

State of Hawaii Public Utilities Commission
Energy Efficiency Portfolio Standard (EEPS)
Technical Working Group (TWG) Meeting

Meeting Summary

Monday, March 25, 2019

1:00 to 2:50pm Hawaii Time

Hawaii Public Utilities Commission, Honolulu

1:00 Welcome – Hawaii Public Utilities Commission.

The attendees - about 20 people in the room and 20 people on the phone - were welcomed to the meeting and to the PUC. Meeting materials, including presentation, notes and recording, will be posted at www.hawaiieeps.org on the March 25, 2019 TWG meeting page. Meeting goals were shared:

- Share latest thinking on Policy Objectives and discuss potential metrics
- Discuss Potential Study Context and Considerations

1:10 EEPS Goals, Objectives and Metrics – Commissioner Jennie Potter

- Presented factors impacting energy efficiency in Hawaii.
 - The context for energy efficiency in Hawaii has changed significantly since early 2012 when the EEPS Framework was adopted
 - New important Hawaii policy goals, including carbon neutrality and resiliency
 - Technologies are evolving (e.g., grid-edge and smart devices)
 - Customer-sited, distributed energy resources (DERs) are proliferating
 - Variable generation sources are providing larger share of utility generation mix every year
 - Increasing attention to low and moderate income and HTR communities
- The EEPS Framework stipulates a review this year of the goals and framework elements.
- Important policy objectives specifically relevant to EEPS
 - Achieve all cost-effective energy use in Hawaii by 2030 (current EEPS goal)
 - Encourage energy efficiency investments that reduce system demand during peak demand periods to maximize grid value
 - Reduce imported fossil fuel related to electricity generation
 - Reduce net greenhouse gas emissions (from generation and other sources)
- Important policy objectives with goals not to be stipulated explicitly in EEPS Framework
 - Focus energy efficiency investments to save energy where and when most needed on the grid (time and location value)
 - Accelerate market saturation of DER-ready equipment and systems capable of responding to DR events (“shift, shed and shimmy”) to provide on-call resources

to the grid if/when connected to utility or aggregator signal (i.e., building as flexible grid resource)

- Ensure equitable level of energy efficiency benefits (including energy bill cost reductions) accrue to HTR and income-constrained communities during the clean energy transition
- The views that are being presented do not represent the Commission as a whole. Participant questions and reactions were requested:
 - A participant asked about the need to address low income communities. There is a locational aspect – island, counties, renters versus owners. How much of this could be incorporated now versus later?
 - Answer: This is important moving forward. It is going to have to be locational, requiring demand-side coordination to better match what is available on the supply-side. In particular at the EEPS-level, we don't have access to that data. In the short term, we still have to be able to capture this. When we're thinking about locational metric, we are asking if it could belong with the PBFA right now, and then hope to move in the direction of considering it in the EEPS once we more about gathering the data.
 - A participant said that part of the process will be educational; not based on consultants but based on using the data itself. KIUC for example already has very high-resolution data for the grid and would make a good place to start.
 - Answer: it would be great to work together on this.
 - A participant asked about what was related to reduced system demand and clarified that metric should allow for and encompass more than one peak. There is a substantive morning peak that is important.

1:30 EEPS Metrics – Ted Pope, EEM team

- The group turned to metrics to achieve the policy goals that Commissioner Potter mentioned. The presenter went through a series of slides describing proposed EEPS metrics (noting changes, measurement units, possible issues, possible data sources, and areas of discussion). These were included in detail in the pre-meeting materials posted on HawaiiEEPS.org.
- EEPS: track progress toward current energy savings goal, including persisting energy savings achieved to date (and as forecasted through 2030) in kWh
 - Recommended change: explicitly articulate program-attributed market effects in reporting of EEPS savings impacts. Change to 4,300 GWh goal would not be considered until 2019 Potential Study is completed
 - Data sources: PBF Verification Report; Potential Study forecast for C&S savings; and other contributing entities data collected. Market effects multiplier to be developed by EM&V consultant
 - Issues: Data from PBFA is sufficient for Hawai'i Energy contribution, but not all substantive contributing entities' data includes sufficient information for calculation of persisting kWh impacts with market effects
 - Questions/Comments? Participant asked, "What is the change?"

