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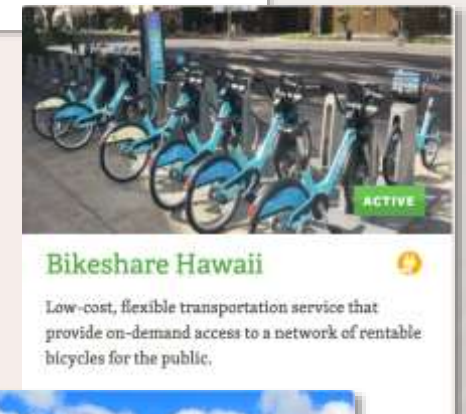
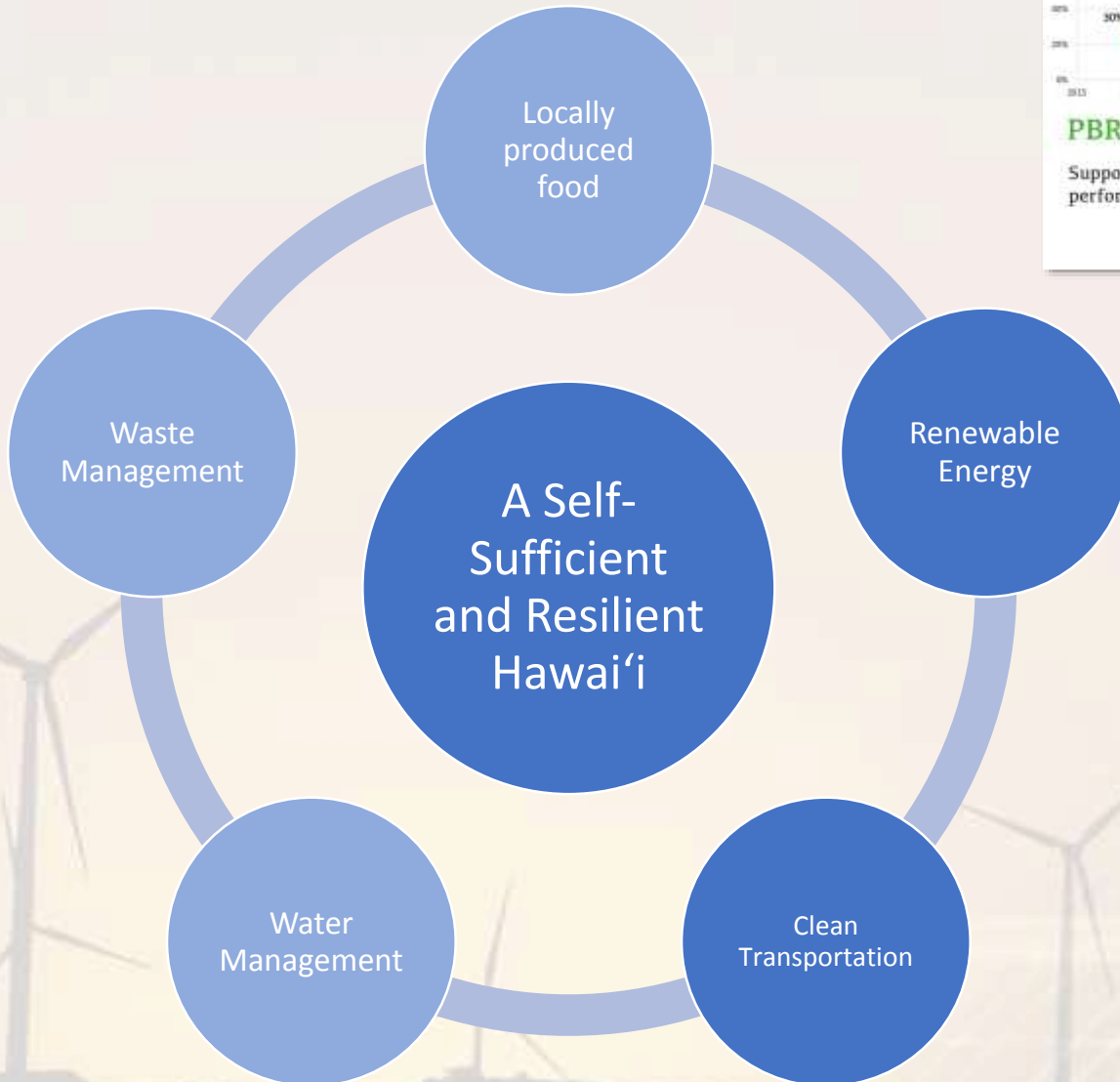
# Perspectives on Electricity in Hawai'i

