Date Filed: September 22, 2026

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Request from: Office of Consumer Counsel

Question:

In Exhibit CLP-TSP-3, Page 48, Eversource provides a table with investment categories by year. For each line item in the table, please provide a brief description of what investments are included in the line item, as well as how the line item is mutually exclusive from the other rows in the table.

Response:

Page 48 of Exhibit CLP-TSP-3 gives the general project and program categories to give insights into the Distribution Substation Capital Plan portion of the Targeted System Performance Plan.

Projects and programs are placed into a category by the main driver for the scope of work. The identified need to begin project or program development could be identified as capacity and a secondary driver could be asset health. The investment would be placed in the capacity category with that being the main driver of the work although it resolves multiple system concerns. The project and program investments in each of the categories are only accounted for in that category and are not included in additional categories.

Aging Infrastructure Replacements: This investment category includes projects and programs that support the replacement of aging or obsolete substation equipment that has reached the end of its useful life in order to maintain safe and reliable system performance. At substations, distribution assets include a range of equipment, depending on the type of station, and can include circuit breakers, bus work, relays, reactors, capacitors, switches, termination structures, control enclosures, protection and control equipment, power supply systems, physical and cyber security assets, cables and connecters, duct bank and cable trench, etc. The need for replacement is determined based on inspections, testing, equipment age, safety considerations, operating performance, changes in standards, equipment obsolescence, and spare parts availability.

Inspection/Replacement Failed Equipment: This investment category is similar to Aging Infrastructure Replacements but differs in that it includes equipment replacements that can be completed under the annual funding policies and within a shorter time period than a typical project.

Substation Transformer Asset Health: This investment category of projects includes replacement of the distribution substation transformer fleet. These units consist of Bulk transformers and Distribution transformers. Bulk transformers are installed at bulk distribution

substations that are directly supplied from the transmission system (typically 115 kV) and step voltage down to distribution levels (typically 23 kV, 13.2 kV, or 4.8 kV). Distribution transformers are installed at distribution substations supplied by other distribution systems (e.g., 23 kV) and step voltages down to supply customers. There are 314 transformers currently installed across CT distribution system. The present fleet average age is 43 years old with the oldest transformer in-service at 85 years old. Based on age records of distribution substation transformers, a portion of the fleet, about 56% have exceeded the 40-year expected service life of a transformer. This means that without repair or replacement, as each transformer ages, their condition is expected to continue declining, increasing the risk of equipment failure. As a result, Eversource continues to prioritize and initiate replacement projects for these transformers within this category of investments.

Substation Transformer DSCADA LTC Controls: This investment category was established to track the installation of DSCADA Load Tap Changer (LTC) Automation at all remaining Eversource CT sites currently utilizing the obsolete radio-controlled system for substation LTC voltage reduction. The existing 1970's radio-controlled systems installed on Eversource transformers were obsolete and failing. Replacement radio units are not available as the system components are no longer supported by the manufacturer. The existing radio-controlled system could no longer support the required voltage reduction capability.

Switchgear Asset Health: This investment category includes projects including the replacement of substation switchgear units that have aging equipment and deteriorating foundation conditions. These projects are needed to address concerns about long-term reliability, safety, and the ability of the equipment to continue operating as intended. Switchgear condition indicators typically include, but are not limited to, asset age, environmental impacts, short circuit margin, operational integrity (operating location in substation and frequency of operation), general model obsolescence (ability to obtain trained service personnel and replacement parts), and field assessment data (maintenance notifications/issues for breaker components like bushings, mechanism, contacts, and dielectric media). In many cases, the condition of the switchgear itself, combined with structural issues affecting its foundation, increases the risk of equipment failure or service interruptions. Replacing this equipment helps ensure the electric system remains dependable and supports safe operation for utility personnel. These investments also help to maintain service reliability and prepare the electric distribution system to meet future operational needs.

Capital Tool Purchases: This investment category includes capital tool purchases to support the field personnel working in electrical substations. Capital tool purchases must meet the capitalization threshold requirement of $500 per unit cost. Exceptions to this $500 threshold include items which are purchased “in bulk” as defined in APS-08 Capital Versus Expense Criteria.

Emergent Equipment Failures/Replacements: This investment category is similar to Aging Infrastructure Replacements but differs in that it includes emergent equipment failure replacements

that can be completed under the annual funding policies and within a shorter time period than a typical project.

Environmental Equipment Replacements: This investment category includes projects to specifically replace aging oil filled substation equipment such as oil filled circuit breakers and oil filled substation reclosers. If a circuit breaker or recloser does not operate properly, the consequences can include serious safety risks for workers, reduced system reliability, environmental impacts such as oil leaks or spills, and damage to nearby equipment. In the case of a circuit breaker failure, failure to interrupt a fault, or experiences internal failure, the next available circuit breaker must operate. Depending on the design of the substation where the circuit breaker is installed, the severity of its unavailability will vary. When a recloser does not work properly, it can prevent automated systems from responding to problems leading to increased Customer Average Interruption Duration Index (CAIDI) and System Average Interruption Duration Index (SAIDI) minutes. A failed circuit breaker or recloser can also affect planned work, including efforts to safely isolate or restore power to lines and substations.

Substation Capacity/System Planning: This investment category includes projects to address normal and emergency substation overloads within the 10-year planning horizon and those created to resolve violations of the Distribution System Planning Guide (DSPG).[1] Solution alternatives are developed with varying levels of complexity and may include a combination of balancing loading across the system, replacing or upgrading limiting equipment, adding new equipment or expanding an existing substation, installing non-wires alternatives, and/or developing a new substation to support the identified needs of the area.

Incremental Aging Infrastructure Replacements: This investment category is the incremental funding required to replace additional aging substation equipment beyond what is included in the Sustained Performance Plan to achieve the Targeted System Performance Plan investment.

Incremental Substation Transformer Asset Health: This investment category is the incremental funding required to replace additional aging substation transformers beyond what is included in the Sustained Performance Plan to achieve the Targeted System Performance Plan investment.

[1] Refer to CLF-SC-023, Attachment 1, for the Eversource Distribution System Planning Guide 2020 Rev. 0.