State of Hawaii Public Utilities Commission

Energy Efficiency Portfolio Standard ("EEPS")

Technical Working Group ("TWG")

Meeting Summary

February 9, 2023

10:00 a.m. to 4:00 p.m. Hawai'i Standard Time

Hawai'i Energy Offices with Teams Conference Option

10:00 - Introduction, Overview, Objectives

- Attendees (20 in-person and virtual) were welcomed.
- The Energy Efficiency Manager (EEM) thanked the attendees for coming and provided an overview of the meeting agenda, provided background materials, and outlined the meeting objectives:
    - Background:
        - Proposed EEPS legislation to extend EEPS to 2045, revised 6,000 GWh persistent cumulative savings, includes DR
        - Commission looking for recommendation from TWG in June
        - Recommendation should address core of legislation; program design/planning and details of framework not part of scope for these workshops
    - Meeting objectives:
        - Identify policy objectives to be addresses in updated EEPS
        - Narrow options for metrics and target methodology
        - Form subcommittees (if deemed necessary) to further discussion
    - EEPS guiding principles:
        - Keep it simple: target should be clear, not complex, easy to execute
        - Leverage existing data sources and align definitions with IGP, other dockets, etc.
        - EEPS is not PBFA-specific; contributing entities include utilities, PBFA, state agencies, etc.

10:20 - Policy Objectives

- The EEM led an exercise to explore and prioritize the policy objectives that the TWG attendees believe should be addressed by the EEPS.
    - The in-person attendees were divided into three break out groups and all the remote participants were in one break out group.
    - The top policy objectives identified by each group are presented below.

- Team 1
  1. **Grid flexibility and demand reduction.** See these two elements as interconnected. Even though Hawaii Energy has more specific targets, the broader policy kWh target doesn't reflect where we need to go for grid flexibility and demand reduction.
  2. **Energy equity.** Resources driving EEPS need not be universally distributed. There will need to be more stacking and prioritizing of bill savings among underserved customers. We know this in terms of program design but it's not necessarily reflected in policy goals.
  3. **Transportation electrification.** Team does not necessarily advocate for goals directing electrification of transportation targets and timelines; this is simply a recognition that electric load will be increasing with transition to transportation. Key questions include: How do we account for that in the targets? Might not be just a market potential number for kWh. What role does carbon have with that transition?
- Team 2
  1. **Energy equity.** Addressed in EEPS through market transformation and low-income programs but not memorialized in EEPS framework.
  2. **Peak demand reduction/increasing demand response.** Addressing peak on demand side.
  3. **Address time and locational value of savings.** We have a huge amount of energy during non-peak time where we need to be using it. Change the paradigm from using energy when you have it versus waiting for a peak. Really forcing programs and people to change their habits during non-peak times—both changing habits and having a dynamic grid.
- Team 3
  1. **Equity.** Bill savings reduction and cost of energy. Would be great to see EEPS provide guidance or definitions around equity, including who is covered and eligibility.
  2. **Peak demand reduction, grid flexibility, grid resilience.** In addition to being interrelated, want to ask the question of whether reduction = resiliency? Batteries provide a huge amount of flexibility on Hawaii.
  3. **Climate resilience and supporting energy transition.** Tying the EEPS to the RPS so they are always linked together.
- Virtual Team
  1. **Grid stability.** Demand response tools, electric vehicle charging management
  2. **Decarbonization.** Interim and final goals in conjunction with codes and standards, etc. Current EEPS metric sort of addresses this; you can guesstimate/back-calculate past emissions reductions, but it would lack time/location.
  3. **Equity:** low-income, small businesses, renters

- The group was invited to share thoughts and comments:
  - *One participant shared their thoughts on IECC:*
    - *IECC 2021 is a combination of improving the envelopes of homes and buildings to reduce A/C use, and also addressing lighting efficiencies. The*

standards built in for LED efficacy go beyond California's standards. It applies to new construction and major remodels.

