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Powering Connecticut's Future
Five-Year Targeted System Performance Plan

The Connecticut Light and Power Company d/b/a Eversource Energy

July 14, 2026

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Overarching System Objectives

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ASSET HEALTH
Use equipment condition data and other inputs to prioritize asset repair/replace decisions

CAPACITY
Forecast demand and orderly expand equipment and facilities to safely and reliably meet growth

RELIABILITY
Target at risk stations and circuit zones; design and operate the system to minimize customer impact under normal operations

GRID MODERNIZATION
Deploy communication and advanced technologies to improve visibility and control of the system

OBJECTIVE
Plan, design and operate a resilient distribution system to deliver power safely, reliably and affordably using data driven strategies to optimize outcomes for customers

RESILIENCY
Harden the system to withstand the impact of major storms; reduce storm outages and costs

EMERGENT WORK
Respond quickly to unplanned equipment failures and events

CORE BUSINESS
Execute day-to-day maintenance, inspection, and compliance programs

REGULATORY COMMITMENTS
Plan and execute programs to meet regulatory targets and reporting requirements

NEW CUSTOMER
Provide safe, reliable and efficient interconnection service to load and DER customers

Electric Grid Overview

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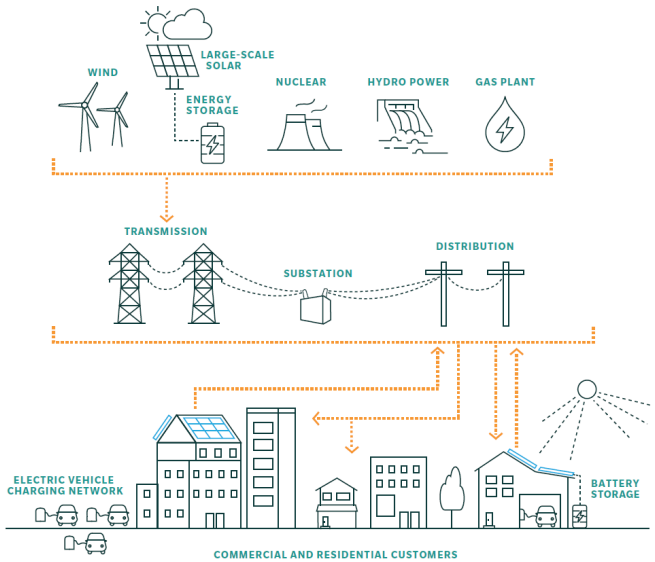

- Utility scale generation is interconnected across New England and even across the country by way of **high-voltage transmission lines**
- All these lines networked together create a type of **superhighway that moves electricity** from the power plants to electric substations and local distribution systems that ultimately deliver power to homes and businesses
- The combination of these components is what we call **the US electric grid**

The distribution system is the backbone of a reliable Electric Power System (EPS) … serving as an interface between the transmission system and customers

Bulk Distribution Substation

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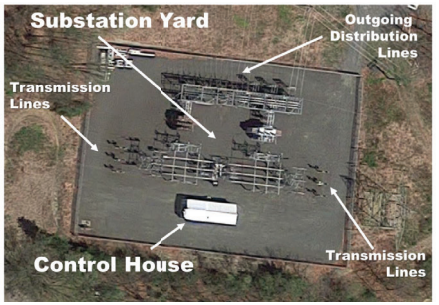

Bulk substations are key components of the electric power system, essential elements in meeting consumer demand for energy and supporting 21st century economies

Modern Electric Distribution Initiatives

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Eversource is implementing innovative technologies and advanced analytics to lower costs and optimize outcomes for customers

GRID VISIBILITY AND CONTROL	Grid sensors, remotely controllable overhead and underground switching, and smart voltage control devices enable data-driven analytics and intelligent real time decisions
AI/ML ENABLED ANALYTICS	Data-driven insights into resiliency and reliability planning, capital investment decisions, load and generation forecasting, and asset management tools
MOBILE TOOLS	Increase operational efficiency with tools to dispatch work, perform asset surveys, document as-builts, and manage storm damage assessment and crew management
OPERATIONAL OPTIMIZATION	Implementing the control room of the future by integrating asset data and real time telemetry into power-flow driven tools for safe, reliable grid management and restoration

Investment Scenarios Summary

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	Sustained Performance	Targeted System Performance	Advancing the Grid
2027 Investment	$667M	$690M	$726M
5-Year Investment	$3.6B	$4.0B	$4.4B
Objective	Maintain Safe and Reliable service ✓	Harden system & reduce storm restoration costs ✓✓	Modernize infrastructure to meet proactive industry standards ✓✓✓
Reliability (SAIDI)	Maintains current performance at -0.7 min ✓	Improves performance by 6.1 min ✓✓	Improves performance by 10.3 min ✓✓✓
Resiliency	No dedicated investment	System-wide hardening to reduce storm restoration costs ✓	Enhanced performance through proactive asset replacement ✓✓
Regulatory Alignment	Supports PBR foundation; reduces RE08 risk ✓	Aligned with regulatory objectives ✓✓	Aligned with lower regulatory risk in outer years ✓✓✓
Customer Impact	Maintains customer experience; more costly in the long run ✓	Reduce customer storm outage minutes ✓✓	Improved service quality and lower long-term lifecycle costs ✓✓✓

Investment Scenarios Breakdown

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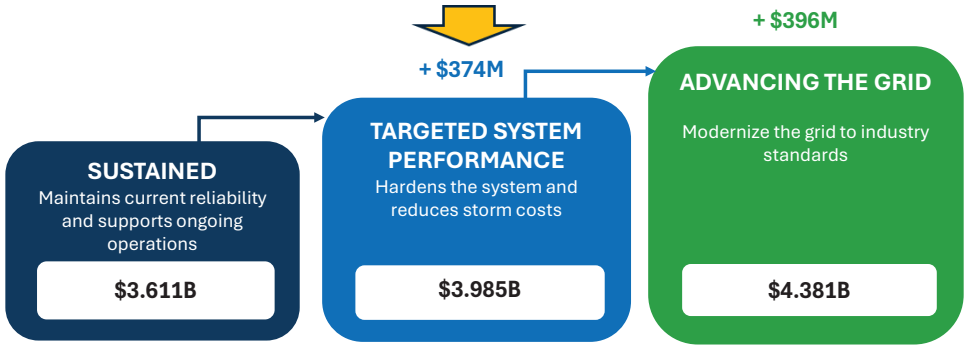

Each plan builds from the prior investment level to yield a stronger, more resilient grid

FIVE-YEAR INVESTMENT BY PROGRAM SUBSET ($B)

	BASIC BUSINESS	CORE PROGRAMS	INCREMENTAL		
SUSTAINED	$0.81B	$2.801B	-	$3.611B	
TARGETED SYSTEM PERFORMANCE	-	-	$0.374B	$0.374B	Enhanced Reliability, Asset Health and Resiliency Programs
ADVANCING THE GRID	-	$-16M*	$0.412B	$0.396B	
TOTAL 2027-2031 PLAN	$0.81B	$2.785B	$0.786B	$4.381B	

*Incremental investments in Asset Health are anticipated to reduce Emergent Failures

Investment Scenarios

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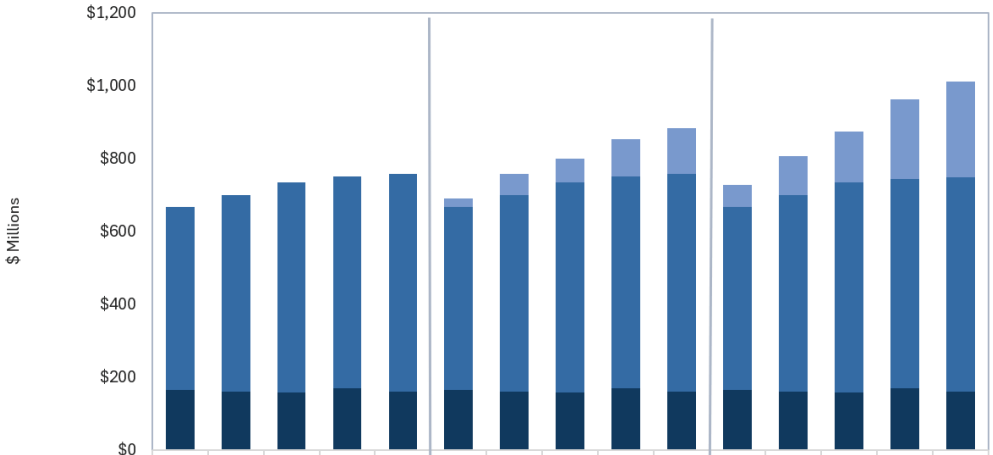
Plan Breakdown by Component



	2027	2028	2029	2030	2031	2027	2028	2029	2030	2031	2027	2028	2029	2030	2031
	Sustained					Targeted System Performance					Advancing the Grid				
Incremental	$0	$0	$0	$0	$0	$23	$58	$66	$101	$127	$59	$106	$139	$219	$262
Core	$504	$541	$577	$581	$598	$504	$541	$577	$581	$598	$504	$541	$577	$573	$590
Basic Business	$164	$160	$158	$170	$159	$164	$160	$158	$170	$159	$164	$160	$158	$170	$159

Investment Plan (Tiered Breakdown)

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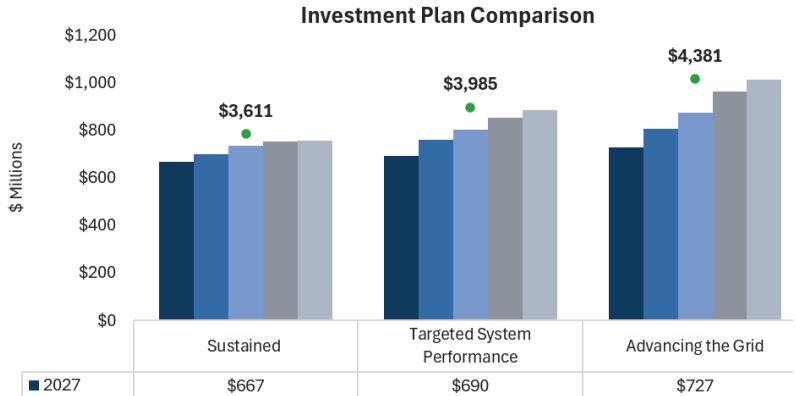
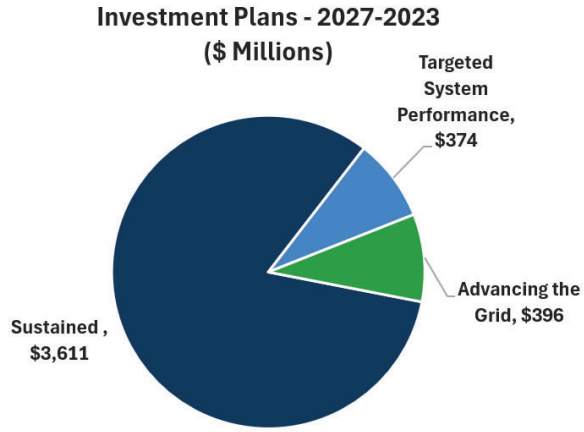


	Sustained	Targeted System Performance	Advancing the Grid
2027	$667	$690	$727
2028	$700	$758	$806
2029	$734	$800	$874
2030	$752	$853	$963
2031	$757	$884	$1,012
5 Year Total	$3,611	$3,985	$4,381



Investment Comparison – 5 Year Summary

Distribution Line & Substation Capital Only

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	2026 Budget	Sustained	Targeted System Performance	Advancing the Grid
Impact	$516M - 2026	$582M - 2027 $3.2B – 5 Yr Total	$605M - 2027 $3.6B – 5 Yr Total	$642M - 2027 $4.0B – 5 Yr Total
Overall Impact on Reliability & Headline Risk				
SAIDI Impact (minutes - 5 Year)	+12.3 ✗	-0.7 ✓	-6.1 ✓	-10.3 ✓
MBI Impact (months - 5 Year)	-2.9 ✗	-0.6 ✓	+0.4 ✓	+1.5 ✓
RE08 (Resiliency/Reliability)	✗	✓	✓	✓
Asset Health Risk	$$$$	$$$	$$	$
Emergent capital risk of failed substation equipment	Expects up to 3 transformer failures per year	Expects 1 transformer failure per year starting in 2030	Expects 1 transformer failure per year starting in 2030	Expects 0 transformer failures per year starting in 2030
Substation Capacity	Number and size of violations increasing	Number and size of violations resolved; meets Planning Criteria		
DER Enablement	150 MW from 9 station projects	+110 MW from 7 additional projects		+175 MW from 2-3 DER Cost-SHARE projects
Substation Transformer Replacements/Year: **Average Fleet Age in 2040:** **Oldest Unit in 2040:**	Replace avg. of 3 Bulk or Dist. Transformers 41 years 76 years	Replace avg. of 6 Bulk or Dist. Transformers 38 years 73 years		Replace avg. of 8 Bulk or Dist. Transformers 29 years 68 years
Grid Mod Avg Annual Impact ($M)	$10M	$14M	$14M	$53M
Vegetation Management (O&M) (yearly)	$59M (Split Cap/Exp thru '27)	$91M (Starting in '28)	$91M (Starting in '28)	$91M (Starting in '28)

Distribution Investment Impact

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Performance Area	Sustained Performance	Targeted System Plan	Advancing the Grid
Primary Objective	Safe, maintain reliability, and meets Planning Criteria	System hardening and **reduced** storm cost	Modernize the grid to current industry standards
Operational View	**Stability-focused**	**Improved storm performance**	**Proactive and strategic**
Safety & Compliance	Supports evolving regulatory requirements (e.g., RE08)	Supports evolving regulatory requirements (e.g., RE08)	Exceeds minimum standards through risk-based investments
Reliability Performance	**Maintained** at current levels	**Improved** resiliency and system performance	Improved performance through **proactive** asset health
SAIDI / Customer Impact	Stabilized customer performance	Reduced outage duration and customer exposure	Reduced risk and improved system configuration
Emergent Failures	Minimal impact	Reduced through resiliency upgrades	Further reduced through proactive replacements
Asset Health	Targeted replacements to **prevent failures**	Improved right-of-way improvements	**Accelerated**, condition-based asset renewals
System Capacity	Substation overloads decreasing	Substation overloads decreasing	Plan for 10-year violations in accordance with planning criteria
DER Hosting Capacity	**Saturated substations** in areas with developable land	New stations for load add some HC in DER growth areas	Major station upgrades targeted to **enable DER** in high growth areas
Automation	Maintains system automation (DMS, DERMS)	Increased system automation	**Expanded** automation to improve restoration and efficiency
Resiliency (Storm Cost)	**No dedicated** resiliency investment	**Proactive, system-level resiliency investment, storm cost reduction**	Further improved through proactive asset replacement
Cost Trajectory	Lower near-term spend; higher Emergent and capital risk	Increased system investment to reduce storm operating cost	Higher upfront investment; lower long-term operating cost
Alignment with Regulatory Policy	Set foundation for PBR, reduced regulatory risk (RE08)	Regulatory aligned	Aligned with lower regulatory risk in outer years

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State of the Distribution System

Overview

State of the Distribution System

Functional Overview

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REGIONAL OVERVIEW	Summary of assets and customer data by planning region
LOAD GROWTH	Summary commercial development over the past ten years and future load growth
CAPACITY	Overview of substation and line thermal capacity headroom and needs
DER INTEGRATION	Summary of installed and planned DER, hosting capacity, and integration challenges
RELIABILITY	Overview of customer reliability performance and challenges at various system levels including storm impacts
ASSET HEALTH	General overview of age and condition of distribution assets

State of the Distribution System

Planning Regions

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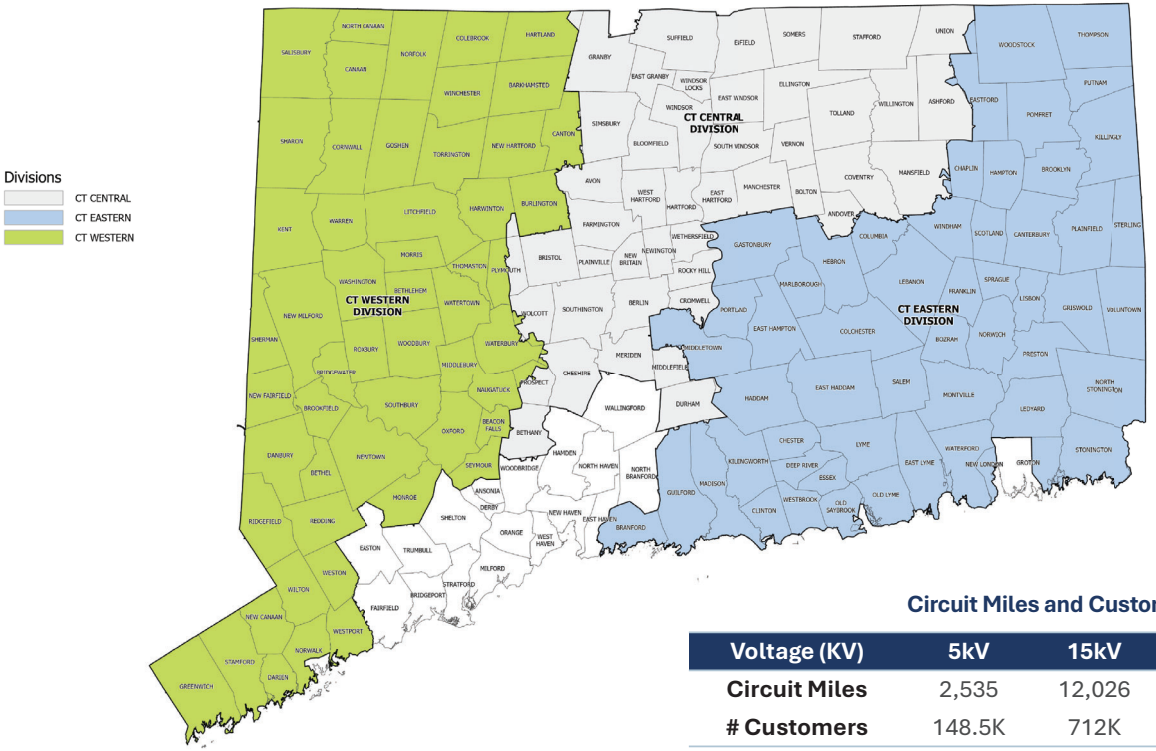

CT Distribution Assets

- 99 Bulk substation locations
- 57 Non-Bulk substation locations
- ~17K OH circuit miles
- ~7K UG circuit miles
- ~265K Service transformers
- ~1.3M Customer accounts

Circuit Miles and Customer Count by Voltage Class

Voltage (KV)	5kV	15kV	25kV	35kV	Total
Circuit Miles	2,535	12,026	8,835	352	23,748
# Customers	148.5K	712K	448K	0.9K	1,300K

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Planning Region Summary Data

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CL&P's 1.3M customers account for approximately 5 GW of peak electric demand

Region	Central	Eastern	Western
Customer Accounts*	540,230	294,838	477,870
Bulk Substation Locations**	38	22	39
Customers per Substation (Avg)	12,278	12,819	11,655
DER Penetration	MEDIUM	HIGH	MEDIUM
Online DER (MW)	832	526	524
In-Queue DER (MW)	439	327	184
Peak Load 2025 (MW)	2,218	1,019	1,775
Online DER as % of Peak Load	38%	52%	30%
Online + Queued DER as % of Peak Load	57%	**84%**	40%

** Note: The term "Customer Accounts" refers to Eversource's retail residential, commercial, and industrial customers. This does not include customers of United Illuminating, nor members of municipal utilities supplied by Eversource's bulk substation facilities.*

*** Note: Several substations in these locations have two independent secondary voltage supply systems, which may be accounted for separately*

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Load Headroom Capacity

State of the Distribution System

Density of New Commercial Development

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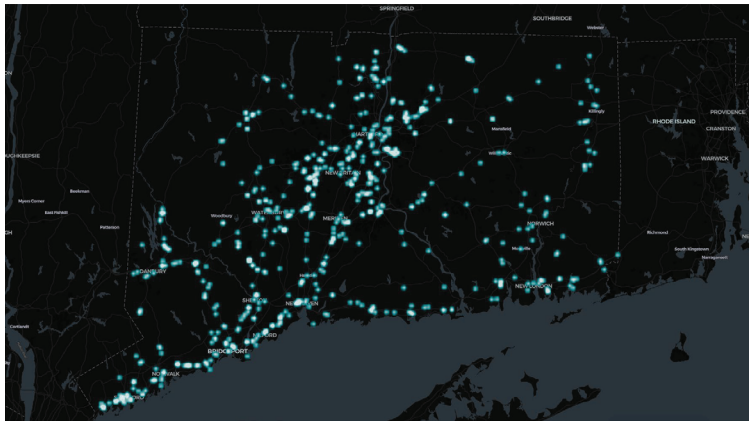
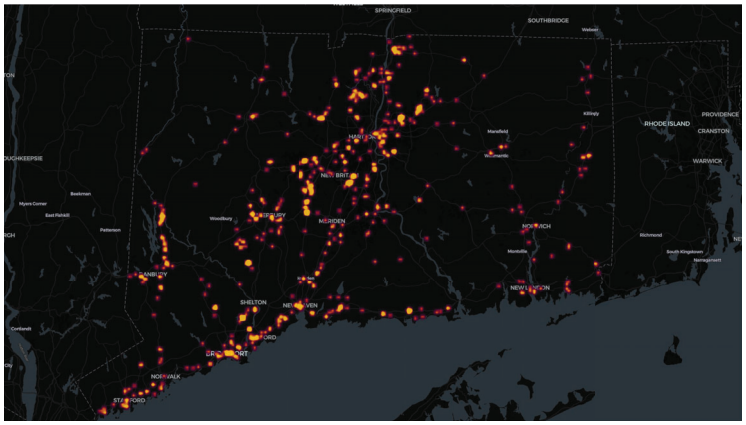
The dominant pattern post-COVID is hyper-concentration of large industrial/logistics buildings in the **Hartford North / I-91 belt** (E Hartford → Windsor → Enfield), where 70–77% of all C&I floor area built in those substation areas is post-2021

2015 -2020



2020 – Present



Orange/red clusters signal high-concentration zones post Covid

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New Commercial Development

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Top Risk:

- EAST HARTFORD 32G and SCITICO 27H have absorbed ~2.26M sq-ft of new industrial/logistics gross building area since 2021
- I-91 Windsor/Enfield corridor is CT's dominant new-load growth zone
- Office pre-Covid 2.3M sq-ft compared to 1.5M sq-ft post

Central CT Corridor: Distributed Reinforcement

- FORESTVILLE 12A, BERLIN 6A, ROCKY HILL 3R, SOUTHINGTON 4C show the highest property count region-wide
- Moderate-scale retail and mixed C&I spread across Southington, Bristol, Rocky Hill — favors distributed, not single-site, investment

Industrial Is the Real Load Driver

- Only 17% of post-COVID buildings are industrial, yet they account for 40% of new floor area (avg. ~85K sq-ft vs. ~15K sq-ft for retail)
- Pre Covid 6.7M sq-ft compared to 9.9M sq-ft post covid

Cooling Trend

- WATERSIDE 22M peaked pre-COVID at 2.3M sq-ft
- Health Care 3.1M sq-ft pre covid compared to 0.5M sq-ft post

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Historical Load and Forecasted Load

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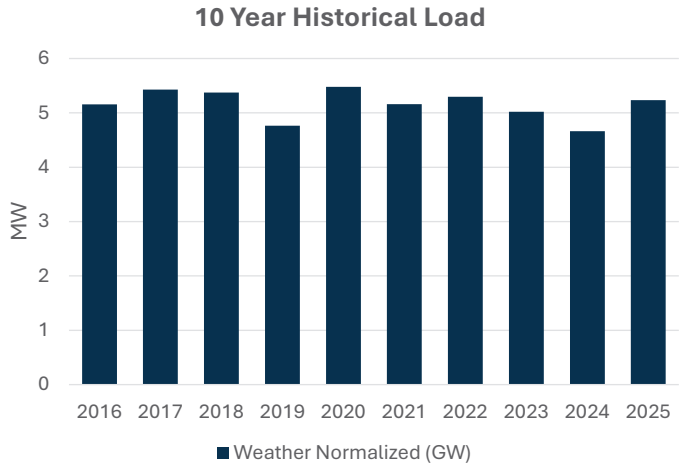
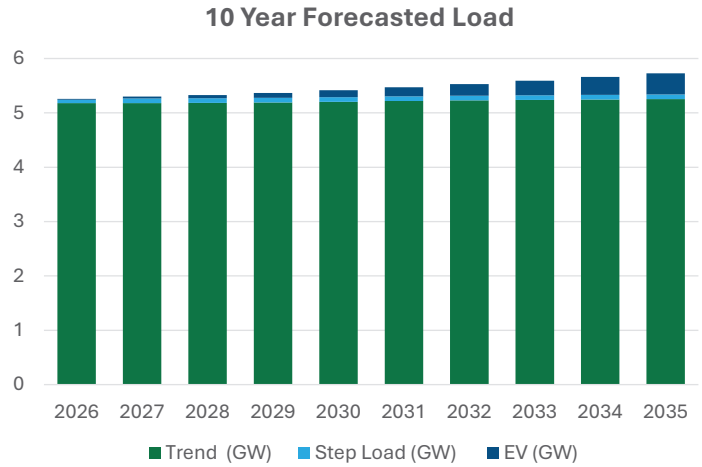
Load at a state-wide level might appear flat, but on a regional basis, step load growth in the Central and West are partially masked by DER growth in the rural areas such as East





State of the Distribution System

Forecasted Step Loads 2026

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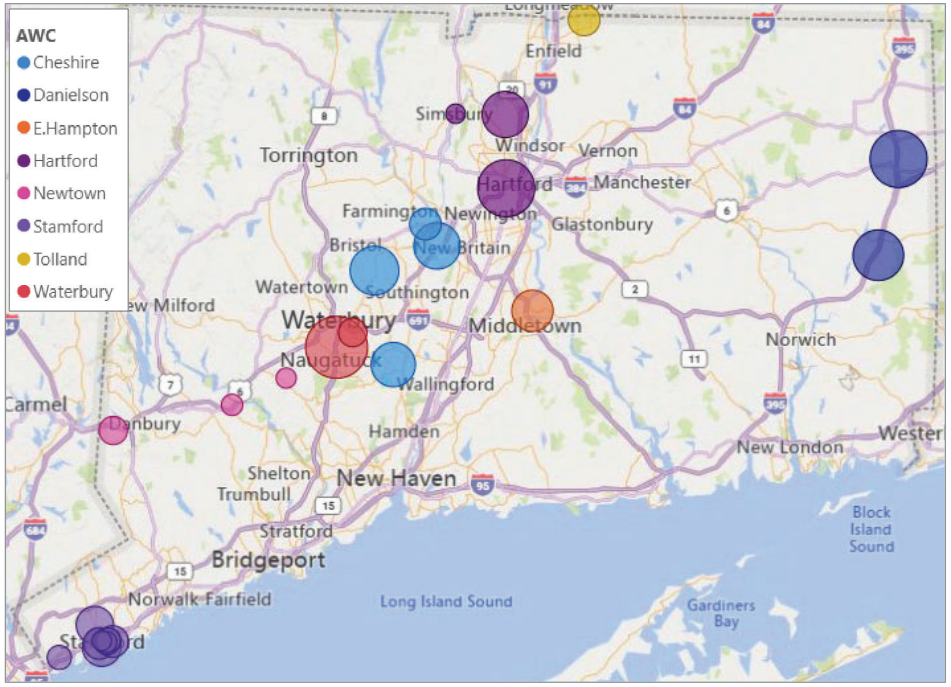

Step loads represent large, discrete demand additions from individual C&I customers that are layered onto the baseline forecast.

