March 1, 2018

Ms. Melanie Bachman
Acting Executive Director
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051

Re: CL&P dba Eversource Energy Forecast of Loads & Resources for the Period 2018-2027

Dear Ms. Bachman:

The Connecticut Light and Power Company dba Eversource Energy (the "Company") submits herewith 15 copies of the Company's 2018 Forecast of Loads and Resources, as required by Connecticut General Statute 16-50r.

Please do not hesitate to contact me if you have any questions regarding this filing.

Sincerely,

Christopher R. Bernard
Manager, Regulatory Policy & Strategy – CT
As Agent for The Connecticut Light & Power Company
dba Eversource Energy

Enclosure

EVERSOURCE ENERGY

2018 Forecast of Loads and Resources

for the Period 2018-2027

March 1, 2018

List of Acronyms

“ACEEE”	American Council for an Energy Efficiency Economy
“C&LM”	Conservation and Load Management
“CAGR”	Compound Annual Growth Rate
“CEAB”	Connecticut Energy Advisory Board
“CSC”	Connecticut Siting Council
“CMEEC”	Connecticut Municipal Electric Energy Cooperative, Inc.
“DEEP”	Department of Energy and Environmental Protection
“DOE”	Department of Energy
“EE”	Energy Efficiency
“EEB”	Energy Efficiency Board
“EDC”	Electric Distribution Company
“EIS”	Environmental Impact Statement
“EV”	Electric Vehicles
“FCA”	ISO-NE Forward Capacity Auction
“FCM”	ISO-NE Forward Capacity Market
“FERC”	Federal Energy Regulatory Commission
“FLR”	Forecast of Loads and Resources
“GHCC”	Greater Hartford/Central Connecticut
“GW”	Gigawatt or 1,000,000,000 Watts
“HQ”	Hydro Québec
“HVDC”	High Voltage Direct Current
“IRP”	Integrated Resource Plan
“ISD”	In-Service Date
“ISO-NE”	Independent System Operator – New England
“KV”	Kilovolt or 1,000 Volts
“KW”	Kilowatt or 1,000 Watts
“KW-Month”	Kilowattmonth
“LREC”	Low Emission Renewable Energy Credits
“MW”	Megawatt or 1,000,000 Watts
“NERC”	North American Electric Reliability Corporation
“NHPUC”	New Hampshire Public Utility Commission
“NH SEC”	New Hampshire Site Evaluation Committee
“NNE”	Northern New England
“NPCC”	Northeast Power Coordinating Council

List of Acronyms, Continued

“NPT”	Northern Pass Transmission Project
“NTA”	Non-Transmission Alternative
“PA 11-80”	Public Act 11-80, An Act Concerning the Establishment of the Department of Energy and Environmental Protection
“PAC”	Planning Advisory Committee
“PV”	Photovoltaic
“PURA”	Public Utilities Regulatory Authority
“RFP”	Request for Proposal
“RGGI”	Regional Greenhouse Gas Initiative
“ROFR”	Right of First Refusal
“RSP”	ISO-NE’s Regional System Plan
“SENE”	Southeast New England
“SWCT”	ISO-NE Southwest Connecticut Zone
“TO”	Transmission Owner
“ZREC”	Zero Emission Renewable Energy Credit

Contents

Chapter 1: INTRODUCTION

1.1 Overview of Eversource's 2018 Forecast of Loads and Resources ("FLR") Report

The Connecticut Light & Power Company doing business as Eversource Energy ("Eversource" or the "Company") is a company engaged in electric distribution and transmission services in Connecticut, as defined in Conn. Gen. Stat. §16-1. As such, Eversource has prepared this Ten-Year FLR pursuant to Conn. Gen. Stat. §16-50r. Eversource has provided an annual FLR to the Connecticut Siting Council ("CSC") for over forty years. This 2018 FLR includes the following information[1]:

1. A tabulation of the peak loads, resources, and margins for each of the next ten years, using CL&P's 50/50 financial forecasting methodology.
2. Data on energy use and peak loads for the five preceding calendar years, including data on the energy savings provided by Eversource's energy efficiency programs during that period.
3. A list of planned transmission lines on which proposed route reviews are being undertaken or for which certificate applications have already been filed.

