

MEETING NOTES

Vermont Department of Public Service (PSD)
Innovative Rate Design Study
Rate Design Initiative – Workshop No. 3
April 16, 2020 (Online via Zoom)

General Notes

This was the first of the likely remaining workshops to be conducted virtually, using Energy Action Network's (EAN) Zoom account and the "chat polling" functions of slido.com (free account). Feedback was generally positive; EAN did a great job in promoting people from "attendee" (audio only) to "panelist" (audio and video). Riley provided an introduction and Jared gave a verbal reminder of the "rules" for interacting on the Zoom platform (which had been provided previously via e-mail). The following is a summary of the presentations that followed.

LSAM™ Updates (Reger)

- Updated demand elasticity
- Carbon accounting refinement
- "Dynamic" rate design
- Increased detail on Utility Cost Key Performance Indicators (KPIs)
- Increased model functionality from stakeholder feedback

Panel #1 (IRP and Utility Planning)

Speaker 1: Jared Duval (Energy Action Network)

Jared presented excerpts from the latest projection for carbon; suggested plans including 90,000 electric vehicles (EVs) and 180,000 water heater (WH) / combined cooling, heating and power (CCHP) units. Vermont's electricity contribution to greenhouse gas (GHG) has reduced dramatically from previous estimates due to increased renewable portfolio in the state.

Speaker 2: Josh Castonguay (Green Mountain Power (GMP))

Josh provided an update of GMP's anticipated load growth, which is generally flat; however, they see increases in electrification and EVs. GMP has managed EV load but does see significant "spring back" when control is lifted. Provided electrification saturation analysis (results provided to NewGen), but not seeing that level now. Constraints now on distribution system seen around photovoltaics (PV).

Speaker 3: Cyril Brunner (Vermont Electric Cooperative (VEC))

Cyril provided a summary of VEC's plans and need for upgrading their distribution system to address customer EVs. Currently, their Line Extension Policies require customers to be responsible for the costs of upgrades necessary for their increased level of service. However, they do not get any advanced notice

of EVs. Additionally, VEC has distribution upgrade requirements regardless of increased electrification / EVs.

Speaker 4 Hantz Presume (Vermont Electric Power Company (VELCO))

Hantz summarized regional transmission issues for Vermont, including an understanding of the transmission level capacity of the current system and what improvements would be necessary beyond that level. Current capacity would be met at high-end projections by 2030. Hantz emphasized the lagging nature of planning – requiring 5 to 7 years for many system upgrades. Hantz stressed that for the long-term nature of transmission planning, if the state were to see the types of load growth being forecast, action would be needed soon to dampen growth in peak demand to avoid the need to invest in new transmission infrastructure.

Rate Discussion (Burnham)

Rate design is a balance between tradeoffs and competing objectives, including customer winners / losers, efficacy in shifting load and managing costs, participation in rates / rate programs, increased complexity of rate offerings and regulatory mandates for specific rate designs. Opportunities for 3rd party entities may exist between the rate complexity and rate program offerings, to the extent utilities are open to such a business model.

Panel #2 (Innovative Rates / Rate Implementation Strategies)

Speaker 1: Freddie Hall (Burlington Electric Department (BED))

Freddie shared BED's experience with their off-peak EV rider. Their program is voluntary, and they see significant "snap-back" of EV load after the on-peak period ends. They have an "all or nothing" EV credit (for the month) that is provided to the customer provided they keep their charging off-peak. They have seen some issues with EVSE software but see a change in technologies for chargers coming (positive). They also see lowering upfront customer costs and education campaigns as effective for rate adoption. Freddie mentioned his belief that most EV drivers in BED's territory could get-by with a Level 1 trickle charger, but such a charger is not currently commercially available that would allow time-controlled charging.

Speaker 2: Rick Weston (Regulatory Assistance Project (RAP)®) (Moved to Speaker 3 due to technical difficulties)

Rick provided a summary of a Brattle Group analysis from 1997 – 2011, which related peak reduction to various rate strategies (Time-of-Use (TOU), Peak Time Rebates (PTR), Critical Peak Pricing (CPP), Real Time Pricing (RTP) all with and without smart meter technology). Technology assists with adoption and responsiveness of customers to price signals. He also presented results of a Sacramento Municipal Utility District (SMUD) CPP pilot, with opt-in / opt-out as variables; opt-in customers were eager to respond but opt-out resulted in more customers remaining after pilot complete. He also mentioned results of an analysis conducted specifically on more "vulnerable" customers, which suggested that such customers were not necessarily more adversely impacted by innovative rate design.

