Development of the Puerto Rico Test Technical Workshop #3

August 25, 2021

Facilitated by: Courtney Lane and Tim Woolf

Agenda

9:30-9:40	Summary of comments on utility system impacts
9:40-11:00	Step 3: Identification of non-utility system impacts to include in the PR Test • Host customer (participant) • Low-income and equity
11:00-11:10	Break
11:10-11:40	Continuation of Step 3 • Water and other fuels • Societal impacts
11:40-12:20	Overarching considerations • Discount rate, assessment level, analysis period
12:20-12:30	Wrap-up and next steps

Summary of Workshop #2 Comments

Summary of Stakeholder Comments

- Comments submitted by:
  - Independent Office for Consumer Protection (OIPC)
  - LUMA
  - Puerto Rico Institute for Competitiveness and Sustainable Economy (ICSE)
- Provided responses to the following:
  - IRP and defining energy and capacity impacts within PR Test
  - LUMA's definition of system peak
    - August to October from 8pm to 10pm
  - List of environmental regulations that should be included in the cost of electricity generation
  - Baseline level of reliability

Today's Task

Step 3: Identify Non-Utility System Impacts

Overview of Step 3: Non-Utility System Impacts

- Using the policy goals identified during Workshop #1, identify which non-utility system impacts to include in the PR Test.
- This step includes the following categories:
  - Host customer impacts (participants)
    - Costs, benefits, non-energy impacts (NEIs)
  - Low-income impacts
  - Other fuel and water impacts
  - Societal impacts

Workshop #1: Policy Mapping Results

Policy, Statute, or Decision	Electric Utility System Impacts	Resilience Impacts	Reliability	GHG	Other Environmental	Public Health	Economic Development/Jobs	Energy Security	Participant Impact (Host Customer)	Low-Income Customer	Price Stability/Low Cost	Other Fuels (ex. oil)	Innovation	Equity	Renewable Integration	Education and Awareness
Act 17-2019. Puerto Rico Energy Public Policy Act	X	X	X	X			X	X	X	X	X		X	X	X	X
Act 57-2014. Puerto Rico Energy Transformation and RELIEF Act.	X			X	X	X		X			X					
Act 60-2019, as amended. Puerto Rico Incentives Code.	X						X									
Act 114-2007. Electric Power Authority Net Metering Program	X	X	X					X				X				
Act 120-2018. Puerto Rico Electric Power System Transformation Act	X										X					

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Act 82-2010. Puerto Rico Energy Diversification Policy	X			X	X	X	X		X	X	X	X			X	
Act 218-2008. Light Pollution Control and Prevention Act	X				X	X										
Act 33-2019. Climate Change Mitigation, Adaptation, and Resilience Act	X	X		X	X	X	X				X	X	X	X		
PREB Regulation No. 9028. Microgrid Development	X	X	X		X	X	X		X		X		X			
PREB Regulation No. 9021. IRP	X	X		X	X											
PREB Regulation 8818. (CILTA)	X								X		X					

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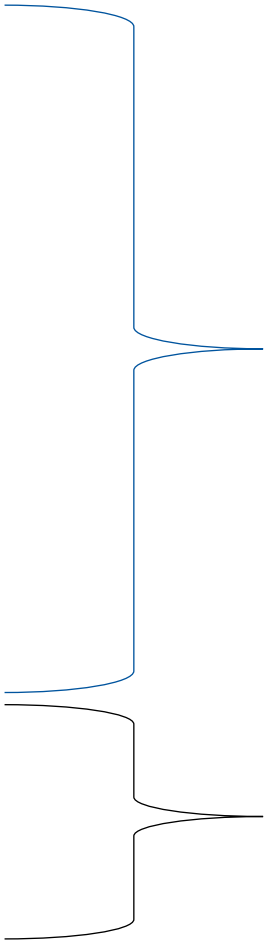
PREPA Regulation 8915 and 8916. Interconnection and Net Metering	X	X	X					X	X			X				
Energy Star-EPA	X			X	X				X	X						
State Energy Program -PPPE	X			X	X	X			X	x		X		X		
LEED-USGBC	X	X		X	X	X	X		X				X			X

