Xcel Energy Alternative Rate Design Pilot
Broad Stakeholder Engagement Meeting

Meeting Notes

May 5th, 2017
1:00 pm to 5:00 pm

Meeting Location
The Wellstone Center – Neighborhood House
179 Robie St E, Saint Paul, MN 55107

This document provides a synthesis of remarks by presenters and attendees. No view should be attributed to any specific individual or organization.

Contents

I. Best Practices in Time of Use Rate Design Pilots (Lon Huber)

- **Key terms**
  - TOU – Time of Use. Rates that vary by time of day and day of the week. TOU rates are intended to reflect differences in underlying costs incurred to provide service at different times of the day or week (definition from *Electricity Regulation in the US,* by Jim Lazar at Regulatory Assistance Project)
  - CPP – Critical Peak Pricing. An extra charge that goes on top of the peak rate TOU, for only certain days. Can be layered on standard or TOU pricing.
  - CPR – Critical Peak Rebate. Incentive where you have a baseline, and if you save off of that baseline, you get a credit
  - PCT – Programmable Controllable Thermostat
  - "Snap-back" – Refers to the demand spike seen after the higher rate time block has passed. Customers wait to use energy, or pre-cool their indoor air temperature, and then turn everything back on when the peak period ends.

- **Key questions for TOU pilots**
  - How do customers interface with the rate? Opt-in vs opt-out.
  - How do you communicate to and educate customers?
  - How do you determine the baseline and evaluate success?

- **Notes on pilot examples**
  - Salt River Project – nobody wanted to be on the late time block.
  - National Grid – opt-out project
    - Broad array of technologies available.
    - Included both active and passive
    - Focused on saving energy and addressing peak demand – balanced both objectives.
    - Lessons learned: customers did not like being called too frequently
  - SMUD (Sacramento Municipal Utility District)
    - Opt-in and opt-out side-by-side
    - Helpful, phenomenal program with positive results
    - Showed the benefits of an opt-out program: the potential is lower per customer but the sheer volume makes up for it
    - Responses to TOU rate depended in part on where people lived, which was influenced things like climate
  - CA pilot had demand savings but this did not translate to bills
  - APS (Arizona Public Service)
    - Tailors communications and solutions to load archetypes (e.g., 'steady-eddies' and 'twin peaks')
  - Oklahoma
    - Advanced, innovative variable peak pricing
    - Set up to avoid investing in new generation
    - Funded w/federal dollars for hardware and other support components
  - Ever Source
    - Consumers dropped out because the technology failed
  - Ontario
    - Low bill savings; poor communications.

- **Overall Recommendations**
  - Use TOU to leverage existing programs
  - Look at different tools – website, mobile apps, etc. to enable different ways to communicate savings opportunities.
  - TOU rates can be a springboard to enable customers to manage their energy.
  - Decide if this is a one-off or how it could inform larger rate programs.
  - TOU rates can be BOTH consumer-friendly AND reduce demand.
  - Saving capacity related costs can help all customers save money.
  - Key impacts on customer participation include communications frequency, events happening too often, communications quality/options, and technology ease-of-use.
  - Consider a 'friends and family' test run before deploying the pilot to address any issues with roll out.

- **Questions**
  - How do you measure customer savings?
    - Need to have customer hourly or 15-minute data and run that through the basic rate plan
  - How do you handle decoupling?
    - Depends on if decoupling factor goes up or down
    - Participant savings overcome the decoupling adjuster
  - Beyond demand reduction and energy savings, what are the outcomes for emissions reductions and dollar savings, both for the utility and the customer?
    - These programs are about saving capacity-related costs for all ratepayers. Participating customers like to be able to change behavior to save money, but everybody saves money over the long run by reducing peak demand on the system.
    - Demand Response doesn't necessarily reduce overall demand – it's more about reducing or eliminating the need for expensive assets. There is also a reliability component, in that having this in place can reduce the risk of brown-outs.
  - What is the ability of low income customers to participate, and how does this affect them?
    - The pilots have shown mixed results. The latest studies from California show about half the response rate of traditional customers, while other studies show that they're more engaged. Lon's guess is that the mixed results have to do with opt-in and engagement practices.
  - In the SoCal Edison example, they had an off peak during the day, and another at night (slide 26) – could you explain more about this?
    - The signal they wanted to send is that during mid-day hours, there are negative marginal prices. They were encouraging customers to use their load during these times when energy was cheap. Spring daytime is the season for over-generation in California – there's lots of hydro, low load, and high solar output.
  - What do pilot failures mean for customer engagement after the pilot, and how do we address that?

