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Witness: Jared A. Lawrence and Jason Tharp
Request from: Office of Consumer Counsel

Question:

(BRIDGE METERS) Please list and explain all functions of the bridge meter(s) the Company uses (i.e., not functions that the meter is capable of, but functions that the Company uses) that differ from an AMR meter.

Response:

Please refer to the Company's response to information request OCC-995[i].

Referenced Response

[i] OCC-995 Question:

(BRIDGE METERS) Please provide the Authority decision and/or ruling approving the Company installing the 467,145 bridge meters it has installed.

OCC-995 Response:

The Company does not require PURA's approval for installation of bridge meters. The installation of meters is a basic function of utility service, falling into the category of capital investment that PURA reviews on the basis of prudence at the time that recovery of the investment is requested in rate base. On the CL&P system, implementation of bridge meters proceeded on the basis of a business case contemplating the obsolescence of automated meter reading ("AMR") technology and the opportunity to obtain enhanced functionality on the distribution system, as the evaluation of implementation of Advanced Metering Infrastructure ("AMI") took place in Docket No. 17-12-03RE02 over an extended time frame (2019-2024). The installation of bridge meters does not involve the need for a comprehensive implementation plan involving the integration of new back-office information systems and accelerated installation across the entire customer base, which are the circumstances that drive the need for an associated cost-recovery mechanism and other approvals of PURA to support that type of implementation.

Specifically, beginning in 2017, the Company began to evaluate the installation of "bridge" meters to replace a portion of its hard-to-reach AMR meters with a goal of increasing operational efficiencies for service disconnects and reconnects; decreasing the amount of customer write-offs and bad debts through more and faster remote disconnects; and addressing the "failure curve" for meters at or approaching end of life. Bridge meters are AMR meters with remote turn-on and turn-off capability through the Company's existing meter reading system. Bridge meters can also be used for specialty applications, including net and demand readings. An AMR meter with specialty applications added to it – like the capability to measure demand – is more expensive than purchasing a bridge meter and programming it to perform specialty applications. This is due to the fact that AMR technology is antiquated and requires more expensive components than the more flexible bridge meter. Because the Company's existing metering

infrastructure was at its end-of-life and therefore prone to error or failure, replacement was necessary in order to avoid billing inaccuracies or estimates.

With the success of the bridge-meter project in meeting operational and bad-debt reduction goals, the Company increased the level of meter-related capital expenditures in 2018, 2019 and 2020, and migrated to remote-disconnect capable meters as its meter of choice for all replacement installations. To this day, bridge meters continue to offer significant safety and operational benefits with their ability to remotely read and operate when access is an issue, which is common in metro areas. The Company expects to continue to utilized both bridge-meter technology and AMR meter technology pending full implementation of AMI.

Specific benefits of bridge-metering technology include the following:

Remote disconnect/reconnect switch:

- Many of the residential meter types include a remote disconnect/reconnect switch. That switch can be operated by agents of Eversource without the need to physically access the meter. The agents must still visit the premises to get close to the meter for the signal to reach.

- The disconnect feature is primarily used to decrease the amount of customer write-offs and bad debt. Allowing employees to disconnect the meter without physical access helps in situations where access is prevented or unsafe conditions.

- The primary benefit of the remote reconnect feature is the ability to restore power to the customer without requiring the customer to be home to grant access when the meter is located inside.

Automatic demand reset:

- Legacy meter types require the Meter Reader to perform manual demand resets monthly so the meter can correctly record demand values for applicable customers/rates. The bridge meter can automatically reset the demand value when the meter is read each month. This cuts down the time and effort involved with reading these meter configurations.

Polyphase phase angles:

- Polyphase bridge meters have the added benefit of providing phase angle data when meter data is extracted. Phase angle data is used to troubleshoot metering or service issues. There have been examples of equipment errors being detected with phase angle data.

Meter feature standardization:

- Prior to bridge meters, the Company used different meter types for demand customers, net customers, net demand customers and production meters. Multiplying each of these needs across the various service configurations results in dozens of different meter types. The bridge meter is able to handle all these billing requirements with the same meter which greatly simplifies inventory and reduces meter inventory shortages.

Annual installations are summarized as follows:

Year	Installed Bridge Meters	Installed AMR Meters
2015		39,086
2016	5,161	28,224
2017	50,292	17,958
2018	85,581	3,798
2019	105,285	1
2020	54,345	
2021	21,291	20,476
2022	16,426	35,157
2023	29,710	14,852
2024	69,896	3,784
2025	18,237	1,432
2026	13,222	173
Total	**469,446**	**164,941**

The table above provides a breakdown of all bridge and AMR meters that are currently physically installed in Connecticut. The different rows separate meters into the year they were purchased. The total quantities differ from the 467,145 figure referenced due to minor fluctuations in reporting of installed and removed meters which occur on a daily basis.

Additionally, it is necessary to highlight that the methodology of categorizing physically installed meters broken out by purchase year, matches previously filed meter breakdowns. Since there are natural delays between purchasing and installing meters in the field, it may appear as if past stated vintages are increasing (i.e. there is an increase in 2025 meters than previously stated). This variance is due to reporting on meters that were purchased in 2025 were physically installed in the field in 2026. This is true for all years resulting in older vintage volumes decreasing, and newer vintage meter volumes increasing each time this analysis is performed.

Going forward – with the implementation of AMI - advances in the industry throughout the previous decade have enabled additional capabilities in AMI meters at comparable cost, increasing the relative cost-effectiveness of an AMI system. Modern AMI meters now leverage advancements in mesh network technology and 4G LTE and 5G communication technologies, enabling near real-time data sharing through device-to-device communication. This facilitates greater situational awareness for the utility. Equipped with more powerful processors and expanded storage, these meters can download applications and run analytical algorithms to address various use cases, such as mapping meters to transformers and providing customers with detailed insights into their energy usage. Additionally, modern AMI meters are capable of grid-edge computation, processing vast amounts of data to produce actionable insights for both the customers and the grid. The meters can autonomously decide which data to send back to the utility, optimizing network utilization and reducing the amount of time needed to process, analyze, and make decisions based on that data. Advanced AMI use cases now include neutral monitoring, connectivity model verification, and advanced load disaggregation, alongside traditional capabilities such as remote connect/disconnect, internal metering, tamper detection, and power loss and restoration notifications. The Company's meter replacement strategy aims to provide all customers in the territory with equal access to the benefits the AMI deployment.