

Performance-Based Ratemaking

Recent Examples of Interest to Consumer Advocates

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Overview

Some general points about:

- Performance-based ratemaking (PBR)
- Multi-year rate plans (MRPs)
- Performance incentive mechanisms (PIMs)

Recent examples from three jurisdictions

- Hawaii
- Puerto Rico
- Illinois

Performance-Based Ratemaking

PBR is not a monolithic, one-size-fits-all mechanism.

PBR can be designed in many ways.

- Some designs can work in customers' favor.
- Some designs can work against customers.

Bottom line: Be very careful...

- In designing PBR mechanisms
- And in monitoring and adjusting them over time

These same points can also be said about cost-of-service ratemaking.

Multi-Year Rate Plans

Elements of MRPs that are important for protecting customers:

- Period between rate cases
- Choice of attrition relief mechanisms
 - Indexes, formulas, hybrids
 - Decoupling (price caps versus revenue caps)
- Treatment of capital costs
- Treatment of riders
- Earnings sharing mechanisms
- Treatment of efficiency savings at the end of the rate period
- Setting the allowed return on equity
- Coordination with PIMs

Performance Incentive Mechanisms

Metrics

- A low-risk, low-cost way to monitor and guide utility performance
- Should be established early because the info is needed to (a) monitor performance; (b) inform targets; and (c) inform incentives
- Many possibilities for useful metrics

Targets

- Provide more regulatory guidance than metrics

Incentives

- Much more effective at changing utility behavior
- Also provide greater risks to customers (and utilities)

These can be established in sequence:



Highlights from Hawaii

Background

PBR in Hawaii has evolved over many years.

- PBR first proposed in the late 1990s, but was not implemented until later.
- Decoupling introduced in Docket 2008-0274. Included an MRP:
 - A fixed, multi-year interval between rate cases
 - An index-based price cap based on inflation (GDPPI) adjusted by a productivity factor
 - An earnings sharing mechanism
- Service quality PIMs introduced later in Docket 2013-01441.
 - Included targets, deadbands, rewards, and penalties
 - Introduced a cap on capital expenditures

In 2018 the PSC opened a new docket to expand past practices.

- Driven by the goal of significant transition of the electric industry to more DERs, aggressive climate change goals, and achieving 100% renewables by 2045
- DER penetration rates in Hawaii already ranked among the highest in the world, driven especially by rooftop solar
- Historically, electricity primarily provided by imported oil, resulting in some of the highest and most volatile electricity prices in the US

Multi-Year Rate Plan

Period between rate cases

- One proposal was to set the “proper” rates and never have another rate case
- PUC decided to revisit the issue every five years, and decide whether to have a rate case

Attrition relief mechanism (ARM)

- Index based
 - Inflation = GDPPI
 - Productivity factor = 0% (proposals ranged from -1.32% to 0%)
 - Z Factor = opportunity to adjust for costs outside utility control
 - Consumer dividend = 0.22% subtracted from ARM, compounded each year

Exceptional Project Recovery Mechanism (EPRM)

- Separate mechanism for costs of large, transformational projects (not just large BAU projects).
- Also includes costs for programs where resources are procured from 3rd parties.
- Cost proposals are reviewed in advance by PUC.

Earnings sharing mechanism

- Deadband of +/- 300 basis points around allowed ROE, tiered sharing above and below deadband

Decoupling

- Maintained, essentially unchanged

Metrics, Targets, and PIMs

Performance Area	Name	PIM	Target	Metric
Affordability	Disconnections			y
	LMI energy burden			y
	Payment arrangement			y
Capital Formation	Credit rating			y
	Third-party generation			y
Cost Control	Annual revenue growth			y
	Conjunctive cost control	y		
	ECRC Fossil Fuel SSM	y		
	EPRM	y		
	Non-ARA components		y	
	O&M cost per customer			y
	Rate base per customer			y
	RFP - Stage 1	y		
RFP - Stage 2	y			
Customer Engagement	AMI opt-out			y
	Green button connect		y	
	Green button download		y	
	Program participation		y	
Customer Equity	TOU participation		y	
	LMI - participation (metric)			y
	LMI EE - energy	y		
	LMI EE - participation	y		
Customer service	LMI EE - peak	y		
	Call Center Performance	y		
DER Asset Effectiveness	Advanced grid services	y		
	AMI utilization PIM	y		
	Demand Response Launch	y		
	DER curtailment			y
	DER grid services capability			y
	DER grid services enrollment			y
	DER grid services utilization			y
GSPA penalty	y			