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October 11, 2019



# Ulupono Initiative

ENERGY



# Customer engagement

ENERGY

- Everyone wants lower prices
- Cost of modernizing the grid and integrating renewables means the price may go up
- Customers also want choices & reliability/resilience



The screenshot shows a news article from Pacific Business News. The header includes a menu icon, the text 'PACIFIC BUSINESS NEWS', a search icon, and an 'Account' dropdown. The article is categorized under 'ENERGY' and has the headline 'Study: Hawaii has the highest electricity prices in the country'. Below the headline are social media sharing icons for email, Facebook, LinkedIn, and Twitter, along with a 'Save' button. The main image is a large array of solar panels. Below the image, a sub-headline reads: 'A WalletHub study compares Hawaii's energy expense rankings to other states.' The author is identified as 'By Megan Fernandes, Reporter, Pacific Business News', with a date and time of 'Jul 3, 2019, 10:32pm EDT'. The article text begins with 'According to a [WalletHub study](#) released Wednesday, Hawaii has the highest electricity prices in the nation at \$0.29 per Kilo-watt hour.'

# DER integration

## Distributed Energy Resources (DER)

- **Past:** very generous federal and state tax credits, plus Net Energy Metering (NEM)
- **Present:** NEM has since been replaced by less generous programs including non-export
- **Future:** Federal tax credits going away and state tax credits capped by Hawai'i Department of Taxation

# DER integration

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*However, solar is now cost-competitive with oil-generated electricity*

# Resilience

- Historically, focus has been on reliability
- Resilience now emerging as a priority focus
- Focus of Integrated Grid Planning docket and, to a lesser extent, PBR
- **Challenge:** currently not a lot of broadly accepted metrics for resilience



# Ulupono's involvement in PUC dockets

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- **Power Supply Improvement Plans [Dkt. No. 2014-0183]**

HECO Cos. developed long-range plans, with 5-year action plan, for generation expansion, integration of renewable energy, grid modernization; PUC "accepted" 2016 Update PSIP. Ulupono provided an independently generated model as a counter weight/comparison to utility proposals.

- **Distributed Energy Resources - Phase 2 [Dkt. No. 2014-0192]**

HECO Cos. developed plans to increase integration of DER into utility grids systems, including tariffs for various programs and resources; PUC approved several DER tariffs, closed DER2 and DR dockets, and opened new docket [2019-0323] to integrate DR and DER with grid services.

- **Community Based Renewable Energy Tariff [Dkt. No. 2015-0389]**

Per State legislation, PUC ordered HECO Cos. to develop a CBRE tariff, accompanying contract forms, for Phase 1 (8 MW), which PUC approved; PUC is currently reviewing an expanded CBRE program for Phase 2 (64 MW but may be increased to 235 MW).

- **HECO Cos. Request for Proposals [Dkt. No. 2017-0352]**

PUC opened this proceeding to facilitate HECO Cos. first and second requests for proposals (RFPs) for renewable energy generation and energy storage on a statewide basis. The first RFP has been completed, with several resultant power purchase agreements, and the second RFP is currently ongoing.

- **Affiliate Transaction Requirements [Dkt. No. 2018-0065]**

PUC ordered HECO Cos. to develop requirements governing HECO Cos.' relationships with affiliated entities; PUC ultimately adopted a set of requirements and limitations governing transactions between HECO Cos. and their affiliates.

- **Microgrid Services Tariff [Dkt. No. 2018-0163]**

Per State legislation, PUC ordered HECO Cos. to develop a microgrid services tariff that would enable islanding by a microgrid, and that proceeding is ongoing with extensive stakeholder in developing this tariff.