- *Existing buildings are the holy grail of decarbonization. Are there any plans for addressing existing buildings?*
- *State Energy Office is implementing a strategy like this with state facilities through its state building initiative.*
- *Combined effect of IECC 2021 is market transformation where:*
  - *Manufacturers see where codes are going*
  - *They manufacture more efficient products*
  - *The more efficient products are the ones that become available on the market*
  - *People who own/live in existing buildings/homes will almost have no choice but to purchase the more-efficient products*

- *We make assumptions about effects of code implementation, but we don't go back to make actual measurements to verify those assumptions/estimates. It's hard enough to do this with new buildings; it'll be even harder to do with existing buildings. It becomes both an enforcement issue and a measurement issue.*

- The EEM summarized the three overall priorities:
  1. Grid stabilization, peak demand, resiliency, flexibility
  2. Equity, low income, small business, renters
  3. Time/locational value of savings, climate support/decarbonization

11:30 - Demand Response

- Applied Energy Group (AEG) presented background material on demand response (DR)
  - Objectives:
    - Set up TWG for future targeted DR subcommittee
    - Develop common understanding of DR
    - Review DR policy
    - Introduce two options for incorporating DR into EEPS
    - Introduce potential metrics for option 2
    - Gather feedback
  - DR definitions:
    - Capacity grid service—traditional DR, usually used for peak shaving, various response times
    - Fast frequency response—helps stabilize system frequency immediately following a sudden loss of generation or load
    - Regulating reserve grid service—maintained to respond to supply/demand imbalances over much shorter time frames (e.g., seconds)
    - Replacement reserve grid service—replaces output of faster responding reserves enabling their redeployment; meets sustained ramps and forecast errors
  - Sometimes we need to increase capacity, too. These are all common throughout the U.S. but every jurisdiction has its own nuances and flavors

- Two key dockets:
  1. No. 2007-0341 (DSM): assist integrating renewables, provide additional ancillary services, manage distribution system requirements
  2. No. 2019-0323 (DER): investigate technical, economic, and policy issues associated with DERs and rate design. Three tracks: advanced rate design, DER programs, and technical issues.
- Two primary DR options:
  1. DR can contribute to traditional EEPS goal through existing framework
     a. Incorporate reporting
     b. Allow achieved (ex-post) aMW to count toward total GWh goal. Requires a lot of thought about how to incorporate this. DR is not just load reduction, it's also load-shifting.
     c. Requires establishing and defining eligibility for contributing MWh
  2. Create specific goal for DR
     a. Incorporate reporting
     b. Simple case: capacity decrease only. It's a little easier because it's what everyone thinks about as DR, it's just MW reduced.
     c. Complex case: capacity + other grid services. This gets at what everyone else thinks is so important: resiliency, flexibility. But how do we measure those? And how do we make it simple and include it and not make it something that will scare people away?
  3. Are there other options we should include?

- The group was invited to ask questions.
  - *Option 2 is a struggle because it's a power reduction. How does that fit into efficiency/EEPS? It shifts consumption but doesn't reduce consumption. We would like to propose something more like Option 2, but it does not seem to fit with energy efficiency, as it is not efficiency.*
    - *Option 2 is actually developing a new goal that is distinct from EE and not constrained by thinking around EE.*
  - *One thought around Option 2 is that we need to start with what we to achieve and consider how we measure after. This is creating systems/infrastructure for 5, 10, 15 years down the road. If it meets our goals but we disregard it because we can't measure it, that's the definition of insanity.*
    - *If you don't have a metric to begin with and build around, how can you determine which option to select?*

  - *Another idea in an Option 3. This could be about shooting for the unforeseen gap, i.e. avoiding the need for additional capacity due to increased load from EVs (or something else). If we increase EEPS MWh to be very large number, how will we achieve that without knowing what the island is going to do? Where is the new load coming on board? It will be from electric vehicles. And we want EV charging/load to be energy-efficient for the grid.*

- *There's no guarantee that peak reduction is our sole focus in 10 years. I am a proponent of having as many tools in the tool belt as possible. It's not ideal to have tools that go unused because they won't meet a particular goal in EEPS, even though they would help with broader (non-EEPS) efficiency/reduction goals. This is an important consideration when developing goals, that once you design a target using a specific metric, there is a drive to meet those targets even if they no longer serve a need. We must be very careful not to create a target (and/or continuing to pursue an existing target) that generates unforeseen consequences that negatively affect our ability to use other DR/EE/ flexible resources. It remains important to be flexible and we should reevaluate which metrics and targets are important periodically (i.e., each legislative period but perhaps more often).*
- *One of the biggest issues we've had over the last few years is that the kWh target has become less and less of a priority in light of peak demand reduction. I do think if we can't come up with what the goal is in terms of reducing peak demand at times of most need, we might have to come back to it in a few years. The TWG is tasked with making recommendations and changes over time. We should be thoughtful; it should be something that can anticipate change but also something that itself can be changed periodically.*
- *Another key question includes how me might tie EEPS and RPS together? Particularly around use of customer sited battery storage, which is often present with PV.*