Performance Area	Name	PIM	Target	Metric
Electrification of Transport	Estimated EV load (energy)		y	y
	EV count		y	y
	Fleet electrification		y	y
	Measured EV load (demand)		y	y
	Measured EV load (energy)		y	y
	Ride share fueling hubs			y
GHG Reduction	Fossil fuel retirement	y		
	GHG emissions		y	y
	GHG intensity		y	y
	RE Guaranteed COD	y		
	RE Project completion	y		
	RE Project milestone completion	y		
Grid Investment Efficiency	RPS-A	y		
	Avoided T&D investment			y
Interconnection Experience	NWA total cost			y
	Interconnection approval	y	y	y
	Interconnection cost overrun			y
	IPP experience		y	y
	IPP interconnection			y
	Total interconnect time		y	y
Resilience	Truck roll response time		y	y
	Critical load			y
	Emergency response training			y
Reliability	NIMs certification			y
	Generator reliability	y		
	SAIDI	y		
	SAIFI	y		

Some of the PIMs are proposals, still under review by the PUC

Performance Incentive Mechanisms

Previous PIMs

- Reliability (SAIDI and SAIFI): penalties only
- Service quality (call center performance): penalties and rewards
- Shared savings mechanisms for procurement of large-scale renewable contracts

New PIMs

- RPS Accelerated (RPS-A)
 - Rewards for exceeding the annual Renewable Portfolio Standard targets
- Interconnection approval
 - Rewards for accelerating interconnection of DERs (resources < 100kW)
- Grid services
 - Rewards to acquire ancillary services from DERs
- Low- to moderate-income energy efficiency services
 - Rewards to encourage collaboration between utilities and third-party efficiency provider, Hawaii Energy
- Advanced Metering Infrastructure utilization
 - Rewards to accelerate AMI that can support time-varying rates and new DERs

New PIMs Proposed in 2021

Staff issued report proposing a set of new PIMs

- Driven by reliability concerns from the expected retirement of a large fossil plant in fall of 2022.
- Source: [Hawaii PUC Staff Proposal For Development Of Priority Performance Mechanisms](#), Docket No. 2018-0088, September 2021.

Focus on specific outcomes

- Grid reliability (i.e., generator outages)
- Efficient use of grid services
- Timely retirement of fossil units
- Interconnection of large-scale renewable resources
- Cost control: A broad PIM covering capital costs, O&M, labor, fuel, and purchased power

Consumer advocate concerns:

- Lots of overlap across PIMs – potential for double rewards
- No justification of incentives based on benefit-cost analysis
- No holistic assessment of how the MRP and all the PIMs work together
- PUC has not set up a systematic process to review and potentially modify PIMs each year
- Some PIMs are simply not needed (e.g., timely retirement of fossil units)

Source: Hawaii Division of Consumer Advocacy, [Final Statement of Position](#), Docket 2018-0088, April 2022.

PUC has not yet issued a decision on these proposals

Benefit-Cost Analysis of PIMs

Quantitative Example: RPS-A

Impact	Utility System Results	Policy Goals Results	Difference
Costs (mil PV\$)	324	324	0
Benefits (mil PV\$)	423	514	91
Net Benefits (mil PV\$)	99	191	91
Benefit-Cost Ratio	1.3	1.6	---

Source: Hawaii Division of Consumer Advocacy, [Preliminary Statement of Position](#), Docket 2018-0088, February 2022.