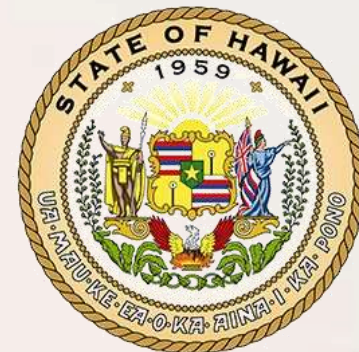
- **Integrated Grid Planning [Dkt. No. 2018-0165]**

PUC initiated this proceeding to review HECO Cos. integrated grid planning process, which embodies a comprehensive power system planning process that basically supersedes the prior integrated resource planning and power supply improvement plan proceedings, and incorporates extensive stakeholder participation. This proceeding is ongoing.

# Performance-Based Regulation

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- **Definition:** an approach to utility regulation designed to strengthen utility performance incentives
- Transitions from Cost-of-Service regulation to PBR
- Hawai'i Public Utilities Commission is on the cutting edge in considering PBR



**STATE OF HAWAII**  
**PUBLIC UTILITIES COMMISSION**



# Ulupono's PBR review principles

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Principles inform Ulupono Initiative's proposed PBR mechanisms, especially the RPS-A PIM and RBA exclusion for EoT

The goal of PBR is the selection and implementation of the lowest (net present value) price energy solutions capable of achieving the 100% RPS requirement

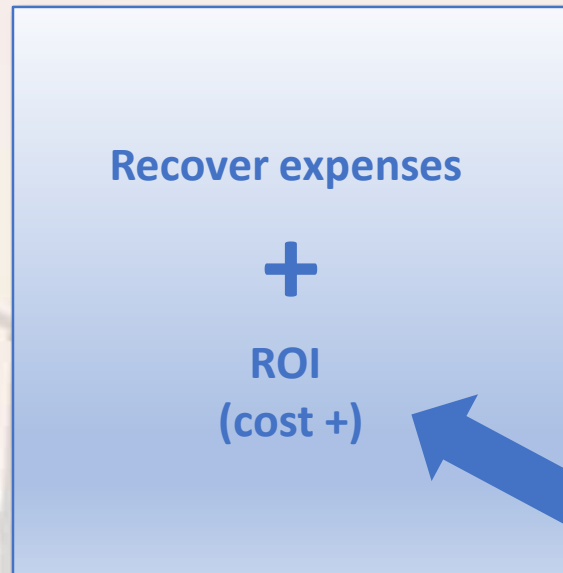
PBR should provide incentives toward selection of energy solutions that are agnostic as to utility or non-utility ownership

PIMs should encourage selection of the lowest cost energy solution for a specific articulated need, regardless of the technology, the utility program, or both

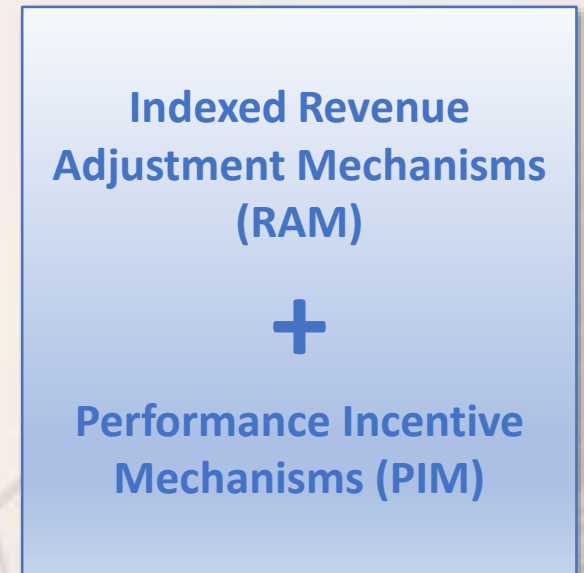
# Performance-Based Regulation

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## Cost of Service (COSR)