1.2 Energy and Peak Demand Forecasts

There is uncertainty in any forecast, and weather can especially have a large impact on the realization of any forecast. Eversource's electric energy usage is expected to decrease by a weather- normalized Compound Annual Growth Rate ("CAGR") of 1.3% per year, but peak demand is expected to increase by a weather-normalized CAGR of 0.5% per year over the 10-year forecast period from 2018 through 2027.

While Eversource is providing this forecast, which was developed for financial forecasting purposes, Eversource uses Independent System Operator – New England's ("ISO-NE") load forecast for transmission planning purposes. Further discussion of Eversource's forecast is provided in Chapter 2.

1.3 Evolving Load and Resource Influences

As part of the state's restructuring of the electric industry, which began in 1998, Eversource sold its generation assets, while remaining a Connecticut electric distribution and transmission company. Since that time, the state has enacted a number of policies and programs which affect the developing wholesale electric market in the region.

State-Mandated Integrated Resource Planning

In 2007, the Connecticut legislature passed PA 07-242, *An Act Concerning Electricity and Energy Efficiency,* directing the annual development of an Integrated Resource ("IRP") for Connecticut. In 2011, the Connecticut legislature passed PA 11-80, *An Act Concerning the Establishment of the Department of Energy and Environmental Protection and Planning for Connecticut's Energy Future.* PA 11-80 calls for the Department of Energy and Environmental Protection ("DEEP") to create an IRP by January 1, 2012 and biennially thereafter, in consultation with Connecticut Energy Advisory Board ("CEAB")[2] and the Electric Distribution Companies ("EDCs").

[1] Pursuant to discussions with CSC staff, Eversource has removed the previously provided Table 2-3: Existing Customer Owned Facilities 1 MW and Above Providing Generation to the Eversource System from this filing.
[2] The CEAB was dissolved as of June 6, 2014. *See* General Statutes § 16a-3, repealed by Public Act 14-94, § 82.

On March 17, 2015, DEEP issued its 2014 IRP for Connecticut presenting a comprehensive plan for improving Connecticut's electric energy future.

ISO-NE Wholesale Electric Markets

Section 2.2 of this report discusses the results of the most recent Forward Capacity Auction ("FCA") in the ISO-NE wholesale electricity market.

Energy Efficiency Programs

For many years, Eversource has been developing and implementing nationally recognized Energy Efficiency ("EE") programs for its customers to help them control their energy usage, save money and reduce overall electric consumption in the state. These successful programs are primarily funded by a per kWh energy efficiency charge on customer bills, as well as revenues received from Regional Greenhouse Gas Initiative ("RGGI") auctions and revenue from the ISO New England Forward Capacity Market ("FCM").

On October 31, 2017, the state of Connecticut passed a budget for biennium ending June 30, 2019. This budget swept approximately $127 million from the energy efficiency fund and $20 million from the RGGI over the next two fiscal years into the state's General Fund. However, for Eversource, this negative impact will largely be offset by an incremental energy efficiency bid pursuant to Docket No. 17-01-11, PURA Review of Public Act 15-107(B) Small-Scale Energy Resource Agreements. Further discussion of Eversource's energy efficiency program forecast can be found in Chapter 3.

Transmission Planning

Eversource plans, builds and operates transmission infrastructure with a goal of safely and reliably delivering power to its customers under a wide variety of supply and demand conditions. A discussion of Eversource's transmission forecast can be found in Chapter 4. The key topics include:

- Eversource's transmission facilities are part of the New England regional grid and must be designed, operated and maintained to ensure compliance with mandatory North American Electric Reliability Corporation ("NERC") reliability standards.
- Eversource is proposing new 115-kV transmission projects to strengthen the Connecticut transmission system.
- The New England transmission system is an important enabler of competitive markets and the region's efforts to meet environmental objectives and mandates.