~86 MW of new step load growth forecasted at 23 substations

- **Baldwin 13F** dominated by 2 large customers (+11 MW)
- **Frybrook 13B** +10.8 MW

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Load Headroom Capacity

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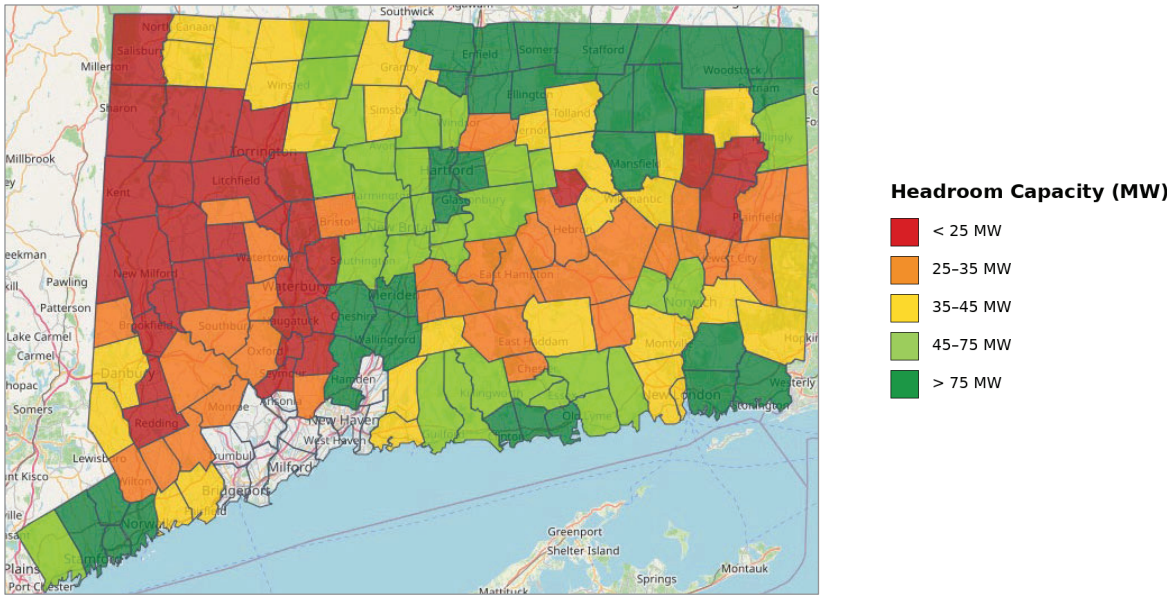

Pockets of load growth in areas with undeveloped capacity means the system has limited ability to meet the demands of load growth and C&I development

State of the Distribution System

Capacity Constrained Areas

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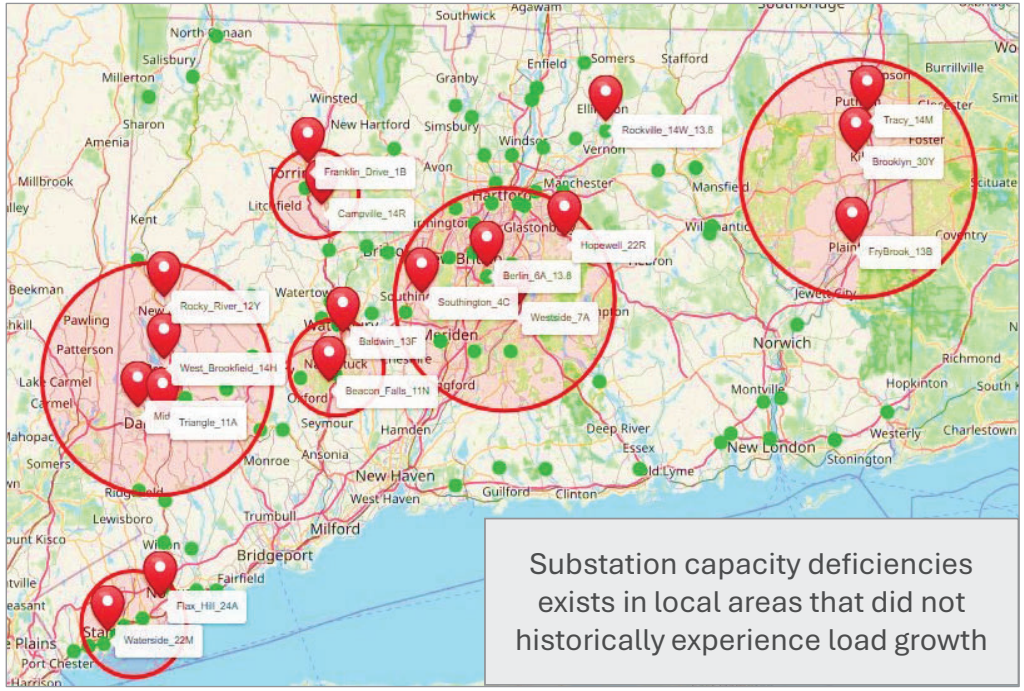
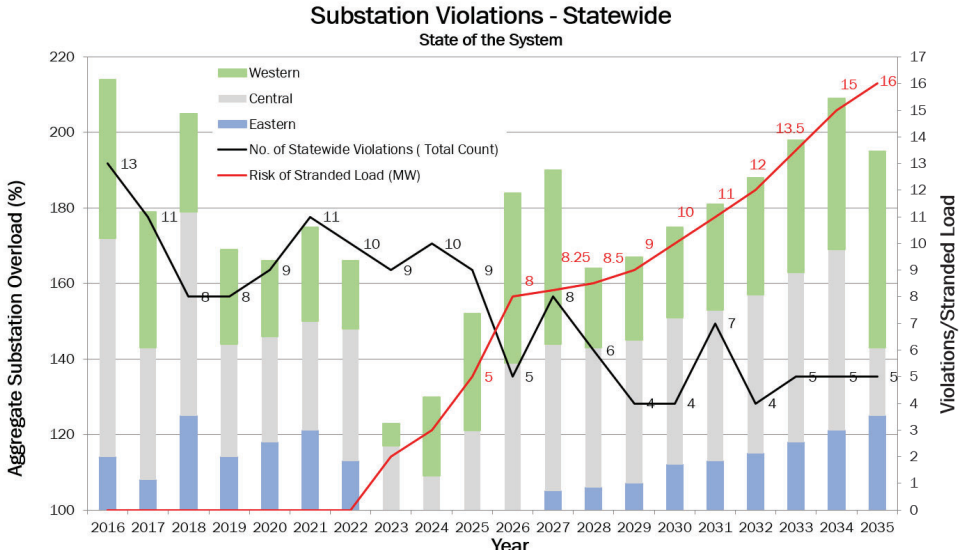


- Substations exceeding their emergency limits – i.e. load must be transferred to other substations to avoid risk of equipment failure or damage.
- Load pockets with limited transfer capability for temporary or permanent load transfers to adjacent substations – i.e., limited area capacity to reduce the loading at a substation. When area capacity is exhausted load must be shed to protect equipment and public safety.

State of the Distribution System

Substation Capacity Violations



- A substation experiences an overload when loading exceeds equipment normal or emergency thermal limits
- "Stranded load" refers to customers that may not be restored following a single failure or emergency event until extensive repairs are completed.
- A single failure may result in insufficient capacity to serve customers; to prevent catastrophic equipment failures customer outages might be required.

Historically, load transfers have been used to reduce violations at substations in an area (black line). However, as area capacity is exhausted, the risk of stranded load (red line) and reliability impacts increase.

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State of the Distribution System

DER Hosting Capacity

DER Hosting Capacity

Planned and Installed DER

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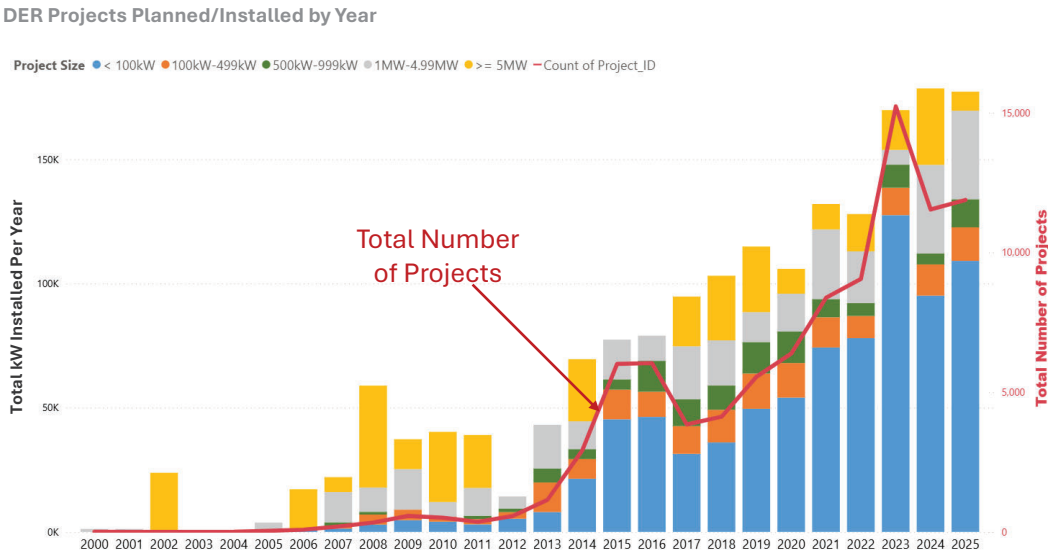

- **1,882 MW installed since 2000** (~45% on 20 stations)
- 2012 - 2015 and 2018 - 2023, saw significant increases in Interconnection Requests
- Majority of projects installed since 2015 are **small rooftop solar**
- Small projects progress to Interconnection Agreement quickly
- Seeing more **large solar projects** since 2017, typically requiring system impact study
- **950 MW (mostly solar) in-queue** (~50% at 20 stations)

Over 15 years of successful interconnections in Connecticut has seen **DER increase over ten-fold**, maximizing use of existing available capacity in areas with sufficient infrastructure.

DER Hosting Capacity

Hosting Capacity by Town

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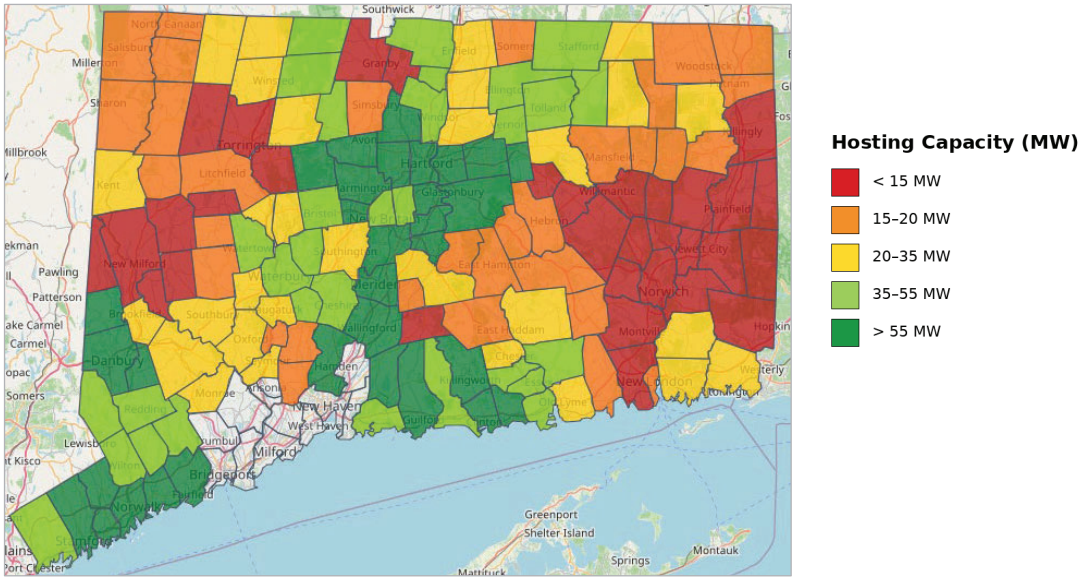

Rural areas with the most developable land and therefore the highest potential for DER growth, have the least amount of native load and therefore the lowest total hosting capacity

DER Hosting Capacity

DER Hosting Capacity vs. Installed / Queued DER

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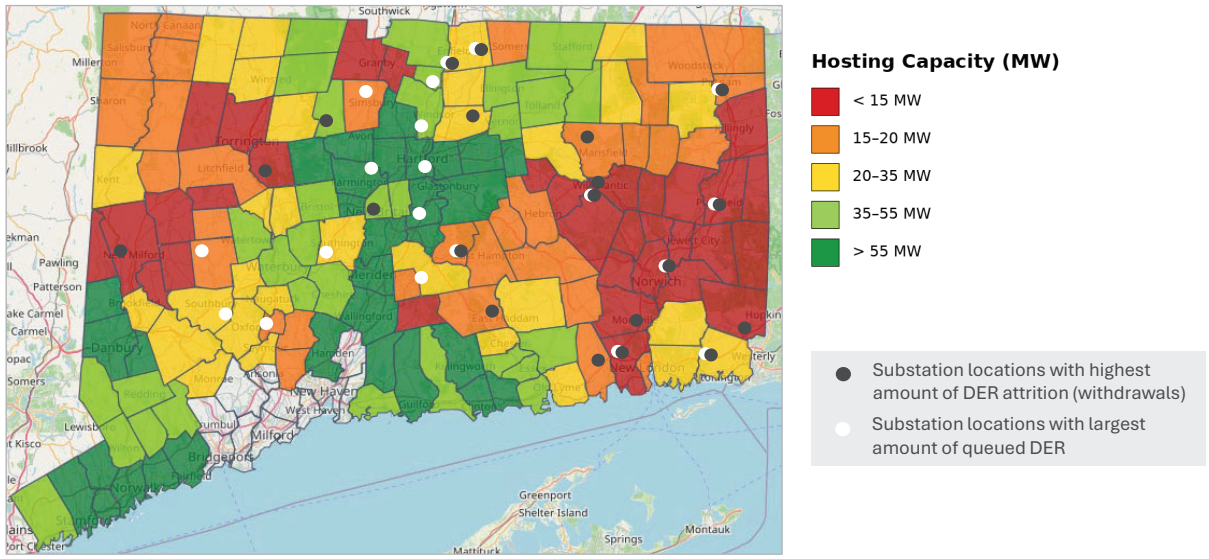
- Installed DER in earlier years was mostly internal combustion engines, gas turbines, and hydro on stations nearer load centers
- Installed DER in the mid- to later-years trended toward rooftop solar in medium to high load areas
- More recently, large PV and ESS projects are prioritizing areas with available land and electrical infrastructure
- Withdrawals have increased in areas with available land but limited hosting capacity



DER growth is most constrained in areas with developable land for solar, but less native load and infrastructure to safely and reliable accommodate DER output

DER Hosting Capacity

DER Integration Challenge

- Most load is concentrated in Central CT (~50%) and Southwest CT (~15%)
- Greatest large DER potential is in rural area where native load is light (Eastern, Northerr and Northwest CT).
- Currently, there is high PV penetration and significant queued DER on several substations in these areas.
- Project withdrawals have been high, and queues have stagnated due to high cost of upgrades
- **Significant substation upgrades** will be needed to integrate large-scale DER and support state clean energy goals.
- Without these upgrades, DER growth in CT may be severely limited.

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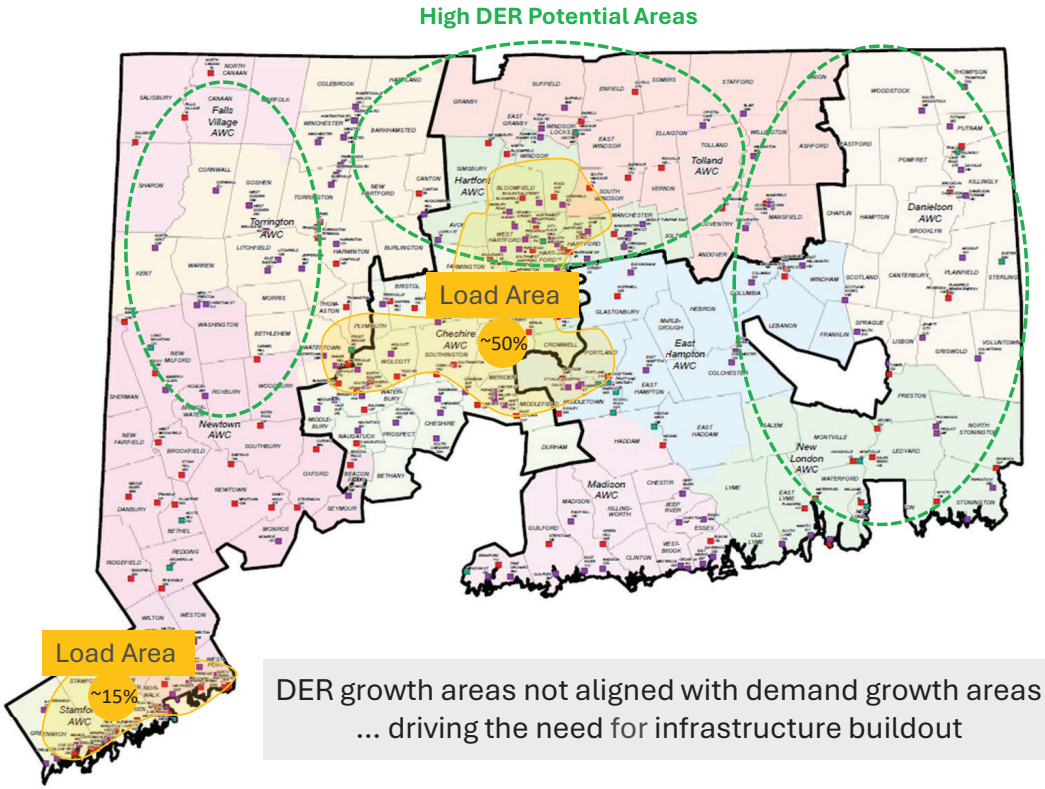

DER growth areas not aligned with demand growth areas
... driving the need for infrastructure buildout

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State of the Distribution System

Reliability

Reliability

Performance Drivers

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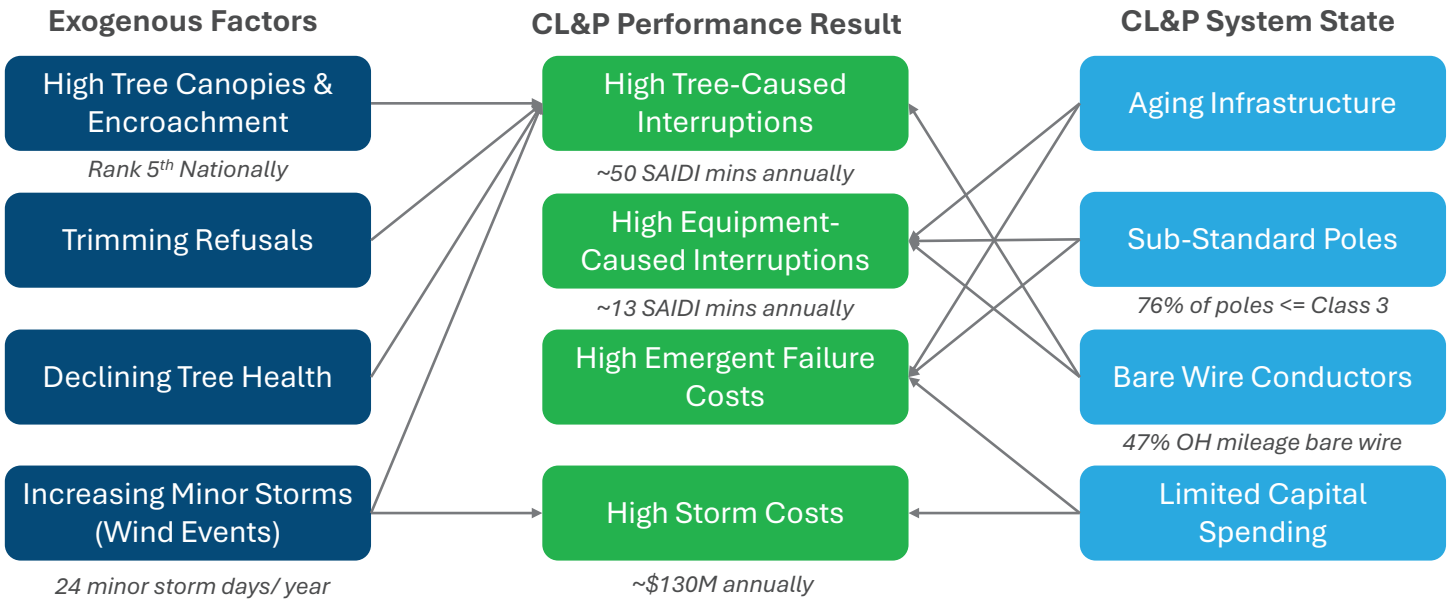
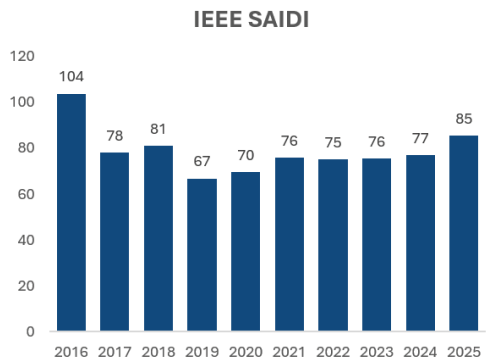
To maintain (***improve***) reliability performance, Eversource's reliability plan needs to keep pace (***outpace***) exogenous factors like vegetation and weather that Eversource does not control or influence.

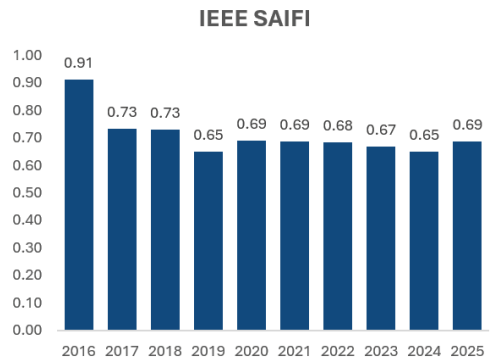


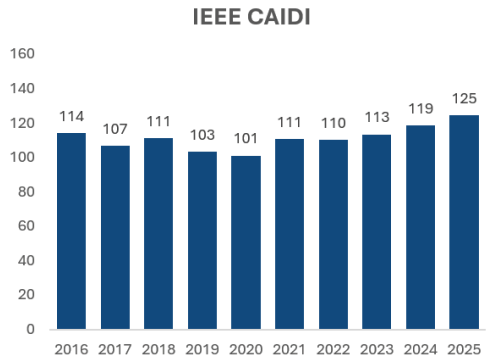
Reliability

Performance Overview

- SAIDI and CAIDI have been increasing in recent years, while SAIFI is generally flat. This is an indication that customers are experiencing longer interruptions on average, while the number of interruptions per customer is relatively stable.
- Although Eversource's performance remains in the top quartile based on the IEEE benchmarking study, it is currently perched on the lower edge of the top quartile. The increase in SAIDI (RE08 methodology) is ~4% from 2023-2024 and ~8% from 2024 to 2025.
- 2026 SAIDI Penalty Threshold (if PBR were implemented) = 81.5 mins







Reliability

Analytical Reliability Investment Strategy

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Balanced Investments Between Reliability and Customer Satisfaction

OBJECTIVE	Support capital investment decisions to improve electric distribution reliability using both historic performance and forward-looking analytics
TRADITIONAL METRIC LIMITATIONS	Traditional outage metrics focus on historical failures, biasing investments toward circuits with past issues rather than future risks
TARGETED INVESTMENTS Capital projects established focusing on the following categories	• SAIDI/SAIFI improvements statewide • Town Scorecard Performance • CEMI • Storm Resiliency
WEIGHTED INVESTMENTS Capital projects weighted to provide balanced approach in achieving anticipated reliability performance and customer experience	• Reliability (Actual + Avoided CMI) • Customer Experience (CEMI) • Equity • Vegetation Risk Reduction • Storm Resiliency • Cost Reduction • Operational Efficiency

Reliability

Data-Driven Approach to the Distribution Plan

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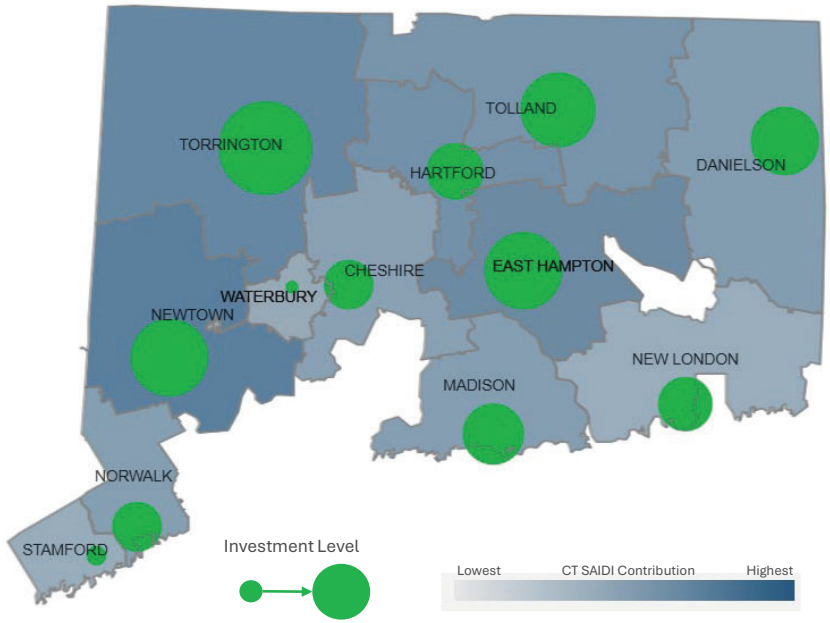
MULTI-INPUT DATA-BASED	The Distribution Plan is informed by data and analytics. Historical **system, performance and asset data are collected and consolidated across various systems** to locate and prioritize LRP investments. Industry-standard tools like the ICE calculator are also incorporated.
METRICS-BASED BENEFIT COST ANALYSIS (BCA)	The LRP is metrics-based. **Industry-standard and model specific metrics are used to quantify costs and benefits and prioritize optimal investments using BCA**. For example, new cost efficiency metrics, like $/CMI saved are used to prioritize reliability investments
RISK-BASED ANALYTICS	Investments are also be prioritized based on **risk, which encompasses the probability and consequences of an event**, e.g., an outage. These analytics target vulnerabilities that may not show up as priorities based on historical data.
GRANULAR ANALYTICS	Laser-focused investments enable higher optimization of each dollar spent. Therefore, **investments are targeted to the highest possible granularity that data enables**. For example, reliability and resilience investments are planned at the protection device (zonal) level.
AI-BASED MODELS	**AI and machine-learning (ML) models are incorporated strategically to improve efficiency and reduce workhours.** For example, AI models parse large volumes of historical data to ensure that models have high fidelity inputs. AI and ML models are also used in Storm Tools & Analytics.
COMPREHENSIVE CO-OPTIMIZATION	Investing in locations that have multiple needs can enable higher optimization of each dollar spent as part of our plan. Therefore, **investments are targeted to resolve multiple system needs**, like asset health, capacity, voltage, and reliability simultaneously.

