NewGen Strategies & Solutions

MEETING NOTES

Vermont Department of Public Service (PSD)
Innovative Rate Design Study
Stakeholder Engagement Meeting December 12, 2019

Meeting Objectives

- Introduce the Innovative Rate Design Study (Study);
- Discuss objectives, purpose, and overview;
- Present industry rate design trends;
- Provide overview of the Load Shape Analysis Model (LSAM™); and
- Facilitate breakout sessions on industry challenges and opportunities, as well as key performance indicators (KPIs) and critical success factors for the Study.

Summary of Discussion

The Vermont Department of Public Service (PSD or the Department) opened the meeting with a discussion of why they are developing this Study, the overall goals and priorities of the Department, and anticipated outcomes for the Study. From the Department's perspective, the broad objective of the effort is to foster new rate designs that create better alignment of retail price signals with system costs. The product of such efforts should contribute to the State of Vermont's (the State or Vermont) objectives for lower costs, greenhouse gas (GHG) reduction, and economic opportunity. Expected outcomes of this effort are rate design principles or approaches that lead to lower cost, rates, flatter and more flexible loads, new business models and agents, more distributed generation and renewables, and GHG benefits.

Jared Duval with Energy Action Network provided an update and review of Vermont's energy burden (including electricity's portion), and related GHG emission by sector and projections relative to its goals. Ken Jones with the Vermont Agency of Commerce and Community Development gave a few comments relative to large electricity users in the State. Ken mentioned that large users want to see rate designs that help to reduce system costs and benefit those customers that are responsive to price signals capable of delivering the benefits. One possibility is the re-consideration of incentive rates that allow for business expansion and spreading out fixed system costs. Ken notes that any rate changes will inevitably result some winners and losers within a class. This concern is especially relevant over shorter time periods.

NewGen Strategies and Solutions, LLC (NewGen) presented the remaining agenda for the meeting, an introduction to the NewGen team and background on the company, and re-iteration of high-level Study objectives and timeframe. We then introduced the Stakeholder Engagement Workshops, including the anticipated outcomes and expectations for the day's meeting, as well as a schedule for the remainder of the Study. We discussed that Workshops #2, #3, and #4 would focus more on the analytics of the Study and would include a sub-set of the attendees at this meeting (the Working Group), and that one or more of these events may occur via a webinar or other on-line forum. Workshop #5 is anticipated for May 2020

and would present the culmination of the Working Group's efforts (see discussion below on schedule for future workshops).

We discussed rate design trends for the industry and Vermont, which was augmented with comments from selected utilities present at the meeting – Burlington Electric Department (BED), Green Mountain Power (GMP), Vermont Electric Coop (VEC), and Washington Electric Coop (WEC).

BED mentioned their Demand Response programs, including active and passive Electric Vehicle (EV) programs and rates; their Time of Use (TOU) rate design; their actively managed Load Control devices and how they are looking at a "roadmap" to the future, including specific devices such as "smart cords" for EV charging; and other applications from internal research and development funds. BED mentioned concerns about how long they can discount certain rates and programs (distribution costs are increasing with more EVs), as well as how long existing market rules would exist at ISO-New England (ISO-NE) (as changes in market rules could have negative impacts on proposed rate structures or decrease their effectiveness). BED later expressed some frustration with storage companies advertising that they can save on Regional Network Service (RNS) transmission costs when the state's total transmission revenue requirement is essentially fixed and then allocated to the state's utility based on load; you cannot immediately reduce the state's total transmission costs based on shifting load around, but you could delay or defer future investment in Transmission capacity if you reduce long-term growth in peak demand.

GMP provided a summary of its current "innovative" rate offerings, including its residential and commercial applications of TOU, Critical Peak Pricing, as well as pilots that it has in place for battery and thermal storage; EVs; fixed monthly charge (i.e. subscription, or "Netflix" model) rate programs; individualized power supply aggregation, using batteries as a meter; and various net metering programs. Lessons they have learned include the importance of size of capacity that may be shifted; and that for most Commercial / Industrial (C&I) customers, their core competency does not include a focus on electricity pricing.

Further, GMP indicated they are seeing greater awareness of customers interest in becoming part of the "solution" to solve grid issues. This "part of the solution" benefit that customers are reporting is an additional benefit and value realized by customers (e.g., non-economic); it should be further leveraged by utilities / organizations in marketing or increasing awareness and branding of rate making with the general public and stakeholders. GMP also noted that typically, customers whose unshifted load receives beneficial rate treatment under a certain program will move to that program and "win" without making any change; and those that would "lose" do not opt into programs. .

WEC indicated that it is still dealing with integration issues regarding Net Metering rates, and that the complexity of managing the program causes them to have to "handbill" some accounts. They have seen an increase in the time required to explain complex billing to customers. Further, customers do not understand the state rules and blame the utility for what they perceive as the utility "messing up" the billing process. They perceive a requirement of substantial customer education to keep customers engaged in these programs. WEC mentioned they are in a situation of declining energy sales and rising expenses and looking at multiple years with significant rate increase (4-6% range).