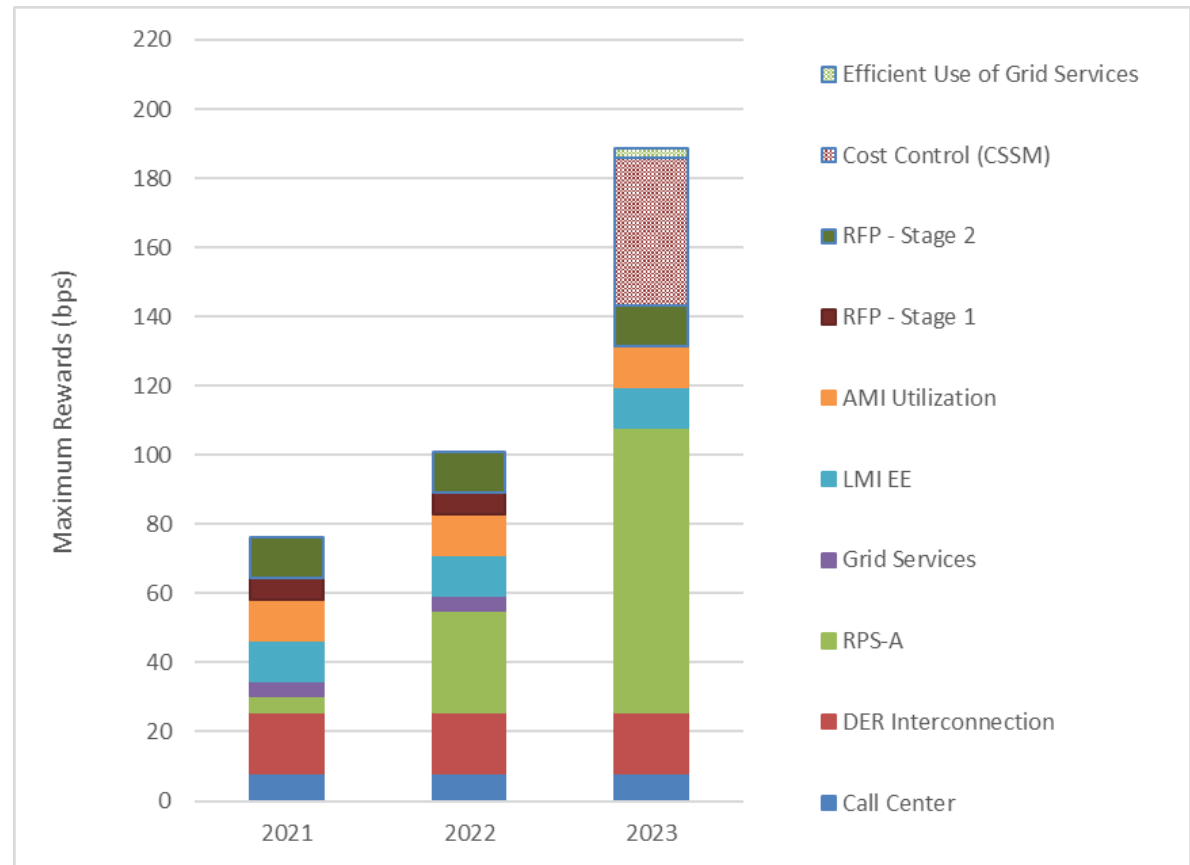
The proposed RPS-A BCA was later updated by one of the Hawaii stakeholders.

Qualitative Example: AMI Utilization

Impact	Discussion
Costs: revenue requirements	Cost of the PIM: Maximum of \$6.0 million, based on \$2 million per year for 3 years
Benefits: revenue requirements	No direct benefits. There should, however, be indirect revenue requirement benefits from: <ul style="list-style-type: none"> • Increased DERs provided by third party vendors • Increased customer response to usage alerts • increased use of DER and TOU rate programs
Benefits: policy goals	Increased access to third party DER vendors More efficient consumption in response to usage alerts Increased customer participation in DER and TOU programs
BCA Conclusions	Customers might pay up to \$6 million in revenue requirements in exchange for (a) potentially reduced revenue requirements from more efficient customer consumption patterns, and (b) achieving the policy goals of promoting DER and TOU programs through AMI.

Holistic Presentation of Incentives

All the potential rewards can be put together in tables and charts to show how all the PIMs combined might affect utility earnings (in terms of basis points) as a whole.



This chart is presented for illustrative purposes only. Some of the values have been updated and corrected by the Hawaii utilities.

