

Update on EPE's Time Varying Rate (TVR) Pilot

Advisory Group Meeting #4

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Objectives of Today's Meeting

- Recap pilot design parameters from previous meeting – rate design, bill impacts, pilot design approach, sample sizes
- Present planning elements of the pilot
- Present next steps

Agenda

1. Recap of Proposed Rates
2. Recap of Bill Impacts
3. Pilot design approach
4. Recap of Estimated Sample Size
5. Pilot Planning Considerations
6. Timeline for Filing
7. Questions

TVR Options – Recap

- We propose to test **eight treatments**
 - Include residential and small general service classes
 - Also include low-income residential customers as a separate subgroup and offer TOD rates for this subgroup
- Pilot peak windows were determined as a result of a data driven approach analyzing:
 - EPE system load and class load profiles
 - EPE’s embedded cost of service
 - Marginal energy costs (system lambda)

Proposed Treatment Cells

Customer	2-period TOD	2-period TOD + demand charge	2-period TOD + CPP	2-period TOD + CPP + enabling technology
Residential Low-Income	✓			
Residential	✓	✓	✓	✓
Small General Service	✓	✓	✓	

Season	Peak Period	Off-peak Period
Summer (June-September)	2-7 pm MDT (HE 15-19) on weekdays	All other hours
Winter (October-May)	--	All hours

2-period TOD Rate

- Rate design considerations
 - Volumetric rates (\$/kWh) are reflective of Generation, Transmission, Distribution costs in all periods based on cost drivers
 - Peak period results in a larger share of costs due to underlying cost drivers
 - Monthly customer charge is maintained at its current level
- Rates have strong price signals encouraging customers to shift load to off-peak periods
 - **4:1 Peak/Off-peak** for residential
 - **3:1 Peak/Off-peak** for small general service (SGS)

Residential

4 : 1 Summer Price Ratio

NM Residential		Proposed	Current IBR
Summer			
On-peak	\$/kWh	0.28396	-
Off-peak	\$/kWh	0.07099	-
Tier 1 (First 600 kWh)	\$/kWh	-	0.06999
Tier 2 (Over 600 kWh)	\$/kWh	-	0.10840
Winter			
Off-peak	\$/kWh	0.03301	-
Flat	\$/kWh	-	0.05782
Customer Charge			
Customer charge	\$/cust/mo	7.00	7.00

SGS

3 : 1 Summer Price Ratio

NM SGS		Proposed	Current	
			Standard Rate	Alternative Rate
Summer				
On-peak	\$/kWh	0.32693	-	-
Off-peak	\$/kWh	0.10898	-	-
Demand Charge	\$/kW	-	18.63	-
Energy Charge	\$/kWh	-	0.03963	0.10941
Winter				
Off-peak	\$/kWh	0.04049	-	-
Demand Charge	\$/kW	-	13.93	-
Energy Charge	\$/kWh	-	0.01152	0.07441
Customer Charge				
Customer charge	\$/cust/mo	14.00	14.00	14.00

Notes: Summer = June 1 - September 30, Winter = all other months.

2-period TOD + CPP

- Rate design considerations
 - Critical Peak Price will be active during the 5-hour summer peak period for **20 event days** in summer
 - CPP rate presented in the table is the total effective rate during the CPP period
 - CPP period is assigned the majority of the marginal generation capacity costs, and also reflects costs related to other functions such as transmission and distribution
 - Maintain a reasonably high CPP/off-peak and a meaningful peak/off-peak price ratio
- Rates have strong price signals encouraging customers to shift load to off-peak periods
 - **10:1 CPP/Off-peak** and **2:1 Peak/Off-peak** for residential
 - **8:1 CPP/Off-peak** and **2:1 Peak/Off-peak** for SGS

Residential

10 : 1 CPP Price Ratio and 2 : 1 Summer Price Ratio

NM Residential		Proposed	Current IBR
Summer			
Critical Peak	\$/kWh	0.68096	-
On-peak	\$/kWh	0.13619	-
Off-peak	\$/kWh	0.06810	-
Tier 1 (First 600 kWh)	\$/kWh	-	0.06999
Tier 2 (Over 600 kWh)	\$/kWh	-	0.10840
Winter			
Off-peak	\$/kWh	0.03413	-
Flat	\$/kWh	-	0.05782
Customer Charge			
Customer charge	\$/cust/mo	7.00	7.00