## PBR

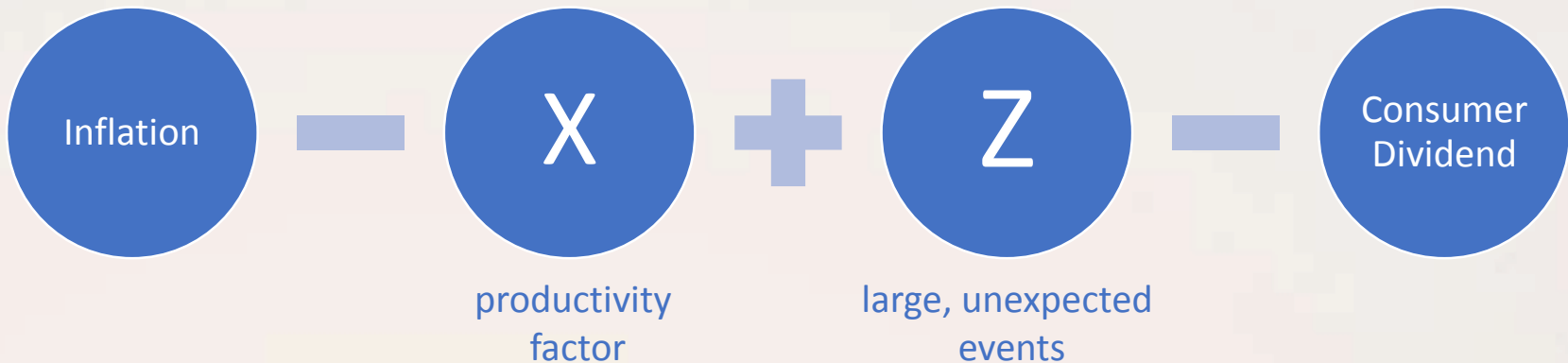


Utility  
capital  
bias

A blue circle containing the text 'Utility capital bias' has two arrows pointing outwards: one towards the 'ROI (cost +)' part of the COSR box and another towards the 'Performance Incentive Mechanisms (PIM)' part of the PBR box.

# Index-based RAM

ENERGY



## PIMs

- PUC has directed work on 3-6 PIMs to cover:
  1. DER asset effectiveness
  2. Interconnection experience
  3. Customer engagement

# Consistent with PBR review principles

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- Lowest NPV energy solution to achieve 100% RPS
- Agnostic as to utility/non-utility ownership
- Lowest cost solution regardless of technology, program – or both

# RPS-A PIM to incentivize performance

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## Effective PBR mechanism

- Symmetrical PIM focused on outcomes
- Upside reward for utility acceleration of RPS-based metrics
- Consistent with HRS § 269-94 and Act 5, SLH 2018
- No change to existing RPS penalty (except possible penalty amount)
- Reward amount to be determined (\$10-\$20 per MWh placeholder)
- Two reward mechanisms, both based on ***corrected RPS***