Chapter 2: FORECAST OF LOADS AND RESOURCES

Chapter Highlights

- Electric energy usage is expected to decrease by 1.3% per year over the 10-year forecast period; however, peak demand is expected to Increase by 0.5% per year during this time.

- While Eversource uses its own Reference Plan Forecast for financial forecasting, it uses ISO-NE's load forecast for transmission planning purposes.

2.1 Electric Energy and Peak Demand Forecast

The energy and peak demand forecasts contained in this chapter are based on the Company's budget forecast, which was prepared in the Fall/Winter of 2017, and are based on Eversource's total franchise area. The base case or 50/50[3] case is also referred to as the Reference Plan Forecast. Eversource's Reference Plan *Energy* Forecast is based on the results of econometric models, adjusted for Eversource's forecasted energy efficiency programs, projected reductions resulting from solar installations and expected additions due to electric vehicles.

The Reference Plan *Peak Demand* Forecast is also based on an econometric model, adjusted for energy efficiency, solar and expected large customer additions.

The Reference Plan Forecast is used for Eversource's financial planning and distribution system planning, but is not used for transmission system planning. As ISO-NE is responsible for regional transmission planning and reliability, it independently develops its own forecast which the Company utilizes to plan and construct its transmission system. Section 2.1.3 discusses ISO-NE's forecast in general terms and how it conceptually compares to Eversource's forecast.

The Reference Plan *Energy* Forecast projects a *decrease* in the weather-normalized CAGR for total electrical energy output requirements of 1.3% for Eversource from 2018-2027. Without the Company's energy efficiency programs, solar installations or electric vehicles, the forecasted energy growth rate is projected to be a *decrease* in the weather-normalized CAGR of 0.3%.

The weather-normalized CAGR for summer peak demand in the Reference Plan *Peak Demand* Forecast is forecasted to increase by 0.5% over the ten-year forecast period. Similarly, if Eversource's Energy Efficiency and solar installations, along with our large customer additions were excluded, the increase in the CAGR for forecasted peak demand would be 0.7%.

[3] A "50/50 forecast" is a forecast that is developed such that the probability that actual demand is higher or lower than the forecasted amount is 50%.

Table 2-1 provides historic output and summer peaks, actual and normalized for weather, for the 2013-2017 period, and forecast output and peaks for the 2018-2027 periods. The sum of the budgeted class sales for each year, adjusted for losses, is the annual forecast of system electrical energy requirements or output. This is the amount of energy that must be supplied by generating plants to serve the loads on the distribution system.

The Reference Plan Forecast is a *50/50* forecast that assumes normal weather throughout the year, with normal peak-producing weather episodes in each season. The forecasted 24-hour mean daily temperature for the summer peak day is 84° F and is based on the average peak day temperatures from 2008-2017. The Reference Plan Forecast's summer peak day is assumed to occur in July, since this is the most common month of occurrence historically. It should be noted, however, that the summer peak has occurred in June, August and September in some years.

2.1.1 Uncertainty in the Reference Plan Forecast

There is uncertainty in any long-run forecast, because assumptions that are used in the forecast are selected at a point in time. The point of time chosen is generally insignificant, unless the forecast drivers are at a turning point. Outlined below are six major areas of uncertainty that are inherent to this forecast:

- The Economy - The Reference Plan Forecast is based on an economic forecast that was developed in July 2017. Business cycles represent normal economic fluctuations which are typically not reflected in long-run trend forecasts because recovery eventually follows recession, although it is difficult to pinpoint when. So, while the level of energy or peak demand that is forecasted for any given year of the forecast may be attained a little earlier or later than projected, the underlying trend is still likely to occur at some point and needs to be planned for.
- Solar Installations (“PV”) - This forecast includes explicit reductions to electrical energy output requirements due to solar installations stemming from the currently active Low Emission Renewable Energy Credits (“LREC”) / Zero Emission Renewable Energy Credits (“ZREC”) program and the Connecticut Green Bank residential program.
- Energy Efficiency – This forecast includes explicit reductions to electrical energy output and peak demand due company sponsored energy efficiency based on the most recent 3-year plan. Both the Energy and Peak Demand Forecasts include energy efficiency estimates from the Incremental Bid EE Program.
- Electric Vehicles (“EVs”) - This forecast includes explicit additions to electrical energy output requirements due to EVs. It does not include any additions to the peak forecast since it assumed that most of the charging will be done off-peak.
- Large Customers – The peak demand forecast includes explicit adjustments for large customer additions with expected demands greater than 0.25 MW’s.
- Weather - The Reference Plan Peak Demand Forecast assumes normal weather based on a ten-year average (2008 - 2017). The historical peak day 24- hour mean temperatures range from 79° F to 89° F, with deviations from the average peak day temperatures being random, recurring and unpredictable occurrences. For example, the lowest peak day mean temperature occurred in 2017, while the highest occurred in 2011. This variability of peak-producing weather means that over the forecast period, there will be years when the actual peaks will be significantly above or below the forecasted peaks.

Despite the inherent risks outlined above, the Company believes its current forecast to be the best possible, given the information available today.

2.1.2 Forecast Scenarios

Table 2-1 contains scenarios demonstrating the variability of peak load around the 50/50 peak forecast due to weather. The table shows that weather has a significant impact on the peak load forecast with variability of approximately 8%, or 400 Megawatts ("MWs"), above and below Eversource's 50/50 forecast, which is based on normal weather. To illustrate, the 2027 summer peak forecast reflecting average peak-producing weather is 5,357 MWs. However, either extremely mild or extremely hot weather could result in a range of potential peak loads from 4,943 MWs to 5,848 MWs. This 900 MWs of variation, which is a band of approximately plus or minus 8% around the average, demonstrates the potential impact of weather alone on forecasted summer peak demand.

The Extreme Hot Weather scenario roughly corresponds conceptually to ISO-NE's 90/10 forecast, described in Section 2.1.3.

Table 2-1: Eversource 2018 Reference Plan Forecast

	Net Electrical Energy Output Requirements		Reference Plan (50/50 Case)			Extreme Hot Scenario			Extreme Cool Scenario		
Year	Output GWh (1)	Annual Change (%)	Peak MW	Annual Change (%)	Load Factor (2)	Peak MW	Annual Change (%)	Load Factor (2)	Peak MW	Annual Change (%)	Load Factor (2)
HISTORY											
2013	23447		5448		0.491						
2014	23041	-1.7%	4772	-12.4%	0.551						
2015	23047	0.0%	4850	1.6%	0.543						
2016	22460	-2.5%	4948	2.0%	0.517						
2017	21686	-3.4%	4721	-4.6%	0.524						
Compound Rates of Growth (2013-2017)											
	-1.9%		-3.5%								
HISTORY NORMALIZED FOR WEATHER											
2013	23275		5202		0.511						
2014	22992	-1.2%	5002	-3.8%	0.525						
2015	22811	-0.8%	5034	0.6%	0.517						
2016	22242	-2.5%	4953	-1.6%	0.511						
2017	21755	-2.2%	5098	2.9%	0.487						
Compound Rates of Growth (2013-2017)											
	-1.7%		-0.5%								
FORECAST											
2018	21958	0.9%	5104	0.1%	0.491	5559	9.0%	0.451	4724	-7.3%	0.531
2019	21614	-1.6%	5128	0.5%	0.481	5586	0.5%	0.442	4743	0.4%	0.520
2020	21286	-1.5%	5132	0.1%	0.472	5595	0.2%	0.433	4744	0.0%	0.511
2021	20892	-1.8%	5158	0.5%	0.462	5625	0.5%	0.424	4767	0.5%	0.500
2022	20543	-1.7%	5198	0.8%	0.451	5669	0.8%	0.414	4803	0.8%	0.488
2023	20243	-1.5%	5228	0.6%	0.442	5703	0.6%	0.405	4829	0.5%	0.479
2024	20024	-1.1%	5251	0.4%	0.434	5730	0.5%	0.398	4848	0.4%	0.470
2025	19664	-1.8%	5285	0.6%	0.425	5768	0.7%	0.389	4878	0.6%	0.460
2026	19378	-1.5%	5323	0.7%	0.416	5810	0.7%	0.381	4912	0.7%	0.450
2027	19107	-1.4%	5357	0.6%	0.407	5848	0.7%	0.373	4943	0.6%	0.441
Compound Rates of Growth (2017-2027)											
	-1.3%		1.3%			2.2%			0.5%		
Normalized Compound Rates of Growth (2017-2027)											
	-1.3%		0.5%			1.4%			-0.3%		