There was alignment among the utilities that billing systems or customer information systems (CIS) can pose a significant barrier to implementing new rates or providing greater flexibility. The feedback on upgrading CIS was aligned in that moving to more sophisticated billing systems is a lengthy process that

can take at least three years to complete. VEC indicated that many of its early adopters dropped out of innovative rates, and they are focusing on simplicity in billing (and simplicity in bill credits for various programs). They mentioned a need for a balanced approach to rate design between fixed components (customer charges) and energy rates to recognize impacts on low users.

Several non-utilities spoke regarding specific issues / concerns. The Regulatory Assistance Project stressed decarbonization policies and potential decoupling strategies. Peck Electric emphasized incentives for EV installation and higher energy rates for Net Metering, and that the state should seek a solution for solar / storage that included a higher rate of compensation to the customer. Dynamic Organics (aggregator) indicated that C&I customers should look at non-chemical storage options and focus on avoiding peak periods. They indicated a need for an architecture for DER so the customer is not exposed to undue complexity (for TOU / complicated discounts). Vote Solar advocated for balance between rate complexity from utilities and a desire for simplicity from customers, and questioned the overall goal of rate design, if it's a pricing strategy or other goals (per Bonbright).

The Department suggested that the messaging on rates seemed to be to allow simplicity but also system value. Traditional uniform usage rates and even a buffet-style monthly fee without an energy charge (regardless of energy consumption, or the "subscription model") provides certainty, but perhaps removes pricing signals for energy efficiency. Utilities can augment simpler pricing plans services through utility system controls, perhaps in exchange for a discount to compensate customers for participation. At the other extreme, third-party aggregators can help customers manage fairly complex or dynamic pricing signals. Customers ultimately can realize lower costs and simplicity, while aggregators harvest value through load arbitrage or the sale of services to the distribution utility or upstream to ISO-NE.

NewGen provided some explanation of its LSAM™ model and the various areas of potential savings that could be quantified from changes in rates and resulting changes in customer behavior, including adoption of the various technologies included in the Study. This discussion included history of ISO-NE power supply pricing and relative time shifting of the system peak. This also included a review of the traditional relationships between Rate Design, Financial Planning and Resource Planning / Load Forecasting, and how this Study will utilize LSAM™ to inform those relationships in a quantitative assessment in the short-term (3-5 years), mid-term (5-10 years), and long-term (10+ years). NewGen also provided a quick demonstration of LSAM™.

Breakout Exercise #1 – Status of Rates in Vermont

The questions asked of the six groups (formed by randomly assigning members to a table), included the three biggest opportunities for using innovative rates to create value, the three biggest implementation challenges, and if members of the newly formed group were in alignment in responses. A summary of the responses is below.

Opportunities

- EVs
- Electrification - Heating/Cooling applications
- Various areas of costs
- Constant price signals
- Awareness, but not attention by customers

- Manual charging (EVs), the "grid works best when priced accordingly"
- Storage offering
- Smart programs (EV)
- Combining renewable with storage in a rate offering
- Energy market reach
- Environmental costs / benefits
- Marginal revenue > marginal costs
- Allowing market actors
- Rates can provide benefits (phase in)
- Opportunities to couple demand / TOU
- Demand charges
- Increased customer engagement.

Challenges

- Complexity
- Equity (low income)
- Uncertainty
- Lack of consistent price signal
- Not wanting to "overwhelm" customers
- Costs (investment and opportunity costs)
- Flexible loads
- Billing systems
- Institutional / political challenges
- Fairness
- Volatile cost shifting
- Retrofitting / fuel switching
- Customer trust
- Difficulty / expensive to change (in short-term)
- Data management
- Insufficiency of rates to drive change
- Communication of rates to market actors
- Proving rate relationships to load shape
- Excessive administrative costs
- Getting customers interested in rates despite relatively low bill savings
- Improving customer relationship
- How DERs will be owned / monetized
- Quantifying actual vs. theoretical benefits of DERs/strategic rate design
- Lack of control of ISO-NE and other wholesale pricing

Alignment

There was a lot of alignment regarding challenges and overall within the group. In some areas there was mixed alignment.

The response to the question if utilities are seen as a "trusted advisor" was that on the customer side of the relationship it was more nuanced. There is a desire to want to deploy the "free market" and allow creativity to thrive. However, most residential customers do not want to play. There was a question of how the utility allows third party participants, and that the utility needs to set what is important. It was recognized there is a lot of work to be done and that it will require collaboration between all parties (regulators, utilities, third parties, and customers).

Breakout Exercise #2 – Key Performance Indicators / Critical Success Factors

The same groups were asked to review the KPIs provided in handouts (randomly assigned to either short-, mid-, or long-term evaluations (Case Study), which included theoretical printouts from LSAM™). An additional question regarding critical success factors or "fatal flaws" related to the Case Study were provided. Results by Case Study are below.