Reliability

Area Work Center SAIDI Performance vs Reliability Investments

- Compares each AWC's average contribution to CT SAIDI with planned five-year reliability investments
- Reliability investments are targeted at the circuit-zone level, rather than by AWC
- AWC averages can mask underperforming circuit zones, reinforcing the need for zone-based BCA analysis
- Planned BCA-driven investments align with areas contributing most to CT SAIDI



AWC Contribution to CT SAIDI

AWC	2021	2022	2023	2024	2025
CHESHIRE	5.75	5.68	5.76	4.84	6.39
DANIELSON	6.21	4.91	7.67	5.55	7.24
EAST HAMPTON	5.28	6.18	7.57	5.94	5.86
HARTFORD	7.87	7.87	6.63	9.68	7.47
MADISON	5.46	6.74	7.66	4.26	6.38
NEW LONDON	3.46	3.98	4.33	4.93	4.19
NEWTOWN	11.61	9.73	8.15	12.55	9.08
NORWALK	6.91	6.26	4.77	6.55	5.62
STAMFORD	4.60	4.47	3.61	3.53	5.35
TOLLAND	9.50	6.85	6.46	7.41	6.70
TORRINGTON	8.24	8.54	7.31	7.58	14.26
WATERBURY	3.63	2.74	2.31	2.53	2.74

Reliability 2027-2031

AWC	2027-2031
CHESHIRE	$11,311
DANIELSON	$15,712
EAST HAMPTON	$17,431
HARTFORD	$12,785
MADISON	$13,826
NEW LONDON	$12,216
NEWTOWN	$17,465
NORWALK	$11,235
STAMFORD	$4,480
TOLLAND	$17,073
TORRINGTON	$21,242
WATERBURY	$3,135
Total	**$157,910**

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State of the Distribution System

Asset Health

Asset Health

System-Wide Asset Health Issues

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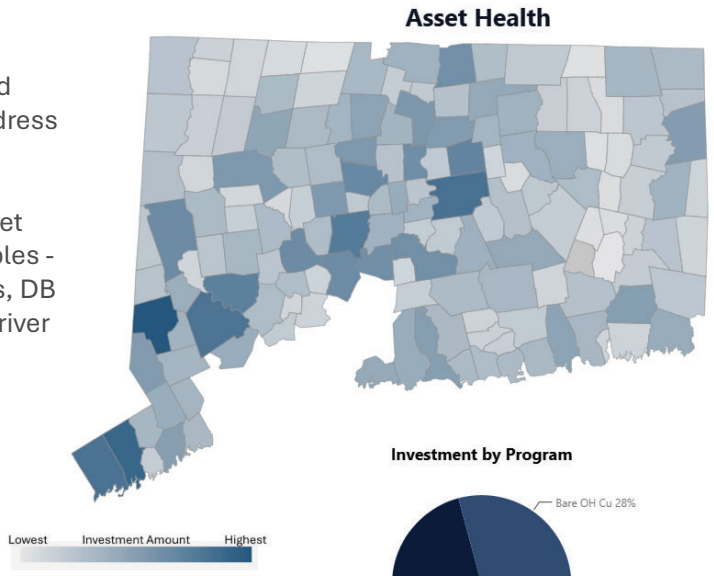
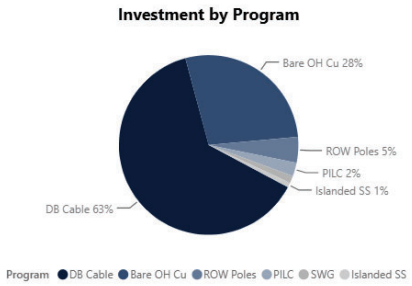
- Map indicates the required investment by town to address **all asset health**
- Largest contributor to asset health is direct buried cables - although prone to outages, DB cables are not a leading driver of SAIDI





Assumptions – Includes:

- All OH bare copper (Cu) wire
- All islanded substations
- All PILC
- All direct buried cable
- ROW Poles > 50 years old
- Switchgear > 30 years old

Town	Bare OH Cu	DB Cable	Islanded SS	PILC	ROW Poles	SWG	Total
ANDOVER	$5,929	$11,759	$0	$0	$0	$0	**$17,688**
ASHFORD	$11,943	$20,403	$0	$0	$0	$0	**$32,346**
AVON	$2,779	$123,396	$0	$0	$5,616	$681	**$132,472**
BARKHAMSTED	$10,938	$19,018	$0	$0	$0	$0	**$29,956**
BEACON FALLS	$3,334	$22,351	$0	$0	$2,184	$0	**$27,870**
BERLIN	$22,927	$62,332	$0	$0	$1,872	$1,759	**$88,890**
BETHANY	$12,244	$19,275	$0	$0	$0	$0	**$31,519**
BETHEL	$15,543	$71,181	$0	$0	$0	$925	**$87,649**
BETHLEHEM	$13,399	$25,369	$0	$0	$0	$0	**$38,768**
BLOOMFIELD	$3,279	$69,838	$0	$1,378	$10,816	$1,319	**$86,631**
BOLTON	$14,245	$14,529	$0	$0	$572	$0	**$29,347**
BRANFORD	$31,155	$66,094	$0	$0	$5,564	$0	**$102,813**
BRIDGEWATER	$14,101	$15,398	$0	$0	$0	$0	**$29,499**
BRISTOL	$50,190	$70,875	$372	$4,304	$2,236	$2,684	**$130,660**
BROOKFIELD	$24,018	$70,694	$0	$0	$0	$0	**$94,712**
BROOKLYN	$20,175	$22,258	$0	$0	$4,680	$0	**$47,113**
BURLINGTON	$7,405	$62,161	$0	$0	$0	$0	**$69,566**
CANAAN	$10,159	$10,531	$0	$0	$0	$0	**$20,691**
CANTERBURY	$19,320	$21,334	$0	$0	$0	$0	**$40,653**
CANTON	$7,903	$62,676	$0	$0	$12,948	$0	**$83,527**
CHAPLIN	$5,769	$6,035	$0	$0	$0	$0	**$11,804**
CHESHIRE	$39,146	$112,163	$0	$0	$2,912	$925	**$155,145**
CHESTER	$14,678	$16,078	$0	$0	$416	$0	**$31,172**
CLINTON	$27,947	$43,299	$0	$0	$4,576	$0	**$75,822**
COLCHESTER	$15,848	$77,816	$0	$0	$11,128	$0	**$104,792**
COLEBROOK	$13,931	$6,334	$0	$0	$0	$0	**$20,265**
COLUMBIA	$11,981	$24,642	$0	$0	$12,324	$0	**$48,947**
CORNWALL	$18,442	$16,327	$4,224	$0	$468	$0	**$39,461**
COVENTRY	$41,977	$39,198	$0	$0	$7,644	$0	**$88,819**
CROMWELL	$1,643	$41,126	$0	$0	$884	$231	**$43,884**
DANBURY	$64,146	$169,078	$0	$2,737	$1,040	$7,100	**$244,101**
DARIEN	$16,130	$24,969	$0	$0	$0	$0	**$41,099**
DEEP RIVER	$19,021	$14,774	$0	$0	$1,664	$0	**$35,459**
DURHAM	$239	$39,817	$0	$0	$0	$0	**$40,056**
EAST GRANBY	$1,862	$35,379	$0	$0	$4,368	$0	**$41,609**
EAST HADDAM	$31,184	$46,069	$0	$0	$1,248	$0	**$78,501**
EAST HAMPTON	$28,202	$48,473	$10,176	$0	$3,900	$0	**$90,752**
EAST HARTFORD	$5,091	$30,319	$0	$2,586	$8,840	$1,489	**$48,326**
EAST LYME	$46,459	$61,591	$0	$0	$3,432	$440	**$111,922**
Total	**$3,107,996**	**$7,063,991**	**$94,755**	**$274,423**	**$519,220**	**$145,365**	**$11,205,749**

Asset Health

By Category



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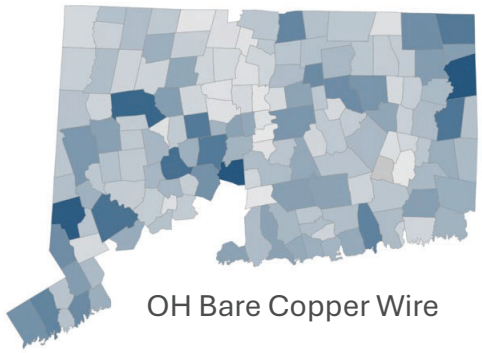

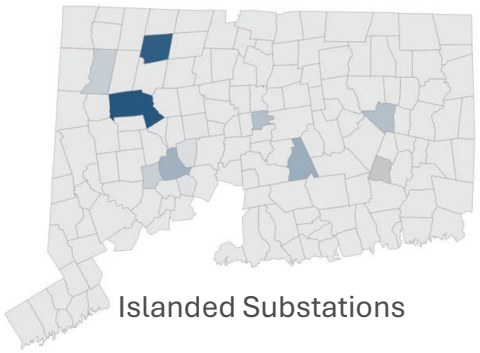

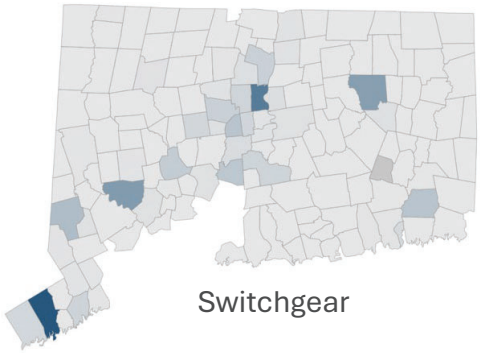

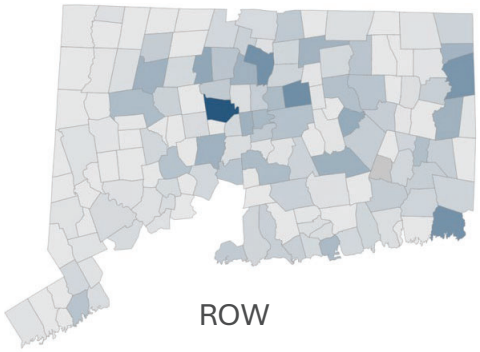

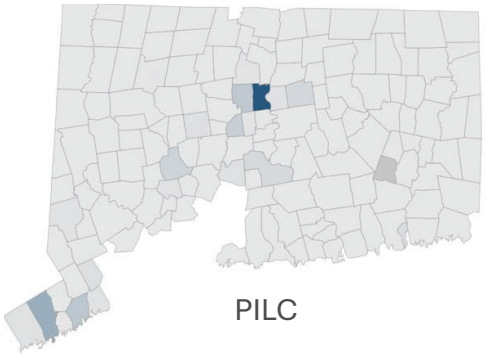

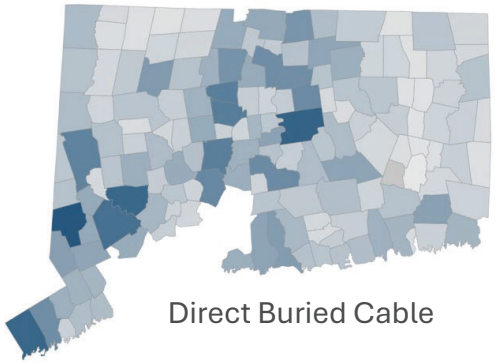

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Targeted System Performance Plan

TSP Plan Overview

Investment Comparison – 5 Year Summary

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Distribution Line & Substation Capital Only

	2026 Budget	Sustained	Targeted System Performance	Advancing the Grid
Impact	$516M - 2026	$582M - 2027 $3.2B – 5 Yr Total	$605M - 2027 $3.6B – 5 Yr Total	$642M - 2027 $4.0B – 5 Yr Total
Overall Impact on Reliability & Headline Risk				
SAIDI Impact (minutes - 5 Year)	+12.3 ✗	-0.7 ✓	-6.1 ✓	-10.3 ✓
MBI Impact (months - 5 Year)	-2.9 ✗	-0.6 ✓	+0.4 ✓	+1.5 ✓
RE08 (Resiliency/Reliability)	✗	✓	✓	✓
Asset Health Risk	$$$$	$$$	$$	$
Emergent capital risk of failed substation equipment	Expects up to 3 transformer failures per year	Expects 1 transformer failure per year starting in 2030	Expects 1 transformer failure per year starting in 2030	Expects 0 transformer failures per year starting in 2030
Substation Capacity	Number and size of violations increasing	Number and size of violations resolved; meets Planning Criteria		
DER Enablement	150 MW from 9 station projects	+110 MW from 7 additional projects		+175 MW from 2-3 DER Cost-SHARE projects
Substation Transformer Replacements/Year: **Average Fleet Age in 2040:** **Oldest Unit in 2040:**	Replace avg. of 3 Bulk or Dist. Transformers 41 years 76 years	Replace avg. of 6 Bulk or Dist. Transformers 38 years 73 years		Replace avg. of 8 Bulk or Dist. Transformers 29 years 68 years
Grid Mod Avg Annual Impact ($M)	$10M	$14M	$14M	$53M
Vegetation Management (O&M) (yearly)	$59M (Split Cap/Exp thru '27)	$91M (Starting in '28)	$91M (Starting in '28)	$91M (Starting in '28)

Targeted System Performance Plan

Financial and Engineering Categories

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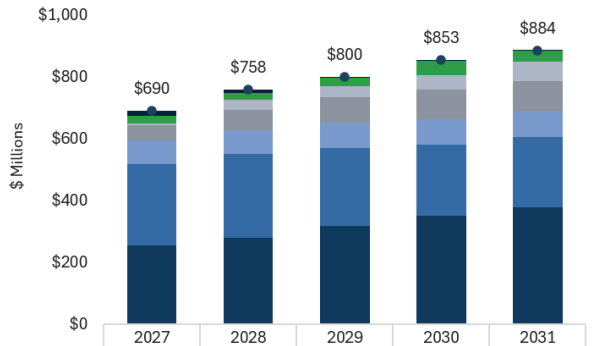
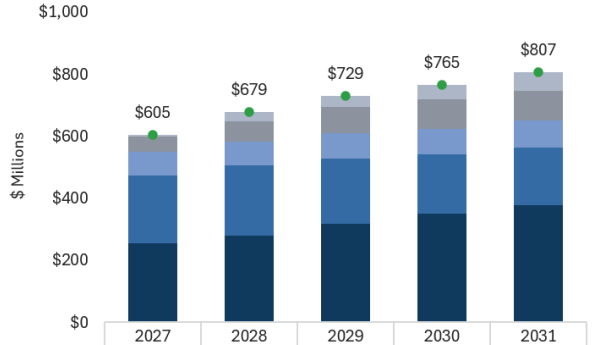
The Engineering capital plan is a subset of total capital plan spending -
it does not include Information Technology, Facilities and certain Basic Business items

Targeted System Performance - Total Investment



	2027	2028	2029	2030	2031
Information Technology	$18	$10	$5	$1	$1
Facilities	$23	$24	$25	$47	$36
Regulatory Commitments-ED	$6	$31	$36	$46	$61
Peak Load / Capacity-ED	$50	$67	$84	$96	$96
New Customer-ED	$75	$77	$80	$82	$86
Basic Business-ED	$264	$269	$252	$231	$226
Reliability-ED	$254	$280	$319	$350	$378
Total	$690	$758	$800	$853	$884

Targeted System Performance - Engineering Component



	2027	2028	2029	2030	2031
Regulatory Commitments-ED	$6	$31	$36	$46	$61
Peak Load / Capacity-ED	$50	$67	$84	$96	$96
New Customer-ED	$75	$77	$80	$82	$86
Basic Business-ED	$220	$225	$211	$191	$187
Reliability-ED	$254	$280	$319	$350	$378
Total	$605	$679	$729	$765	$807

Targeted System Performance Plan

Distribution Substation & Lines

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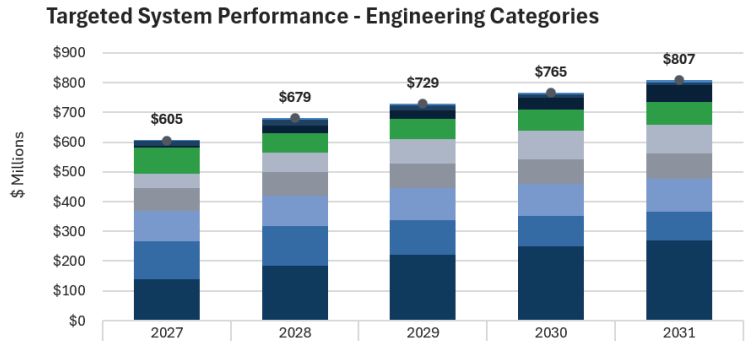
A comprehensive and prioritized plan that delivers projects and programs that maintain the distribution system by addressing asset health along with strategic system reliability improvements

Investment Description	
Regulatory	5kV Grounding, CEMI
TelCom/Grid Mod	Tele-communications and Grid Mod
Resiliency	Resiliency bare conductor replacement
Reliability	Substation reliability, distribution planned reliability, Double Pole Removals, Smart Switch progam
Capacity	Includes distribution line and substation peak load/capacity projects
New Customer	Customer growth reflected over 5 years
Operational Requirements	3rd party attachments, pre-cap transformer, DOT Relocations, Lighting, Meters, Capital Tools
Emergent	Emergent response or work required to prevent imminent outages, DB cable failures, annual reliability, & substations emergent
Asset Health	Includes Aging Infrastructure, PILC, ROW poles, substation elimination, substation and switchgear replacements, battery & RTU replacements, station security upgrades, Pole Integrity

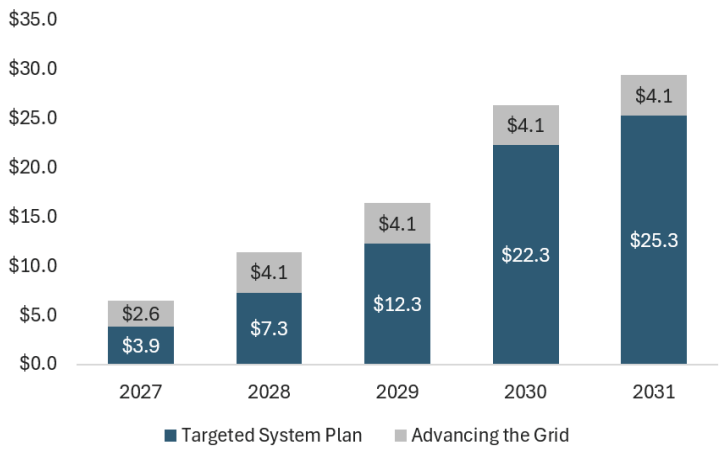


	2027	2028	2029	2030	2031
Regulatory	$1	$6	$6	$6	$6
TelCom/Grid Mod	$18	$19	$16	$11	$10
Resiliency	$5	$25	$30	$40	$55
Reliability	$87	$65	$67	$70	$77
Capacity	$50	$67	$84	$96	$96
New Customer	$75	$77	$80	$82	$86
Operational Requirements	$102	$103	$109	$110	$112
Emergent	$129	$132	$116	$102	$97
Asset Health	$139	$186	$221	$249	$268
Total	$605	$679	$729	$765	$807

Targeted System Performance Plan

Incremental O&M

- Advancing technology will require labor to support maintenance of field and software tools that is incremental to the test year O&M in line with investments included in Sustained Performance and Advancing the Grid proposals
- DERMS benefits are enabled by Grid Services Compensation Fund
- New Vegetation Management employees to bring work in house
- New Power Quality employees to investigate and resolve PQ issues



Advancing the Grid ($18.9M)
- System Planning Labor and Tools (8 new FTE)
- Field Engineering Labor (8 new FTE)
- Distribution Engineering (2 new FTE)

Targeted System Performance ($71.0M)
- Grid Services Compensation Fund - $38M
- Control Room Labor (7 new FTE)
- Field Com Labor and Cellular (2 new FTE)
- Data Innovation (3 new FTE)
- Distribution Substation Asset Mgmt. (1 new FTE)
- Vegetation Management (21 new FTE)
- Power Quality (5 new FTE)

Targeted System Plan

Economic Impacts Based on RIMS II Methodology

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Eversource Energy
CT Rate Case 2026
Calculation of Economic Impacts of Proposed Investment Levels
Regional Input-Output Modelling System (RIMS II) developped by the US Bureau of Economics Analys (BEA) to assess the potential impacts of various projects
This spreadsheet uses Connecticut RIMS II type I multipliers for industry "2211A0 Electric power generation, transmission, and distribution* based on the 2017-2023 years
$ in millions
For more information: https://apps.bea.gov/regional/rims/rimsii/

For input by user		
Year	Current Investment	Total Sustained Investment
2027	$470.00	$690.00
2028	$470.00	$758.00
2029	$470.00	$800.00
2030	$470.00	$853.00
2031	$470.00	$884.00
2027-2031 Total	**$2,350.00**	**$3,985.00**

Calculated Table - Demand Output (Dollars)		
Year	Current Investment	Total TSP Investment
2027	$599.49	$880.10
2028	$599.49	$966.83
2029	$599.49	$1,020.40
2030	$599.49	$1,088.00
2031	$599.49	$1,127.54
2027-2031 Total	**$2,997.43**	**$5,082.87**

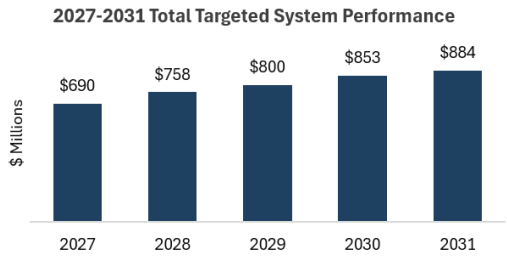
Calculated Table - Employment Output (jobs)		
Year	Curent Investment	Total TSP Investment
2027	1,012	1,486
2028	1,012	1,632
2029	1,012	1,722
2030	1,012	1,837
2031	1,012	1,903
2027-2031 Total	**5,060**	**8,580**

Five-Year Economic and Employment Impacts of 2027-2031 Total Sustained Investment based on CT 2017-2023 RIMS II Methodology	
Additional Economic Impact Investment (M)	
Curent Investment	**$ 647.43**
Total TSP	**$ 1,097.87**
Employment Impact of Investment	
Curent Investment	**5,060**
Total TSP	**8,580**

RIMS II Multipliers (2017/2023)	
State of CT (Type 1): 2211A0 Electric Power Generation, Transmission, and Distribution	
Final Demand Output*	1.2755
Final Demand Employment**	2.1531

*Total dollar change in output which occurs in
**Total change in number of jobs which occurs

Calculated Table - Net Output Gains (Dollars)		
Year	Current Investment	Total TSP Investment
2027	$129.49	$190.10
2028	$129.49	$208.83
2029	$129.49	$220.40
2030	$129.49	$235.00
2031	$129.49	$243.54
2027-2031 Total	**$647.43**	**$1,097.87**



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Investment Plans Overview

Distribution Substations

Distribution Substations

Plan Overview

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	No Change to Capital Investment	Targeted System Performance	Advancing the Grid
	Minimum investment	**Increased Investment**	**Adequate Investment**
Equipment Failure Investment	Risk of higher than budgeted amounts for equipment failures and emergent replacements of transformers, breakers, batteries, etc.	Reduced risk of reactive emergent replacements and equipment failures of transformers, breakers, batteries, etc.	Reduction of risk of higher than budgeted amounts for equipment failures and emergent replacements of transformers, breakers, batteries, etc.
	Broke/Fix Only	**Strategic Projects Planned**	**Asset Health Monitoring & Analytics**
Asset Replacement Investment	**Sub-optimal** funding for replacements of transformers and switchgear **Cancellation** of substation security, oil recloser, battery, and station service transformer replacements Projects **deferred significantly** beyond need date	Replacement strategy for transformers achieves average fleet age and oldest unit age objectives with incremental budget Progressing projects for substation security, oil recloser, battery, and station service transformer replacements Projects minimally delayed beyond need date	Enhanced on-line monitoring and analytics enables real-time monitoring of asset health Advancing progress on replacements of RTUs and Protection Systems provides improved capabilities for protection and controls Enables Predictive analytics for asset condition monitoring
	Limited to Existing Projects	**Existing, Critical Projects, and Improving Future Station Designs**	**Major Substation Upgrades for Large-Scale DER Integration**
Capacity Investments	Existing projects being coordinated and delayed to adhere to budget limitations	Existing, critically needed, and design-criteria-related projects allowed to progress and continue with system studies for future plans	Upgrading saturated substations that have long stagnated DER queues and allocating cost of upgrades to beneficiaries

Distribution Substations

Targeted System Performance Plan

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TRANSFORMER REPLACEMENTS	• Aging fleet with focused replacements for the oldest units that have declining health scores. • Projects targeting units with asset condition concerns and over 50 years old • Coordinating with peak load/capacity upgrades to manage scoping and funding • **$40.4M** funded in 2028 increasing to $68M by 2030 (Avg. 6 transformers/yr)
SWITCHGEAR REPLACEMENTS	• Replacements of aging switchgear with operational concerns (i.e. failing foundations, obsolete equipment, lack of communications, electromechanical relays, etc.) • **$18M** funded in 2028, increasing to $20M by 2030
EMERGENT EQUIPMENT ANNUAL	• Annual work orders related to emergent response or work required to prevent imminent equipment failures. • **$16.5M** funded in 2028 – 2029. Reduced to $11.5M in 2030 – 2031 with planned equipment replacements.
AGING INFRASTRUCTURE	• Projects related to aging equipment replacements (i.e. batteries, station services transformers, oil reclosers, oil circuit breakers, and other station equipment). • **$21.8M** funded in 2028, increasing to $29.4M by 2030
PEAK LOAD/CAPACITY UPGRADES	• Projects to address normal and emergency substation overloads within the 10-year planning horizon • Reduce risk of equipment failures and customer outages, eliminates risk of extended outages during emergency conditions, and reduce cost of response to emergent issues • **$36.5M** funded in 2028, increases to $70M by 2030

Distribution Substations

Targeted System Performance Plan

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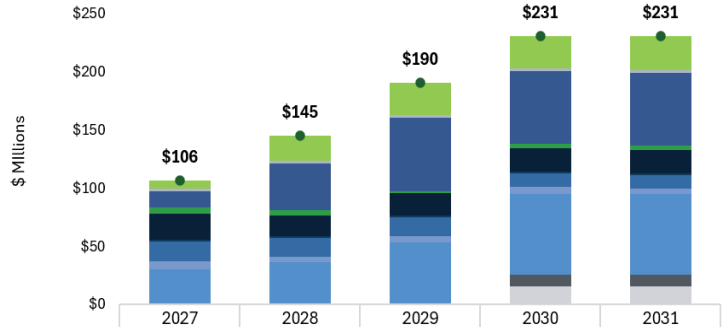

	2027	2028	2029	2030	2031
Aging Infrastructure Replacements	$7	$22	$28	$28	$29
Inspection/Replacement Failed Equipment	$2	$2	$2	$2	$2
Substation Transformer Asset Health	$14	$40	$63	$63	$63
Substation Transformer DSCADA LTC Controls	$5	$4	$2	$4	$4
Switchgear Asset Health	$23	$18	$19	$20	$20
Capital Tool Purchases	$1	$1	$1	$2	$2
Emergent Equipment Failures/Replacements	$17	$17	$17	$12	$12
Environmental Equipment Replacements	$7	$4	$6	$6	$5
Substation Capacity / System Planning	$30	$37	$53	$70	$70
Incremental Aging Infrastructure Replacements	$0	$0	$0	$10	$10
Incremental Substation Transformer Asset Health	$0	$0	$0	$15	$15
Total	$106	$145	$190	$231	$231

Proposed budget increases over years to give time for engineering and material purchasing

Aging Infrastructure Replacements include the replacements of circuit breakers, electromechanical relays, oil reclosers, station batteries, and station service transformers.

Reduces the funding for emergent failures as more asset health replacements are planned

Incremental funding allows two more bulk transformer replacements per year

EVERSOURCE

Investment Plans Overview

Distribution Lines

Distribution Lines

Plan Overview

EVERSOURCE

AREA	Sustained	Targeted System Performance	Advancing the Grid
RELIABILITY (5 YEARS)	Maintain ▪ SAIDI: +0.08 ▪ MBI: 0.0	Maintain ▪ SAIDI: +0.08 ▪ MBI: 0.0	Maintain ▪ SAIDI: -0.2 ▪ MBI: 0.0
PBR	Inline with potential PBR	Inline with potential PBR	Inline with potential PBR
CEMI	No Investment	Strategic Investment ($5M/year)	Strategic Investment ($5M/year)
RESILIENCY	No investment (RE08)	Proactive investment (RE08)	Proactive investment (RE08)
ASSET HEALTH	**Targeted** investment to address high priority asset conditions (PILC, ROW, OH Cu, UG automation, 5 kV substations & UG structures)	**Increased** funding in UG structures, UG automation	**Accelerated** investment to address asset conditions
AUTOMATION	**Increased** investment to maintain reliability invest (~130 reclosers/year) **10 years** to <500 customer groups	**Increased** resiliency focus	**Proactive** investment to resolve customer zones > 500 (~190 reclosers/year) **5 year** to <500 Customer groups
LINE SENSORS	**Targeted** investment	**Targeted** investment	**Advanced** line sensor technology
SCADA CAPACITOR	Meets ISO-NE **Compliance** levels	Meets ISO-NE **Compliance** levels	**Additional** automation investment

Distribution Lines

Targeted System Performance Plan

EVERSOURCE

NEW SERVICE	• Annual work orders and specific projects related to customer interconnections • **$75M** funded in 2027
EMERGENT EQUIPMENT FAILURES	• Annual work orders related to emergent response or work required to prevent imminent outages • **$70M** funded in 2027 **(reduced spend in later years under TSP)**
CAPACITY	• Projects to address circuits exceeding the planning criteria for capacity • **$20M** funded in 2027
RELIABILITY	• Automation & reconductoring required to maintain SAIDI/SAIFI performance • Town scorecards – Reliability improvements for the worse performing towns • **$31M** funded in 2027
SMART SWITCH	• Automation – Addressing large customer zones > 500 customers • **$5M** funded in 2027 **(TSP adds $5M per year)**
RESILIENCY	• Storm hardening on worse performing devices during weather events • **$0M** funded in 2027 under Sustained Performance **(TSP $5M in 2027 & $55M in 2031)**
OH AGING INFRASTRUCTURE	• Replacements of aging overhead conductors and equipment • **$12.5M** funded in 2027
UG PILC REPLACEMENT	• Replacement of PILC aging infrastructure • Feeder cutovers in support of switchgear replacement • **$14M** funded in 2027
DIRECT BURIED CABLE	• Replacement of failed direct buried cables with cable in conduit • **$27M** funded in 2027
RIGHT-OF-WAY	• Replacement of poles located within ROWs that have exceeded life expectancy • **$21M** funded in 2027

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Targeted System Performance Plan

New Service

New Service

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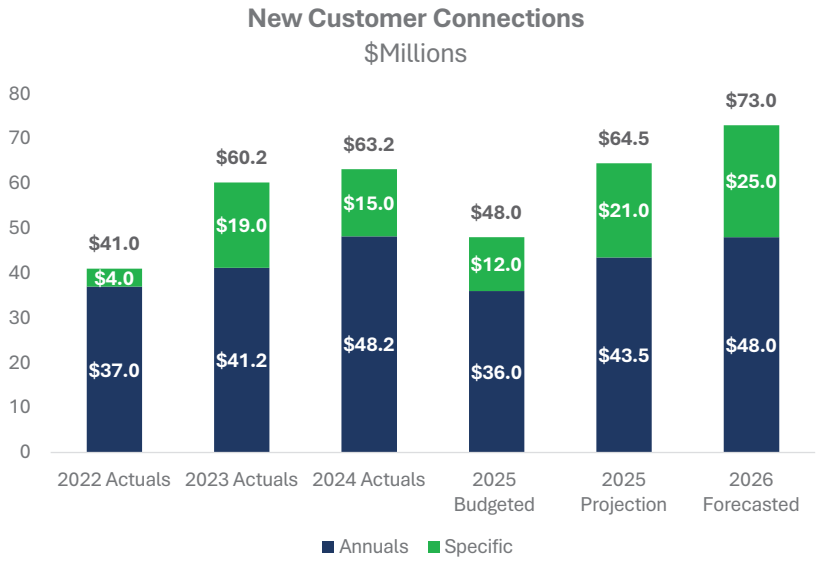
Steady customer growth drives increasing demand over time

- Annual projects (smaller, less complex work) have maintained similar spend levels
- Specific projects (large commercial/industrial projects) continue to increase
- 5 Year Plan = $400M



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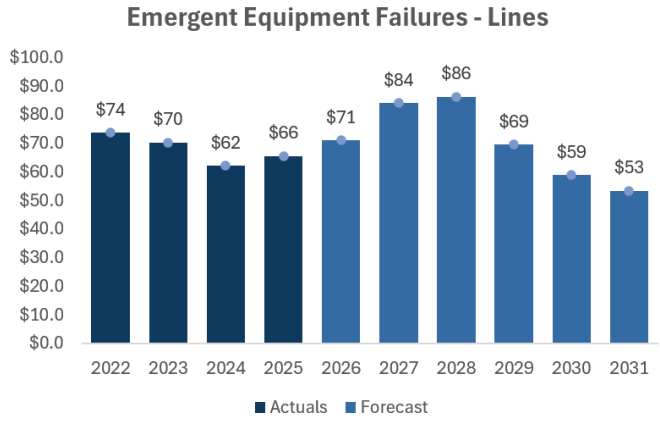
Targeted System Performance Plan

Emergent Work

Emergent – Distribution Lines

EVERSOURCE

- Emergent work includes items identified through routine inspections and maintenance as well as emergent/emergency repairs on overhead and underground distribution.
- The goal is to optimize time-directed and condition-based maintenance to minimize future corrective maintenance.
- Maintenance activities include:
  - Predictive: take action based on data analysis, inspection, etc.
  - Preventive: take action to avoid failures
  - Corrective: take action after failure or malfunction – broke/fix
- 2027 & 2028 each include $14M for replacement of defective Eaton reclosers
- 5 Year Forecast = $352M



As proactive asset health investment increases in future years, emergent work is anticipated to decrease

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Targeted System Performance

Asset Health

Asset Health - Lines

ROW Poles

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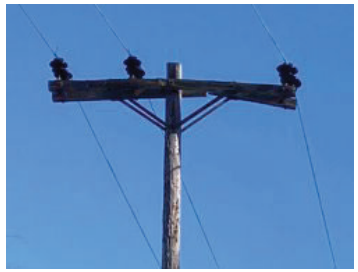
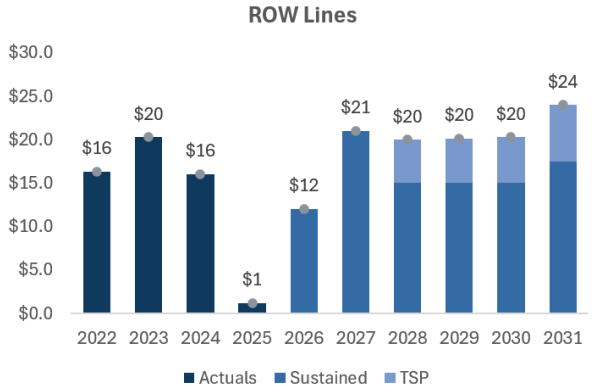
Most of these poles are past their service life with an average age over 50 years







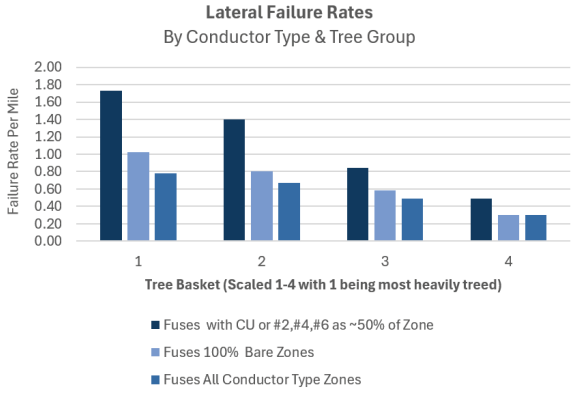
- Program replaces aging infrastructure in rights-of-way (ROW).
- Wooden poles, crossarms and conductor located in ROWs show visible signs of degradation caused by weather and wildlife damage.
- Reliability will be at continued risk and susceptible to failures causing extended outages to customers if not addressed.
- Projects are prioritized by number and severity of degraded poles, public safety, and customers at risk.

