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

Meeting Summary
September 29, 2020
1:00 – 2:30pm Hawaii Standard Time
Via Zoom Video and Phone Conference

1:00 – Welcome and Meeting Objectives

- Attendees (52) were welcomed and advised that the meeting was being recorded.
- Commissioner Potter thanked the attendees for coming and observed that:
  - Hawaii has an advanced energy ecosystem
  - Traditional solutions are becoming outdated
  - Hawaii needs to evolve its programs to make them more inclusive and more diverse
- The Energy Efficiency Manager ("EEM") previewed the agenda. Participants will learn about the review of the EEPS process and PBF evaluation.
- The EEPS Review requirements and timing were reviewed: The EEPS Framework defines four Performance Periods during the EEPS implementation timeline of January 1, 2009 through December 31, 2030. It requires five Evaluation Reports during this time, due 20 days before the convening of the legislative session. Each review cycle involves:
  - EEPS Load Impact Evaluation (GWh)
  - Baseline studies – characterizing electricity use in Hawaii, and
  - Energy efficiency potential study and scenario analyses.

1:15 – Market Potential Study: Distributed Energy Resources and Interventions

- Applied Energy Group ("AEG") presented an update from the Market Potential Study ("MPS"). In summary, regarding EEPS Progress to Date and Future Projections:
  - The EEPS target appears to be attainable under the Achievable Business-as-Usual ("BAU") scenario, in which programs continue in a similar manner.
  - There is a substantial amount of additional cost-effective savings – economic potential (in green) – available through 2030.
  - Interventions can come from many sources – some of which have already occurred due to previous efforts in Hawaii.
- AEG described potential energy efficiency savings by end use:
  - The commercial sector is expected to contribute more savings than the residential.
  - By 2030, the residential sector is expected to achieve between 549 GWh and 770 GWh.

- Cooling, water heating, and lighting measures account for the majority of savings.
- More detail is included in the slides.

- AEG explained that energy efficiency, distributed energy resources ("DERs") and rates interact to reduce peaks. The state could do more in coordination with the Integrated Grid Planning ("IGP") process.
  - Regarding demand response and grid services, there is a menu of possible demand management events for residential and commercial segments combined on Oahu.
    - AEG modeled five different grid services.
    - Key technologies to target include HVAC, electric vehicles and water heating.
- AEG described the approach for developing intervention concepts and four intervention options.
  - AEG summarized intervention concepts for the residential sector.
    - Most high-saving measures can be promoted through PBFA Programs and future codes and standards.
    - A few AC measures are well-suited to demand response and/or grid services initiatives
  - AEG summarized intervention concepts for the commercial sector.
    - Lighting is a major contributor to savings and can be supported through PBFA programs and future codes and standards.
    - Several cooling measures are well suited to demand response and/or grid services initiatives.
- The group was invited to ask questions.
  - *Question: Was that achievable megawatts or technical?*
    - *Answer: The savings were of the achievable high case.*
  - *Question: Is the solar shown in the early chart reflective of the legal definition? That is, it is now captured by the Renewable Portfolio Standard ("RPS") definition.*
    - *Answer: Solar PV savings from installations after 2014 count towards the Renewable Portfolio Standard. Through 2014, the solar was allowed to count toward EEPS.*
  - *Question: Please define newly enacted standards.*
    - *Answer: These are standards that have become part of the new state standard in Hawaii.*
  - *Question: Were there any market studies that said cooling for residential is achievable? Also, did the capacity for cooling for commercial buildings include or do not include offices?*
    - *Answer: AEG did not look specifically at cooling. AEG looked at cooling as a part of the baseline, and a cost effectiveness analysis showed the measures here are cost effective. Offices were included.*