Presentation of Metrics on Utility Website

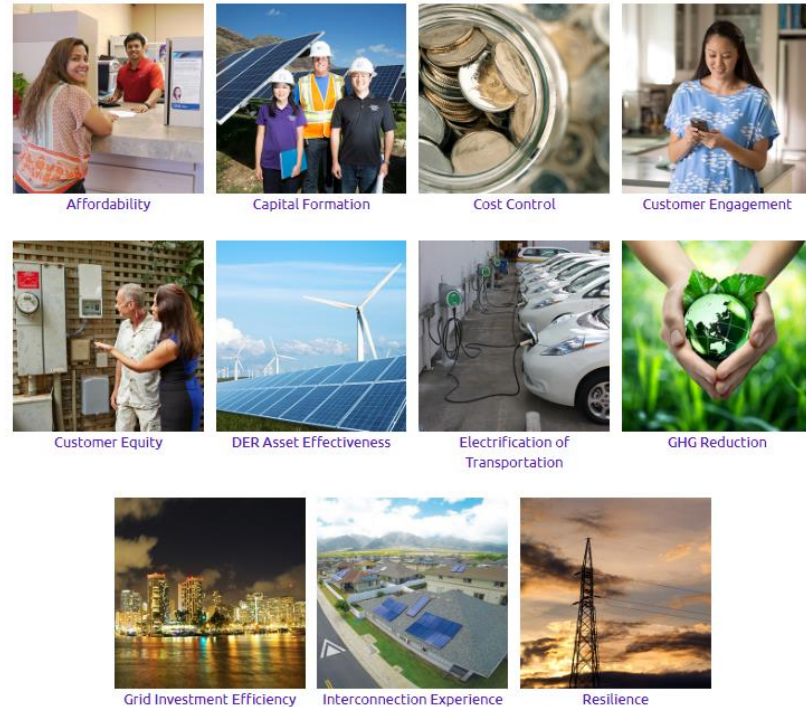
Performance Scorecards and Metrics

Performance Based Regulation (PBR) Scorecards and Metrics

In 2021, the Hawaii Public Utilities Commission (PUC) approved the following portfolio of PBR scorecards and reported metrics to be available for the PUC, our partners, and our customers.

[LEARN ABOUT PBR](#)

- Reported metrics: serve as a standard unit of measurement used to assess the Company's performance.
- Scorecards: track progress of a reported metric against a specific benchmark or target.



[LIST OF ADDITIONAL REPORTS](#)