        - Lon suggests a friends and family pre-test – reach out to customers who are close to the utility (or part of the energy industry), and unlikely to be disappointed at initial failures, to run a small test.
        - Sometimes when pilots fail, the response from the commission is to cancel the rate altogether.
    - What are best practices for outreach to low-income communities or those with language barriers?
        - Partner with local organizations and adapt marketing materials for targeted outreach. Also utilize frequent surveying – deploy surveys at multiple stages, including before and after the pilot. This can help to make sure that everything is working and that customers are understanding the process. It can also prove whether customers have learned to effectively adjust their usage patterns.
    - What about pricing signals for overgeneration – could this have an impact on emissions?
        - Yes, for states dealing with overgeneration from renewables, TOU could be a good solution, though this is not yet widespread.
    - What about the impact on customers with rooftop solar?
        - This has not been widely studied. Often, pilot participants cannot have solar due to challenges around metering and billing infrastructure. This can also throw off the pilot findings because customers have generation on-premise. One pilot included customers with solar, but it was too small of a group to effectively measure the results. In some utility territories, these customers may be too small a group to warrant including in the study at all.
    - What about commercial customers on peak demand?
        - Large commercial customers tend to be easy to engage, but small commercial customers can be difficult. However, there are pilots and programs out there that have done this successfully.
        - For some commercial customers, there may also be a challenge in that the time periods are based on *system peak* rather than customer demand peak. The peaks may not coincide with a business' needs.

II. Xcel Energy's Alternative Rate Design Pilot in Minnesota and Similar Pilot in Colorado (Amy Liberkowski, Steve Wishart, Kerry Klemm)

- **Current TOU rate in Minnesota**
    - History of TOU in MN – Xcel has had a TOU rate since 1979. In 2002, there was a TOU pilot that was cancelled before completion.
    - Current TOU design in MN -- on-peak period is 9am-9pm (off peak 9pm-9am). No penalty for going on or off the rate.
    - Currently 525 residential customers on TOU in MN. Not tracking how many are EV owners. Xcel does not do marketing for the rate.

- Saver's Switch is also a form of time-based pricing. Customers get a discount June-September in return for A/C cycling.

- **Colorado pilot**
  - Two rate options – Demand-based Time Differentiated Rate (TDR) and Time of Use (TOU)
  - 3-year pilot. In December 2019 Xcel will make a report to the CO PSC on the results of the pilot.
  - Demand-TDR: "Time Differentiated Rate"
    - 2 demand charges – one for distribution, another for generation and transmission (different summer and winter)
      - Distribution charge measured 24/7, according to the highest 1-hour demand period.
      - Generation and transmission charge measured 2-6pm, according to the highest 1-hour demand period.
      - Excludes weekends and holidays
    - Cost causality – At the distribution level, it doesn't matter when you peak because the need for capital investment is localized, more at the neighborhood level. So the distribution demand peak is measured 24/7, except on holidays (4th of July, for example).
    - Mimics commercial peak demand very closely
  - TOU
    - 3-part rate (different summer and winter)
      - On-peak 2-6
      - Off peak 9pm-9am
      - All other hours are shoulder
  - Rates designed to be revenue neutral – so some will win and some will lose.
    - Low income indemnified -- gets billed lower of EITHER old rate or new one.
  - What is current standard residential rate?
    - Inverted block rate (no demand charges)
    - Note that when you move away from inverted block rates to TOU, it can hurt the lower volume users because it brings them back up to the same level.
    - Tried to layer TOU with tiers (like inverted block) but it became too complicated.
  - During winter, the peak shifts, so considered changing peak period for winter but decided not to.
  - Need to base the peak period on *system load* (all customers) rather than just residential load.