- Answer: The change is that you will be accounting for program-attributed market effects. Also, in addition to first year savings, there would also be clear accounting for cumulative savings.
 - There was another question about how accounting works for replacement. When forecasts are done, there might be potential for double counting if the baseline used for the end of life replacement isn't updated to reflect current baseline or if equipment is replaced early.
 - Answer from a modeling perspective: modelers look at the end of the useful life. At the time that the replacement occurs, the customer is making a new decision. The new baseline is taken into account when the replacement occurs.
 - Answer from a policy perspective: Making predictions is hard. It is important to think about how the information will be used (e.g., resource planners use for load projections).
- EEPS: Track Peak Demand Reductions: Cumulative, Persisting Peak Demand Reduction in kW
 - Recommend: add metric for peak period demand reduction from Contributing Entities. Current peak period is 5PM-9PM, but can be updated over time and differentiated by Island to reflect changing peak periods
 - Data sources: PBF Verification Report. Information provided by other Contributing Entities or estimated from what information they provide
 - Issues: If trending this metric forward to 2030, need to determine how to handle changing peak period assumptions
 - Questions/comments? A commenter said the peak period looks off: 9pm may be too late and each island will differ. The morning load increase before the solar comes online will also be challenging. In a follow-on question, a participant noted that we need to be clear the whether the ramp was the issue or the peak was the issue.
- Avoided consumption of fuel oil for electricity generation in barrels of oil
 - Recommend: add metric for avoided fossil fuel use as a result of reduced electricity use
 - Data sources: Verification Report and other contributing entities for energy savings. HECO for oil information.
 - Issues: Need to work out approach (e.g., overall average kWh/barrels * overall kWh savings; OR hourly oil intensity of generation * hourly kWh savings
 - Questions/comments? This will be very specific to the island. You should work closely with the utility .It gets complicated quickly.
 - Kauai has a lot of solar so that needs to be considered alongside fuel oil. We are curtailing. In working with EE the initial goal was to reduce fossil fuel. As we approach higher contribution of solar what do we do when we replace renewable instead of fuel oil. Also true on Maui and Big Island.

- There are a number of different kind of oil products that are utilized (diesel, fuel oil). It could be normalized in some way, although then there is overlap with the GHG metric.
 - This is the challenge of managing the peak: things are going to be variable depending on weather, what is happening in community. Is there a metric that captures flexibility, not just single reduction fossil fuel or fixed peak (e.g., measuring efficiency that is installed or load shifting capacity)?
- EEPS: Reduce greenhouse gas emissions both avoided generation and other programmatic impacts in tons CO₂e
 - Recommend: incorporate CO₂e savings from avoided/shifted generation, electrification (i.e., fuel switching to electric), and other end use carbon reduction strategies (e.g., SLCP).
 - Data from: Hawai'i Energy (Verification Report) and other contributing entities. Periodic (eventually hourly) grid carbon intensity values needed from HECO.
 - Issues: Some elements of this data may be challenging to get from other contributing entities and carbon intensity calculations will be uncertain
 - Questions/comments? One commenter noted that it is extremely important to realize that it will change by each grid.
 - It is important to note that there are additional items on this list (e.g., refrigerants, high GWP pollutants).
- PBF: Time & Location-Weighted Energy Savings: Begin tracking time & location-weighted value of the cumulative persisting energy savings (\$/kWh or scaled kWh)
 - Recommend staged development and deployment of this metric within PBF portfolio. Phase 1: Time Dimension = use defined time periods with approximate cost values or scaling factors. Location dimension by island or county. Phase 2: Time Dimension = hourly avoided cost or scalar. Location dimension – possibly subdivision of islands or island
 - Data sources: HECO for time value and location cost/scalars and Verification Report for hourly savings
 - Issues: 1st year or persisting savings or both? Need hourly load shapes to be integrated into TRM. Need to define the pricing periods to be used in Phase 1 and establish avoided cost proxies. Phase 2 depends on hourly avoided costs and possibly location-defined cost factors. Without TOU rates, there may be increasing spread between value proposition for program participants versus the grid from EE investments
 - Questions/comments? One commenter said that cost might not be the right indicator – it can be lower cost to produce energy at higher demand periods than at lower demand periods. The measure needs to be around the energy mix. Answer: The question is value to the grid. The focus is on maximum replacement of renewables and agreed this might be hard to do with a dollar value. One goal is to allocate PBF dollars to support the grid. Another participant noted is that it won't be obvious when the