Mapping Policy Goals to Non-Utility Impacts

Policy Impact Categories
GHG Emissions
Other Environmental
Resilience Impacts
Reliability
Host Customer (Participant)
Public Health
Economic Development/Jobs
Other Fuels
Energy Security
Low-Income Customer
Equity
Innovation
Renewable Integration
Education and Awareness
Price Stability/Low Cost



Often included in Host Customer, Low-Income, Societal Impact Categories

Less common and may be included in Utility System impacts.

Host Customer Impacts

Potential Host Customer Impacts

Type	Host Customer Impact	Description
Host Customer	Host portion of DER costs	Costs incurred to install and operate DERs
	Host transaction costs	Other costs incurred to install and operate DERs
	Interconnection fees	Costs paid by host customer to interconnect DERs to the electricity grid
	Risk	Uncertainty including price volatility, power quality, outages, and operational risk related to failure of installed DER equipment and user error; may depend on the type of DER
	Reliability	The ability to prevent or reduce the duration of host customer outages
	Resilience	The ability to anticipate, prepare for, and adapt to changing conditions and withstand, respond to, and recover rapidly from disruptions
	Tax incentives	Federal, Commonwealth, and local tax incentives provided to host customers to defray the costs of some DERs
	Non-energy impacts	Benefits and costs of DERs that are separate from energy-related impacts

Potential Host Customer Non-Energy Impacts

Impacts	Summary Description
Transaction costs	Costs incurred to adopt DERs, beyond those related to the technology or service itself (e.g., application fees, time spent researching, paperwork)
Asset value	Changes in the value of a home or business as a result of the DER (e.g., increased building value, improved equipment value, extended equipment life)
Productivity	Changes in a customer's productivity (e.g., changes in labor costs, operational flexibility, O&M costs, reduced waste streams, reduced spoilage)
Economic well-being	Economic impacts beyond bill savings (e.g., reduced complaints about bills, reduced terminations and reconnections, reduced foreclosures—especially for low-income customers)
Comfort	Changes in comfort level (e.g., thermal, noise, and lighting impacts)
Health & safety	Changes in customer health or safety (e.g., fewer sick days from work or school, reduced medical costs, improved indoor air quality, reduced deaths)
Empowerment & control	The satisfaction of being able to control one's energy consumption and energy bill
Satisfaction & pride	The satisfaction of helping to reduce environmental impacts (e.g., one of the reasons why residential customers install rooftop PV)

Host Customer Impacts

Host customer definition: The owner/occupant of the site at which behind-the-meter (BTM) DERs are installed and/or operated.

Reasons for host customer impacts to be included

- Whether to include host customer impacts is a policy decision (based on jurisdiction's policy goals)
  - Workshop #1 exercise mapped 8 policies to host customer impacts
- They should be included to account for the impacts on all utility customers: participants and non-participants.
- They should be included to account for the total cost of the DER.

- **Reasons to not include**
  - Host customer non-energy impacts are difficult to monetize
  - Host customers are always better off by installing DERs

Host Customer Non-Energy Impacts (NEIs)

Points to Consider

- There are many such impacts.
- Some of them can be very large.
- Some of them are more important to customers than energy benefits.
- They vary significantly across programs.
- They can be difficult to measure, quantify, and monetize.
- Estimates are often uncertain.
- Symmetry Principle:
  - If host customer costs are included, then host customer NEIs should be too.
  - If host customer NEIs are not included, host customer costs should not be.
- Hard-to-Quantify Principle:
  - Relevant impacts cannot be ignored just because they are difficult to quantify.