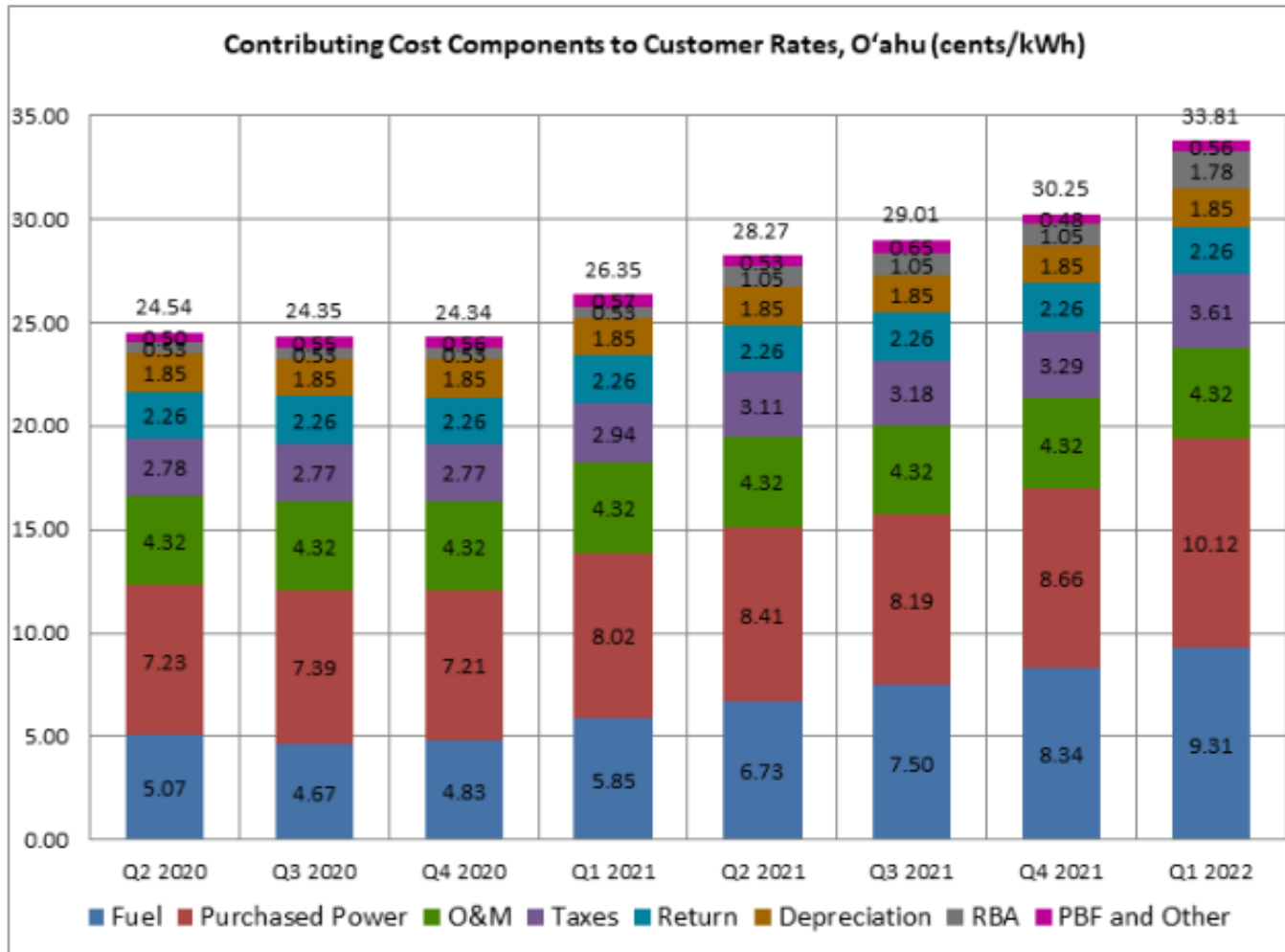
Key Performance Metrics

Since 2015, Hawaiian Electric has provided the following key performance metrics for the PUC, our partners, and our customers.



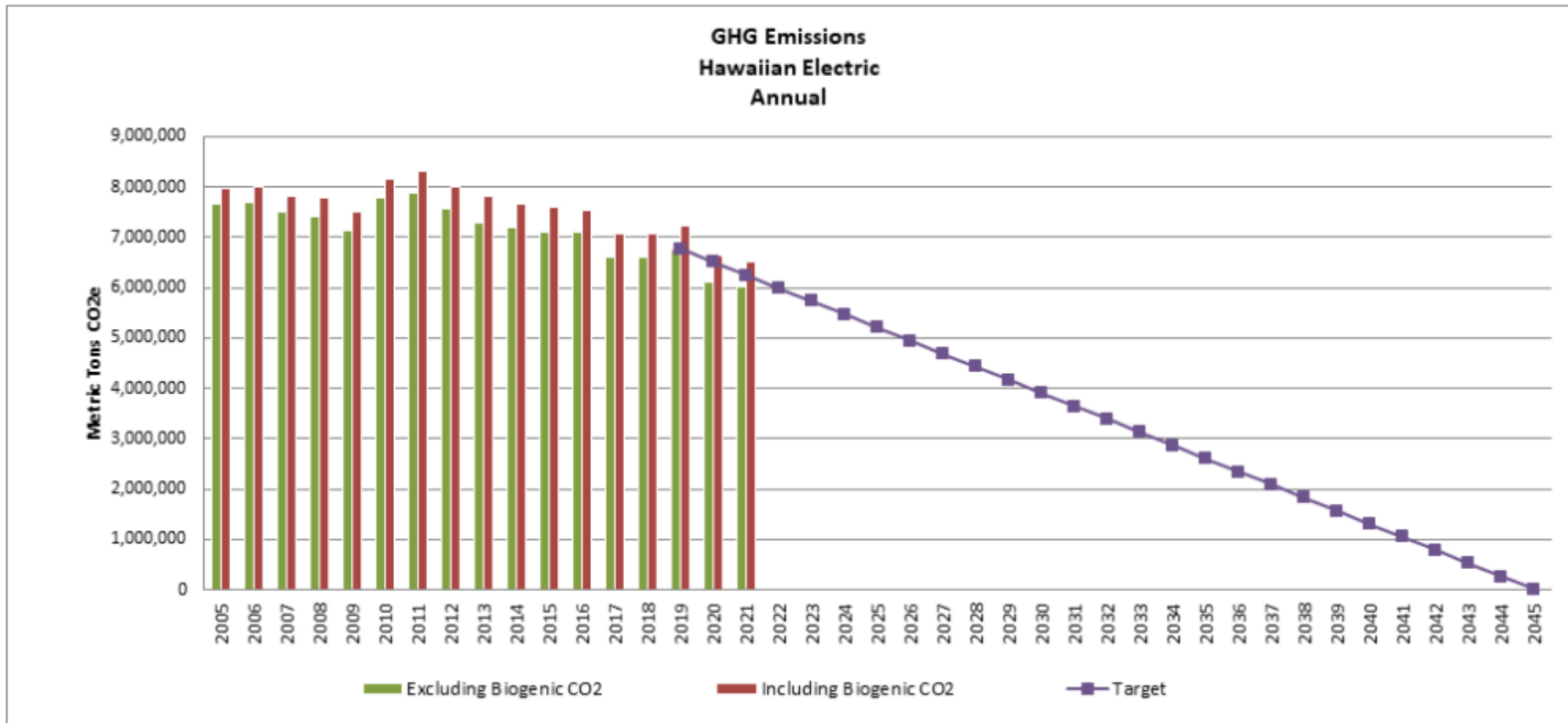
Source: <https://www.hawaiianelectric.com/about-us/performance-scorecards-and-metrics>