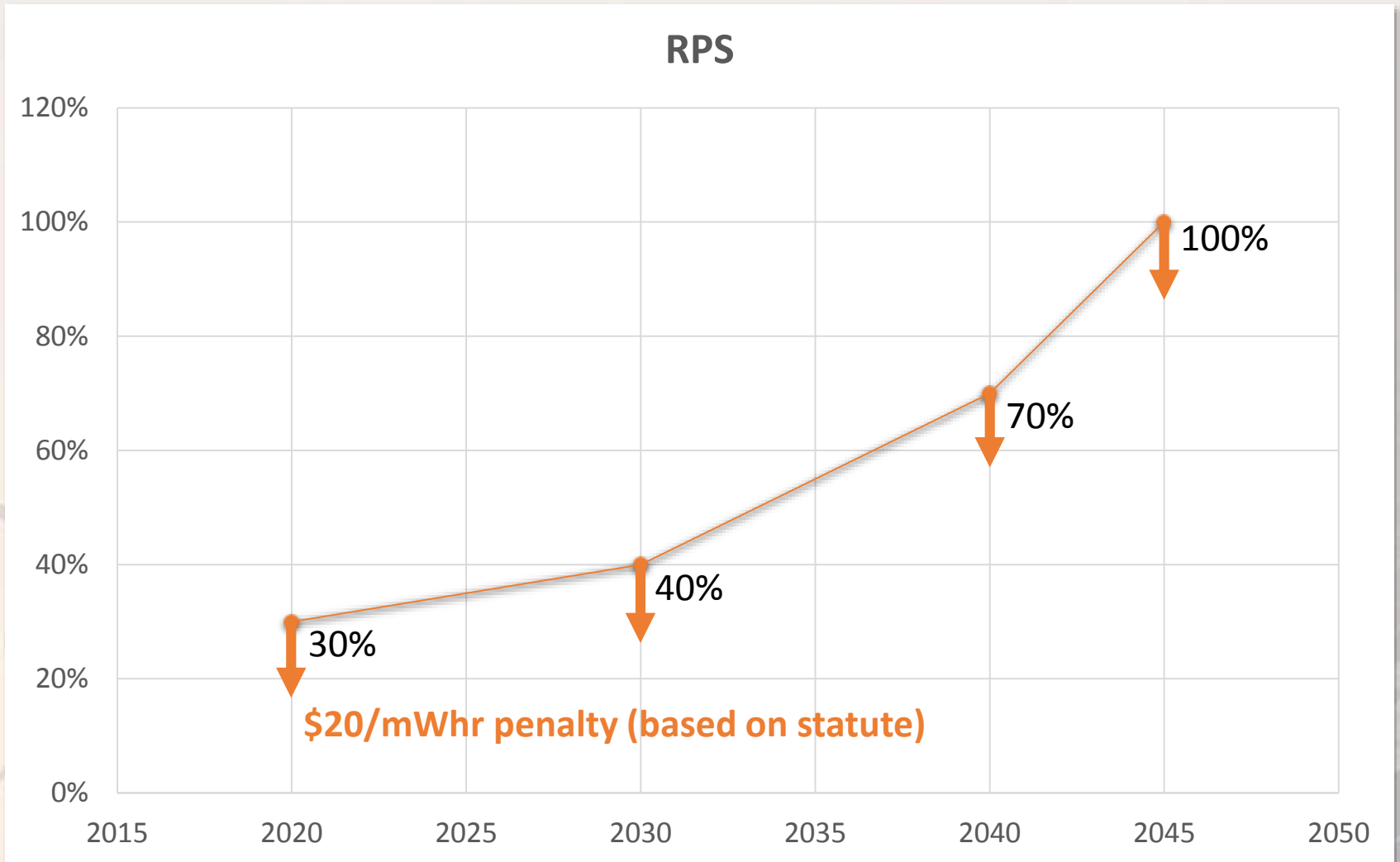
## Statutory year reward

- Determined during statutory year (2020, 2030, 2040, 2045)
- Reward if statutory percentage is exceeded