SGS

8 : 1 CPP Price Ratio and 2 : 1 Summer Price Ratio

NM SGS		Proposed	Current Standard Rate	Current Alternative Rate
Summer				
Critical Peak	\$/kWh	0.79827	-	-
On-peak	\$/kWh	0.19957	-	-
Off-peak	\$/kWh	0.09978	-	-
Demand Charge	\$/kW	-	18.63	-
Energy Charge	\$/kWh	-	0.03963	0.10941
Winter				
Off-peak	\$/kWh	0.04172	-	-
Demand Charge	\$/kW	-	13.93	-
Energy Charge	\$/kWh	-	0.01152	0.07441
Customer Charge				
Customer charge	\$/cust/mo	14.00	14.00	14.00

Notes: Summer = June 1 - September 30, Winter = all other months.

2-period TOD + Demand Charge

- Two components besides the fixed charge
 - **Volumetric TOD rate** featuring the same pricing windows as the TOD-only rate
 - **Demand charge** that applies only during the summer peak period
- Rate design considerations
 - Demand charge recovers a portion of generation demand and transmission costs in the peak period
 - Aim to recover less than 1/3 of the revenues from demand charge and the rest from volumetric and fixed charges on an annual basis
 - Maintain a meaningful peak/off-peak price ratio for the volumetric charge; currently **4:1 Peak/Off-peak**
 - Incorporate forgiveness elements to prevent bill hikes
 - ▶ Set monthly billing demand as the *average of the three highest* demands recorded in the peak period in a given month, as opposed to using the maximum demand
 - ▶ In one out of the four summer months, if the billing demand exceeds a certain threshold (e.g., demand implied by a 15% load factor), set billing demand at that threshold

Residential

4 : 1 Summer Price Ratio

NM Residential		Proposed	Current IBR
Summer			
Demand Charge	\$/kW	4.38	-
On-peak	\$/kWh	0.23407	-
Off-peak	\$/kWh	0.05852	-
Tier 1 (First 600 kWh)	\$/kWh	-	0.06999
Tier 2 (Over 600 kWh)	\$/kWh	-	0.10840
Winter			
Off-peak	\$/kWh	0.03187	-
Flat	\$/kWh	-	0.05782
Customer Charge			
Customer charge	\$/cust/mo	7.00	7.00

SGS

4 : 1 Summer Price Ratio

NM SGS		Proposed	Current	
			Standard Rate	Alternative Rate
Summer				
Demand Charge	\$/kW	10.34	-	-
On-peak	\$/kWh	0.30268	-	-
Off-peak	\$/kWh	0.07567	-	-
Demand Charge	\$/kW	-	18.63	-
Energy Charge	\$/kWh	-	0.03963	0.10941
Winter				
Off-peak	\$/kWh	0.03791	-	-
Demand Charge	\$/kW	-	13.93	-
Energy Charge	\$/kWh	-	0.01152	0.07441
Customer Charge				
Customer charge	\$/cust/mo	14.00	14.00	14.00

Notes: Summer = June 1 - September 30, Winter = all other months.

Bill Impact Summary

In the last presentation we presented bill impact summaries for four classes across three rates for two scenarios – without and with price response

- Given the opt-in nature of the pilot, if more customers with favorable profiles participate, bill outcomes will be improved further
- Load response results in **more customers benefiting across the board**. Thus, messaging on load response is important
- While **RES class sees more non-benefiters** than benefiters, average customer bill sees a modest reduction. Load response under CPP results in more benefiters than other rates as customers can avoid significantly higher priced critical peak hours
- **Large share of SGS customers benefit** even without load response. This outcome is improved marginally with load response under TOD and CPP but markedly more for demand rates as smaller customers avoid higher peak period demand charges