Asset Health - Lines

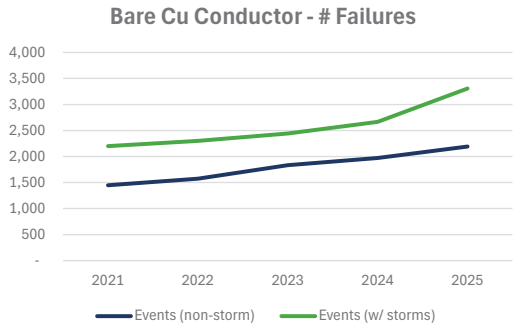
Overhead Aging Infrastructure Replacement

- Reconductoring program **targeting legacy #2, #4, and #6 bare copper conductor** - typically over 50 years—and has experienced significant mechanical degradation, including embrittlement and reduced tensile strength
- Aging conductors exhibit elevated failure rates under normal loading and environmental stress conditions, contributing to sustained customer interruptions
- Lateral zones with the highest asset-related failure risk will be prioritized using Customer Minutes Interrupted (CMI) over a four-year evaluation period and$/CMI Saved.
- Data-driven prioritization ensures that efforts target zones where replacement yields the greatest reliability improvement and mitigation of repetitive outage.
- To remediate, locations are reconductored and, if applicable, converted to the area's standard voltage.
- There are currently 3,774 miles of bare Cu in-service. Baseline funding of ~ $16M per year would result in a 189-year replacement program or 144 years with ~$5M of incremental funding per year.

Circuit zones with bare copper wire have a substantially higher failure rate than other bare zones



The number of failure events associated with bare Cu conductors have increased by 150% in 2025 versus 2021.

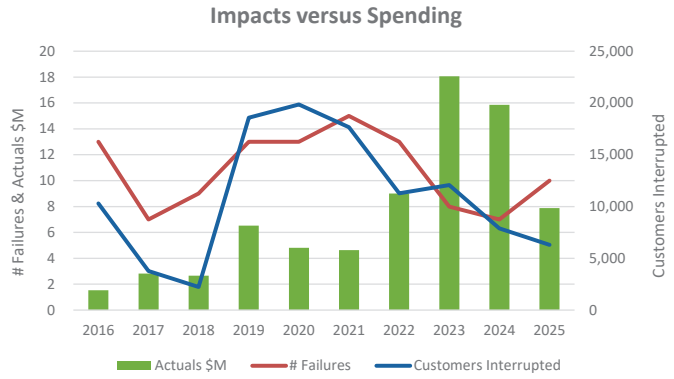


Asset Health - Lines

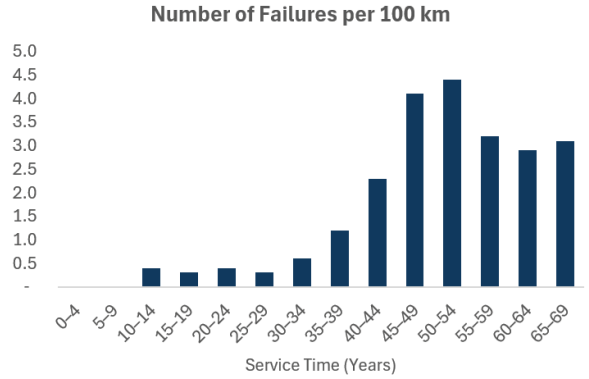
PILC Replacement

Purpose: Replace aging Paper Insulated Lead Covered (PILC) underground distribution cables.
Asset Age: PILC cables were widely installed through **1984**, primarily on circuit getaways and in networked underground systems.
Expected Life: Designed service life of approximately **40–50 years**; many remaining cables have exceeded their expected life.
Reliability Risk: Aging PILC cables experience roughly **3 failures per 100 km** (about **1 failure per 20 miles**) once they are over **45 years old**.
Customer Impact: Failures can cause customer outages and leave the electric system operating in an abnormal configuration for extended periods.
Network System Risk: Underground network systems, including areas such as **Hartford**, rely heavily on PILC feeders. A second cable failure during an abnormal operating condition could result in the loss of an entire network, affecting a large number of customers.

Historical PILC Failure Data in Relation to Proactive PILC Replacement



Failure rate as a function of service time for age related failures on PILC cables



Asset Health - Lines

PILC Replacement

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Replacement Prioritization Based On:

- Circuit load
- Number of reliability events
- Customers at risk
- Number of customers impacted

Benefits of Replacement:

- Improved worker and public safety
- Reduced environmental risk
- Improved reliability
- Increased system capacity
- Enhanced customer satisfaction

Remaining Inventory:

- Approximately **270 miles of PILC cable** remain on more than **200 feeders** in Connecticut.

Funding & Timeline:

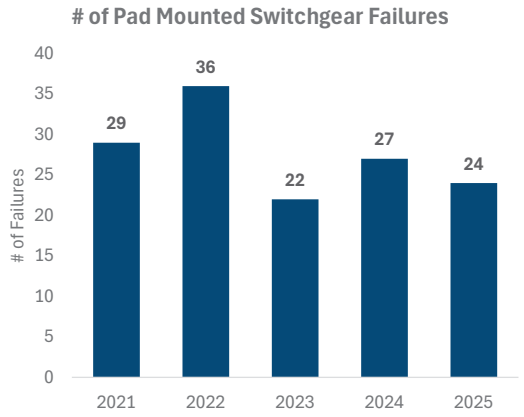
- Current baseline funding of approximately **$11 million/year** results in a **25-year** replacement program.
- Adding approximately **$5.5 million/year** in incremental funding reduces the program duration to about **17 years**.

Asset Health - Lines

Underground Automation

This initiative enables switchgear automation to enable quicker restoration, telemetry, improved safety and aging infrastructure

- **Manual switchgear**: Has contributed to extended outages which negatively impacts reliability as these switchgear units cannot be operated remotely to isolate a fault to restore customers. Crews must be dispatched to manually operate the switchgear.
- **Telemetry**: New switchgear with SCADA enables real-time load monitoring and remote switching, significantly reducing outage restoration times and improving operational flexibility and system planning.
- **Improved safety**: New switchgear cable connections are dead-front utilizing elbow connectors versus older live front switchgear where cables are bolted to a spade eliminating exposed primary voltage, reducing potential flash incidents and risks.
- **Aging Infrastructure**: Replacing switchgear that has reached end-of-life proactively prior to failure would reduce both customer outages and abnormal system configurations.



Asset Health - Lines

DB Cable Replacements

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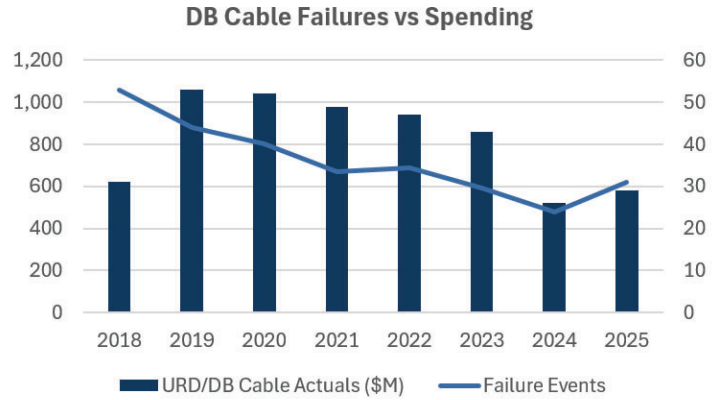
- This program funds the replacement of direct buried (DB) distribution cables in underground residential (URD) and commercial developments that are reaching the end of their useful lives.
- It has been determined on an industry-wide basis that much of the original XLP and HMP-insulated primary cable installed in the DB system has not achieved its engineered life expectancy.
- Premature cable failures have degraded the reliability for the Company's customers served by these cables.
- The distribution system encompasses a substantial component of DB cable in residential areas, which was placed in the ground in the 1970s and 1980s.
- At the time, the installation of the cable did not include any conduit. Utility companies simply dug a trench, put the cable into the ground, and placed it in-service.



Asset Health - Lines

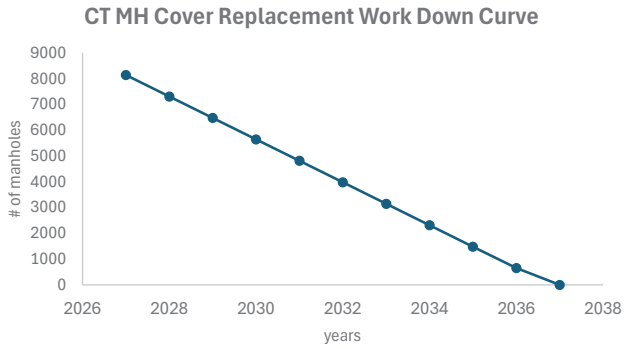
Underground Structures

- Approx 14,000 underground structures - vault/manhole/handhole/service box/conduit ducts with most structures in CT installed between the 1920s through 1970s.
- Inspections are performed on structures by Operations on a 5-year inspection cycle.
- Replacement of manhole covers with Energy Release MH covers that do not dislodge from MH structures in the event of a splice/cable failure in the manholes
- Approximately 8,000 manhole covers in Connecticut at an average cost of $12k to replace each cover.
- Manhole cover replacements are prioritized as follows:

Priority	Description
1	Outdoor Dining Areas
2	High Pedestrian and Vehicular Traffic
3	Downtown areas
4	Holes containing High Fault Duty circuits
5	Getaway manholes
6	Other









Energy Release Manhole Cover

Asset Health - Lines

Substation Elimination

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- Program provides funding for line work necessary to eliminate small, aging distribution substations with an average age of **60+ years old** that, if not eliminated, will require significant upgrades and equipment replacement to remain in service.
- Many of these substations are "Islanded" i.e. a substation where all or most of the load cannot be picked up by alternate sources in the event of an equipment failure within the substation.
- Rather than replacing the equipment, the preferred mitigation technique is to eliminate the station by converting the distribution system to safely operate at a higher voltage fed from a bulk substation that is not islanded.
- These substations typically supply voltages such as 4.8 kV which are no longer standard, rebuilding and converting these areas to higher voltages such as 13.8 kV or 23 kV will improve reliability for customers and provide the means to restore customers via an alternate source for both non-storm and storm events.

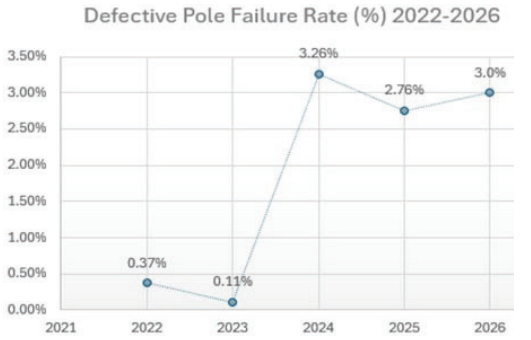
14 Islanded substations remain in-service impacting: 20k+ Customers

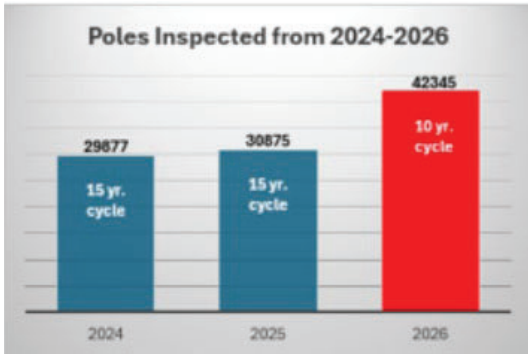
Recent Islanded Substation Events	
Tomac 12H	**Terryville 21Q**
Town: Greenwich	Town: Terryville
Outage Event: 4/25/16	Outage Event: 6/10/20
Cause: Substation Arrester	Cause: Substation Insulator (Animal)
Voltage: 4.8 kV	Voltage: 4.8 kV
Customers Impacted: 1,725	Customers Impacted: 2,375
Restoration Time: 9 Hours & 37 Minutes	Restoration Time: 4 Hours & 12 Minutes
Year Substation Converted: 2019-2022	Year Substation Converted: 2019-2021
Cost to Convert: $9.4M	Cost to Convert: $6.3M

Asset Health - Lines

Pole Integrity Program

- The pole integrity program accounts for the cost required to replace defective wooden poles identified during the annual pole inspection process across CT. These poles must be replaced as they can no longer remain in service, due to loss of structural strength, decay, insect infestation and physical damage resulting in a risk to public safety and system reliability.
- In 2025, Eversource updated its construction pole standards and harmonized its inspection process across all service territories to better align with industry standards. This change shortened the pole inspection cycle from 15-yr to a 10-yr inspection cycle and incorporates the use of the IML tool (Resistograph).
- Eversource as the custodian of approximately 419,000 utility wooden-poles across 149 towns in Connecticut, will begin inspecting approximately 42,000 poles annually to comply with the new 10-year cycle starting in 2026. The expected life of a utility pole is 40-45 years with CT poles averaging 47 years old.
- The Company anticipates an increase in capital spending due to a higher volume of defective poles resulting from shortening the inspection cycle.

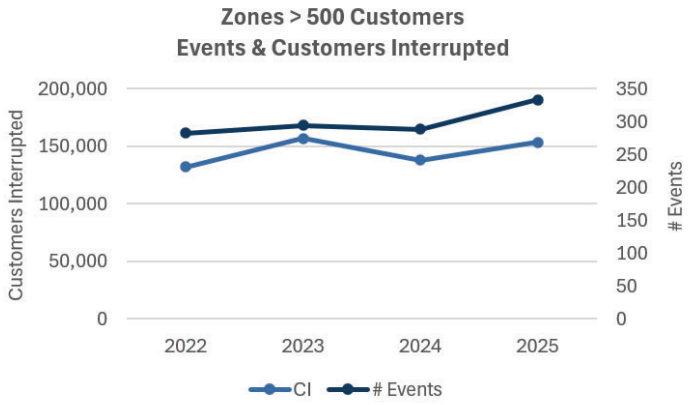




Asset Health - Lines

Smart Switch Automation

- Outage events in circuit zones with over 500 customers have a high customer reliability impact with no ability to automatically or remotely isolate an event to restore customers in less than 5 minutes. These events are large contributors to system SAIDI and SAIFI.
- Additional smart switch devices enable outage events to be isolated to smaller groups of customers improving customer reliability, telemetry, SAIDI and SAIFI.



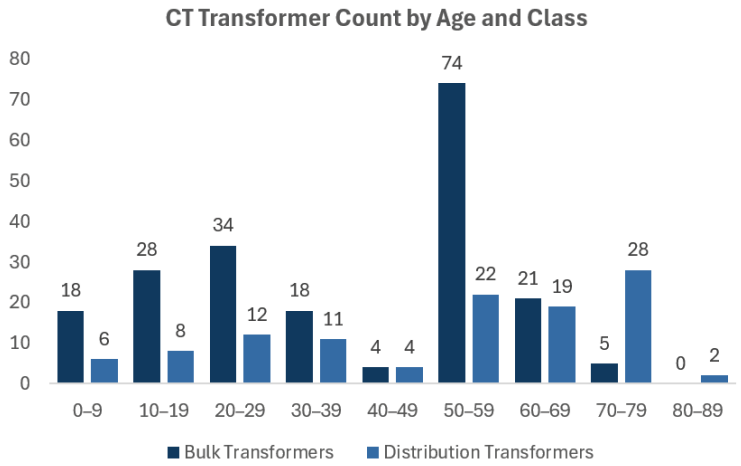
Sectionalizing all zones to below 500 customers would take **9 years** under the Reliability SAIDI / SAIFI program alone.

The incremental funding under TSP of $5M under the Smart Switch program would reduce the time to **6.5 years**.

Asset Health - Substations

Bulk and Distribution Transformer Age Profile

- The life expectancy of transformers is typically **40 years**
- There are 314 units not including single customer units
- The current average age is **43 years** old
- 178 or **56%** are **over 40 years old**
- The oldest unit is 85 years old located at Shepaug 13A
  - The transformer currently has a PTX short term health rating of 0.19 and a long-term health rating of 0.29 (=>0.50 needs review for replacement)
  - No projects for Shepaug 13A are currently in the 5-year plan



Asset Health - Substations

Transformer Health Index

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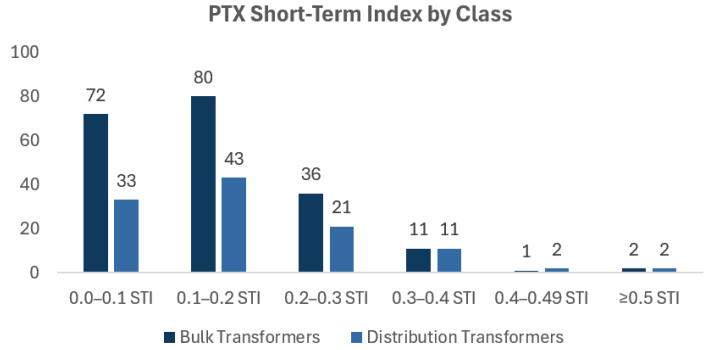
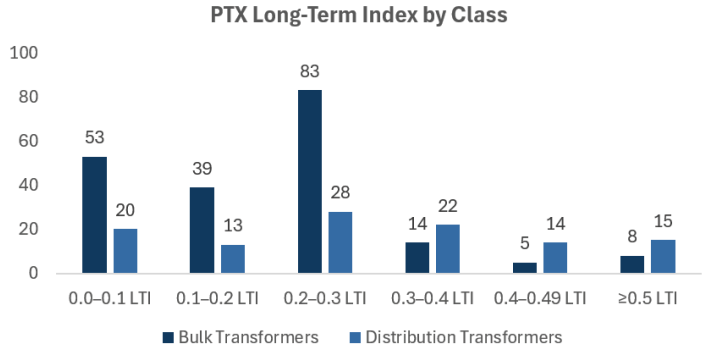
Electric Power Research Institute (EPRI) Power Transformer Expert System (PTX)

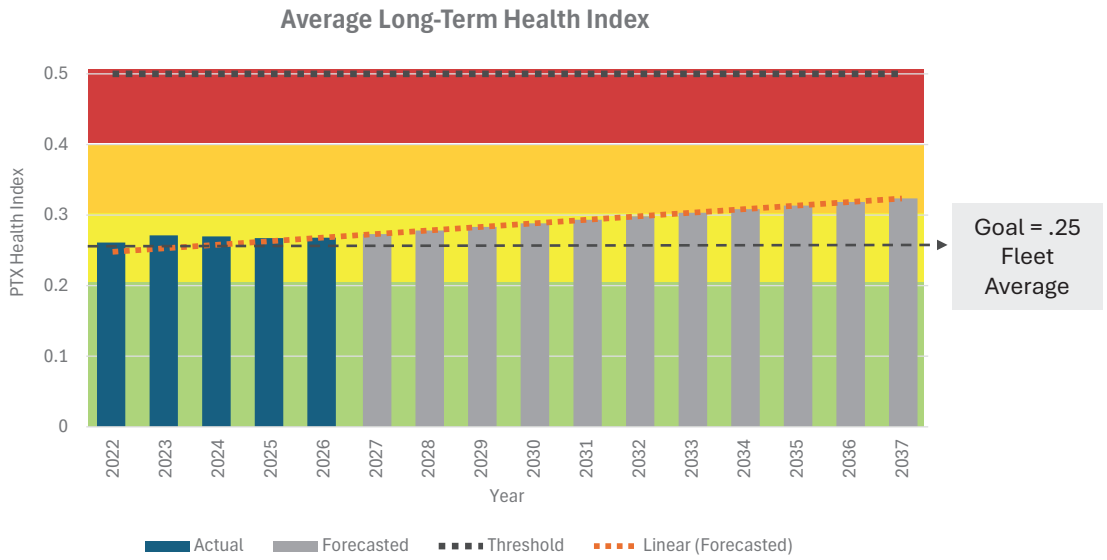
- PTX evaluates normal degradation, abnormal operating conditions, oil quality, and age to produce two critical indicators:
  - Long-Term Health Index (LTI): A high long-term index reflects distant operational concerns; aging of the insulation system, typically indicating end of life characteristics.
  - Short-Term Health Index (STI): A high short-term index signals more immediate operational concerns overheating, partial discharge, arcing, abnormal gas generation, or manufacturing defects.
- The PTX health index is measured in the range of 0 to 1, with 0 meaning healthy and 1 needing immediate replacement. A value greater than 0.5 indicates considered a transformer is at greater risk of poor health and should be reviewed for replacement.





Asset Health - Substations

Forecasted Transformer Long-Term Health Index

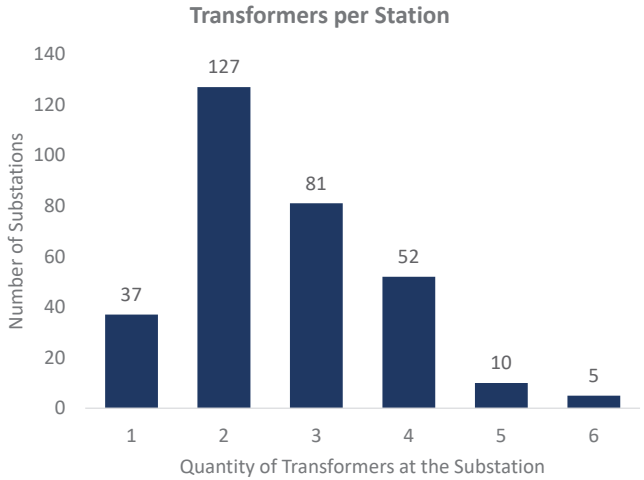


- Leveraging historical data and accounting for the current replacement strategy, the forecast finds a net positive trend in PTX scores.
- A net positive trend in the forecast indicates that the current replacement strategy is suboptimal and drives the fleet closer to the 0.5 threshold or in other words, indicates degradation in the expected life of the assets.
- Additional funding is required to modify the replacement strategy and thus change the slope of the trend line from net positive to net negative.

Asset Health - Substations

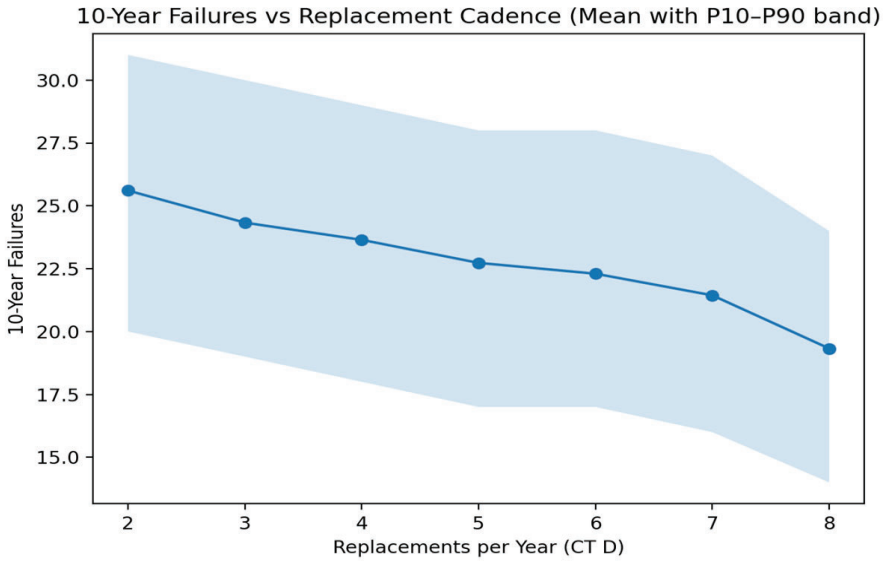
Distribution Substation Transformer Risk

- Substations on the CT distribution system with 1 or 2 transformers make up the largest share of the system.
- Transformer outages at these locations can affect a large portion of the network and have limited built-in redundancy.
- Substations with only 1 or 2 transformers have less backup capability, loss of a single unit can have a much greater impact on electric service reliability.
- When one transformer is lost at a two-unit substation, the remaining transformer and surrounding system may need to carry more load, increasing the risk of overloads and asset life reductions.



Asset Health - Substations

Distribution Transformer Risk – Monte Carlo Simulation



- Quantify expected transformer failures and fleet health trajectory under candidate replacement strategies.
- For each transformer, annual Probability of Failure (PoF) is modeled as an age-based condition.
- Utilize uncertainty-aware Monte Carlo approach.
- For each year over a 10-year horizon simulation advances:
  - Asset ages
  - Planned replacement policy (6/Year Required, 8/Year Preferred)
  - Samples stochastic failures as Bernoulli events using each unit's PoF.
- Failed units are assumed to be replaced in-kind within the planning year.
- 5,000 trials are run to produce mean and percentile ranges (P10-P90).
- Results indicate that under preferred strategy, the expected rate will drop to 14.0 failures over 10 years.

Asset Health - Substations

Distribution Transformer Age Profiles

- Transformers are designed for an expected life of **40 years**, yet the current fleet average is **42 years**, with **55% of units operating beyond design life**, materially increasing failure and outage risk.
- Increasing the replacement rate to the proposed under **Modernization**, **8 transformers annually,** is required to reduce the average fleet age to **35 and under 70 within 10 years**, positioning the system below the end-of-life threshold.
- Achieving the **35-year** target shifts the system from reactive failure response to proactive asset risk management, improving reliability, reducing emergency replacements, and stabilizing long-term capital needs.