Group Discussion: Host Customer Impacts

- Should host customer impacts be included?
  - If yes, these should be incremental to utility system and societal impacts.
- Non-Energy Impacts
  - Can impacts be prioritized based on magnitude of impact on cost-effectiveness?
  - Can any impacts be quantified in near term?
  - Is an adder or proxy appropriate for one or more impacts?
    - While there is much research on NEIs for energy efficiency, there is less available for other DERs.

Low-Income Impacts

Impacts on Low-Income Customers

Affected Party	Costs	Benefits
Host Customer	Typically, none. Well-designed low-income programs cover all costs and remove all barriers to low-income customers.	• Reduced energy burden • Reduced O&M costs • Increased comfort • Increased health & safety/reduced medical costs • Increased productivity • Improved aesthetics • Property improvements • Reduced home foreclosures • Reduced need to move/relocate due to unpaid bills
Society	Typically, none.	• Alleviating poverty • Improving low-income community strength and resiliency • Reduced home foreclosures • Energy justice

Group Discussion: Low-Income Impacts

- Should low-income impacts be included?
  - At least 4 policies speak to assisting low-income customers.
  - Host customer?
  - Societal?
- Which impacts should be included?
  - Is an adder or proxy appropriate for one or more impacts?

Other Fuels Impacts

Other Fuels

- When a DER program paid for by electricity customers also reduces (or increases) consumption of other fuels (gas, oil, propane, wood).
- Workshop #1 exercise mapped 5 policies to Other Fuels
  - What fuels are commonly used in homes, businesses, and industry?
  - Would DERs displace other fuels, creating benefits?
  - Should these be included in the PR Test?

Societal Impacts

Potential Societal Impacts

Type	Societal Impact	Description	PR Policy Objective
Societal	Resilience	Resilience impacts beyond those experienced by utilities or host customers	✓
	GHG Emissions	GHG emissions created by fossil-fueled energy resources	✓
	Other Environmental	Other air emissions, solid waste, land, water, and other environmental impacts	✓
	Economic and Jobs	Incremental economic development and job impacts	✓
	Public Health	Health impacts, medical costs, and productivity affected by health	✓
	Equity	Poverty alleviation, environmental justice, and reduced home foreclosures	✓
	Energy Security	Energy imports and energy independence	✓

Additional Considerations

Additional Benefit-Cost Analysis Considerations

Discount Rate	• Choice of discount rate is a decision that should be informed by the jurisdiction's applicable policy goals. • The regulatory perspective should be used to determine the appropriate discount rate. • Draft energy efficiency regulation indicates it should reflect low-risk nature of energy efficiency investments.
Assessment Level	• Analysis at all levels can provide insight/value – but focus should only be on the program, sector, or portfolio level for making "yes or no" investment decisions. • Draft energy efficiency regulation states the portfolio, sector, and/or program level.
Analysis Period	• Should be long enough to cover lifecycle costs and benefits of the energy efficiency or demand response measure.
Free Ridership and Spillover	• Draft energy efficiency regulation states test should reflect net resource impacts and include Free Ridership and Spillover effects.

Appendix H. of the NSPM for DERs contains additional guidance on assessing the cost and benefits for energy efficiency programs. Topics include Analysis of Early Replacement Measures, and Application of Free-Ridership and Spillover.

Next Steps

Homework and Comments

- Homework
  - Based on the outcome of today's meeting, we will distribute a table in the below format with a draft list of impacts for the PR Test.

Impacts	Potential Magnitude	Challenge in Developing	Priority
Impact A	Low, Moderate, High	Low, Moderate, High	Low, Medium, High

  - For each impact, we ask you assess (1) what impacts may have largest effect on BCA? (2) how difficult will it be to quantify and monetize? (3) is the impact a low, medium, or high priority to quantify?
- Comments and table can be submitted until Friday, September 10th

Next Meeting

- Fourth workshop
  - Overview of proposed draft PR Test and discussion of remaining open questions from prior workshops.
  - After final workshop, stakeholders can submit comments on the draft PR Test.