Example of Metrics on Utility Website (1)



Source: <https://www.hawaiianelectric.com/about-us/performance-scorecards-and-metrics>

Example of Metrics on Utility Website (2)



Please click the button below for historical data (in Excel format).

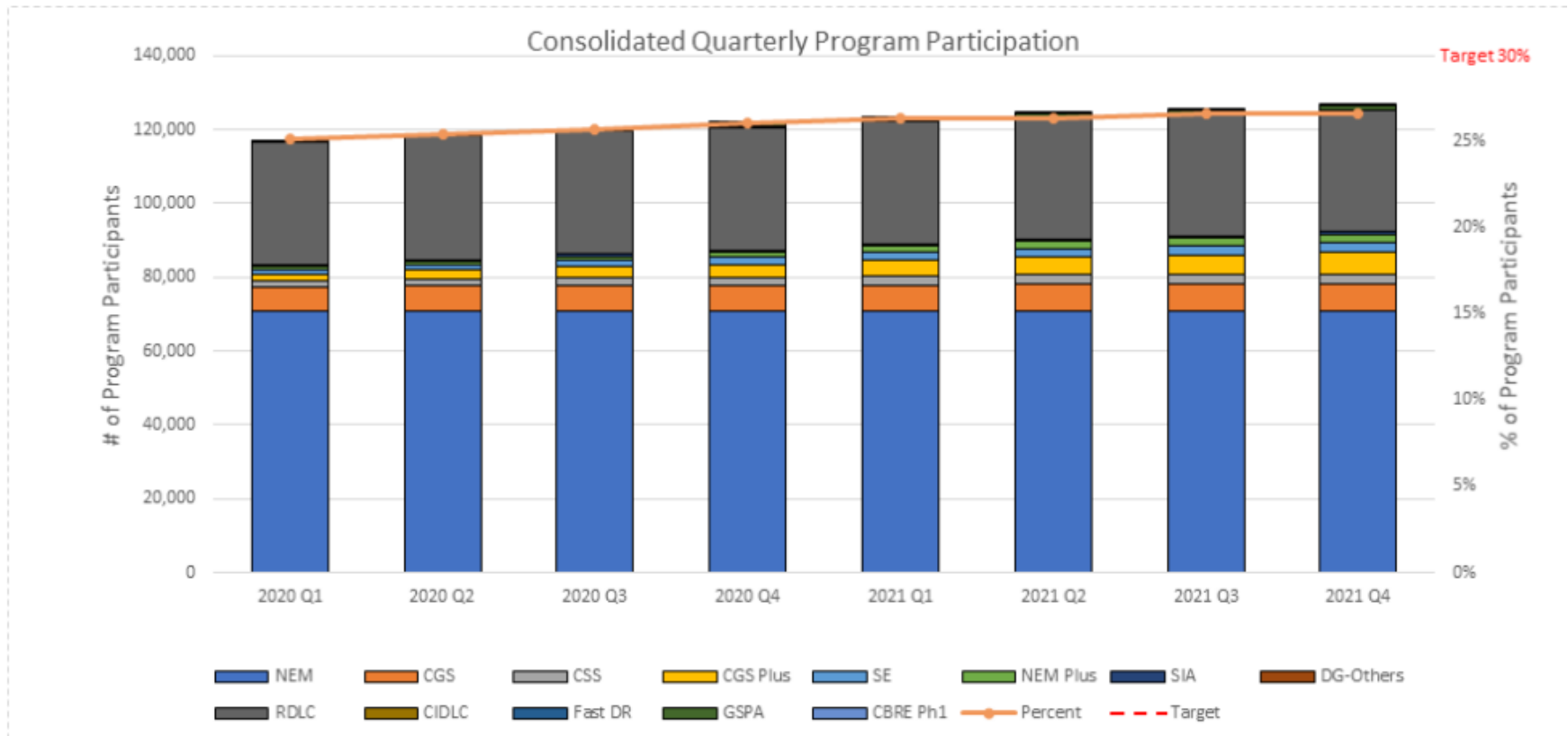
DOWNLOAD HISTORICAL DATA

Source: <https://www.hawaiianelectric.com/about-us/performance-scorecards-and-metrics>

Example of Metrics on Utility Website (3)

This chart shows the percent of customers participating in the variety of DER programs offered by Hawaiian Electric (mostly net metering and demand response programs).

