



LG&E and KU

Large Nonresidential Demand Conservation Program

Evaluation Early Findings Presentation
December 6, 2022

Business Use

Agenda



- Process Evaluation
- Wrap Up

Process Evaluation Activities



- In-depth Interviews
 - LG&E and KU Program Staff
 - Implementation Contractor (Enel X)
- Benchmarking Study
 - Secondary Research

In-depth Interviews – Enel X Summary



“Our current goals are simply to maintain the current customer base and try to ensure they are ready to deliver should an event be called.”

- By design, Enel X is not seeking program expansion.
 - Emphasized “maintenance mode.”
 - Went into contract knowing only a single dispatch over the contract period.
- Enel X is confident the program can expand to aid with any potential capacity shortfall
 - Alignment between incentive level and frequency of events required.

Benchmarking - Summary



- Primarily secondary research
- Research focused on utilities with C&I DR programs
- Peer utilities in benchmarking study included:

Peer Utilities	
Ameren (MO)	Duke Energy (NC, SC, FL, KY)
ComEd (IL)	FirstEnergy (PA, NJ)
Consumers Energy (MI)	Idaho Power Company (ID)
Dominion Energy (SC)	Xcel Energy (MN, CO)
DTE Electric Company (MI)	

Benchmarking - What We Learned



- Utilizing energy efficiency and DR program to address future grid needs and utility's capacity constraints across both seasons (summer/winter)
 - Using more automatic controls, flexibility in level of demand reduction and non-performance penalties to assure demand reduction is delivered when called upon
 - Participating in wholesale energy market and emerging electricity markets in which demand resources can participate
 - Offering a variety of participation options to allow inclusion and optimization of equipment to be utilized by programs
 - Ease of participation – limited impact, set it and forget it, sufficient notification for planning purposes (industrial curtailment)
 - Incentivized for “stand-by or ability” to reduce demand

Benchmarking - What We Learned



Utility	Demand Response Strategies
LG&E and KU	DLC: Demand curtailment – automatic and manual controls
Ameren	Priced-based rates: Interruptible rate Priced-based rates: Hourly and Time-of-Day Pricing Rates Other DR: MISO programs and Conservation Voltage Reduction (CVR)
ComEd	Priced-based rates: Hourly and Time-of-Day Pricing Rates Other DR: Smart Returns: Voluntary Load Reduction (VLR), PJM/MISO programs, Voltage Optimization (VO)
Consumers Energy	DLC: Demand curtailment – automatic and manual controls, smart Thermostat Price-based rates: Time-of-Use rates, electric vehicle rate Other DR: CVR
Dominion Energy	DLC: Demand curtailment – on-site back-up generators – automatic controls Price-based rates: Time-of-Use rates, Other DR: Voltage Optimization, PJM programs
DTE Energy	Priced-based rate plans: Interruptible supply, space conditioning and water heating, critical peak pricing, and Electric Vehicle TOU
Duke Energy	DLC: Demand curtailment automatic and manual controls (mandatory, voluntary, and generator curtailment options available), AC/HP cycling (30, 50, 75 percent cycling options) Price-based rates: Hourly Pricing, Optional Power Services, Thermal Energy Storage Other DR: Electric Vehicle Leased F-150 Light Truck Pilot
FirstEnergy	Priced-based rates: TOU rates Other DR: PJM programs
Idaho Power	DLC: Demand curtailment – automatic or manual controls (irrigation) Price-based rates: Time-of-Day and irrigation rates
Xcel Energy	DLC: CAC cycling Priced-based rates: Peak Day Partners, Peak Partner Rewards, Peak Flex Credit, Critical Peak Pricing (CPP), Electric Vehicle CPP, Time-Of-Day (TOD), and interruptible rates

Benchmarking - What We Learned



- Capacity constrained utilities transitioning to new technologies and time-varying rates faster due to necessity: allows for year-round vs. events-only load reduction. Methods include:
 - Time-varying rates, critical peak pricing, TOU rates
 - Electric Vehicles
 - Grid-interactive efficient buildings

- Demand/Conservation Voltage Reduction (DVR/CVR)
 - Lowering the voltage during peak load conditions
 - Maintain feed voltage at the lower end to achieve demand and energy savings
 - Savings and load reduction dependent on customer base on each feeder

Benchmarking - What We Learned



- Incentives for small and medium business demand response utilizing DLC:
 - Ranged from \$5 to \$135 per device
 - Provided in the form of bill credits on either a monthly or annual basis
 - Provided additional incentives at the time of enrollment or installation of equipment
- Incentives for C&I curtailment – automatic or manual controls:
 - Typically, ranged from \$15 to \$35 per kW reduction
 - Provided in the form of a direct payment or bill credits on either a monthly or annual basis
 - Provided incentives for participants being "available" to be called upon during events and/or their participation in test events
 - Battery and thermal storage incentives ranged from \$50 to \$200 per average kW reduction per season

Benchmarking - What We Learned



- Monthly discounts or bill credits:
 - Ranged from \$1.35 to \$8.50 per kW
 - Stacking of discounts/credit
 - Committed, events, and availability – fixed/variable
- Incentives for voluntary load reduction based on hourly wholesale electric market prices

Benchmarking – Conclusions



- Enel X and LG&E and KU teams are well prepared for events.
- Use of additional nonresidential DR strategies and incentive restructuring may aid in increased C&I participation and greater load reduction during events and throughout the year.
- DR participating in the PJM/MISO market continues to grow year- over-year; providing opportunity for voluntary customer participation may enhance customer satisfaction.
- CVR/DVR optimization – does not require customer participation.

Wrap Up



Thank you for your time!

Any additional questions or comments?