- AEG presented information about metrics and elements:
  - Traditional metrics:
    - Enrolled MW: total enrolled in DR programs (maximum or rated capacity)
    - Utilized MW: total achieved during DR events (average event or max reduction)
  - Other metrics:
    - % utilization = utilized / enrolled
    - % of peak demand forecast: measure of flexibility based on total demand
    - % of MW in total portfolio that are "flexible" or "fast"

- The group was invited to ask questions.
  - *The metric could become even more specific, like percentage of electric vehicle charging that is "responsive." What are the resources, how often do we want to use it, and is it energy-efficient?*
  - *It is really important to think about what are your pain points, and what do you see your pain points being in 10 years? Am I forcing an industry that I don't want to create, or a behavioral change that we don't desire?*
  - *We're not just talking about peak demand savings or demand response. Resilience came up for all groups. It's about support and risk reduction to grid operators. We don't want an unintended consequence. It should be not be a demand response goal just to satisfy legislation. TWG's recommendation should be what makes the most sense, and it doesn't have to be tied specifically to demand response terminology.*

- *Maybe we don't recommend goals. Putting it into statute could result in unintended consequences. PUC is really asking for us to define. Do we have one catch-all metric? Or carve-outs?*
- *For EV charging, we could have passive and active flexibility. Do we submeter? HECO knows some of the households that are active responders; for passive responders, we would ask folks to participate via BYOD [bring your own device program]. Otherwise, we would offer an incentive for people to sign up, and then we gather information on who is charging.*
- *It's maybe for farther out, but eventually as codes and standards converge on zero, we need to increase resolution at the building level because we can't keep putting renewables on the grid forever.*

1:00 - EE Metric Options

- The EEM presented information about EE metric options.
- The objectives were to:
  - Explore and narrow options for EEPS metric(s)
  - Set up TWG for targeted future discussions in subcommittee(s)
  - Types of metrics:
    - Resource-specific targets: setting savings by fuel type
      - Energy (kWh) savings
      - Peak demand (kW) reduction
      - Therms
    - Fuel-neutral targets: overarching goal that does not specify a resource
      - British thermal units (Btu) reductions
      - Total system benefits ($)
      - Greenhouse gas (GHG) reductions
    - Non-fuel targets: goals expressed in non-fuel terms; metrics of other interest
      - Installation targets
      - Participation targets
  - Metrics tool chest:
    - Carve-outs: requirements for spending or participation in priority areas
      - Commonly ued to promote investment in LI sector
      - Can be fixed value or percentage
      - No specific savings targets associated with spending requirements
    - Adders: account for non-energy associated with programs
      - X% adder for benefits for (e.g.) LMI-sector programs
      - CE for market transformation calculated across multiple years
    - Multipliers: modifiers to base goal
  - Cumulative persisting savings (GWh): New EEPS legislation established target as 6,000 GWh cumulative persisting savings. Was not originally specified as cumulative persisting. Different from simple cumulative (savings drop off after EUL expires).
  - Pros:
    - Captures benefit for life of measure and not beyond duration of EUL

    - EEPS legislation already in these terms
    - Simple to execute
- Cons:
    - Agnostic of "anytime" savings (time/locational value)
    - Does not capture policy objectives such as GHG impacts, grid benefits, etc.
- Total system benefit (TSB) ($): expression of lifecycle energy, ancillary services, generation, T&D, and GHG benefits expressed annually
    - Pros:
        - Encourages savings that will reduce energy during highest value times and locations
        - Incorporates all system benefits reflected in avoided costs
    - Cons:
        - Requires robust set of inputs (load shapes, 8760 ACs)
    - Discussion:
        - What policy objectives would it support?
        - Do we have the data to support it?
- Strawman options:
    1. Simple: currently proposed 6,000 GWh cumulative persisting savings by 2045
    2. Moderate: Simple option + multiplier for peak demand savings and multiplier for energy savings in A&A zip codes
    3. Aspirational: TSB