Hawaiian Electric



Source: <https://www.hawaiianelectric.com/about-us/performance-scorecards-and-metrics>

Highlights from Illinois

Background

In 2011 Illinois Legislature passed the Energy Infrastructure Modernization Act

- Ameren and ComEd allowed to spend up to \$3.3 billion in grid modernization projects.
- Utilities allowed to recover costs from customers through annual “formula rate” adjustments.
- Also included some metrics (some of which had penalties), particularly around reliability

In 2021 the Legislature passed the Climate and Equitable Jobs Act

- Requires ICC to develop a “comprehensive performance-based regulation framework” for the large utilities.
- [Public Utilities Act Sec. 16-108.18](#)

PBR framework to address:

- Integrated grid planning
- Ratemaking (through MRP)
- PIMs

Utilities have the option, but not an obligation, to file MRP proposals after the Commission approves PIMs.

Ameren and ComEd filed PIMs proposals to the Commission in early 2022.

- These separate dockets are still ongoing.
- Utilities have not filed MRP proposals yet.

Performance Incentive Mechanisms

Statutory requirements

- PIMs should better tie utility revenues to performance and customer benefits, accelerate progress on Illinois energy goals, ensure equity and affordability of rates for all customers (including low-income customers), and hold utilities accountable
- Utilities are to propose at least one PIM in each of six outcome areas:
 1. Reliability & resiliency, particularly in environmental justice and equity communities
 2. Peak load reductions
 3. Supplier diversity expansion
 4. Affordable distribution, particularly for low-income, environmental justice, & equity communities
 5. Interconnection timeliness
 6. Utility customer service
- Statute requires symmetrical rewards and penalties (at least on a portfolio basis)

Consumer advocate concerns

- PIMs are being proposed and vetted in advance of utilities' MRP proposals.
- Performance targets that have been proposed by the utilities are not adequately informed by other processes — e.g., integrated planning.
- Benefit-cost analyses provided by utilities are insufficient to demonstrate PIMs will provide net benefits.

Multi-Year Rate Plan

Key legislative finding

- The previous formula rate plan “may have resulted in excess utility spending and guaranteed profits without meaningful improvements in customer experience, rate affordability, or equity.”
 - Source: 220 ILCS 5/16-108.18(a)(6)

Statutory requirements

- 4-year MRP term with annual rates to be established based on cost forecasts
- Revenue requirements adjusted annually to allow partial recovery of actual costs
 - Overruns are subject to a cap of 105% of the utility’s approved forecasted costs
 - But cap does not apply to major cost categories such as new business costs, storm costs, interest and tax changes
 - Underruns are also reconciled, with no cap
- Utility can petition Commission for rate increases above 105% cap if needed

Consumer advocate concerns

- Companies use their own cost forecasts, not an industry-based index.
- Mechanism like a formula rate plan: underruns are fully reconciled and many overruns are reconciled.
- MRP would be inconsistent with PIMs
 - Reliability PIMs are typically applied to offset incentives to cut costs.
 - But without incentives to cut costs, there is less need for reliability PIMs.
 - Utilities are allowed rewards for improved reliability.
 - Companies do not need positive incentives for reliability investments when they have accelerated cost recovery, earn a return on these investments, and can reconcile for overspending.

Highlights from Puerto Rico

Background

The Puerto Rico Electric Power Authority (PREPA) is a publicly-owned electricity utility serving the entire island.

For many years, the primary source of electricity generation was imported oil.

- Electricity prices are among the highest in the US.
- Oil plants are not currently in compliance with some EPA standards.

In 2015 PREPA began being regulated by the Puerto Rico Electricity Bureau.

- Prior to that there was little regulatory oversight.

PREPA is currently in bankruptcy proceedings.

- Due to prior years of mismanagement and lack of regulatory oversight

In 2017 Puerto Rico was devastated by Hurricane Maria.