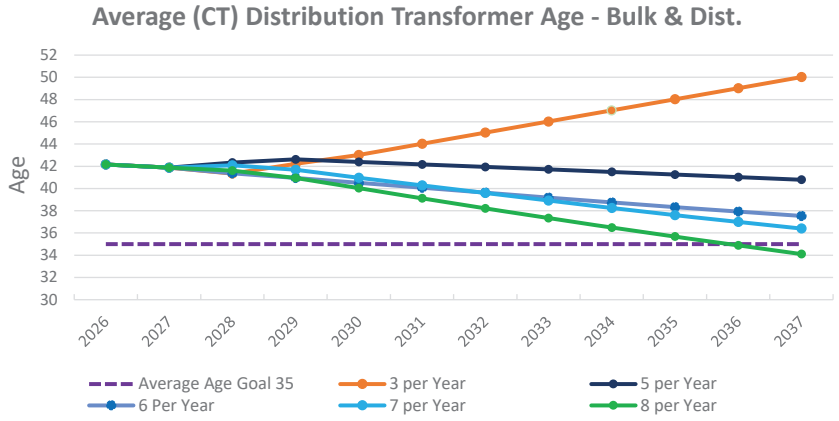
Historical Investments

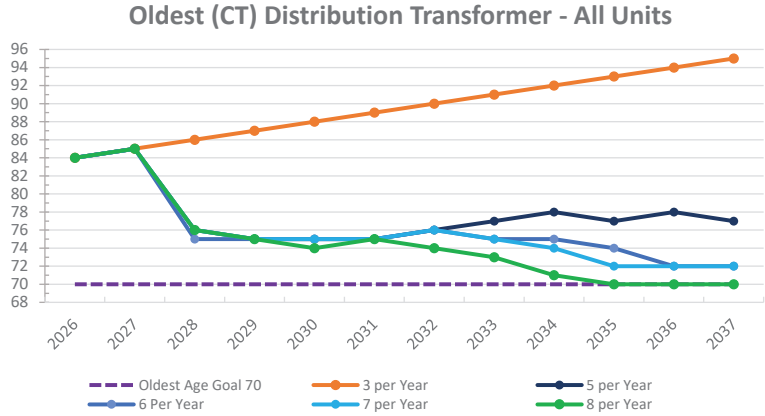
Replacement of transformers varies per year, may be due to capacity and asset conditions may not lead to oldest transformer replacement

Average age will be 45 years in 2032 and 50 years in 2037

The oldest transformer is 95 years old in 2037

Based on historical investments of replacing an average of three transformers per year the goal to have an average age of 35 for transformers in CT is unachievable





Note: Values in graphs are based on completions of replacement projects at year end

Asset Health - Substations

Switchgear

Functionality:

- Online monitoring and control of distribution system
- Safe control and direct the flow of electricity
- Detect and isolate problems

Importance of Availability:

- Provide flexibility to safely reroute power
- Safely separate a problem from the rest of the system
- Automatically operate for personal safety

Components:

- Circuit Breakers, Busbars, Disconnect Switches (Isolators)
- Protection Relays, Fuses, Metering & Instrumentation



Replacement Needs:

- Lack of redundancy create single-point-of-failure exposure
- Settling foundations and misalignment driving unsafe operation and recurring outages
- Insufficient capability to support load growth

Replacement Plans:

- Five switchgear replacement projects are planned from 2028–2031
- Continuing systematic replacement to reduce aging, obsolescence, and reliability risk



Asset Health - Substations

Circuit Breakers



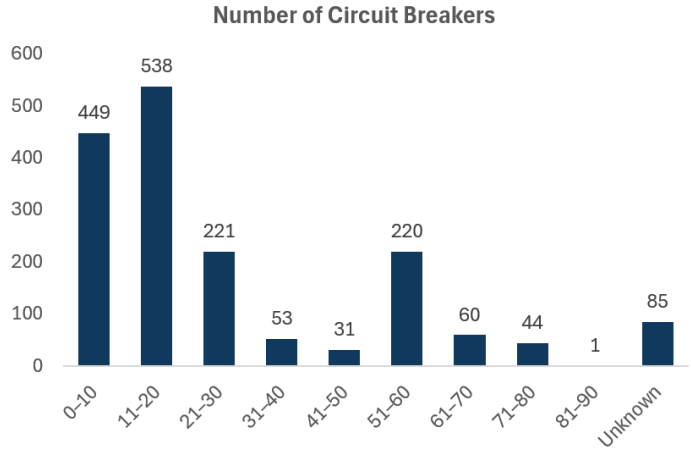
- Circuit breakers are an essential part of the electric system because they help protect equipment, support safe operation, and allow power to be shut off when needed.
- Modern circuit breakers provide enhanced fault-interrupting capability, improved protection coordination, and compatibility with current protection and control systems.
- Replacing the existing equipment will help ensure compliance with current electrical standards, support future load growth, and reduce operational risk while improving overall system resilience and maintainability.

Asset Health - Substations

Circuit Breakers

The life expectancy of circuit breakers is typically 40 years.
This can be reduced due to frequent operations, excessive fault interruptions or manufacturer defects.

- There are 1,702 circuit breakers in service
- 356 units or 20% are over 40 years old
- These circuit breakers outside of their useful life have a higher risk of failure and higher maintenance requirements
- Modern circuit breakers provide enhanced fault-interrupting capability, improved protection coordination, and compatibility with current protection and control systems.
- Replacing the existing equipment will help ensure compliance with current electrical standards, support future load growth, and reduce operational risk while improving overall system resilience and maintainability.



Asset Health - Substations

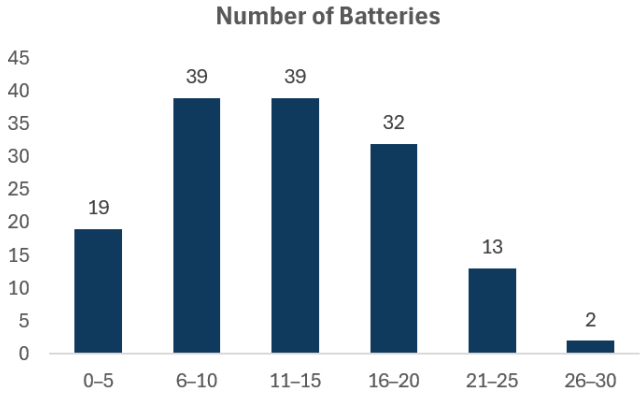
Substation Batteries

Battery Systems supply substation DC loads including:

- Relay monitoring and protection
- Circuit breaker operation
- Supervisory Control and Data Acquisition (SCADA)
- Dynamic Fault Recorders (DFR)
- Substation communications systems
- Importance of Availability

Battery failure could render this equipment inoperable, leaving the system vulnerable to outages and decreased system reliability

Battery systems have an approximate life expectancy of between 15 and 20 years depending upon chemistry, manufacturer, charging cycles and maintenance.



144 Distribution battery systems are installed across CT

- The current average age is 12 years
- In total, 52 or 36% of station batteries are more than 15 years old
- 15 or 10% of those batteries are more than 20 years old

Targeting a plan to replace 9 station batteries per year. This would eliminate the 52 batteries at or past end of life and address the aging of the remaining fleet by 2037 ensuring system operability and reliability.

Asset Health - Substations

DSCADA LTC Control System

Device Functionality:

- Adjusts transformer output voltage under load to keep system voltage within acceptable limits
- Enables operators to change tap positions from a control center without visiting the site
- Provides real-time visibility of voltage levels, tap position, and equipment status
- Automatically adjusts voltage based on system conditions to maintain stability
- Alerts operators to abnormal conditions or equipment issues
- Interfaces with broader grid control systems to support coordinated operations and voltage optimization

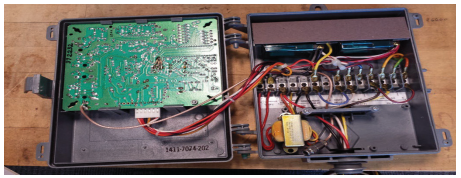
SCADA Capable LTC Controller



Importance of Availability:

- Ensures stable voltage levels across the system and prevents widespread service issues
- Required for ISO-NE OP-13 to enable voltage reduction and load shedding during emergencies
- Obsolete radio systems increase the likelihood of control failures and limited response capability
- Allows fast system adjustments without dispatching field personnel
- Helps prevent damage to transformers caused by improper voltage levels
- Supports advanced functions such as voltage optimization and system-wide monitoring

Radio control LTC Controller



Asset Health - Substations

Electromechanical Relays

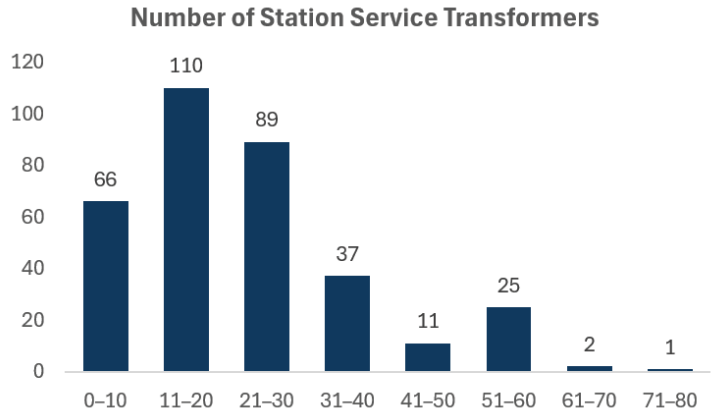


- Electromechanical relays are older protective devices that use moving parts to detect electrical problems and signal equipment to shut off when necessary.
- These are obsolete, no longer supported by manufacturers, and are not capable of remote control and live data reporting.
- Replacing these with microprocessor relays, provides advanced diagnostics, reduced maintenance, and allows live data reporting
- The upgrade provides shortened response times to failures and increase reliability.

Asset Health - Substations

Station Service Voltage Transformers

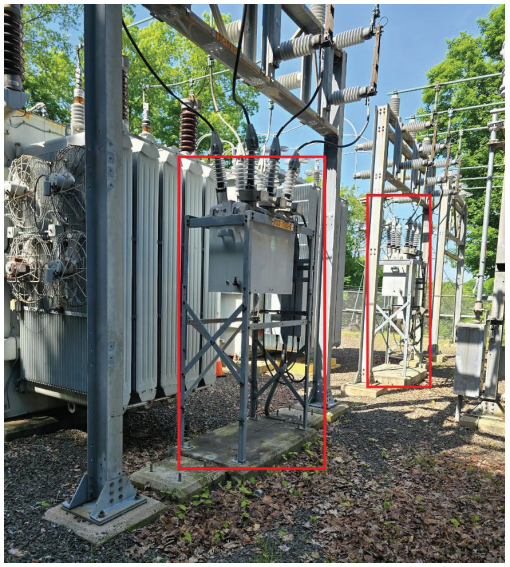
- Station Service Voltage Transformers (SSVT) provide power at appropriate voltages (typically 120/240V) to the substation equipment for things like lighting, HVAC, security cameras, computers, phones, etc.
- Life expectancy of SSVTs is typically 40 years
- The oldest unit currently is 76 years old.
- The SSVT replacement program is to replace units verified to be 40 years or older by 2030, to be of temporary pole type, or to be in poor asset condition.



Asset Health – Substations

Oil-Filled Reclosers

- Industry considers life expectancy to be 10,000 full-load operations which typically occurs between 20 – 30 years of age
- There are currently 87 oil-filled reclosers in service
  - 38 or 44% are at the end of their useful service life
- The Substation Oil Recloser Replacement Program was established to replace all remaining oil-filled reclosers with vacuum type reclosers. This program has several benefits:
  - Removing oil-filled reclosers eliminates the environmental hazards associated with insulating oil
  - Addition of DSCADA capabilities to allow for remote monitoring capabilities and faster outage restoration
  - Improved system reliability
  - Reduction of maintenance costs



Asset Health - Substations

Transformer Gas Monitors



- **Aging & Obsolescence:** Older existing Calisto and GE Hydran transformer gas monitors are aging or failed, increasing the risk of misoperation and loss of visibility into transformer condition.
- **Reliability & Equipment Health Risk:** Degraded or unreliable gas monitoring reduces early fault detection capability, elevating the risk of undetected transformer deterioration or failure.
- **Standardization & Operational Efficiency:** Replacing legacy systems with new-generation Calisto units standardizes gas monitoring across the system, improving data accuracy and consistency.
- **O&M Cost Reduction:** Standardized monitoring equipment enables more effective data analysis by Field Engineering and reduces long-term operation and maintenance costs.

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Peak Load / Capacity

Distribution Lines & Substations

Peak Load / Capacity

Lines

EVERSOURCE

Load Management

Eversource design criteria established to prevent equipment damage due to thermal overloads which could result in customer outages, while also providing operational flexibility to enable outages to be isolated and restored through alternate sources.

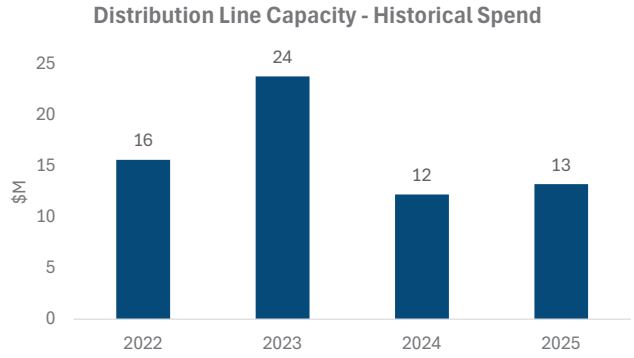
Design Criteria

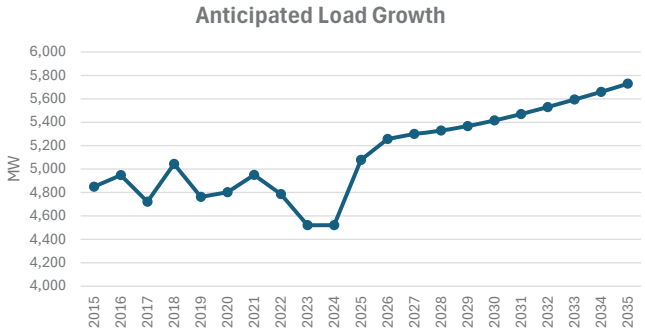
Normal Conditions

- Underground cables not to exceed 80% of normal rating
- Overhead wires not to exceed 90% of normal rating

Contingent Conditions

- Both cables & wires not to exceed 100% of normal rating





Peak Load / Capacity

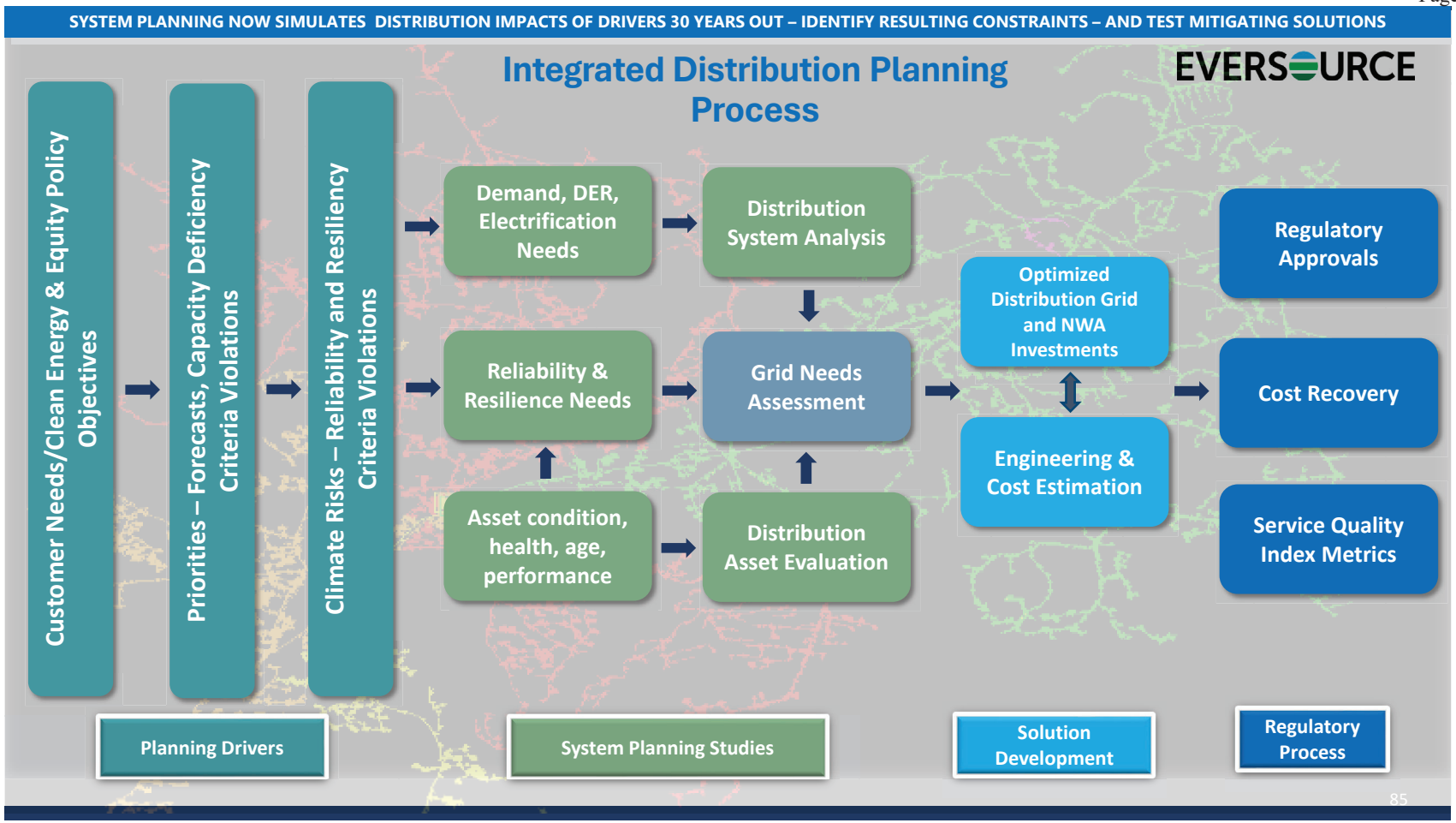
Goal of Distribution Planning

EVERSOURCE

Provide **orderly**, **economic** expansion of equipment and facilities to meet future demand with acceptable system performance

- Ensure sufficient capacity to meet future demand and service needs
- Satisfy voltage and power quality requirements within applicable limits
- Provide adequate reliability and resiliency to disruptive events
- Serve all customers safely wherever they exist

... and do it all for the lowest reasonable cost


SYSTEM PLANNING NOW SIMULATES DISTRIBUTION IMPACTS OF DRIVERS 30 YEARS OUT – IDENTIFY RESULTING CONSTRAINTS – AND TEST MITIGATING SOLUTIONS
Integrated Distribution Planning Process
EVERSOURCE
Customer Needs/Clean Energy & Equity Policy Objectives
Priorities – Forecasts, Capacity Deficiency Criteria Violations
Climate Risks – Reliability and Resiliency Criteria Violations
Demand, DER, Electrification Needs
Reliability & Resilience Needs
Asset condition, health, age, performance
Distribution System Analysis
Grid Needs Assessment
Distribution Asset Evaluation
Optimized Distribution Grid and NWA Investments
Engineering & Cost Estimation
Regulatory Approvals
Cost Recovery
Service Quality Index Metrics
Planning Drivers
System Planning Studies
Solution Development
Regulatory Process
85

Peak Load / Capacity

Bulk Substation Planning Cycle

EVERSOURCE

Yearly planning cycle starts after summer peak loads have been recorded

- Develop 10-year Load Forecast
- Develop Long-term Demand Assessment
- Review Bulk Substation Capacity Needs

Identify violations based on Planning Criteria

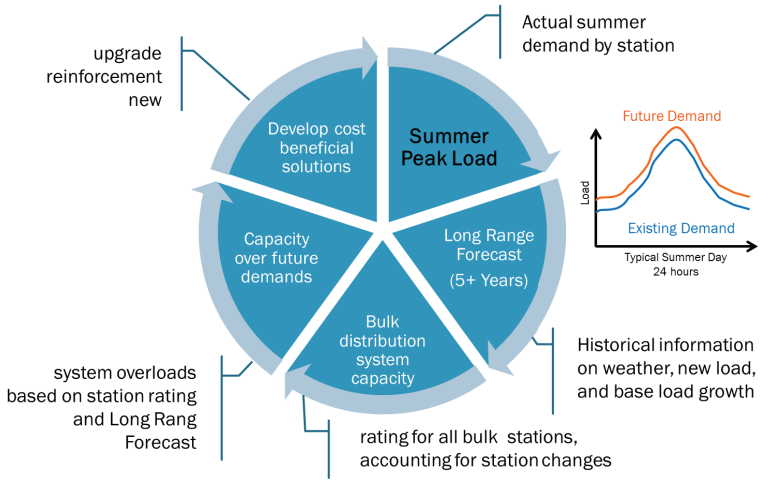
- Distribution System Planning Guide (DSPG)
- SYSPLAN 010 - Bulk Distribution Substation Assessment Procedure

Key Planning/Design Criteria

- N-0: Equipment below **75% of normal rating**
- N:1 Equipment below **100% of emergency rating**
- N-1: No dropped load for loss of largest station asset

Solution Planning

- Develop plan for when substation expected to exceed **90% of emergency rating**
- Solution placed in-service before substation exceeds 75% of Normal or 100% of Emergency rating



Starts with forecasting the net load on the system

Peak Load / Capacity

Forecasting Process and Timelines

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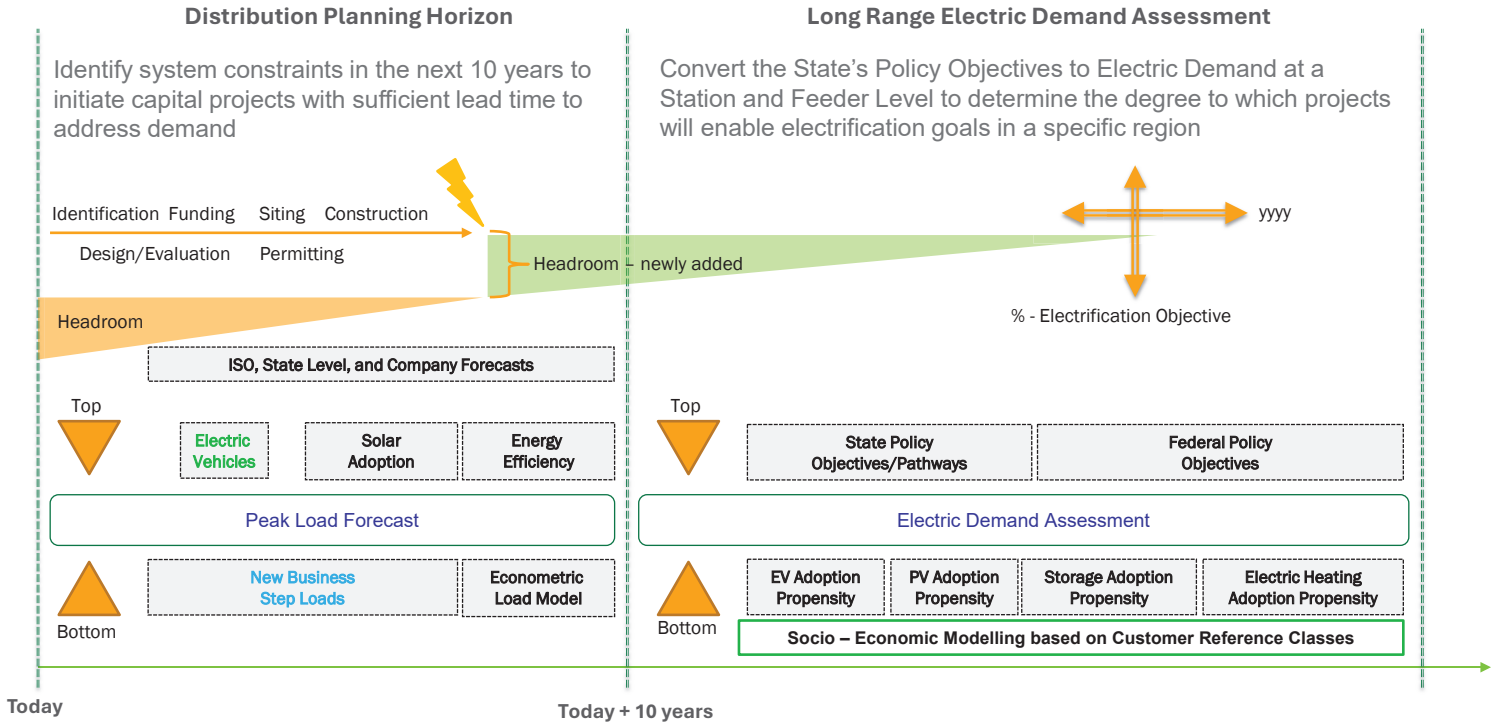

Peak Load / Capacity

Standards and Criteria are the Foundation of the Plan

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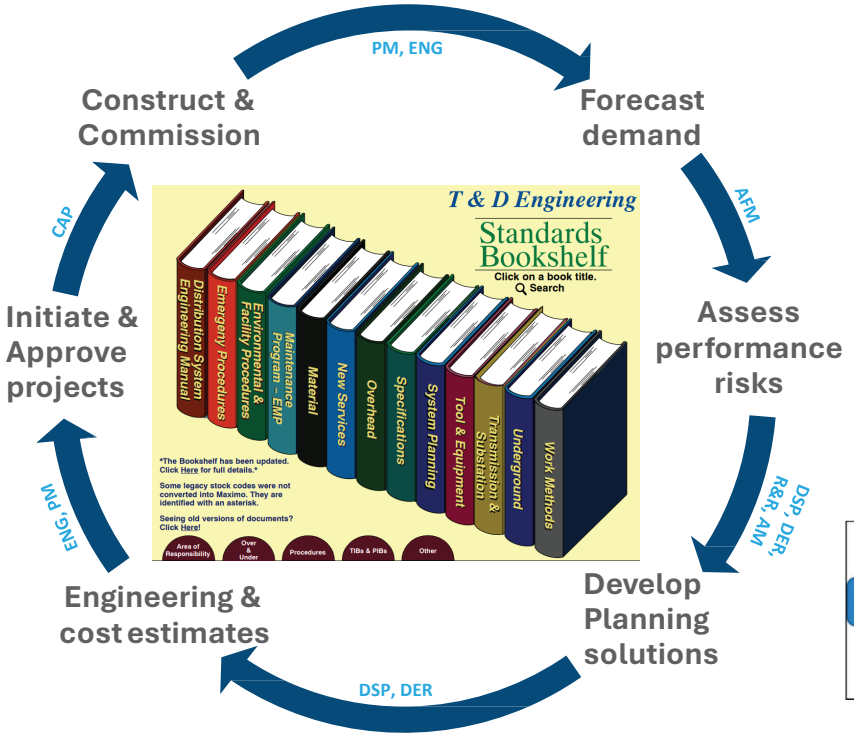
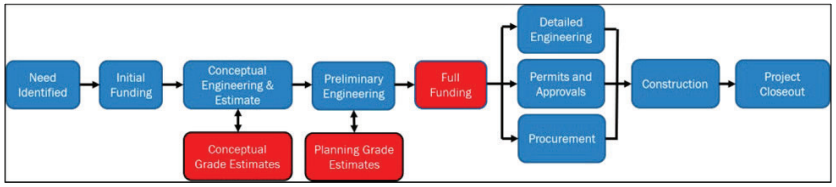


- Key Internal Guides and Standards
  - Distribution System Planning Guide (DSPG)
  - SYS PLAN 010 Bulk Distribution Substation Assessment Procedure
  - Non-Wires Alternative (NWA) Framework
  - Distributed Energy Resource Planning Guide (DERPG)
  - Information and Technical Requirements for the Interconnection of Distributed Energy Resources
  - Distribution System Engineering Manual (DSEM)
- Eversource Capital Project Approval Process



Peak Load / Capacity

Tools & Methods for Distribution Performance Evaluation

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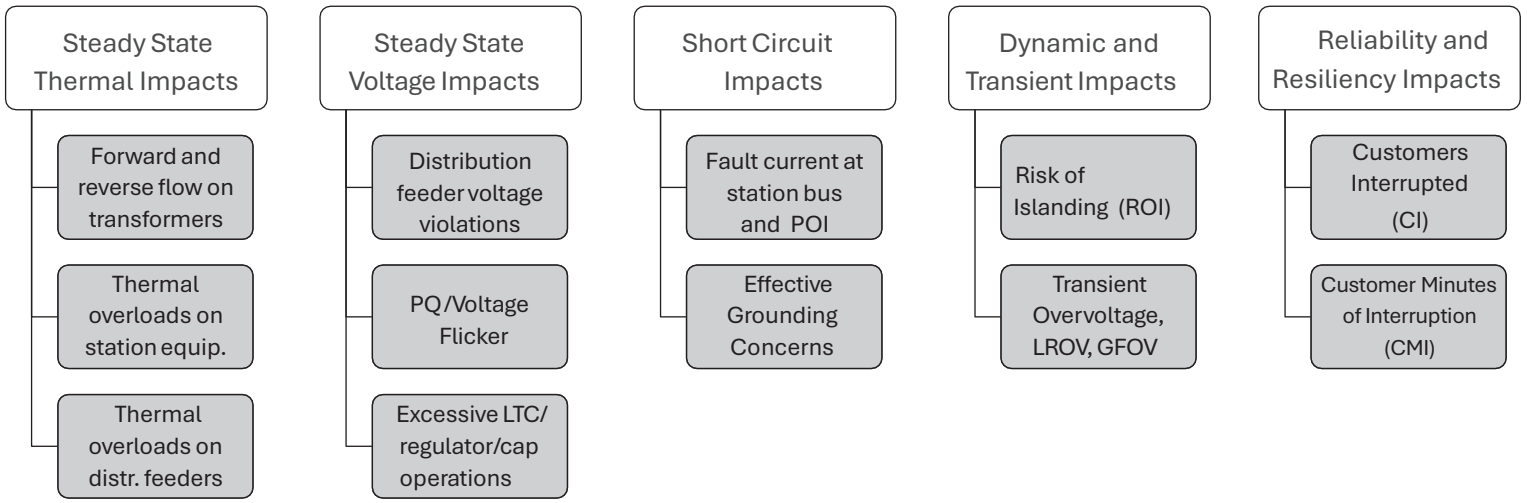
ADVANCED TOOLS AND PROCESSES USED TO ASSESS IMPACT AND PLAN THE SYSTEM TO SAFELY, RELIABLY PROVIDE SERVICE FOR BOTH LOAD AND DER