- The group was invited to ask questions.
    - *IGP does not produce 8760 avoided costs in the traditional sense. More like an 8760 value for specific bundles of energy/load. May be a way to use IGP data to support development of TSB or something similar, but not readily available.*
    - *Starting point for IGP modeling, to determine avoided costs, could be a no-EE business as usual (BAU) scenario. Then we could a sensitivity analysis to find the marginal costs relative to BAU by entering the target savings/reductions (as the model input). The model can't work without an input.*
    - *California updates their avoided costs every year. Other jurisdictions could be as infrequent as every five years. When avoided costs are updated, we can avoid our targets, too—no sense in revising previous estimates of savings, reduction, etc. The avoided costs reflect that moment in time. (Same with TSB, it would be calculated as net present value to account for time value of money.)*
    - *TSB does seem like a good metric that could meet a lot of the needs identified including time and locational benefits, and would give a path to potential include at least capacity type DR in EEPS. Avoided costs can be established at the end-use or end-user level and thus differentiate between time and locational values of load reduction according to those end-uses/end-users.*
    - *TSB provide guidance for acquiring resources (PBFA) that are best (not necessarily most) benefit to the system. Like CBA it can't be just about magnitude of cost-benefit ratio nor is it solely about absolute magnitude of benefits. Net benefits (TSB minus program cost) could be a solution here, if cost remains a consideration.*

    - *Equity may be challenging to incorporate as a goal into EEPS. Avoided costs are evaluated from the perspective of the entire grid. Equity doesn't really translate well into that analysis/framework. Equity tends not to work out in cost-benefit analysis (CBA), too.*
        - *How do we work around this? For CBA, we used adders or multipliers. In California, utilities are allowed to allocate a maximum of 30% of program funding (or something like that) to low-income programs that might not otherwise satisfy CBA or TSB requirements. That way there is no dispute about validity of those programs; all utilities are held to the same sort of standard.*
        - *Non-cost-effective equity-focused programs typically are propped up cost-effective non-equity-focused programs in the rest of the portfolio. It is a holistic view of benefits.*
- *Ultimately, does equity deserve its own metric/target? And how do we formulate it? Subcommittee to be formed to discuss.*
- *Article sent by EEM has more information about TSB in California and is not overly long, is an excellent resource for TWG members that can/should be reviewed.*
- *Option 3, aspirational option provides the best opportunity to move the market and helps us get to a more universalist approach. We can use TSB to value all distributed energy resources on equal footing.*
- *CA is using TSB, and are using it to value DERs, there is a lot of information available about the avoided costs for various pieces, capacity, ancillary services, greenhouse gas emissions reductions, etc. all broken down according to climate zone (geographic location) in addition to end-uses/end-users. CA is currently tracking TSB in parallel with existing approach, but will not make the full transition to TSB until next year. Trying to understand the implications prior to changing. That degree of granularity would not be imperative for Hawaii but it can be helpful to see breakdown of benefits at that level.*
- *This staged adoption approach is also something we could recommend. To look at TSB retroactively to understand how it would have affected things, before moving forward so that we can give time for all parties to adjust. Has implications for PBFA programs among other things. Need time to make changes for a new metric. Could also phase in adoption.*
- *Option 2 also seems like something that could work. It leaves options to go partway toward Option 3 and make recommendations for future explorations and analysis around TSB. A combination of metrics/targets would allow for flexibility in pursuing state goals (referring back to "tools in the toolbelt" conversation).*
- *A subcommittee on TSB is likely to be important.*
- *What about the higher burden of taking on this type of method. It's more expensive and requires more analysis and potentially updates. We want to do something that makes sense, but want to weigh carefully.*
- *Another note that all TWG members are on the same page about wanting to do what makes the most sense even if it is more difficult or new.*
- *Is there a possibility that having dual targets or parallel metrics, while simpler, is actually contextually short-sighted?*
- *More information is needed, EEM to provide more on what CA is doing.*