% Share of Benefitters – With and Without Load Response

	Residential			Small General Service		
	2P-TOD	2P-TOD + CPP	2P-TOD + Demand	2P-TOD	2P-TOD + CPP	2P-TOD + Demand
<i>No Load Response</i>	40%	41%	40%	68%	67%	53%
<i>With Load Response</i>	46%	54%	48%	69%	69%	58%

Treatment Group Recruitment Approach

We considered three robust pilot design methods before proposing the pilot design approach for EPE:

- randomized controlled trial
- randomized encouragement design
- random sampling with matched controlled group

Assessing the pros and cons of each approach as well as the practical and budget implications of customer recruitment, we propose that the pilot is deployed using **“random sampling with matched controlled group”**

- Treatment group customers will be recruited from a randomly selected group of eligible customers (the rest of the eligible customers will be set aside for the control group design)

The random sample of eligible customers will be drawn from several recruitment waves, and customers in each wave will be sent recruitment materials and asked to participate in the pilot

- If a customer shows interest, they will be recruited for the pilot and asked to fill-in a pre-launch survey that confirms their eligibility and collects some socio-demographic data
- If a customer declines participation, they will be flagged as “declined to participate”
- The recruitment team will stay with the wave-based deployment until the recruitment targets/enrollment caps are reached

The rest of the eligible customers will be used for designing the matched control group

Target Sample Sizes

We estimate sample sizes through statistical power calculations to detect a statistically significant pilot impact given the price ratios. Next, we boosted the sample sizes by 15% to account for potential attrition over the two years of the pilot. We also calculated an approximate outreach sample assuming a 2% enrollment rate

Class	Treatment	Based on Statistical Power Calculations	Assuming 15% Attrition	Target Outreach Assuming 2% Enrollment
Residential	2-Period TOD	146	170	8,500
	2-Period TOD (LMI Only)	259	300	15,000
	2-Period TOD + CPP	355	410	20,500
	2-Period TOD + CPP (Tech Enabled)	129	150	7,500
	2-Period + Demand Charge	146	170	8,500
SGS	2-Period TOD	249	290	14,500
	2-Period TOD + CPP	381	440	22,000
	2-Period + Demand Charge	157	180	9,000

Total RES outreach target of 60K to recruit 1,200 residential customers

Total SGS outreach target of 45.5K to recruit 910 SGS customers

Pilot Planning Activities following Pilot Approval

Development of the sampling frame

- Define eligibility criteria for the recruitment
- Determine how many customers meet the eligibility criteria to form the sampling frame

Development of a recruitment, marketing and outreach plan

- Develop recruitment and marketing strategy (channels, internal team readiness and timelines, etc.)
- Assess customer service representative training/readiness to handle questions from the pilot participants
- Develop marketing and recruitment materials (letters, brochures, refrigerator magnets, bill inserts etc.)
- Form focus groups to test the appeal of materials/messaging and adjust accordingly
- Assess readiness of the billing department to issue the TVR bills

Determine Data Management Protocols

- Master list of eligible customers and random samples drawn for recruitment
- Master list of recruitment data and marketing outreach
- Personal Identifiable Information (PII) management

Pilot Planning Activities following Pilot Approval (cont'd)

Develop a Process Evaluation Plan

- Development of pre-pilot survey materials
 - Plan to roll-out a survey for the recruited customers to establish their “starting perceptions and expectations” on TVRs before they had a chance to experience. These survey results will constitute a baseline to compare the post-pilot outcomes
- Development of a process evaluation journal
 - Pilot manager to log opt-outs, reasons for opt-outs, and other challenges experienced during the pilot
 - This information will inform future larger scale deployments
- Development of post-pilot survey materials
 - Plan to roll out a survey at the end of the pilot to understand customer experience with the pilot
 - Compare post-pilot responses to the pre-pilot responses

Develop a Load Impact Evaluation Plan

- This involves methods for quantifying the load impact associated with the TVRs tested in the pilot

Next Steps

EPE plans to file the proposed pilot with the PRC in March 2024

Given a timely approval from the PRC, it intends to recruit pilot participants and roll out the pilot rates in 2025

- Specific timelines and milestones will be determined after the PRC approval

Questions