Speaker 3: Mary Sprayregen (Oracle / Opower)

Mary focused on the human behavior aspect of responding to rates / pricing; even with automation, the human element is critical for success. Most customers do not understand variable rates and fear overall

bill increases. Opower has had luck with “behavioral load shaping”; by providing rate guarantees as financial signals, allowing them to choose, and maximizing on-/off-peak rate differential. At a 2:1 rate differential, there was a 5% response, but at 4:1 rate differential, they saw a 10% response. She also emphasized the “rate coaching” aspect for residential customers as critical to success; building trust and engagement with customers is key to changing rates and behavior.

Speaker 4: Josh Bode (Demand-Side Analytics)

Josh presented insight into customer adoption, including various strategies (marketing, free technology, incentives, recruitment attempts, direct calls) that move customers along an adoption curve. Similarly, hassles and frequency of operations (calls for reduction) reduce the participation. Josh presented various study results for “blind” pilot studies from California Investor-owned utilities (IOUs), indicating that a “opt-out” or default recruitment approach had a much higher acceptance rate. ConEd (Chicago) piloted subscription rates, with and without overages, and found that incentives and direct mail / e-mail were effective. An extensive Ecobee study with 240,000 participants resulted in high acceptance rates for various rate offerings (TOU, EV) across different climate regions (Canada, California).

Speaker 5: Graham Turk (GMP)

Graham presented GMP’s experience with the eCharger program. They offered a free charger option (Level 2) with purchase of EV, a monthly charger rental rate option (if already owned), and an “unlimited” off-peak rate (fixed charge). Limited (5-10) peak events per month, 2-6 hours per event, customer notification 8-24 hours in advance. Used charger data for billing system; lots of outreach / education. Managed load reduced peak related costs, benefiting all customers. They had a low opt-out rate, including that small number of interruptions was effective. A free level 2 was critical for adoption to allow customers to realize savings quickly.

Speaker 6: Paul Hines (Packetized Energy, University of Vermont)

Paul presented opportunities and challenges for electric rate design from the perspective of an aggregator / grid edge flexibility solutions provider. He spoke about close to zero marginal energy costs (when renewables were high and load low) and zero to negative wholesale energy markets (ISO NE had zero pricing over Easter weekend during the COVID -19 pandemic). He suggested strategies to shift from sending prices to devices to allowing contracts to devices, to increase adoption and ability to respond quickly to changes in markets. He referenced cell phone type plans with various steps for usage / pricing (subscription).

Wrap Up and Next Steps (Reger)

Andy gave update on LSAM™ results with various rate strategies, including static TOU rates, flexible load events, and RNS capacity costs included during Critical Peak Events, compared to “status quo.” This resulted in significant annual savings (\$150M - \$200M) projected by 2040, the higher end of such savings being realized when the percentage of drivers with access to “at work” EV charging was increased from 10% to 50%. He presented May 21st as the next on-line workshop to present draft results, including recommended set of innovative rates / rate programs and management of implementation issues. Additionally, he presented June 25th as the final results workshop (presumably on-line as well). He also required assistance from participants for additional vetting of LSAM™ model parameters.

Steering Committee Session After Workshop

- Feedback from workshop was good – topics were broad, but insightful speakers.
- Good alignment between end user responsibility to system costs.
- 2019 EV adoption is in mid-level of forecast.
- Subscription rates seem to be a potential solution for more than just EV.
- Storage as a cost effective mechanism should be considered (see Lawrence Berkeley Lab – Phase II report (Steve, SunRun)
- CCHP/WH technology generally has back up mechanisms that are fossil fueled, so cannot lean on them too much.

Action Items from Steering Team Meeting

- NewGen to send draft report outline to Department by May 1st.
- Need to have Technical Group feedback by May 5th.