- energy efficiency is most valuable. Another point was made about the price signal and finding a way to show the customer grid value.
- Ensure equitable delivery of services and bill impacts to HTR and income-constrained customer segments (in various units)
 - Recommend: Increase scope of metrics beyond what is already being done by Hawai'i Energy. Potential metrics include: Participation rates and annual kWh impacts by small business and HTR customer programs by county and sector level; Percent of total PBF program expenditure serving defined economic areas with high percentage of HTR and ALICE customers (not just HTR and Low-Income program dollars); Spending (\$) for HTR and ALICE programs by sector by county level
 - Data sources: Verification Report (Hawai'i Energy) and State/Federal/NGOs for economic region definitions
 - Issues: geographic areas are only crude proxy for receipt of program services by actual HTR and income-constrained customers. Work to cross tabulate program data with economic regions
 - Questions/Comments? A commenter said that what matters is the percentage of people's income that goes to energy consumption. Another commenter cautions against looking at income given that households might be very large. It is hard to make this a precise metric.
 - A commenter said Kauai tracks and has this data by county.
 - PBF: Flexible Buildings / DER Ready Capacity. Track deployment of buildings as flexible grid resource and total DER-ready capacity installed/facilitated via Hawai'i Energy (in various units)
 - Recommend phased in metrics: Phase 1: Completion of planned, grid flexible building or DER-ready equipment pilot projects (i.e., start with milestone-based metrics). Phase 2: Cumulative, persisting DER-ready (DR and load shifting) capacity at specified time intervals and/or percent of building stock with DER-ready resources that could be engaged by HECO or aggregators
 - Data sources: Verification Report (Hawai'i Energy), HECO for helping define measurement periods (time of day and day of year)
 - Issues: Need to upgrade TRMs with load shapes and DER-ready capacity values.
 - Questions/Comments? Is this voluntary versus those required by code (in order to avoid double counting)? Where would you be measuring it from; it wouldn't be the 2009 baseline. Answer: Getting to DER-ready buildings includes many factors – e.g., getting the marketplace ready. The current EEPS uses a 2009 baseline but were talking about a PBF metric here so it would use a current baseline.
 - From a financing perspective, the incentive needs to be larger to make sense for the ratepayer.

Please share additional thoughts on metrics.

2:20 Potential Study Context and Considerations – Ingrid Rohmund, AEG

- Discussed key issues involved in conducting a study of the potential for energy efficiency in Hawaii and solicited input on key assumptions and results.
- A recap of the 2014 Potential Study was presented (e.g., load was forecast to increase through 2030 at an annual growth rate of 1.5%; for EVs, assumed that they would only be charged at home). Important changes have taken place in Hawaii since that study was done. It is normal for utilities to update every couple of years.
- Preliminary recommendations for how to proceed with the analysis for the 2019 Market Potential Study were shown. A number of questions were discussed.
- Q1. Are DER Customers Different from non-DER customers? For example: Are customers with DERs more or less inclined toward saving energy and buying high-efficiency options?
 - One commenter brought up that people think of solar, but not of energy efficiency. Many people say: “Now that I have solar, I keep the air conditioning running.”
 - Answer: The supplemental customer surveys being conducted in the coming months will help answer these questions.
- Q2. what will the pace of growth be for customer-sited solar PV? For example: What role will newly emerging solar PV + battery play in each sector?
 - Almost all solar going in now has batteries, a difference from the past.
- Q3. What will the pace of growth be for Electric Vehicles?
 - A commenter said that HECO has projections to 2045. DBEDT tracks EVs.
 - A participant asked if it is realistic that EVs will be used for demand response or are batteries limited. Answer: This depends on the availability of charging stations, what value is assigned and whether infrastructure (fast charging, two-way chargers) and market indicators are present.
- Q4. What is the outlook for codes and standards? The federal government is considering a rollback of long-standing standards including some appliances and transportation. The State of Hawaii is considering additional standards to supplement federal standards.
- Q5. How large a role will IDSM play? Integrated DSM is a program or measure that provides both energy savings and peak demand savings. IDSM programs can use one truck-roll to meet more than one objective. Do you think customers would be interested in doing more?
 - Hawai'i Energy is coordinating with HECO, for example, on smart thermostats and small pilots with grid-interactive water heaters to ensure a seamless customer experience.
- Q6. We are beginning to include non-energy benefits (NEBs) from energy-efficiency measures in potential studies (for example clothes washing water savings). When these are quantified, they count as a benefit in the cost-effectiveness calculation. Which NEBs are most important?
 - A caller mentioned health benefits, e.g., less fossil fuel burning.
 - It would be great to measure items tied into state policy (e.g., greenhouse gas).
- Q7. The study can look at new metrics being considered in Hawaii. Should the study explore alternative metrics?

- A commenter asked about the time frame: is it the next five years or 2030?
Answer: The study will provide savings estimates for 2020 – 2040. The model can also run to 2045.
- With the goal of 2045 – do you have the avoided costs that you need to do an accurate representation of potential? Answer: This will be discussed in the TAG meeting.
- What about community solar? Are they different or the same? Answer: This is another category of customers with DERs.
- It is hoped that folks will volunteer further input. Customer segmentation is important (by island, by building type, etc.). There will be a lot of discussion around the topic of what is achievable. We will be looking at a number of metrics on an hourly basis. There will be opportunities to interact, weigh-in, argue, and bring additional ideas. Please volunteer to serve on the working group (email tedpope@2050partners.com if interested).
- The potential study begins formally in April. The work will align with Hawai'i Energy plans for the next triennial period, with planned completion in September 2019.
 - As you assess the technologies, codes, NEBs, would it be possible to add an analysis to see who is left behind (e.g., technology innovation is done by higher income groups).
 - Are you using KIUC data? Answer: we would love to use the data.

3:05 Wrap-up – Ted Pope, EEM team

- The presenters and participants were thanked, and the meeting concluded. The Technical Advisory Meeting will begin at 3:15.