Peak Load / Capacity

Distribution Solution Development

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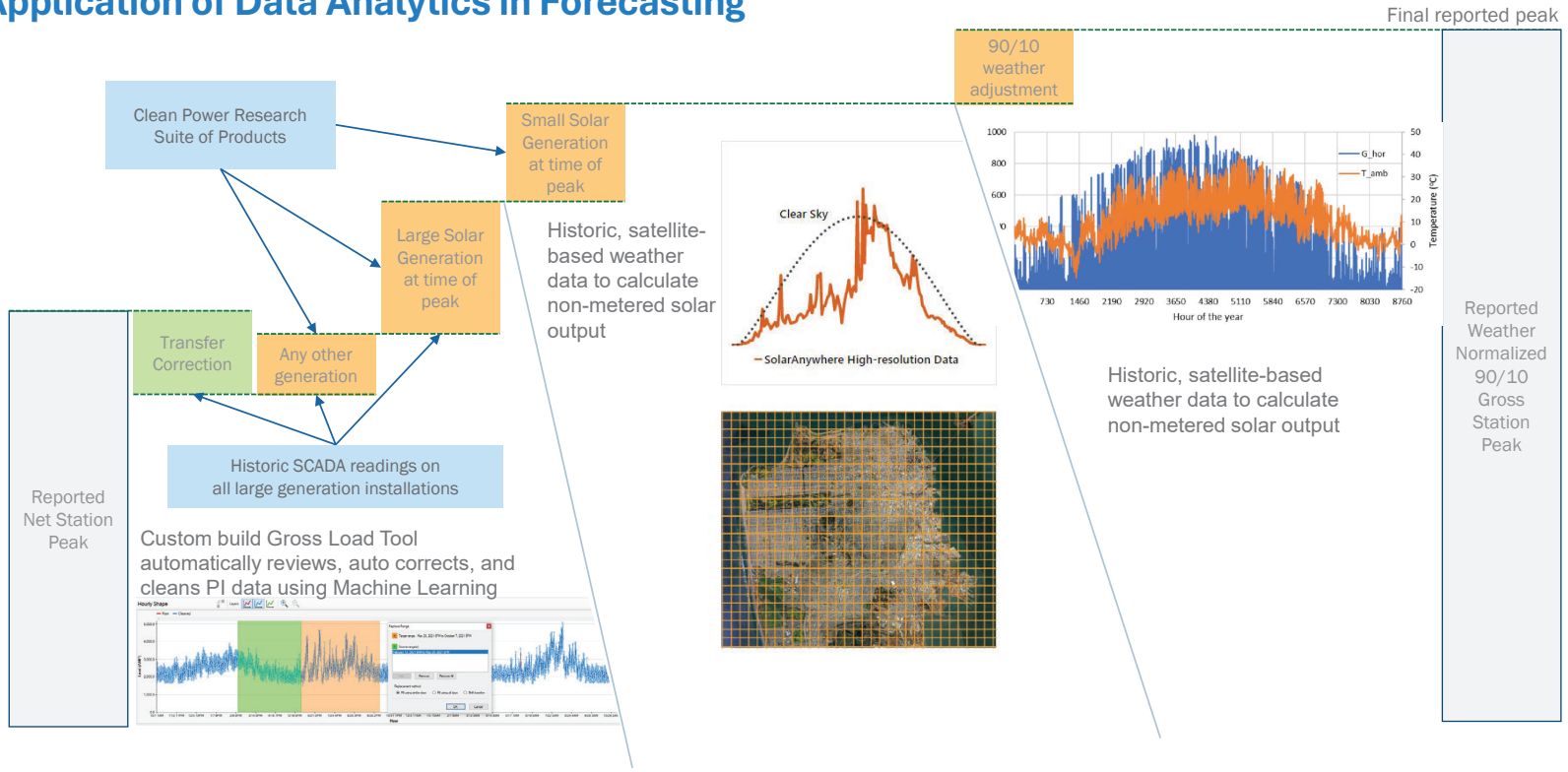
- **Data Analytics and Tools** – leverage traditional and non-traditional input (GIS, solar irradiance, socio-economics, travel patterns, parcel data, etc.) and cutting-edge tools to develop **long-term view of system need**
- **Solution Alternatives** – develop solutions with varying levels of complexity:
  - Balance loading across system
  - Replace/upgrade limiting equipment
  - Add new equipment or expand substation
  - Apply Non-Wires Alternatives
  - Develop new substation
- **Solution Selection** – complex and iterative process involving several groups to select preferred solution in compliance with internal and external stakeholder requirements.
- **Regulatory Review/Approval** – may be required for complex solutions

The final distribution solution must meet the **long-term energy need** in a reliable manner with minimum impact on the environment at the lowest reasonable cost

Peak Load / Capacity

Application of Data Analytics in Forecasting

EVERSOURCE



Peak Load / Capacity

Application of Data Analytics in Forecasting

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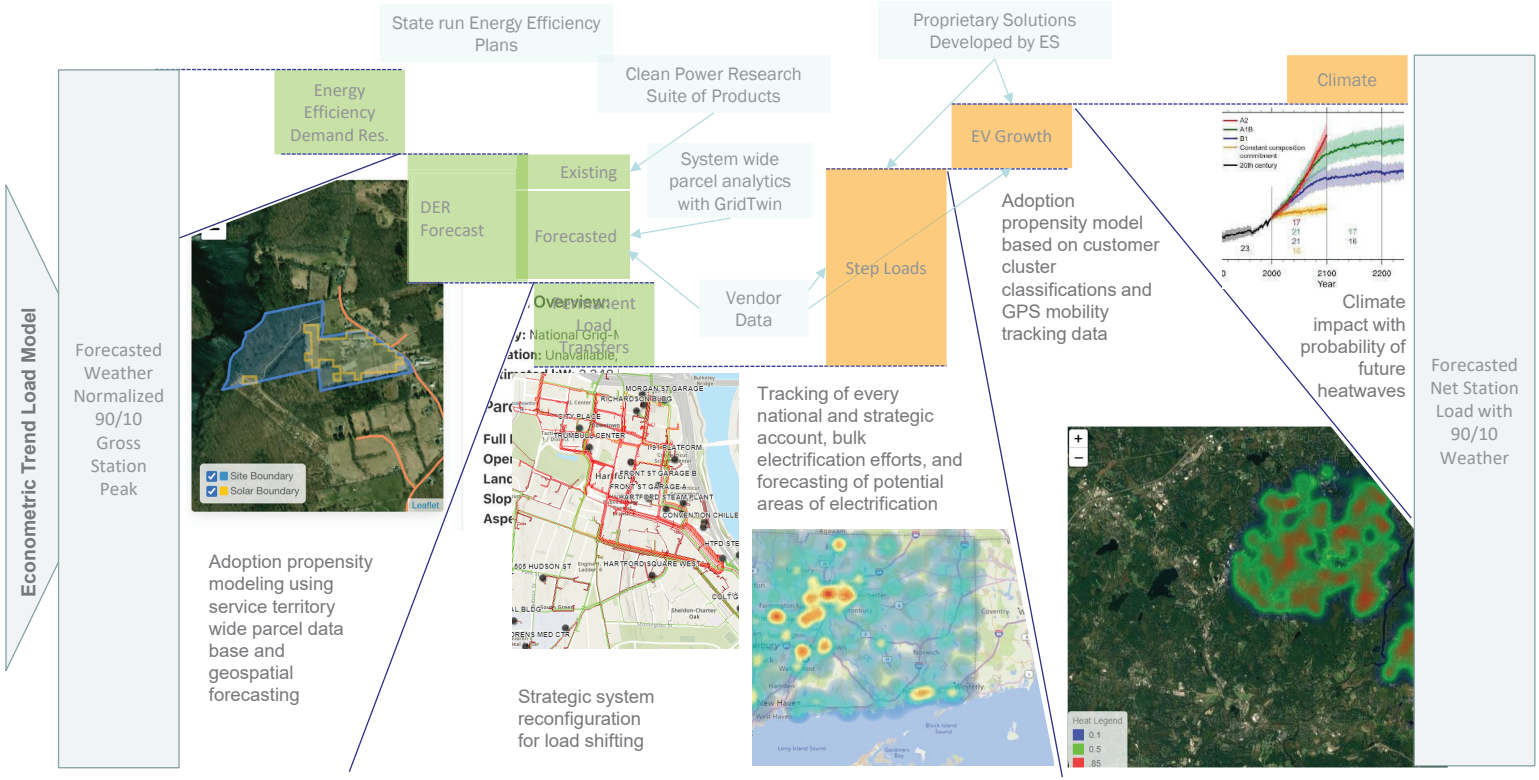

Peak Load / Capacity - Substation

EVERSOURCE

Substation Name or Location	Community/Town Supplied	2035 % of Substation Capacity	Project Solution
West Brookfield 14H	Brookfield, Danbury, New Fairfield, New Milford	126%	Substation Upgrade
Beacon Falls 11N	Seymour, Beacon Falls, Bethany, Oxford	108%	Substation Upgrade
Campville 14R	Goshen, Cornwall, Torrington, Winchester	106%	Non-Wires Alternative
West Side 7A	Middletown	106%	Substation Upgrade
Hopewell 22R	Glastonbury, Hebron	105%	Substation Upgrade
Rockville 14W	Vernon	103%	Substation Upgrade
Berlin 6A	Berlin, Cromwell, Middletown	102%	Substation Upgrade
Southington 4C	Southington	97%	Substation Upgrade

Peak Load / Capacity - Substation

EVERSOURCE

Substation Name or Location	Community/Town Supplied	2035 % of Substation Capacity	Project Solution
Triangle 11A	Danbury	127%	Substation Upgrade
Baldwin 13F	Waterbury, Prospect, Naugatuck	113%	Substation Upgrade
Tracy 14M	Putnam, Killingly, Thompson, Woodstock	108%	Substation Upgrade
Flax Hill 24A	Norwalk	104%	Substation Upgrade
Rockville 14W	Vernon	103%	Substation Upgrade
Middle River 28M	Danbury, New Fairfield	103%	Substation Upgrade
Frybrook 13B	Canterbury, Griswold, Plainfield, Sterling, Voluntown	102%	Non-Wires Alternative
Todd 30L	Waterbury, Wolcott	102%	Substation Upgrade
Waterside 22M	Stamford, Greenwich	102%	Substation Upgrade

Peak Load / Capacity - Substation

EVERSOURCE

Substation Name or Location	Community/Town Supplied	2035 % of Substation Capacity	Project Solution
Darien 13S	Darien, Stamford	95%	Solution Planning
Branford 11J	Branford	96%	Solution Planning
South Naugatuck 21L	Naugatuck	97%	Solution Planning
Portland 21H	Colchester, East Hampton, Marlborough, Portland	94%	Solution Planning
Uncasville 1Q	Montville	95%	Solution Planning
Williams 9L	New London, Waterford	92%	Solution Planning
South Windsor 14L	South Windsor	98%	Solution Planning
Sandy Hook 37F	Monroe, Newtown	93%	Solution Planning
Bunker Hill 12B	Middlebury, Waterbury, Watertown	94%	Solution Planning

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Non-Wires Alternative (NWA) Framework

Non-Wires Alternative (NWA) Framework

What is a Non-Wires Alternative?

A project that **defers, avoids, or reduces** a traditional capital investment in the distribution system for a period of time through an **alternative technology** that addresses the same identified need. Hereby, a non-wires alternative **changes the load shape** to the extend that the need is at a minimum **temporarily avoided**.

Examples:

- Distributed Generation Resources
- **Battery Energy Storage Systems**
- Demand Response Programs
- Energy Efficiency Programs
- Virtual Power Plants
- Electric Vehicle Integration
- Grid Software and Controls Resources
- Other Resources









Non-Wires Alternative (NWA) Framework

Connecticut Non-Wires Program Overview

EVERSOURCE

Two separate programmatic frameworks for non-wires solutions in CT:

Level	Framework	Regulatory Authority
Distribution	Non-Wires Solutions (NWS) Program	PURA Dockets RE07 and 24-08-08
Transmission	Non-Transmission Alternatives (NTAs)	Public Act 25-173

The **Connecticut NWS Program** evaluates whether DER can defer or avoid traditional distribution infrastructure investments.

- **Independent Process Monitor**
  - Designated by PURA to reviews utility analyses and filings
  - Oversees transparency and fairness of the process
- **Competitive Procurement Requirement**
  - Qualified NWS opportunities generally procured through RFIs & RFPs
- **Program Goals**
  - Cost-effectiveness
  - Reliability
  - Environmental benefits
  - Customer value

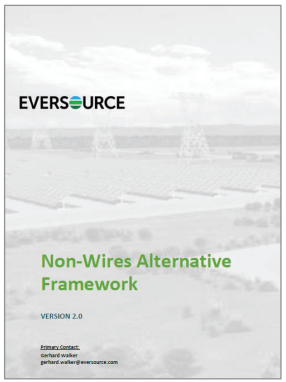
DER Category	Examples
Distributed Generation	Solar, CHP
Energy Storage	Batteries
Demand Response	Load shifting
Energy Efficiency	Building improvements
Advanced Grid Technologies	Microgrids, VPPs
EV Integration	Managed charging, vehicle-grid services

After the initial year of the program, PURA re-opened a proceeding to consider improvements to the process

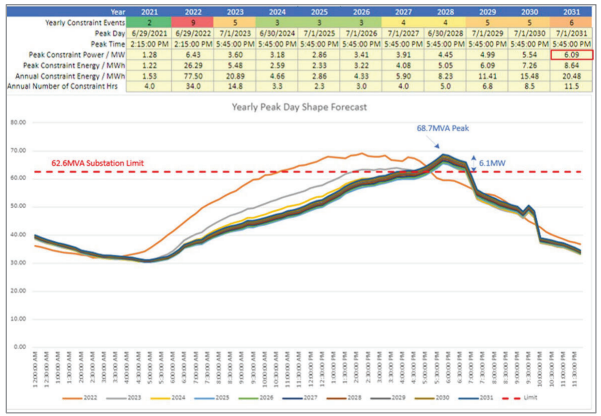
Non-Wires Alternative (NWA) Framework

Eversource Internal NWA Process

- Developed comprehensive **NWA Framework** and established robust planning process to
  - Identify projects that are suitable for NWA solutions
  - Minimize resources spent on unlikely candidates
  - Standardize screening criteria, inputs and outputs
  - Prioritize solutions with proven and tested technology
  - Ensure soundness and defensibility of financial model



- Developed companion **NWA Screening Tool** to facilitate a rapid, analytical screening process
  - Developed in-house and operationalized across all planning teams
  - Incorporates technical, regulatory, and financial data to provide transparency, traceability, and repeatability



Non-Wires Alternative (NWA) Framework

Eversource Has Integrated its NWA Process into Distribution Planning

- **Data Analytics and Tools** – leverage traditional and non-traditional input (GIS, solar irradiance, socio-economics, travel patterns, parcel data, etc.) and cutting-edge tools to assess long-term system need
- **Solution Alternatives** – use cutting-edge tools and processes to develop solutions with varying levels of complexity, **including NWA solutions**
- **Solution Selection** – complex and iterative process involving several groups to select preferred solution in compliance with internal and external requirements
- **Filing with PURA** – through Distribution review process
- **Regulatory Review/Approval** – may be required for complex solutions.

Final distribution solution, **including NWA**, must meet the **long-term energy need** in a reliable manner with minimum impact on the environment at the lowest reasonable cost

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Non-Wires Alternative Projects

Eversource Battery Storage NWA Projects for Substation Capacity Relief

(As filed in Docket No. 22-06-05*)

* https://www.dpuc.state.ct.us/dockcurr.nsf/(Web%20Main%20View%5CAll%20Dockets)?OpenView&Start=1454

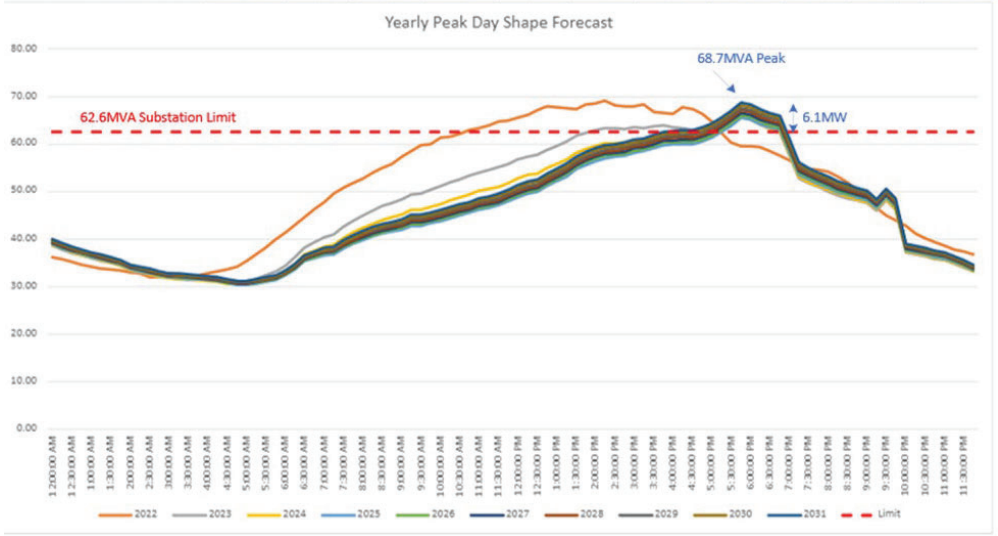
Non-Wires Alternative Projects

Campville 14R Need (as filed in Docket No. 22-06-05*)

EVERSOURCE

- Campville 14R is forecasted to exceed station limit by 6.1 MVA in 2031
- Forecast assumes all 39.1 MW of DER in the queue comes online within the next 3 years
- A transformer failure (N-1 event) would create outage risk for over 18,155 customers served by Campville 14R
- The system could be in a compromised state until the transformer is replaced, which could be weeks to months

Year	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Yearly Constraint Events	2	9	5	3	3	3	4	4	5	5	6
Peak Day	6/29/2021	6/29/2022	7/1/2023	6/30/2024	7/1/2025	7/1/2026	7/1/2027	6/30/2028	7/1/2029	7/1/2030	7/1/2031
Peak Time	2:15:00 PM	2:15:00 PM	5:45:00 PM	5:45:00 PM	5:45:00 PM	5:45:00 PM	5:45:00 PM	5:45:00 PM	5:45:00 PM	5:45:00 PM	5:45:00 PM
Peak Constraint Power / MW	1.28	6.43	3.60	3.18	2.86	3.41	3.91	4.45	4.99	5.54	6.09
Peak Constraint Energy / MWh	1.22	26.29	5.48	2.59	2.33	3.22	4.08	5.05	6.09	7.26	8.64
Annual Constraint Energy / MWh	1.53	77.50	20.89	4.66	2.86	4.33	5.90	8.23	11.41	15.48	20.48
Annual Number of Constraint Hrs	4.0	34.0	14.8	3.3	2.3	3.0	4.0	5.0	6.8	8.5	11.5



* https://www.dpuc.state.ct.us/dockcurr.nsf/(Web%20Main%20View%5CAll%20Dockets)?OpenView&Start=1454

Non-Wires Alternative Projects

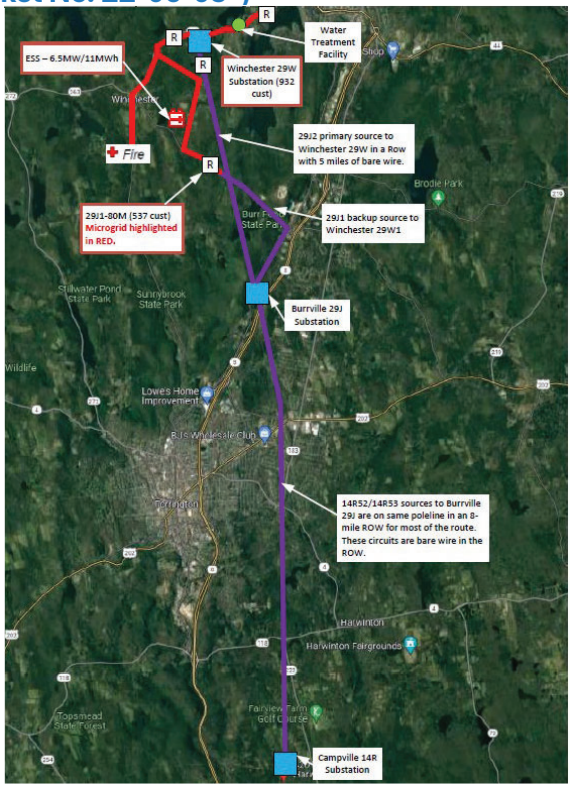
Campville 14R Battery NWA Solution Proposal (As filed in Docket No. 22-06-05*)

- 6.5 MW / 11 MWh ESS Microgrid located in Winchester, CT
- Reduce peak loading on Campville 14R substation, deferring capital upgrades
- Mitigate need for ROW rebuilt
- Backs up 1,469 vulnerable customers in a distressed community
- Critical customers include a Water Treatment Facility and Fire Station
- ESS Estimated Cost = **$24.06M**
- Traditional Solution Cost = **$77M**

NOTE: ESS and Traditional Solution scope and costs are based on information filed in Docket No. 22-06-05 and would reflect changes if updated based on current conditions.

* https://www.dpuc.state.ct.us/dockcurr.nsf/(Web%20Main%20View%5CAll%20Dockets)?OpenView&Start=1454





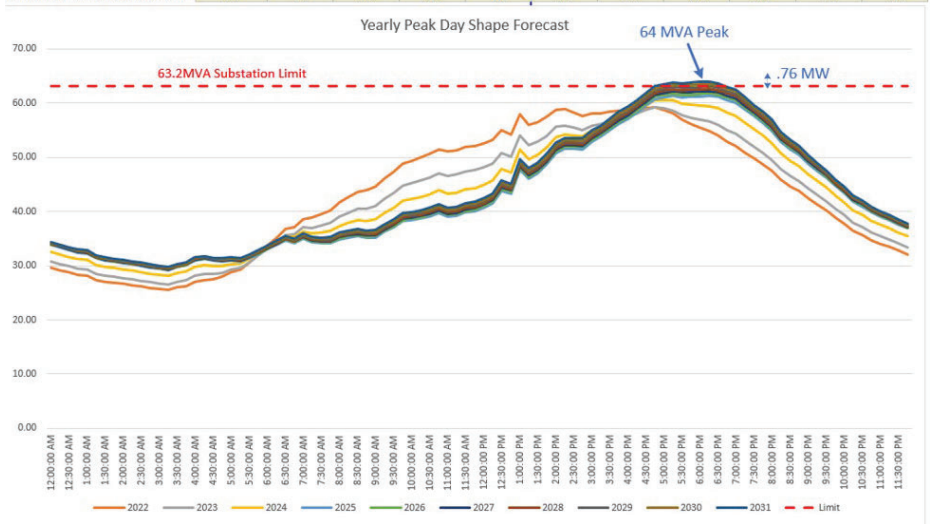
Non-Wires Alternative Projects

Frybrook 13B Need (As filed in Docket No. 22-06-05*)

EVERSOURCE

- Frybrook 13B is forecasted to exceed 100% of station limit by 2030
- Several events over the past six years have interrupted 538 to 1,006 customers
- A transformer failure (N-1 event) would create outage risk for over 14,600 customers.
- The system could be in a compromised state until the transformer is replaced, which could be weeks to months

Year	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Yearly Constraint Events	0	0	0	0	0	0	0	0	0	1	1
Peak Day	6/29/2021	6/29/2022	6/29/2023	6/28/2024	6/29/2025	6/29/2026	6/29/2027	6/28/2028	6/29/2029	6/29/2030	6/29/2031
Peak Time	4:45:00 PM	4:45:00 PM	4:45:00 PM	5:00:00 PM	6:15:00 PM	6:15:00 PM	6:15:00 PM	6:15:00 PM	6:15:00 PM	6:15:00 PM	6:15:00 PM
Peak Constraint Power / MW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.32	0.76
Peak Constraint Energy / MWh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24	0.99
Annual Constraint Energy / MWh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24	0.99
Annual Number of Constraint Hrs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	1.8



* https://www.dpuc.state.ct.us/dockcurr.nsf/(Web%20Main%20View%5CAll%20Dockets)?OpenView&Start=1454

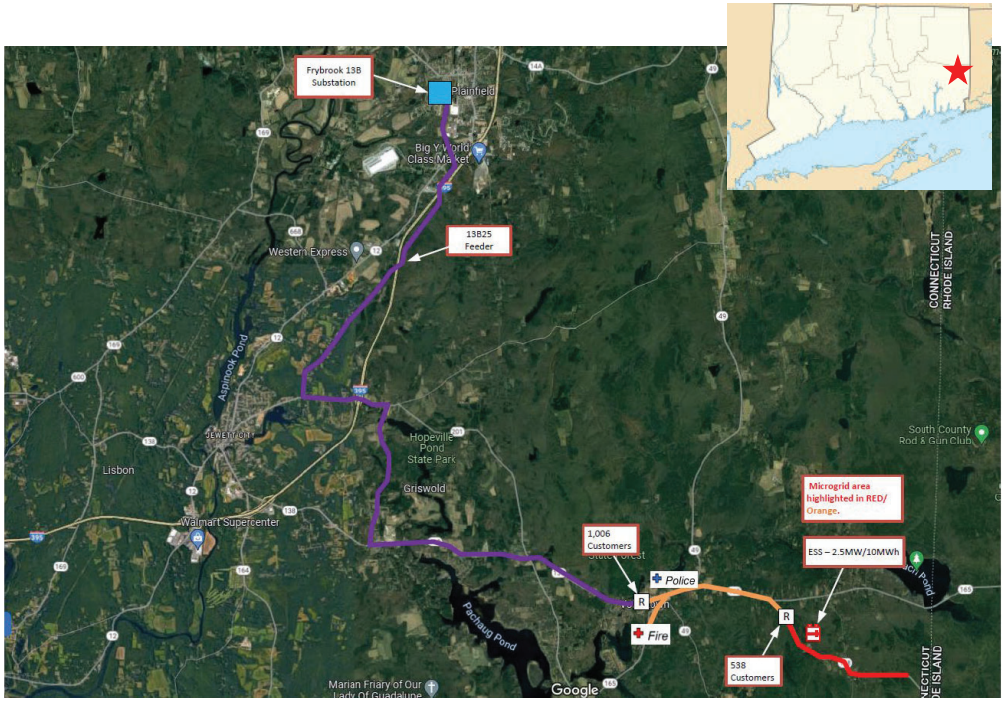
Non-Wires Alternative Projects

EVERSOURCE

Frybrook 13B Battery NWA Solution Proposal (As filed in Docket No. 22-06-05*)

- 2.5 MW / 10 MWh ESS located in Voluntown, CT
- Reduce peak loading on Frybrook 13B substation, deferring capital upgrades
- Backs up 1,006 vulnerable customers in underserved communities.
- Critical customers include a Fire Department and a Town Hall with Police Dispatch.
- ESS Estimated Cost = **$20.1M**
- Traditional Solution Cost = **$25M**

NOTE: ESS and Traditional Solution scope and costs are based on information filed in Docket No. 22-06-05; and would reflect changes if updated based on current conditions.