2:15 - EE Target Methodology Options

- AEG presented information on possible EE target methodology options.
    - The objective was to reach consensus on method(s) to set EEPS target moving forward. Know that we can work through it and application of it in future workshops.
    - Three methods:
        1. Deterministic goal (current case)
        2. Bottom-up goal; aligns with market potential study
        3. Top-down goal; aligns with gap between forecasted demand and supply
    - Deterministic goal:
        - Based on alignment with clean energy goals (4,300 GWh for EEPS currently; otherwise could be % of forecast or % of baseline, something simple)
        - Pros: simple, does not require complex analysis; familiar, does not require "cultural shift" specifically for HI because it's already in place
        - Cons: restrictive, does not transparently account for market changes, somewhat arbitrary
    - Bottom-up goal:
        - Align with scenario developed from bottom-up analysis like a potential study
        - Pros: transparent, adapts to changes in market, accounts for past performance
        - Cons: must update analysis to be relevant, data quality affects accuracy, complex
        - Expensive but accurate.
    - Note that all three goals can/should be updated at some cadence, so perhaps this in not really a con for this approach but just something that we should be aware of for all approaches.
    - Top-down goal:
        - Future incremental goal aligns with gap between sales and generation
        - Pros: Accounts for current and forecasted resource mix, doesn't overestimate need, data aligns with IGP
        - Cons: Only "fills gap" without addressing potential, will change when generation mix changes
        - It would require following the generation mix and mandate immediate update whereas we could otherwise set the cadence for updates.

- The group was invited to ask questions.
    - *Top-down goal description close to the original suggestion, but was thinking more about load and capacity than sales. Also could consider the gap in the context of renewables in that there is only so much area where PV or wind can exist on the island. Really constrained in their generation by area. Also notes that the actual gap might be much larger than depicted on the slide.*

- *Question about whether the data exists to support development of the top-down goal.*
- *Confirmed that generation in terms of both sales and load are available in IGP and also there is a forecast of consumption and demand.*
- *Seems that this data is available and that it would not be too onerous to calculate the actual top down goal. EEM/AEG to confirm that the data exists through a data request to HECO and review of data on the IGP working group site.*
- *Bottom-up approach has the ability to support the TSB metric, includes 8760 profiles by end-use and building type that can show savings, and demand reduction shapes so that they can be translated to TSB, this is one key advantage of the bottom-up approach.*
- *Bottom-up can support more granular policy objectives by building type, size, major end use, etc. and also can support equity metrics or policy objectives since there is a low-income designation built into the MPS for residential. Commercial results could be mapped to A&A zip codes.*
- *There is a distinct advantage in using two methods to cross check results and ensure coverage from both the demand side and the generation side. If two methods can converge on roughly the same number, then we can have high confidence in our targets. Using the two methods to set a target seems to make more sense than using something arbitrary.*

3:15 - Market Potential Study Update Overview

- AEG provided in overview of the Market Potential Study (MPS)
    - The objectives were to:
        - Brief overview of proposed MPS update (limited update)
        - Gather feedback re: key inputs and analyses
    - Context:
        - EEM and AEG recommend updating MPS
            - EE potential
            - DR potential
            - EEPS scenarios
                - Not defined yet but data that comes out of workshop can help define them
        - Update 2020-2022 with actuals
        - Update and calibrate forecast from 2023 onward to reflect consumption, reflect changes in C&S, etc.
        - Add analyses that support development of alternate/new metrics/methods
        - Includes hourly analysis (8760) like in TSB
        - Can incorporate grid services impacts

- The group was invited to ask questions.
- *A couple questions around the timing of this analysis. Could wrap up in May/June if approval is received tomorrow. May not be able to align the timeline with the TWG discussions.*

- *Confirmed that the 2020 analysis is still available, key updated that would be missing include changes to lighting standards, and updating of baseline, accounting for changes from COVID in building use and energy consumption.*

3:45 - Wrap-up/debrief

- The EEM invited the participants to provide meeting feedback, both positive and negative.
- The participants offered the following feedback:
  - Kept on time
  - Group interaction early on was effective
  - Maybe another breakout session in afternoon
  - Shorter with fewer breaks—9:30 to 12:30 maybe?
  - Or do it over two days in short morning chunks (9-12 x 2)
  - Discussion was very collaborative; felt natural and safe

  - The EEM will review the meeting discussion and determine which working groups we need based on this discussion, likely:
    - EE
    - DR
    - Equity
    - TSB