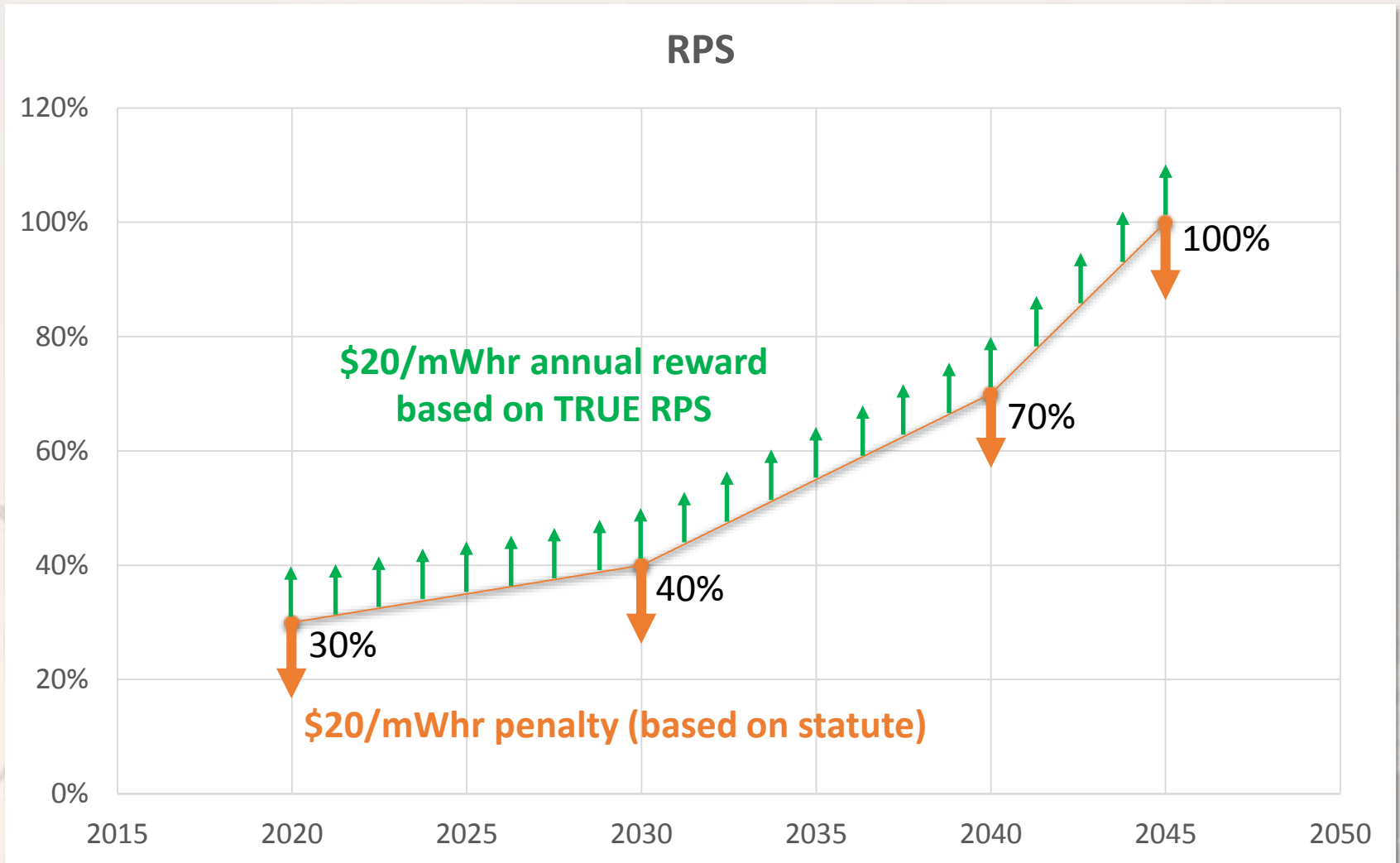
## Interim year reward

- Determined during interim period between statutory years
- Baseline is straight line between two consecutive statutory years
- Reward if baseline is exceeded (no penalty for failing to achieve)

# Statutory RPS



# Statutory RPS + RPS-A PIM



# Electrification of Transportation (EoT)

- Decoupling went into effect in 2010 and was largely successful by removing the financial incentive to resist energy efficiency and renewable energy
- Electric vehicles (EV) can accelerate progress
  1. EVs essentially are energy efficiency measures and can be powered by locally produced renewable energy
  2. An EV is about three times more efficient than an internal combustion engine (“ICE” vehicles are 17-21% efficient while EVs are 59-62% efficient)<sup>1</sup>
  3. 63% of total petroleum use in 2016 was transportation, with ground transportation making up 27% of our total petroleum use<sup>2</sup>

<sup>1</sup> U.S. Department of Energy’s Office of Energy Efficiency and Renewable Energy