* https://www.dpuc.state.ct.us/dockcurr.nsf/(Web%20Main%20View%5CAll%20Dockets)?OpenView&Start=1454

Non-Wires Alternative Projects

EVERSOURCE

ESS Project Cost-Effectiveness Supplemental Analysis – Updated BCA (As filed in Docket No. 22-06-05*)

Project	Total Program Cost	Estimated Energy Market revenue	Program cost minus Estimated Energy Market revenue	System Benefits (per AESC Study)	Deferred Traditional Distribution Upgrade Cost	Total Benefits	TRC Test BCR	Utility Cost Test
Campville 14R	$24,061,000	$303,450	$23,757,550	$30,269,710	$87,506,823	$117,776,533	4.96	4.96
				$36,645,151		$124,151,974	5.23	5.23

Project	Total Program Cost	Estimated Energy Market revenue	Program cost minus Estimated Energy Market revenue	System Benefits (per AESC Study)	Deferred Traditional Distribution Upgrade Cost	Total Benefits	TRC Test BCR	Utility Cost Test
Frybrook 13B	$20,065,800	$433,500	$19,632,300	$16,490,338	$16,969,671	$33,460,009	1.70	1.71
				$19,949,333		$36,919,004	1.88	1.88

* https://www.dpuc.state.ct.us/dockcurr.nsf/(Web%20Main%20View%5CAll%20Dockets)?OpenView&Start=1454

EVERSOURCE

Grid Modernization

Distributed Energy Resource Management System (DERMS)

Grid Modernization

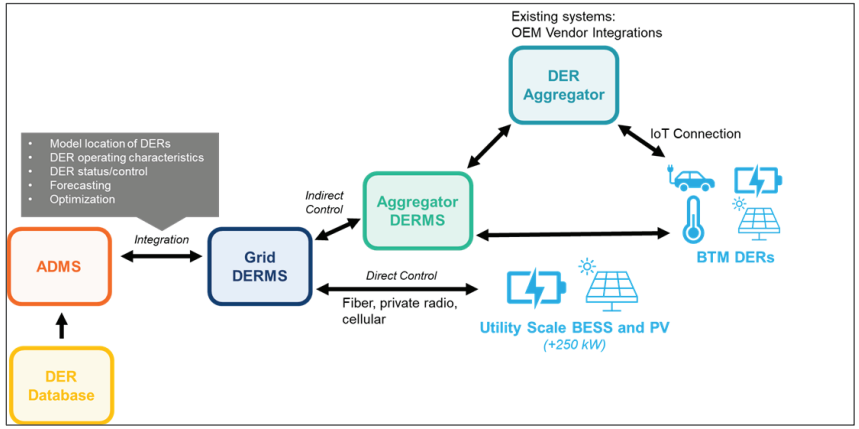
DERMS

EVERSOURCE

DERMS is the technology that transforms real time operations to utilize new and existing DERs to optimize the distribution system

- Provide visibility and control of and large utility-scale and behind the meter (BTM) DERs to control room operators;
- Enable dynamic flexible interconnections to reduce costs of DER integrations;
- Provide the control room operators with decision support tools to recommend DER control based on the DERMS optimization recommendations;
- Orchestrate BTM and FTM DERs and utilize them for grid services; and
- Support visibility of FERC Order 2222 DER Aggregators

DERMS Architecture



Grid Modernization

Communications Overview

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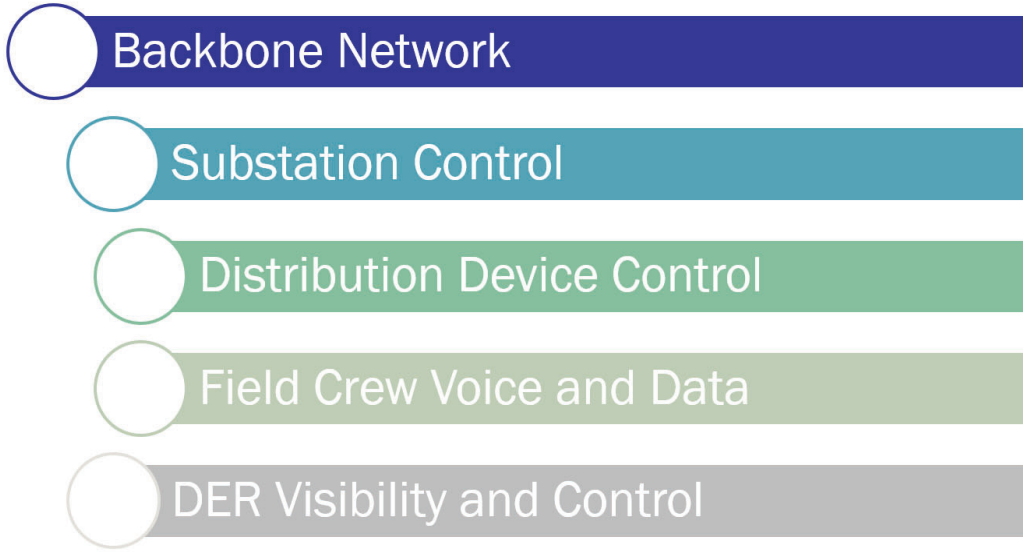
- Eversource builds and maintains an extensive communications network of private fiber and radio, augmented by public carrier cellular and infrastructure sharing agreements
- 2027-2031 plan includes limited expansion of mission-critical fiber and upgrades of aging substation and distribution SCADA equipment



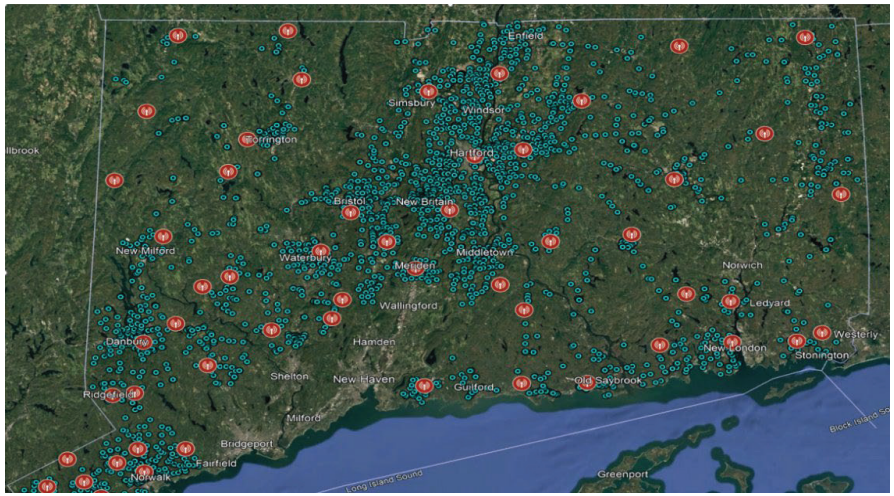
Grid Modernization

Data Communications System Upgrade

Operational data communications system provides two-way telemetry and control between field devices (e.g., reclosers) and Company System Operations Centers

- **Current Operational Data System is End-of-Life**
  - 900 MHz private radio transmits data via tower-based master radios
  - Equipment is no longer supported and requires significant maintenance
- **Replacement Technology Will Reduce Risk and Lower Operational Costs**
  - Transition to public carrier cellular technology will increase bandwidth enabling remote programming
  - Supported by satellite where cellular is not reliable

CT Private Operational Data Communications System



Tower Base Stations

Field Devices

EVERSOURCE

Vegetation Management

Vegetation Management

Current Expenditures vs. Proposed Budget

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PROGRAMS	Current	Miles	Rate Case	Miles
Roadside Scheduled Maintenance – 4 Year Cycle	$28,195,000	2,290	$48,000,000	4,000
Tree Removals	$25,000,000		$20,000,000	
Reliability Tree Work	$2,000,000	20	$14,500,000	145
Distribution Rights-of-Way (D ROW)	$50,000	50	$1,900,000	120
Emergency	$2,000,000		$2,000,000	
Vines	$200,000		$375,000	
Emergent Work	$420,000		$900,000	
Mid-Cycle			$950,000	
CT DOT Collaboration	$1,000,000		$1,200,000	
LiDAR			950000	
Other	$123,169		$300,000	
TOTAL	**$58,988,169**	**2,360**	**$91,075,000**	**4,265**

Capital

- Rate case proposal will be based on results of competitive RFP, currently underway
- 71% increase in Scheduled Maintenance in a four-year cycle
- 25% increase in Ground to Sky Programs (RTW/Removals)
- Re-establishes a ROW Trimming program
- Establishes a LIDAR program to drive priority optimization and cost controls
- Results in ~3% estimated reliability improvement and regulatory compliance

- Provides funding for scheduled maintenance on a 4-year cycle
- Sunsets all capitalized treatment (Tree Removals, Customer Focus ETT & CTDOT Collaboration)
- Adds reinforcing program elements (Tree Removals, Reliability Tree Work, & CTDOT Collaboration)

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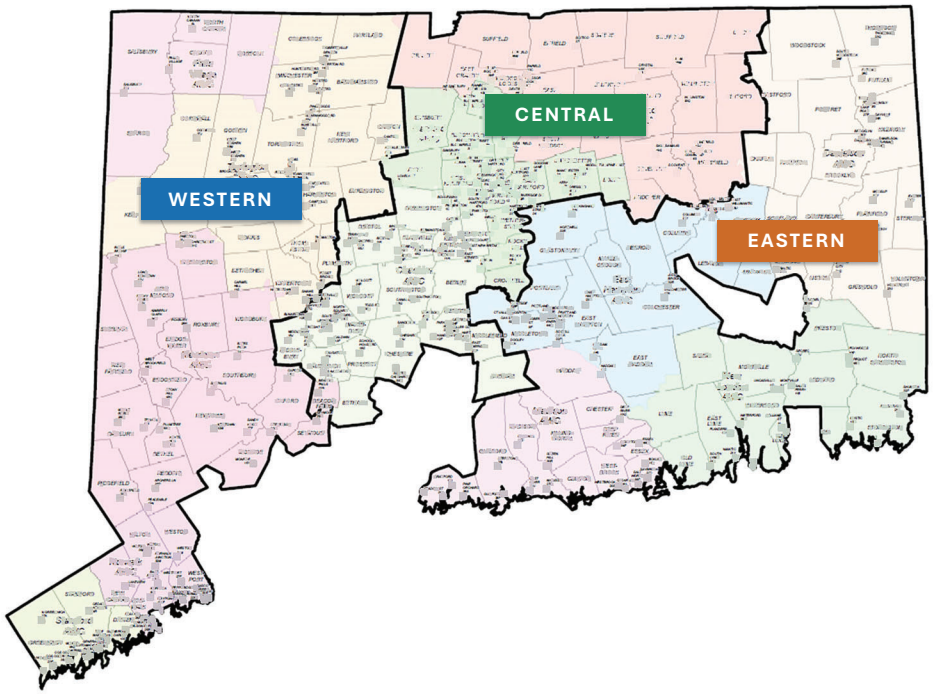
Resiliency Plan

Resiliency Plan

Resiliency Upgrades Proposed By Region ~$150M Plan

EVERSOURCE



WESTERN 17 priority zones
Total Miles: **47.9 mi**
Total Cost: **$40.9M**
Total Customers Impacted: **19,585**

CENTRAL 15 priority zones
Total Miles: **49.0 mi**
Total Cost: **$40.0M**
Total Customers Impacted: **21,250**

EASTERN 32 priority zones
Total Miles: **78.4 mi**
Total Cost: **$75.4M**
Total Customers Impacted: **47,608**

Resiliency Plan

EVERSOURCE

Why We Need Storm Resiliency Upgrades

Understanding the Difference Between Normal Operations and Storm Hardening

HOW THE GRID IS DESIGNED

- ✓ Optimized for **one event at a time affecting customers**
- ✓ Backup sources (ties) re-route around single outages to restore customers
- ✓ Adequate to provide reliability for everyday (normal) conditions and minor storms

THE PROBLEM WITH MAJOR STORMS

- ✗ Multiple failures happen **simultaneously affecting customers**
- ✗ Primary AND backup sources fail at the same time limiting restoration options
- ✗ Does not adequately provide resiliency for major events and catastrophic storms

4	150–250	~70%	600K+
Catastrophic storms in the past 15 years	**Major outage events per catastrophic storm**	**Of total outage impact driven by backbone failures**	**Customers out in recent major storms**
Irene, Alfred, Sandy, Isaias	*Each impacting 1,000+ customers*	*A single backbone failure affects all customers downstream*	*Alfred '11 · Irene '11 · Sandy '12 · Isaias '20*

Resiliency Plan

EVERSOURCE

Resiliency Strategy: Two Key Focus Areas

150M Plan · Bare Wire + Tree Risk + High-Impact Zones · All-In SAIDI Risk Model

1 High Storm Event Locations

Reconductor all zones with 10 or more storm-driven outage events in the past 4 years.

These are proven, high-failure areas — the outage records speak for themselves. Bare wire in heavy tree conditions that has failed repeatedly under storm stress.

2 Predicted All-In SAIDI Locations

Zones ranked by total predicted customer impact — combining blue sky, everyday storms, AND a 1-in-10-year catastrophic storm assumption (modeled on events like Isaias).

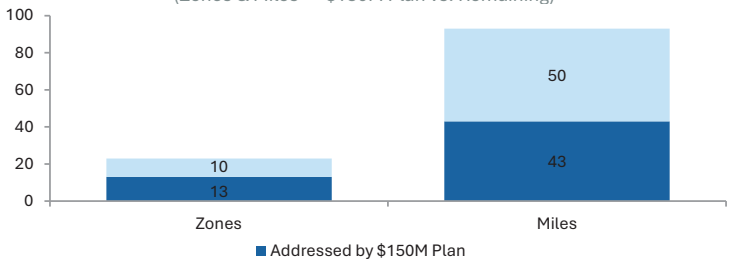
Key criteria: the zone must have had at least 1 storm event in the past 4 years. This ensures we focus on locations with real, recent exposure — not just the highest modeled risk on paper.

3 Overlap with Most Impactful Catastrophic Storm Zones —

All-In SAIDI Model (1-in-10-yr catastrophic storm) · Very Good Overlap · Poor Performers Across All Conditions

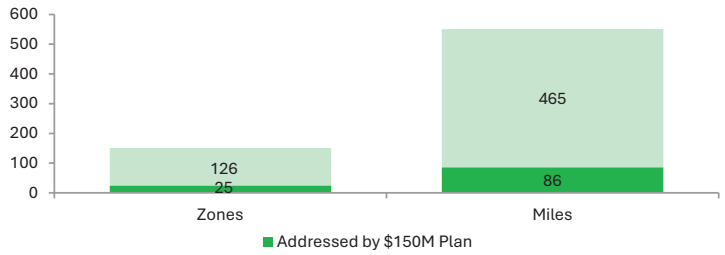
Most Vulnerable Zones —
Bare Wire + High Tree Risk + 1,000+ Customers Predicted Impacted

(Zones & Miles — $150M Plan vs. Remaining)



All Potential 1,000+ Customer
Predicted Impact Zones System-Wide

(Regardless of Vulnerability — Total Work Still to Do)



Resiliency Plan

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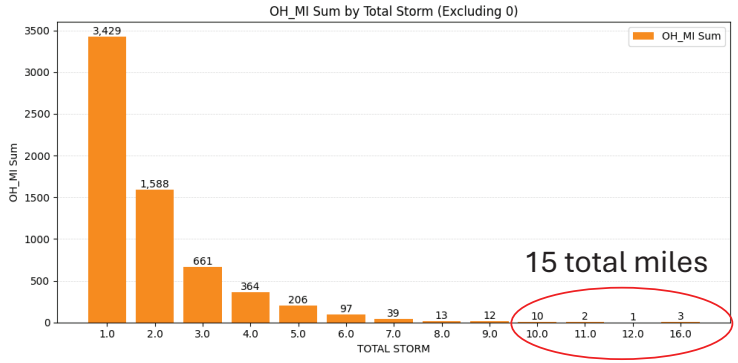
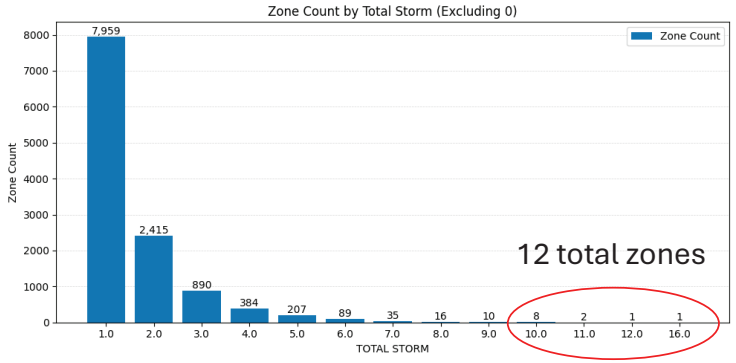
Overhead Miles by Total Storm (Excluding Zone Miles with 0 Events)



Device zones by Total Storm (Excluding Zones with 0 Events)



Resiliency Plan

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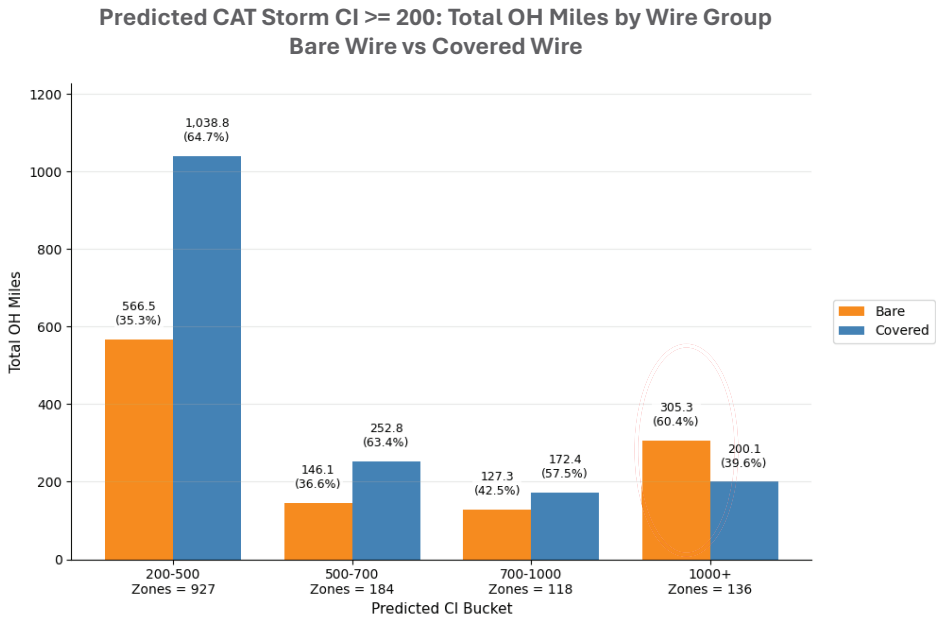
Key Characteristics of the Priority Zones Identified for the $150M Hardening Plan



Resiliency Plan

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Program Benefits: What This Investment Delivers

$150M Storm Resiliency Plan — Equity-Focused, High-Impact Customer & Community Benefits

105.4 mi **Miles of Line Hardened** Bare wire reconductored	**12** **Zones Addressed** High-storm-event locations (+10 events 4yrs)	**~60K** **Customers Protected** Residents & businesses
68 **Towns Covered** Equitable geographic reach	**~90** **Town Critical Facilities** Medical, emergency services	**40** **Tie Reclosers Impacted** Faster switching & restoration
~40/yr **Storm Events Reduction** Reduced actual storm events	**12.4M min** **CMI Savings per Year** Customer minutes interrupted	**$37.1M/yr** **VOLL Savings (@$3/cust-min)** Value of lost load avoided

Equity Commitment: This plan prioritizes high Storm CEMI locations first, ensuring the most storm-burdened customers are addressed — then optimizes remaining zones for maximum statewide reliability benefit.

Economic Impacts of Engineering Plan based on RIMS II Multipliers

EVERSOURCE

Based on the Regional Input-Out Modelling System (RIMS II) developed by the Bureau of Economic Analysis (BEA), the Company's sustained performance engineering plan investments are expected, for the 5-year period and for the state, to:

- generate approximatively **$881M** of additional economic output
- support close to **7,000** more jobs.

Five-Year Economic and Employment Impacts of 2027-2031 LRP Investments based on CT 2017-2023 RIMS II Methodology		
Additional Economic Impact Investment (M)		
Curent Investment	$	647.43
Sustained Performance	$	881.05
Resiliency System Performance	$	923.20
Advancing the Grid	$	1,076.10
Employment Impact of Investment		
Curent Investment		5060
Sustained Performance		6886
Resiliency System Performance		7215
Advancing the Grid		8410

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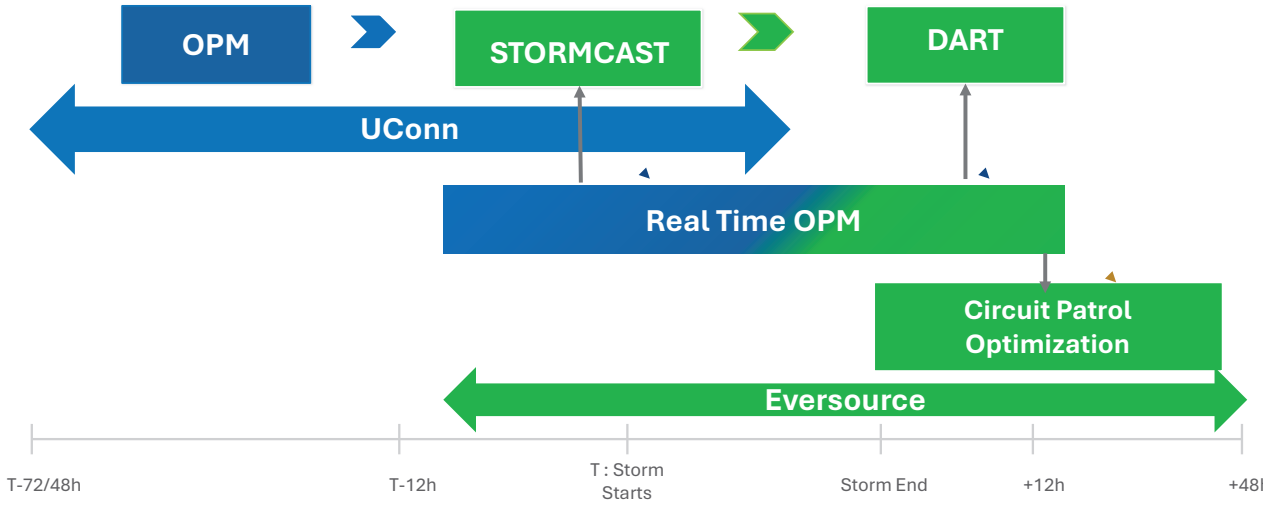
Storm Tools & Analytics

UConn Outage Prediction Model (OPM) and Eversource Initiatives

Storm Tools and Analytics

Storm Analytics Collaborative Roadmap

EVERSOURCE



UConn OPM forecasts likely trouble spots 3–5 days before a storm, giving valuable lead time to plan and mobilize

Real-time OPM provides real-time, high-precision outage predictions into Eversource tools: STORMCAST and DART

STORMCAST facilitates improved procurement, staffing, and prestaging storm crews based on OPM inputs

DART optimizes damage assessment crew routing during storms, reducing travel time and speeding up restoration.

Circuit Sweep Optimization converts storm intelligence into targeted patrol routes, optimally dispatching crews to damage locations

Storm Tools & Analytics

Eversource Initiatives

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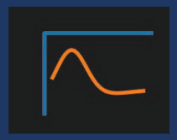
STORMCAST

- Forecasts ETR curves (pre-storm + in-storm)
- Recommend crew requirements (mobilization)
- Update "remainder of storm" outlook during event



Damage Assessment Routing Tool

- Route damage assessors, service crews, FPS emergency crews to event locations
- Optimize assignments using live traffic



Outage Prediction Forecast to Nowcast

- Develop in collaboration with UConn
- More accurately predict trouble spots during storms



Circuit Patrol Optimization

- Reduce miles driven for post storm sweeps by optimizing routing plans for all Eversource vehicles



Storm Tools and Analytics

Eversource Rollout Plan

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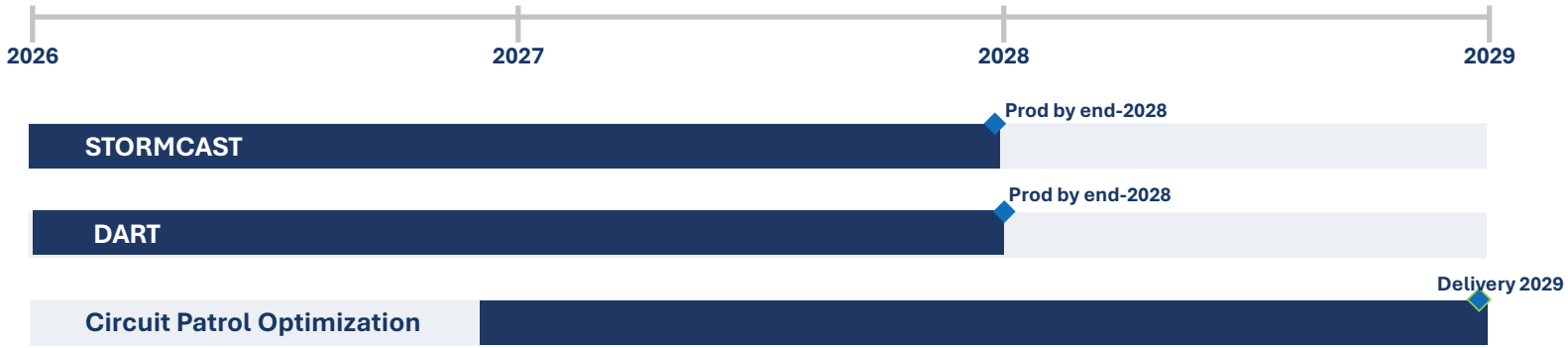
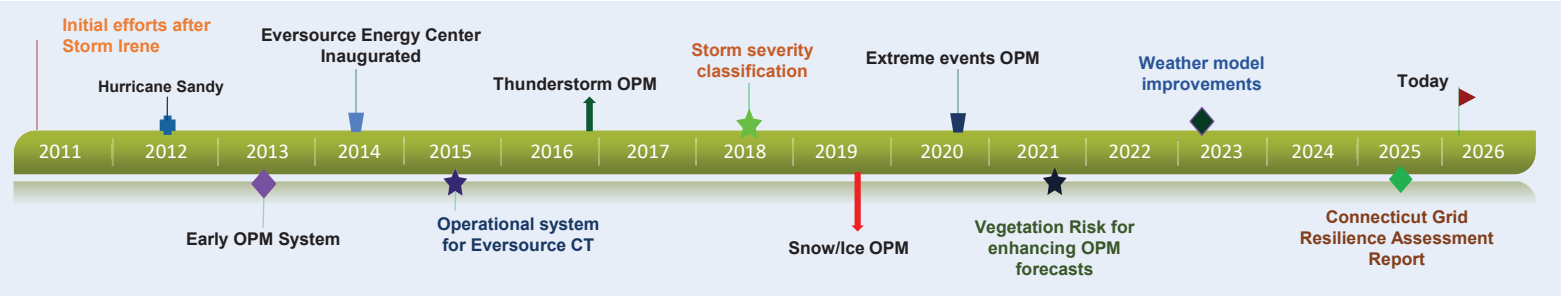
Target milestones for production readiness and rollout in Connecticut

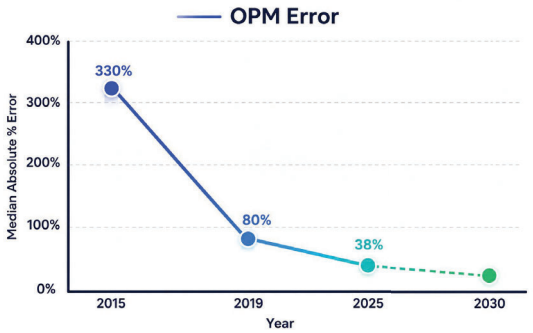


Development not constrained by on UConn OPM development timelines

Storm Tools and Analytics

OPM Development Timeline (Current Model)





During the period 2015 – 2025:

- The ***OPM error has decreased 10-fold*** thanks to weather research, improved data management, more advanced AI techniques, better understanding of storm impacts.
- The OPM team has provided forecasts to Eversource for **more than 600 storms** in Connecticut (~60/yr).

Each OPM forecast includes:

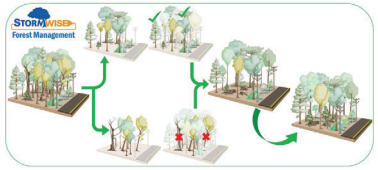
i. a written summary of the expected storm impact,
ii. a forecast range of predicted trouble spots,
iii. probabilities that total trouble spots will fall within pre-determined operational ranges.

Storm Tools and Analytics

UConn Eversource Energy Center - Background and Expertise

Advanced storm impact modeling

Winter storms Thunderstorms Snow/ice storms



Modeling vegetation risk using field imagery from multiple sources.

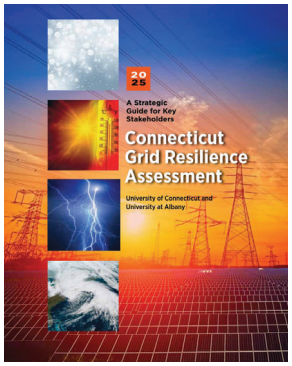
Eversource Energy Center (2014-current):

- $30M+ of external, non-Eversource grants
- 70 Faculty
- 211 Graduate Students
- 317 Papers in international journals
- 7 U.S. Patents

Power outage prediction targeted to each storm type that continuously learns from the system's performance during storms.

Nation-wide experience with asset vulnerability, storm modeling and utilities preparedness practices.

UConn OPM
OUTAGE PREDICTION MODEL



Develop data-based policy guidance to promote a safe, resilient and equitable grid for Connecticut rate payers.