1:40 – EEPS Review EM&V Wrap-Up, Summary of Findings

- AEG described the key insights from evaluation, measurement and verification ("EM&V") and EEPS Research Studies.
    - Hawai'i Energy programs have been successful, as demonstrated by annual verifications (and other EEPS Research).
        - Hawai'i Energy obtained 99% of their savings goals and 80% of the EEPS interim goal.
    - EEPS Research shows savings are changing over time.
        - Energy impacts have been heavily focused on prescriptive measures such as lighting, but more complex custom measures are likely to become a larger part of the portfolio.
        - The Baseline Study and Market Potential Study ("MPS") show greater opportunity for savings from custom measures such as space cooling moving forward.
    - The MPS indicates that no major changes are needed to Hawai'i Energy's portfolio over the next several years to support achievement of EEPS goals, however recommendations include:
        - There is a likely benefit from measure diversification, and the appetite for integrated programs and future rate-based options should be evaluated.
        - Programs will need to plan for various outcomes with respect to standards.
- AEG described the EEPS EM&V activities as including EEPS research, verification of savings, Technical Resource Manual ("TRM") updates and TRM Framework, Baseline study and Market Potential Study ("MPS").
- AEG shared implications of past EEPS savings studies:
    - Hawai'i Energy programs are major contributors to the EEPS goals, given a similar savings trajectory.
    - A more accurate TRM results in more accurate savings estimates.
    - More diverse programs (by end-use) are likely needed to achieve 2030 cumulative savings goals.
- AEG shared implications of EEPS from the MPS:
    - There are technology options, outside of batteries, that are good targets for grid services programs.
    - Some end uses (i.e. water heating and cooling) have substantial energy efficiency and grid service potential and would be good targets for integrated programs.
    - Variable or dynamic rates should be tested in Hawaii to confirm their savings potential.
- AEG shared implications for the future of EEPS savings:
    - There is a likely benefit from measure diversification.
    - Hawaii should evaluate the appetite for integrated programs and future rate-based options.
    - Programs will need to plan for various future states with respect to standards.
- The group was invited to ask questions:

- *Question: Can you talk about any variation in applicability of the MPS across the four Counties? Are there significant differences in energy efficiency measures across Islands? Is there any insight into which have the greatest potential among lower income households?*
    - *Answer: The study was performed for the four counties, and Appendix A has the results by County. There is not a ton of variation, except for residential. There is also detail about cooling in the Appendix.*
- *Question: There was mention of the potential value of diversification. Please clarify what diversification means in this context? Assuming that the clarification is that the measures should start to diversify beyond lighting measures, that has been recommended in the past and there has been movement away from overreliance on lighting. Cooling and water heating have been mentioned but are there are other promising candidate measures/technologies that bear further investigation and discussion besides lighting? Or, would a focus on lighting, cooling, and water heating provide sufficient diversification? There was mention of some consideration of rate basing certain measures. Could that be clarified?*
    - *Answer: The way AEG described diversification is important – as lighting standards are adopted, lighting is added into the baseline. However, it is still contributing to EEPS goal as Codes and Standards, so we are not losing the savings when the Energy Independence and Security Act of 2007 (EISA) is re-implemented.*
    - *AEG looked at water heating and cooling because measures show the most potential in the MPS, but they are by no means the only measures (see Slide 13 for additional detail).*

2:00 – EEM Perspectives from EEPS Review

- The EEM provided a summary of EEPS performance during the first decade:
    - EEPS interim goals have been met from 2009-2018.
    - Hawai'i Energy has been delivering a large share of EEPS goal savings and reliably delivering savings relative to its annual plans (as verified).
    - Two additional "Other Contributing Entities" – codes and standards, and Kauai Island Utility Cooperative ("KIUC") – as well as "naturally occurring" savings contributed most of the remaining savings.
    - On average, the EEPS impacts have been much cheaper than the avoided cost of power.
- The EEM explained that the Hawaii landscape is evolving. The context for energy efficiency in Hawaii has changed significantly since 2012 when the EEPS Framework was adopted; it has even changed since the EEPS First Review Period (2009-2015).
    - EEPS complements but could better support newer Hawaii policy goals.
- The EEM described the opportunity for energy optimization:
    - The Baseline Study and Market Potential Study completed by AEG confirm that substantial savings remain in Hawaii for both "anytime" energy efficiency, and energy optimization (efficiency and demand flexibility).

