following-new-net-metering-rules/>

Impact of reduction scenarios

	LMI	LMI + Medio	California
	28%	59%	80%
	<i>reducción</i>	<i>reducción</i>	<i>reducción</i>
2025	11,474	24,059	32,901
2026	22,948	48,117	65,802
2027	34,422	72,176	98,702
2028	45,897	96,235	131,603
2029	57,371	120,294	164,504
2030	68,845	144,352	197,405

Assuming installation rates remain stable, this graph shows the likely reduction in all three scenarios analyzed, showing the number of *fewer* households adopting solar and storage through 2030.

The graph below shows the cumulative number of fewer homes with solar and storage in the three scenarios analyzed.



Economic impact of the devaluation of net metering

The chart below shows the expected economic losses if the devaluation of Net Metering resulted in the loss scenarios analyzed, assuming that the cost of a typical residential solar and storage system were \$30,000.

	Historical	Reduction	Reduction	Reduction
	2023-2024	28%	59%	80%
Economic Value (1-yr)	\$1,184,220,000	\$852,638,400	\$485,530,200	\$236,844,000
Economic Loss (1-yr)		\$331,581,600	\$698,689,800	\$947,376,000
Economic Loss (6-yr)		\$1,989,489,600	\$4,192,138,800	\$5,684,256,000

Impact of the devaluation of net metering on jobs

The Puerto Rico Solar Energy Storage and Energy Association estimates that there are currently 10,000 jobs in Puerto Rico in the distributed solar and battery storage industry.

If the net measurement is devalued in such a way as to result in reductions in the scenarios analyzed, the associated job losses would be between 2,800 and 8,000 real jobs lost in Puerto Rico, as shown in the following graph:

	Histórico	Reducción	Reducción	Reducción
		28%	59%	80%
Empleos totales	10,000	7,200	4,100	2,000
Empleos perdidos		2,800	5,900	8,000

Impact on the amount of solar energy and storage installed

The reduction scenarios analysed show a drastically lower number of megawatts of solar and storage deployed over the 2025-2030 time horizon if the net metering policy is eliminated or reduced.

The graph below shows that there would be 398 to 1,137 fewer megawatts of solar power and 1 to 3 gigawatt-hours less installed batteries if Net Metering were to be devalued.

	Historical	Reduction	Reduction	Reduction
	2023-2024	28%	59%	80%
MW solar (1-yr)	237	171	97	47
MWh battery (1-yr)	632	455	259	126
MW solar loss (1-yr)		66	140	189
MWh battery loss (1-yr)		177	373	505
MW solar loss (6 years)		398	838	1,137
MWh battery loss (6 years)		1,061	2,236	3,032

The negative ramifications of this measure would fall mostly on low- and middle-income communities that did not install solar, although there would also be a dramatic impact on society as a whole due to the reduced availability of solar power to avoid daytime blackouts, and the lower availability of battery storage to act as a "virtual power plant." reducing widespread blackouts at night for everyone.

Conclusion

Net metering has historically been crucial in enabling the installation of solar systems throughout Puerto Rico. This policy has made the adoption of solar energy economically viable for many households, especially those with lower incomes.

Maintaining the current net metering policy is essential for Puerto Rico. Any devaluation of this policy would disproportionately hurt lower-income residents. Given that nearly 100% of solar installations in Puerto Rico include battery storage, reducing the adoption of solar energy would also mean fewer batteries, thus decreasing protection during frequent blackouts.

Continuing with the true net metering policy in Puerto Rico is essential to ensure equitable access to solar energy and improves resilience for all Puerto Ricans, particularly the most vulnerable.

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