- Much of the electricity infrastructure was badly damaged.

PREPA was recently required to procure the services of a private company, LUMA, to operate the grid and deliver customer service.

Rate Case with a Formula Rate Mechanism

In 2016 PREPA filed its first rate case before a commission.

PREPA proposed a formula rate mechanism (FRM).

- Rate cases to be conducted every three years
- Interim rate adjustments to be conducted each year, with mini rate cases
- Revenue requirements to be based on forecasts of PREPA costs
- PREPA's costs to be reconciled each year
 - Costs to be reconciled either up or down

PREPA justification for its FRM proposal

- PREPA is not-for-profit and does not have shareholders
- PREPA is financially constrained and has no access to debt or equity
- Allowing 100% cost recovery would allow PREPA to make necessary investments
- PREPA is overseen by a government agency that can keep it in check

Source: Ross Hemphill, Direct Testimony, *RE: Puerto Rico Electric Power Authority Rate Review*, Case No. CEPR-AP-2015-0001, May 26, 2016.

Commission Response to Proposed FRM

The Commission adopted some of the elements of the FRM.

- Agreed to the three-year rate cases, annual mini rate cases, and reconciliation of costs

The Commission imposed as much discipline as it could.

- PREPA “shall have no expectation of readily spending more than its approved revenue requirement, then simply charging ratepayers for the excess.”
- PREPA shall improve bookkeeping and auditing practices.
- PREPA shall submit an annual report comparing budget forecasts to actuals.
- PREPA shall use the most recent, commission-approved IRP for setting budgets.
- For new capital projects, PREPA shall file an estimate from a third-party.
- For each cost overrun deemed unreasonable by the Commission, PREPA shall provide a detailed analysis, including steps it will take to avoid future overruns, and identify departments and executives responsible for the overrun.
- The Commission opened a separate investigation into PREPA’s performance.

Source: Puerto Rico Energy Commission, *RE: Puerto Rico Electric Power Authority Rate Review*, Case No. CEPR-AP-2015-0001, Final Resolution and Order, January 10, 2017.

PREPA appealed the order. The appeal has not been decided.

Metrics for PREPA

Performance Area	Metric
Overall system	Operational expenses vs budget
	Client services
	Transmission and distribution
	Corporate responsibilities
	Miscellaneous responsibilities
	Capital expenses vs budget
Generation	Cost of generation (system: O&M)
	Cost of generation by plant type
	Average heat rate
	Plant availability
Planning and environmental	Absolute emissions of SO ₂ , Nox, CO ₂ , PM, Hg and other regulated pollutants
	Emissions rates of SO ₂ , Nox, CO ₂ , PM, Hg and other regulated pollutants
	Carbon intensity of fossil generation
Operations - Fleet	Total available vehicles in service (system)
Human resources	OSHA Severity Rate, DART (days away, restricted, or transferred), Fatalities

Metrics for LUMA (1)

Performance Area	Metric
Finance	Operational expenses vs budget
	Capital expenses vs budget
	Timely submission of operating reports
	Accounts payable days outstanding
Customer service	Average length of time to resolve customer complaint appeals
	Number of customer complaints appealed by customer class
	Number of formal customer complaints
	Average time to respond to service and outage complaints
	Average time to resolve billing disputes
	Wait time in commercial offices
Overall system	Monthly peak by customer class
	Monthly peak by district
Transmission & distribution	Net monthly work orders balance
	MAIFI

LUMA (2)

Performance Area	Metric
Planning & environmental	Timeliness of permitting — new permits and renewals
Operations	Inventory turnovers
	Fuel expenditure vs forecast
Human resources	Absenteeism
Renewable resources	Mean time to interconnect utility scale RPS-eligible projects
	Incremental number of distributed generation installations per month - Total
	Incremental number of distributed generation installations per month - wind
	Total and incremental installed energy storage capacity by type (system and per district)
	Total and incremental number of energy storage installations by type (system and per district)

There currently are proposals to apply PIMs (rewards and penalties) to LUMA
 Docket: NEPR AP 2020-0025

About The Speaker

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is a Senior Vice-President at Synapse Energy Economics. He has 40 years of experience working for a variety of clients including consumer advocates, environmental advocates, regulators, and government agencies. A large portion of his career has been dedicated to the review and development of policies and practices regarding power sector transformation and distributed energy resources. He served as a commissioner at the Massachusetts Department of Public Utilities from 2007-2010.

Synapse Energy Economics

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