- **Marketing and Program Operations Overview**
  - CO pilot objective: measure how customers respond to TOU and time-demand based rates.
  - Went through a very abbreviated settlement process. Some parts of pilot design were determined by the settlement, including…
    - Customer opt-in

        - Meters – are cellular, but a truck must drive streets to collect information. No real-time metering. (Note that Minnesota already has daily usage information from meters. CO customers didn't have this prior to entering the pilot).
    - Measurement and verification – challenge is how to measure differences between participants and normal users (in consideration of Lon's warnings about bias in sampling)
        - Hired 3rd-party Measurement and Verification (M&V) expert to design measurement of design BEFORE doing RFP for pilot evaluator.
        - 7 different segments being tested and need a statistically significant number in each group:
            - Need to enroll 44,000 customers over 14 months (3,000 per month). Can't do more because the metering folks can only keep up with that rate at most.
            - Need roughly 3,000-4,000 customers per segment for valid M&V results
    - Had focus groups and stakeholder input for naming the rate options (and stakeholder input). Landed on "Peak Demand Pricing" and TOU.
    - Customer research insights:
        - Customers generally don't understand how various devices and behaviors impact their overall bills and energy use
        - Customers found it VERY appealing to be able to choose whether they were in the control vs. test group
        - Needed to present a simple explanation of demand. This helped to inform the video script: https://youtu.be/EpyRm3UfFQA
        - Customers were surprised that the utility didn't already have real-time metering
    - E-mail outreach tripled enrollment rates – hard to tell if that was early adopters or not
    - Questions:
        - How is this marketing different from other marketing campaigns?
            - Doing a 60-day test on marketing campaign
                - Will use this to determine plan and budget for the rest of the pilot.
            - Energy efficiency campaigns tend to be more targeted, whereas this is more broad-based.
        - What is the marketing budget?
            - Minimum of $1.5 million, based on Windsource marketing budget.
            - Ran some early tests and identified that initial marketing performed well, but not sure if that was due to early adopters.
        - What's your strategy for customers who don't have the internet or smart phones?
            - Direct mail
            - Agencies and community partners promoting on Xcel's behalf
            - Can sign up by phone
        - Will customers have a rate comparison tool?

        - Not initially, because trying to manage attrition and don't want a bad month to cause customers to drop off.
    - Created a new solar incentive for customers signing on with NEW solar, but only 1 customer has applied so far.

III. Panelist Comments (Will Nissen, Annie Levenson-Falk, Ron Nelson) and Group Discussion

- **Goals**
    - We need to clarify the goal and the trade-offs that we want.
    - Rates should be based on cost causation, but that can be altered to meet policy goals. For example, facilitating more efficiency and renewables on the system.
    - How can rate design encourage efficiency and renewables on the system? In MN, how can rate design encourage higher integration of wind? How can we shift toward usage wind at night?
    - For super off peak – how can we not only get peak demand reduction, but encourage customers to shift demand to when renewable generation is highest and least cost?
    - Energy use reduction is in service to bigger goals – what are those?
        - Cost savings to utility and customers
        - Environmental goals

- **Customer Engagement and Impacts**
    - Strong concerns about residential demand charges and applicability and effectiveness. Would be willing to go deeper on that topic in particular.
    - Provide visibility to customers so they know WHEN their peak demand occurs and WHY. Customers need info to be able to respond.
    - Roll-out is important. Marketing and outreach is critical.
        - Earlier presenter stressed simplicity in price signals – can develop the best price signal but if it isn't communicated well it won't be used.
    - Lesson from CO -- Be careful not to get caught up too much in creating a statistically significant pilot – a lot can still be determined from a pilot that is not statistically significant.
    - Xcel has access to a lot of data to be able to divide costs by class.
    - Understanding that some requests may not be achievable once you consider the marketing logistics, still want consideration for specific groups – for example, renters, low-income, and seniors.
    - Will this reduce the livability and quality of life of customers?
        - We've made a lot of technology advances – they now make devices that can be controlled to match a TOU situation, and set so that customers don't need to be constantly thinking about it.
        - Saver's Switch is a good example of a program that customers don't need to think about (and that doesn't bother them because the control happens in small increments)

        - Some other customers, like EV owners, WANT a major off-peak rate so that they can save money when charging their vehicle.
    - What's the rate at which customers can realistically learn new technology? If you have a new smart meter, and thermostat, and a new billing method, what's the limit or capacity?
        - MA – some customers didn't want AMI because they didn't understand the tech, and didn't understand the benefits of it (and they needed the tech to put them on TOU).
            - This is the "TOU Platform" concept – get the base rate down, and then figure out how to link up to DSM, wind programs, special pricing, etc.
            - Even one technology can be too much depending on when and how you roll it out.
        - Illinois had 2 fears arise, to the point that some customers were willing to pay NOT to have AMI installed:
            - Fear of utility tracking in-depth data about customers
            - Fear of the devices themselves
    - From an economics standpoint there are already winners and losers – for example, the current system is unfair because customers are causing system costs that they're not paying for. That's why there's push-back from an opt-out approach. But if they can opt-out back to a flat rate or low-income rate, that's a more efficient (targeted) way to address those issues rather than through a postage stamp rate
    - For a large part of the population, they don't care about the details and the amount of money isn't enough to drive behavior change.
    - Need to anticipate how customers use their energy in the future.