    - The Commission has actively supported increased development of energy optimization strategies and sees the opportunity increasing.
    - Development of hourly avoided costs will clarify the time-dependent economic value of the energy efficiency and other energy optimization impacts delivered by the PBF portfolio and Other Contributing Entities.
- The EEM showed progress against the 2017 TWG EEPS "Hopes and Dreams" list that the TWG formerly created.
- The EEM shared that regarding EEM Perspectives, Hawaii and the Commission have wisely established robust policy goals and guidance that directly and indirectly support a clean energy future. Energy efficiency is an important element of this vision.
- The EEM believes the following focus areas merit continued attention:
    - Policy and support for activities to address time and location value, demand flexibility, and other grid services needs that can be provided from behind the customer meter as part of an increasing investment in energy efficiency activities.
    - Research and pilots to inform performance and benefits assumptions about energy optimization interventions.
    - Optimal coordination between PBFA and HECO with respect to data, load forecasts, demand flexibility and grid services initiatives.
    - Energy efficiency and energy optimization interventions that ensure that moderate and low income and other hard-to-reach customers are equitably served.
- The EEM shared additional detail on the promotion of energy optimization: when implementing energy efficiency programs, integrate other elements of energy optimization at the same time, including:
    - Promote DER-ready equipment and systems capable of responding to demand response events ("shift, shed and shimmy") to provide on-call resources to the grid if and when connected to a utility or aggregator signal (i.e., a building as flexible grid resource).
    - Promote smart appliances that operate independently to ameliorate grid challenges (e.g., water heater with circuit for frequency and voltage anomaly response).
    - Promote controls for equipment that can support energy optimization strategies, both manual and automatic.
    - Coordinate with HECO to support utilization of DR-ready capacity.
- The EEM supported the ongoing pursuit of cost-effective energy efficiency: over the next five years, Hawaii should increase its investment in cost-effective energy efficiency and energy optimization (especially where it can lower supply costs).
- The EEM stressed the value of coordination with other actors in the energy sector: multiple market actors beyond Hawai'i Energy must coordinate their activities across silos to achieve the State's energy and climate goals in a cost-effective and timely manner. These actors include:

    - HECO – particularly in the areas of data sharing, identifying grid service needs, and coordinating DER planning and initiatives, especially with respect to outreach, incentives and tariffs,
    - Community organizations,
    - Professionals and professional organizations,
    - Military installations, and
    - State and local government agencies (e.g., State Energy Office) – particularly on the implementation of energy optimization in public buildings and the adoption of and compliance with energy codes and standards.
- The EEM described the importance of data access.
    - HECO, as the grid operator, needs data to assess the potential, operation, and optimization of distributed energy resources utilized to provide demand flexibility.
    - This will include time- and location-differentiated avoided costs and real-time demand data. The latter would be available through advanced metering infrastructure ("AMI") and/or building automation systems that communicate with HECO.
    - Depending on the extent of Hawai'i Energy's role in supporting grid flexibility, they will either need:
        - Data to properly target their efforts, define metrics, and assess their performance, and/or
        - Clear direction from HECO or others indicating what demand side resources Hawai'i Energy should support and the specifications of such resources so that those procured do meet HECO requirements.
- The group was invited to ask questions:
    - *Question: Seems like there is immense savings potential for future codes/standards for lighting (~500 GWh for combined residential and commercial). Are you envisioning a new state lighting standard? If so, could you share elements of such a standard?*
        - *Answer: AEG still sees significant lighting potential. With the repeal of the second phase of the EISA, that potential shifts from Codes and Standards to programs or possibly future standards. AEG cannot speak to whether or not the state is considering another standard. Particularly specialty lamps and others present substantial savings opportunities.*
    - *Question: Policy and support for activities to address time and location value, demand flexibility, etc. – could you give examples or more detail?*
        - *Answer: The commission has supported policy support through their approval of the Hawai'i Energy Triennial Plan. There are opportunities for pilots, for example targeting areas where the value of storage is better for customers and the grid. When it comes to evaluating savings by hour, we would need to ask the question of whether to focus on measures that have more value to the grid or to customers. This may be a topic for future TWG meetings.*

- *Question: Are there any full-scale programs in other jurisdictions that either provided significant cost-effective EE savings and/or helped to address concerns with affordability for low income customers that should be prioritized for consideration as pilot programs?*
    - *Answer: Hawai'i Energy has refocused their efforts on this, ramping up rebates that serve hard to reach segments. This will be discussed further at next week's Technical Advisory Group ("TAG") meeting. AEG does not have immediate examples, but can provide more research as a follow up.*
- *Question: Can you explain more about how energy efficiency could be treated as an optimizable resource in the IGP planning process?*
    - *Answer: We can develop cost curves and have efficiency resources and energy optimization in the mix. The IGP process and other planning processes take a variety of resources and optimize them against each other.*
- *Question: Given the emphasis on data access, is there any progress on requirements for or implementation of digital customer authorization for 3rd party data access and how important is that for 'market transformation'?*
    - *Answer: [From a Participant] For data access by customers and third parties, the focus has been on having the Hawaiian Electric Companies comply with Green Button Connect My Data standards.*

2:30 – Adjourn

- The EEM reminded participants that additional Hawai'i Energy program insights will be shared next week at the TAG meeting on October 8th.
- The EEM concluded the meeting and welcomed follow up questions and comments from participants.
    - If you have questions, contact Ted Pope at 510-462-0091, tedpope@2050partners.com.
    - Meeting materials will be posted on www.HawaiiEEPS.org.