Storm Tools and Analytics

UConn Advanced Operational Products - Description

EVERSOURCE

Target	Advancements	Benefits
Enhanced OPM accuracy: ***(Target: 25% error by 2030)*** 	Integration of ***novel AI algorithms*** to handle large weather and vegetation datasets and improve the prediction of extreme storms. Advanced ***weather forecasting*** techniques, and improved ***vegetation mapping and risk*** models.	Improved storm preparedness, more targeted crew staging, decreased storm-response costs, reduced restoration time.
Lead time increased to 5 days: 	Extension of the OPM system to ***forecast trouble spots up to 5 days before*** the impact of major events such as tropical storms and nor'easters.	Earlier situational awareness, proactive mutual aid, enhanced coordination with municipalities, more effective communication with customers.
Real-time OPM: 	A ***nowcasting system*** providing updated trouble spot estimates during a storm ingesting real-time NOAA radar, NWS weather station, and NASA satellite data.	Continuously updated TS estimates during storms, improved real-time decision making, supports damage assessment and discovery.

Storm Tools and Analytics

UConn Advanced Operational Products - Timeline

EVERSOURCE

Activities and Milestones	2026	2027	2028	2029	2030
AI-enhanced weather predictions for key weather variables relevant to OPM					
Vegetation mapping and vegetation risk modeling to inform OPM					
OPM forecasts with enhanced accuracy			★		★★
Evaluate weather forecast accuracy for key variables for 4- and 5-day lead time					
Evaluate OPM accuracy for 4- and 5-day lead time					
Operational OPM forecasts up to 5 days ahead of storms			★★★		
Assimilate radar, weather station and satellite data into OPM					
Test real-time OPM for 1 year and assess performance (August 2027 – 2028)					
Provide OPM updates in real-time during storms			★★★★		

★ Target: 30% error
★★ Target: 25% error

★★★ Beginning of extended operational forecasts

★★★★ Beginning of real-time OPM forecasts

Storm Tools and Analytics

Storm Analytics Platform Capital Requirement

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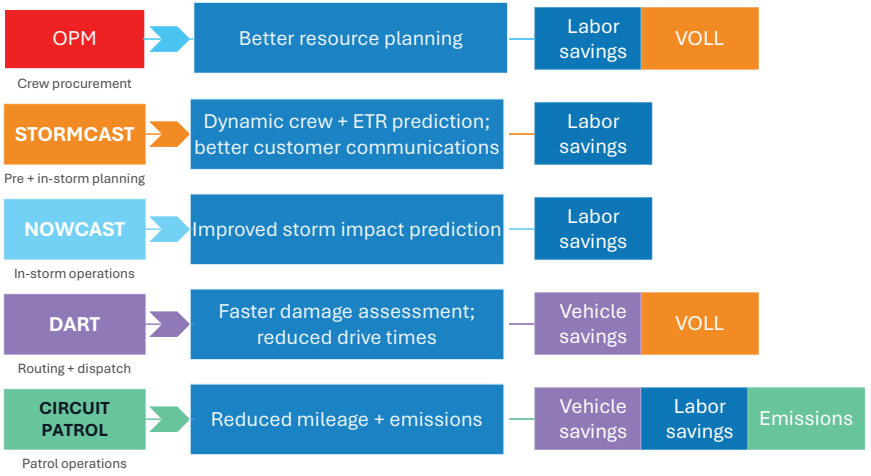
2.84 BCR for VOLL
(1 min SAIDI reduction)*



Storm Analytics Tools

UConn		Eversource
Weather models	Software Development	Hardware
Live LiDAR	AI Infrastructure	Google Maps API

$1.5M annually is

<0.6% of an Isaias-like storm cost	<1% of annual storm O&M costs (2023-2025)

Conservative estimate using 50% of C&I customer counts for VOLL

EVERSOURCE

Advancing the Grid

Advancing the Grid

Overview

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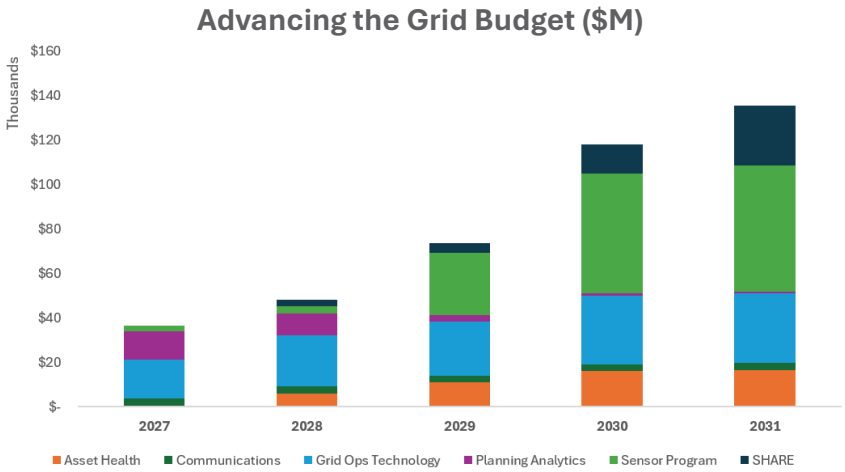
PROGRAM	SUMMARY
Asset Health	Accelerated replacement of aging substation equipment
Communications	Distribution substation networking technology upgrade
Grid Operations Technology	Increased penetration of remotely operated grid control equipment and DERMS demonstration
Planning Analytics	Advanced tools for IDSP initiatives, long-term planning and forecasting
Sensors	Widespread deployment of sensors for predictive analytics and wildfire protection
SHARE	Shared Hosting and Advancement of Renewable Energy



Advancing the Grid

Grid Operations Technology – Grid Controls

EVERSOURCE

Reprograming and replacing Microprocessor Relays and Load Tap Changer Controls will increase monitoring and control, improve outage response, and support control room operations

Key benefits of upgrading and replacing microprocessor relays:

- Allows for DMS integration supporting fault location
- Increases SCADA visibility and remote controls to distribution substations, including remote fault indication
- Improves system reliability, facilitates remote operations
- Increased penetration of devices with remote monitoring capabilities will reduce inefficiency and delays associated with the need to travel to substations to collect system measurements.
- Enables investments for next generation analysis, automated feeder reconfiguration, integrated planning of DERs, network monitoring, predictive outage detection, and adaptive protection capabilities.



Station 53 High Street, Boston – New panel line-up

Advancing the Grid

Grid Operations Technology – Adaptive Protection

EVERSOURCE

Adaptive protection preserves safety and reliability during abnormal or reconfigured system states by continuously adapting protection settings in real time.

Why Adaptive Protection: The distribution system has thousands of digital protection devices; it is challenging to manually maintain settings even under nominal topology. Planned/unplanned switching changes topology and coordination across feeders and substations makes it more difficult and costly – this technology reduces cost and increases efficiency.

Benefits of an Adaptive Protection System (APS):

- Detailed modeling of protection settings
- Interface to read settings from/write setting parameters to field devices
- Centralized topology-aware algorithm for checking validity of protection/coordination
- Ability to correct errors by changing individual protection parameters (time dial, current, curve type

Advancing the Grid

DERMS Demonstration

EVERSOURCE

Demonstrate the use of a centralized DERMS advanced capabilities to integrate third-party DER to deliver grid benefits in a select location* in support of future programs at scale

- **DER communications and control technology**
  - Assess options for new protocols to lower the cost of communication and control of DER integrated with the Company's centralized DERMS relative to current DER Gateway
- **Use of DER for centralized voltage management**
  - DERMS control of advanced inverters to support control of voltage and reactive power coordinated with grid devices to increase the efficiency of power delivery
- **Lower cost DER-enabled microgrid**
  - Integration of third-party DER into microgrids as a low-cost option to increase the value of resiliency microgrids

* The DERMS demonstration location will be determined based on further study; preliminary assessment indicates the potential of coordinating with other programs planned at Triangle, Frybrook, and Campville

Advancing the Grid

Communications Network Upgrade

EVERSOURCE

Distribution External Routable Connectivity (dERC) will update obsolete equipment and maintain communication between substations and SCADA.

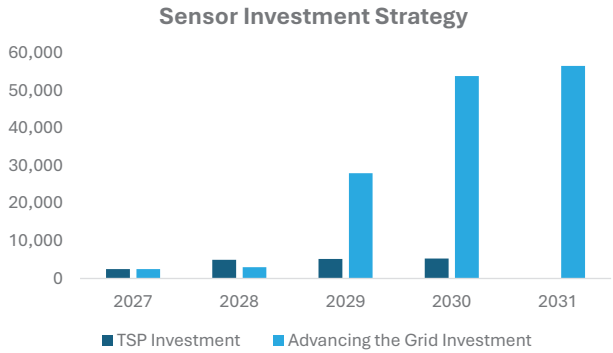
- Current substation design supports non-routable (serial) communication
- Equipment used to facilitate communication between substations & control centers is becoming obsolete and can no longer be purchased:
  - **Frame Relay Access Devices**: FRADs convert data from serial to Frame Relay for transport. They also provide IP connectivity to switches.
  - **Aggregation Services Routers (ASR):** ASRs serve as aggregation sites for all substations in their vicinity and then transport that data over MPLS network to the head-ends. Only certain modules of ASRs are EOL.
- External Routable Communication (ERC) network elements are readily available and are becoming the industry standard providing ethernet connectivity and facilitating the upgrade of RTUs from Serial to IP communication.

Advancing the Grid
Sensor Strategy

EVERSOURCE

Vision
Transform the Eversource Distribution system from a reactive restoration model to predictive, sensor-enabled system that proactively protects the public, identifies degrading assets before failure, and improves restoration performance during major events

Value
- Improved public safety through rapid identification of downed conductor
- Reduced wildfire ignition risk and detection
- Improved fault location and storm response
- Predictive and condition-based maintenance
- Improved reliability performance on worst performing circuits
- More efficient capital prioritization using sensor derived analytics



Anticipated Benefits:
50%-70% pre-detection of equipment failures
~10-15% reduction in duration of outages

Public Safety | Wildfire Mitigation | Storm Response | Asset Health

Advancing the Grid

Analytics Platform

EVERSOURCE

New platform allows for massive-scale data processing (billions of records) with secure data storage for automated data cleaning, GenAI and LLM tool development, and machine learning

- Explosion of data from **inspection images, substation asset monitoring**, **AMI, PQ monitors, substation automation, DERs**
- Data trapped across **multiple platforms and databases**
- Manual analytics → **slow, inconsistent, not scalable**
- Existing tools cannot support **LLM, GenAI, ML, probabilistic modeling, or real-time insights**

Business Impact

Reduce time to perform complex AI-based analysis of system engineering and operational data to gain insights to

- ✓ Lower operational costs
- ✓ Improve capital budgeting decisions
- ✓ Predict and address reliability concerns before they affect customers
- ✓ Optimize system performance

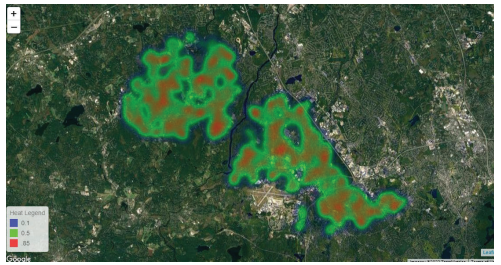
Advancing the Grid

Planning Analytics - Advanced Forecasting Tools

EVERSOURCE

- Integrate all relevant distribution network data sources into a **spatial load forecasting tool** to predict:
  - **How much** power must be delivered
  - **Where** on the grid the power is needed
  - **When** it must be supplied
- Evaluate multiple factors affecting future grid needs performing scenario analysis:
  - **Weather** scenarios
  - **Economic** growth
  - **DER** penetration (EV, PV, Heat Pumps, EE, Storage, etc.)
- Precise, scalable, and efficient **assessment of localized electric load**
- Generate forecasted **8760 load shapes** across all levels: substation, transformer, and at circuit levels
- Address both **short-term** circuit trends and **long-term** grid expansion





→ **Aligns with the IDSP proposed final decision from 2025** DOCKET NO. 21-05-15RE03 PURA

Advancing the Grid

Planning Analytics - Advanced Planning Tools

In addition to advancing the Companies forecasting capabilities as laid out in DOCKET NO. 21-05-15RE03, PURA has articulated a vision for Integrated Distribution System Planning ("Authority's Version") which requires significant advancement of distribution tools and analytics to achieve PURA's and the Company's vision of IDSP. To achieve this, the Company expects to invest in:

- Compute resources to allow the modeling and simulation of granular models with 8760 data under various scenarios for every circuit and circuit configuration. In an effort to safe-guard sensitive data, the Company will plan to retain information and maintain resources on-prem.
- Investments into probabilistic load flow capabilities will require development of customized solutions. While the Company expects to leverage knowledge from other jurisdictions where it has developed such capabilities, CT data is unique and some new investments will be required.
- Custom tools for data analytics and review will be required. This will be investments into high performance mapping and data review as probabilistic load flows with 8760 data sets by circuit are expected to create upwards of terra bytes of data.
- Investments with our solution providers for existing tools to develop customized features to meet the PURA requirements.
- Investments in Power Quality assessment tools and equipment to evaluate the impact of high penetration of DER and new load types on customer service quality

Advancing the Grid

Planning Analytics - Integrated Energy Planning

EVERSOURCE

Integrated Energy Planning as a Core Function of Regulated Utilities

- The Company seeks authorization to establish an Integrated Energy Planning function similar to capabilities already implemented or under development in other Company jurisdictions with development of supporting analytical tools and technology.
- Integrated Energy Planning coordinates electric and natural gas planning activities to identify opportunities for optimized infrastructure investment across both systems. These activities include evaluating targeted electrification opportunities, non-pipeline alternatives for natural gas infrastructure, and non-wires alternatives for electric infrastructure.

Targeted Electrification Pilot Project

- The Company additionally proposes developing a targeted electrification pilot program that would provide regulators, stakeholders, and policymakers with valuable information regarding customer adoption of targeted electrification strategies as an alternative to traditional gas infrastructure investment.
- Because similar capabilities have already been developed elsewhere within the Company, Connecticut can leverage existing experience, methodologies, and software, thereby reducing both implementation costs and project risk.

Approval of the requested funding will allow the Company to establish these capabilities, implement the necessary technology, and begin coordinated planning efforts with Connecticut gas utilities consistent with the objectives established by the IDSP proceeding.

EVERSOURCE

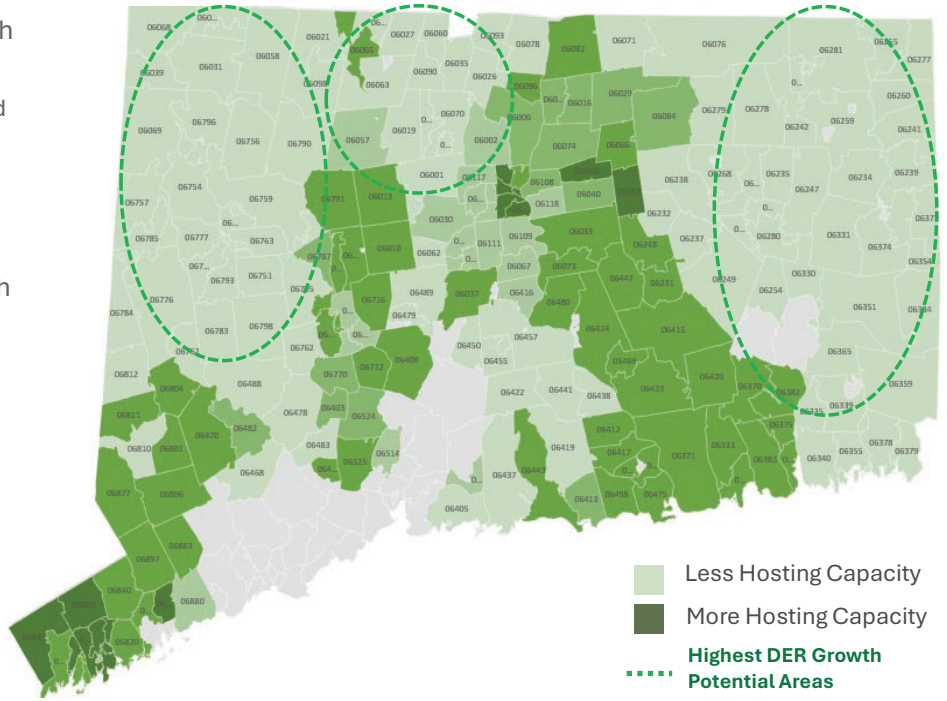
Advancing the Grid
Major Substation Upgrades for Large-Scale DER Integration

Shared Hosting for Advancement of Renewable Energy (SHARE)

Shared Hosting for Advancement of Renewable Energy (SHARE)

Need for Innovative DER Integration Solutions

- High DER growth potential areas are not aligned with demand growth areas
  - Highest DER growth potential areas are in Eastern and Northwest CT
  - High load demand in Central and Southwest CT ((Stamford/Norwalk, Hartford)
- Currently, there is high penetration and project attrition (withdrawals) on several substations in high potential growth areas
- Queues have stagnated due to the high cost of upgrades
- **Significant substation upgrades and innovative cost-sharing methods** needed to
  1) equitably allocate costs between beneficiaries,
  2) integrate stalled DER,
  3) avoid free-ridership,
  4) provide cost-certainty, and
  5) enable future growth.



Shared Hosting for Advancement of Renewable Energy (SHARE)
Cost-Sharing to Enabling Large-Scale DER Growth

EVERSOURCE

SHARED HOSTING FOR ADVANCEMENT OF RENEWABLE ENERGY (SHARE) Program Proposal

OBJECTIVE	• Substations with long DER queues, a history of project withdrawals, and costly major upgrades required to accommodate in-queue projects • Areas with sufficient developable land to subscribe to enabled capacity • Areas with limited infrastructure to support growth
BENEFITS	• Enable over 500 MW of in-queue and future DER to connect at less than $500/kW, eliminating "free rider" problem under cost-causation • Increase capacity for economic development and improved reliability for load customers
TARGET AREAS	• Share cost of investments for large-scale DER between beneficiaries • Increase DER hosting capacity in constrained regions by upgrading substations and lines • Provide cost-certainty for current and future DER development
NEXT STEPS	• In 2024, eight (8) substations with long DER queues and little to no hosting capacity were identified in Docket No. 22-06-29RE01 • 2 of these sites plus one other have been chosen to propose initial **SHARE** investments to connect queued DER, enable over 300 MW of DER while supporting capacity and reliability needs for 6 substations

Shared Hosting for Advancement of Renewable Energy (SHARE)

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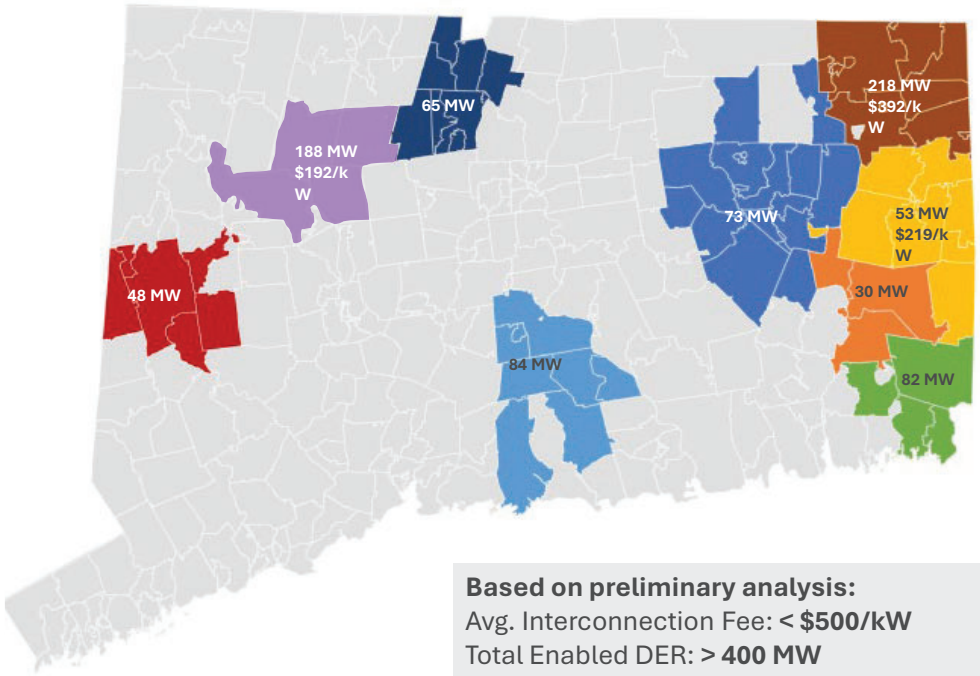
Substation Areas with Limited DER Capacity

Potential Locations for Group Studies and Cost-Allocation



Based on preliminary analysis:
Avg. Interconnection Fee: **< $500/kW**
Total Enabled DER: **> 400 MW**

Proposed

- 14M Tracy
- 13B FRYBROOK
- 14R CAMPVILLE

Potential

- 11F CARD ST
- 12S TUNNEL
- 12Y ROCKY RIVER
- 13B FRYBROOK
- 30K DOOLEY
- 32P SHUNOCK
- 43F NE SIMSBURY

Shared Hosting for Advancement of Renewable Energy (SHARE)

Substations with Limited DER Capacity (2024)

Details on Installed DER, Queued DER, and Constraints

Top 8 Substations with DER Constraints (circa 2024)				
Substation Name	Available DER Capacity (MW)	DER In Queue (MW)	DER online (MW)	Total DER (MW)
Proposed				
13B FRYBROOK	0	60	10	70
14M TRACY	0	62	53	115
14R CAMPVILLE[1]	0	9	40	49
Potential				
11F CARD ST	0	32	28	60
30K DOOLEY	9	30	15	45
32P SHUNOCK	7	17	26	43
12S TUNNEL	0	21	80	101
12Y ROCKY RIVER	0	8	78	86

[1] CAMPVILLE 14R DER numbers are based on 2026 data

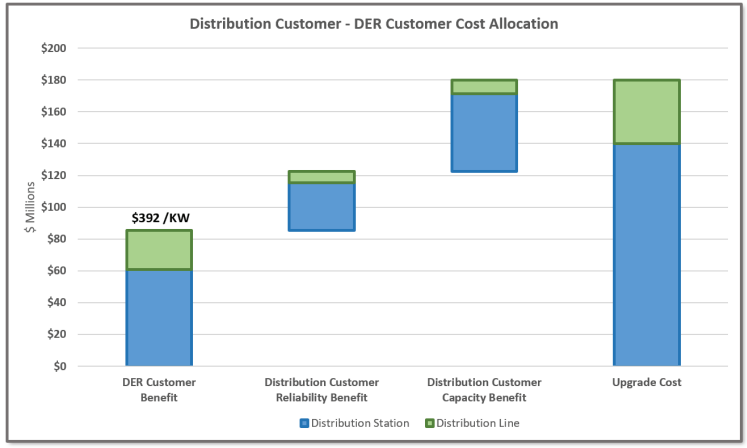
Over 600 MW of Large Solar stuck in the interconnection queue across all substations.
Eversource SHARE proposals could enable over 600 MW of additional DER at 8 substations

Shared Hosting for Advancement of Renewable Energy (SHARE)

Tracy 14M SHARE Group Proposal (based on 2024 estimates)

Stations	Level 2 DER Applications (MVA)	Level 1 DER Applications (MVA)	DER Group Study (MVA)	Reserved Operational Capacity (MVA)	Enabled Electrification (MVA)	Enabled Rooftop DER Capacity (MVA)	Enabled Ground Mounted DER Capacity - Group Study (MVA)	Enabled Ground Mounted DER Capacity - Post Group Study (MVA)
Tracy 14M	39	10	17	63	32	10	91	73
Mansfield	9	9	4	63	49	9	39	35
Brooklyn	3	8	2	63	35	8	53	51
New Station	30	5	15	63	28	5	34	19
	81	32	38	250	143	32	218	179

- DER stations in Group: Tracy 14M, Brooklyn 30Y, Mansfield 12J and a New Substation
- Major Upgrades:
  - Upgrade transformers at Tracy 14M
  - Upgrade and add new transformer at Brooklyn 30Y
  - Build new 2-bank Bul Substation near Hampton
  - Upgrade existing feeders and add new feeders
- Total Distribution Investment: **$180M**
- Prospective SHARE Fee: **$392/kW**
- Enabled DER: **218 MW**



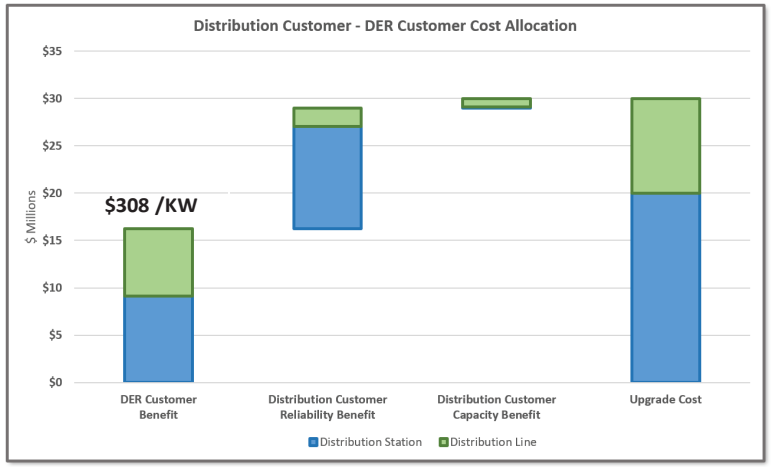
Shared Hosting for Advancement of Renewable Energy (SHARE)

Frybrook 13B SHARE Group Proposal (based on 2024 estimates)

EVERSOURCE

Stations	Level 2 DER Applications (MVA)	Level 1 DER Applications (MVA)	DER Group Study (MVA)	Reserved Operational Capacity (MVA)	Enabled Electrification (MVA)	Enabled Rooftop DER Capacity (MVA)	Enabled Ground Mounted DER Capacity - Group Study (MVA)	Enabled Ground Mounted DER Capacity - Post Group Study (MVA)
Frybrook 13B	16	7	32	63	0	1	53	21

- DER stations in Group: Frybrook 13B
- Major Upgrades:
  - Add 1 new standard size transformer
  - Upgrade existing feeders and add 5 new feeders
- Total Distribution Investment: **$30M**
- Prospective SHARE Fee: **$308/kW**
- Enabled DER: **53 MW**

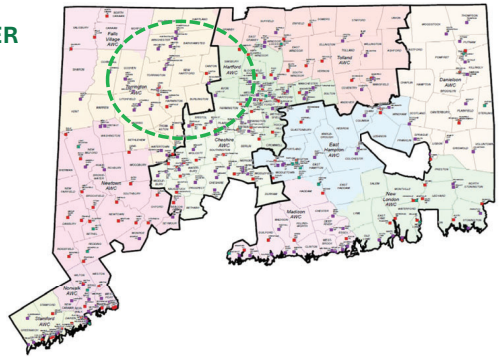


Shared Hosting for Advancement of Renewable Energy (SHARE)

EVERSOURCE

Northwest CT Area Solution (Campville 14R)

CO-INVESTMENT OPPORTUNITY LEVERAGING CAPACITY, RELIABILITY, AND RESILIENCY NEEDS, DER ENABLEMENT AND NWA APPLICATION FOR A COST-EFFICIENT AREA SOLUTION



DER growth trends show a need in more rural locations with adequate space to support renewable projects. This unique solution will resolve multiple regional needs with a long-term solution that leverages a DER Cost-Sharing framework, while utilizing cost-efficient NWA to bridge the gap to a long-term solution.

- Approximate **4 MW / 8 MWh BESS** (Bridge-to-Wires) solution to defer construction of a planned new bulk substation for the area.
- Design a new substation (long-term solution) to **enable 150-200 MW of DER** and leverage BESS to maximize DER hosting capacity at the new substation (Solar-Sponging)
- Resolve long-term planning violations at 2 additional area substations, target the elimination of costly ROW upgrades required for area reliability, and mitigate flooding risk
- Target **25-30% cost reduction** overall for ratepayers for the long-term planning solution
- Target **$200/kW to $400/kW** DER SHARE fee paid by developers for capacity benefits

Shared Hosting for Advancement of Renewable Energy (SHARE)

Campville 14R SHARE Group Proposal (based on 2025 estimates)

	Existing DER		Group Study DER and Post Applications	Capacity Allocation of Distribution Substation between DER Customers and Load Customers				
Stations	Level 2 DER Applications (MVA)	Level 1 DER Applications (MVA)	DER Group Study (MVA)	Reserved Operational Capacity (MVA)	Enabled Electrification (MVA)	Enabled Rooftop DER Capacity (MVA)	Enabled Ground Mounted DER Capacity - Group Study (MVA)	Enabled Ground Mounted DER Capacity - Post Group Study (MVA)
Campville 14R	8	31	9	47	0	4	27	18
Canton 5R	12	19	3	47	0	7	92	89
Still River 55G & BESS	4	7	17	63	17.5	5	69	53
	25	58	29	156	18	16	188	159

- DER stations in Group: Canton 5R, Campville 14R, and a New Substation
- Major Upgrades:
  - Buil new Bulk Distribution Substation at Burrville
  - Upgrade existing feeders and add new feeders
- Total Distribution Investment: **$65M**
- Prospective SHARE Fee: **$192/kW**
- Enabled DER: **188 MW**