- **Design Features**
    - Interested in looking at TOU as the base, with Critical Peak Pricing (CPP) layered on top.
    - Can we do shadow billing for customers? If so, who is likely to benefit? Who is likely to see bills go up? For whom are these rates not appropriate? Who should opt-out and how do we make sure that customers do that if this isn't a fit for them?
        - Would like to maintain CO model of holding low-income customers harmless.
        - Conflicting evidence (as Lon said) about how TOU rates impacts low income customer bills. Would like to get more information here.
    - Opt-in vs opt-out
        - There will always be selection bias in an opt-in approach. Can get around it by throwing a lot of money at it, but at that point the money may be better spent on an opt-out approach.
        - If we're trying to look at the goal of overall system costs, that DOES reduce the costs for all customers. Having the opt-out rather than opt-in enables the impacts that are meeting the goal of reducing system costs to benefit everybody
        - California regulators asked for an opt-out approach – why is that?

                - Risk aversion. But you can set it up so that customers know what they're getting into.
                - Can also do opt-out for TOU, and then opt-in for additional features like Critical Peak Pricing
    - Ideally it would be nice to design a rate that benefits the majority of customers, and then can target the ones it doesn't benefit
    - 70/30 principle – should have a design that targets benefits for 70% of the population
        - Understand as robust a detail as cost, the marginal emission impacts of a TOU rate. AND how can we drive RE through TOU?
        - Whose peak is it?
            - System peak
            - Class peak – drives distribution costs
    - Need to clarify the goal of the TOU rate to decide on design features

- **Requests for More Information**
    - Would be helpful to see studies showing which customers are driving the system peak demand, and then what the rationale is for doing peak demand reduction programming for specific customer classes, including…
        - What is driving the demand?
        - Which class is driving what demand? Measure who can and is responding to different rates?
        - Is demand or energy usage reduction in service to a larger goal?
        - What are the cost savings to the utility and the customer?
    - WHAT is the current status of the metering infrastructure and software?
        - Xcel doesn't know and still evaluating.
        - Should core stakeholder group explore this?
            - Xcel first needs to get more info about what capabilities they have right now.
            - What's actually available and installed? What could be done without installing AMI?
        - How do AMI investments pencil out on bills? Is it a huge change?

- **Process and Timing**
    - We should get experience with TOU for a period of time before we introduce additional things or consider demand charges.
    - Need to have a clear and transparent process, including the cost design and communications and marketing. Also need to know who is driving it and what the objective is. This helps non-technical customers get involved and can drive stakeholder and customer buy-in.
        - How do these processes happen in other states? Are they customer led or driven by utilities? Environmental groups?
        - And what are the results of those processes? In other words, is there research to show how the *process* determines the success of the pilot design, rather than just the design elements itself?
    - What is the timeline for the MN pilot?
        - Have built in more time to gather input that they have in CO.

        - What's undetermined is the appropriate length of the pilot. Need to balance ability to measure and ability to launch.
        - Lon – 2 years seems to be the right rough length of time to manage attrition. SMUD's pilot had 25% dropouts because customers were moving away due to recession.
        - Need to cover a full year to get all seasons. And need a ramp-up period, so needs to be longer than a year.
    - What happens AFTER the pilot? Often it takes a year or two to evaluate, and then you've lost continuity with those customers. INSTEAD, we should think of it as a phased roll-out, the "pilot" just being the first phase.
        - In CO, the idea is that one of the two rates will become the normal rate for everybody.
        - Additional folks seemed to agree on this point. Also more cost-effective if it's long-term
        - BUT part of the idea of a pilot is that it may not go according to plan.
            - This isn't necessarily new – alternative rate designed are happening everywhere
            - "a phased roll-out of what's now a well-established activity."
        - Phasing-in is really about helping the UTILITY learn, as well as the customers.
        - We're beyond deciding WHETHER to do TOU rates. Now we're just figuring out HOW to do them in a way that meets our goals.
        - Think of rate design as a linear process – start educating customers with intent being to have a robust program 10 years down the road. In MN we're starting from zero from a customer education standpoint.
    - Need to think about attrition as part of the project. DON'T roll it out at the same time as a rate increase. Do it in the spring so that you have two full summers. This is what they did in CO.