<sup>2</sup> Hawai’i State Energy Office



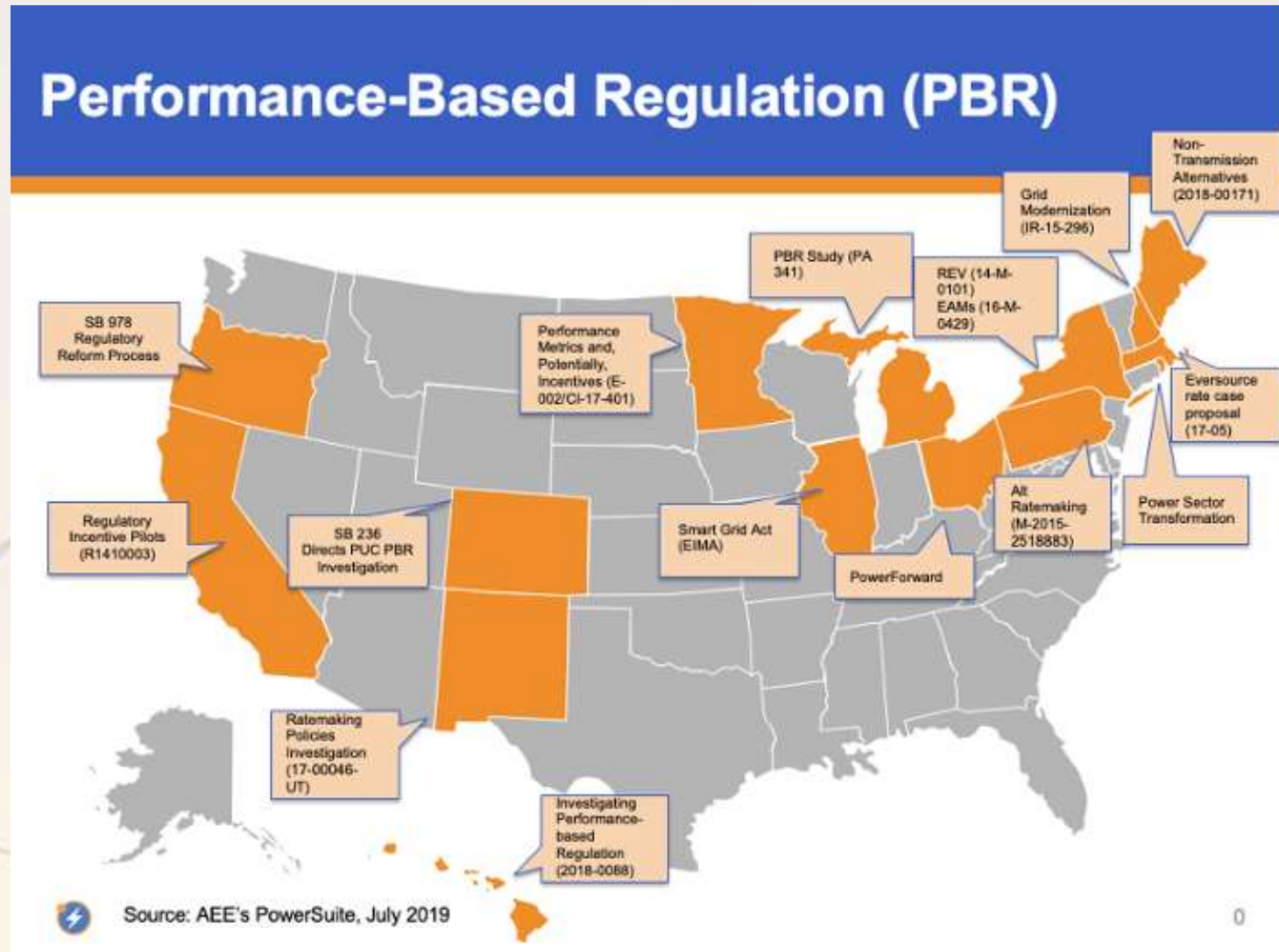
# EoT decoupling exclusion

## **WE WANT THE UTILITY TO SELL ELECTRICITY TO EVs**

- HECO is promoting EV adoption through its Electrification of Transportation Roadmap, among other measures, recognizing opportunity for a win-win
- As electricity sales (price per kilowatt hour) to EV drivers goes through the decoupling mechanism, ratepayers in general benefit from downward pressure on the price of electricity
- 2 cents per Kwhr — excluded from decoupling — could be sufficient incentive for the utility
- We have the opportunity to take an unincentivized utility and make it a champion of decarbonizing transportation



# Other states working on PBR



# Two streamlined PBR mechanisms

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What we are offering is the elegance of simplicity

Provides flexibility to the utility and PUC in achieving PBR outcomes

Reduce administrative burden and likelihood of a suboptimal portfolio of program- and activity-based PIMs

Difficult (if not impossible) to “game”

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**OR**

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Debating the metrics for up to six PIMs, the relative weighting of each, the standards to achieve rewards or penalties while preventing gaming will be extremely problematic

# Debating six PIMs, weights, rewards and penalties

ENERGY



**“... never get involved in a land war in Asia...”**

– Fezzik, *The Princess Bride*

# Debating six PIMs, weights, rewards and penalties

ENERGY



**“... never get involved in a land war in Asia...”**

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**... and it's *inconceivable* that we'll get it right**

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# Mahalo

—  
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