Long-Term (10+ Years, Resource Planning Horizon)

Key Performance Indicators

Feedback on the initial KPIs included expanding some of them (such as related to GHG) to include cost and GHG emissions of total energy usage (including electricity, gasoline, or other fossil fuels for space conditioning). There was a recommendation to develop a "baseline" condition, such as a price per kilowatt-hour (kWh), as a baseline KPI to compare future states. Additional suggestions included: an average bill (residential), outage events, kWhs sold, and changes in GHG/kWh in Vermont.

- Changes in system Load Factor
- Reductions in power supply / transmission costs may not follow (need to maximize benefits)
- Adverse impacts on parts / sectors of economy
- Energy burden (total)
- Equity questions
- Maximize flexible loads

Critical Success Factors

- ISO Market mechanisms / Coincident Peak (CP) and Non-Coincident Peak (NCP)
- Upgrades for distribution systems / more robust system to support DERs (fatal flaw)
- Greater green integration in Eastern region of the United States and beyond
- Expansion of balancing authority / areas
- Battery storage at ISO-NE
- Sharing of benefits across sections
- Peak reduction (rate design that reflects market costs)
- Capacity at ISO undermines efforts (ERCOT has no capacity market, ISO-NE does)

Mid-Term (3-10 Years, Financial Planning Horizon)

Key Performance Indicators

- Unintended consequences of too narrowly a focus on electric – need to expand to incorporated total energy
- GHG will go up with increased load but offset by decreases in fossil fuel usage
- Total Energy usage / total GHG is top two KPIs

- Power Supply / Transmission costs, load factor (system) are less important
- Renewable integration (how much renewable is forcing fossil fuel "off-line)

Critical Success Factors:

- Energy burden
- Equity issues (ability for people to participate)
- Balance is important

Short-Term (1-3 Years, Rates Implementation Horizon)

Key Performance Indicators

- Flexible load metric
- Determine various metrics for thermal energy, chemical energy, and desirable load
- Provide load factor metrics – CP Load Factor, System Load Factor for transmission / distribution
- Measure financial costs incremental to customers
- Look at $/fossil fuel imports (multiplier effects)
- Financial savings – comparison / trending (year-to year?)
- Add distribution costs to Power Supply / Transmission costs
- Look at incremental growth in PV (extra load, such as storage)
- Unitize on kWh basis
- Metric of average system costs
- Change in System Load Factor

Critical Success Factors

- Distribution upgrades
- Increase in revenue requirement
- Controllability of new load, interoperability, and renewability

Decisions Made

- Set dates for next series of Stakeholder Engagement events:
  - Workshop #2 – Tuesday, January 28, 2020
  - Workshop #3 – Tuesday, March 17, 2020 (Potentially on-line / Webinar)
  - Workshop #4 – Thursday, April 16, 2020
  - Workshop #5 – Thursday, May 14, 2020
- Solicit volunteers for LSAM™ "Working Group" (sign-up sheet was passed around by Department)
- Equity becomes an output from other KPIs

- Indicators may go in the "wrong" direction, need to prioritize
- Need to draft outline of report to help guide future workshops

Outcomes of Study Goals / Objectives

- Initiated Phase 2 (Stakeholder Engagement)
- Feedback from Department was that participants were engaged and very interested in the LSAM™ output / process

Outstanding Items / Next Steps

- Department to review LSAM™ first two weeks of January
- Provide LSAM™ to Working Group prior to next scheduled Stakeholder Engagement

Implications for Utilities and the Department

At the end of the meeting the Department responded to a question about how these meeting will bear on utility regulatory responsibilities and Department advocacy:

- IRP -- Rate design is increasingly recognized by the Department as a component part of least cost service delivery. The Department expects that beneficial electrification will bring new pressures on the system. That was part of the earlier conversation. Rate design creates opportunities to both capture the benefits and minimizing adverse system impacts from unmanaged loads. At this juncture, the Department believes that this process will provide guidance for future rate design inclusion in future utility IRPs.
- Policy Reform -- Some policy guidance may be needed from either the Commission or the Legislature to ensure that rate design is recognized broadly as an essential part of delivering on state policy objectives and lowering costs (and rates). This process is expected to inform future policy formation and guidance around rate design that may have relevance for all utilities. The Department anticipates that this process may lead to future legislative initiatives or regulatory policy reforms.
- Transparent Advocacy -- Beneficial electrification is not without hazards. Utilities can be expected to rely on sensible rate design solutions as a component part of meeting their obligations for service delivery. Failure to recognize the opportunities and manage the risks, will likely surface on many fronts including rulemaking proceedings, rate design proceedings, project approvals, and in rate cases. The Department believes that this workshop process will provide constructive, potentially pivotal, reference materials that guide utilities and Department advocacy in service of a more transparent regulatory environment.