1. Sales plus losses.
2. Load Factor = Output (MWh) / (8760 Hours X Season Peak (MW)).

Forecasted Reference Plan Peaks are based on normal peak day weather (84º mean daily temperature). Forecasted High Peaks are based on the weather that occurred on the 2011 peak day (89º mean daily temperature). Forecasted Low Peaks are based on the weather that occurred on the 2017 peak day (79º mean daily temperature).

2.1.3 ISO-NE Demand Forecasts

The CSC's 2008 Review of the Ten-Year Forecast of Loads and Resources provides a concise description of the ISO-NE's "90/10" forecast used by Eversource for transmission planning purposes. A relevant excerpt is provided below.

> Called the "90/10" forecast, it is separate from the normal weather (50/50) forecasts offered by the Connecticut utilities. However, it is the one used by both ISO-NE and by the Connecticut utilities for utility infrastructure planning, including transmission and generation.

The 90/10 forecast is a plausible worst-case hot weather scenario. It means there is only a 10 percent chance that the projected peak load would be exceeded in a given year, while the odds are 90 percent that it would not be exceeded in a given year. Put another way, the forecast would be exceeded, on average, only once every ten years. While this projection is extremely conservative, it is reasonable for facility planning because of the potentially severe disruptive consequences of inadequate facilities: brownouts, blackouts, damage to equipment, and other failures. State utility planners must be conservative in estimating risk because they cannot afford the alternative.

Just as bank planners should ensure the health of the financial system by maintaining sufficient collateral to meet worst-case liquidity risks, load forecasters must ensure the reliability of the electric system by maintaining adequate facilities to meet peak loads in worst-case weather conditions. While over-forecasting can have economic penalties due to excessive and/or unnecessary expenditures on infrastructure, the consequences of under-forecasting can be much more serious. Accordingly, the Council will base its analysis in this review on the ISO-NE 90/10 forecast.

As Eversource has reported in the past, there is one other major difference between the Eversource and ISO-NE forecasts, aside from the difference between the 50/50 forecast methodology used by Eversource and the 90/10 forecast methodology used by ISO-NE. The Eversource peak demand forecasts include explicit reductions for the Company's EE programs, solar resources and explicit large customer additions, while the ISO-NE demand forecasts do not include these adjustments; instead, ISO-NE considers EE and large scale solar to be supply resources in their capacity forecast. ISO-NE has developed a new photovoltaic (“PV”) forecast such that small scale solar is calculated and explicitly reduces the ISO-NE demand forecast. ISO-NE publishes the PV forecast annually as part of their load forecast documentation.

Table 2-2 shows Eversource's Reference Plan Forecast with savings from Eversource's EE programs, solar and large customer additions added back in to make it easier to compare Eversource's forecast with ISO-NE's forecast.

Table 2-2: Adjustments to Output and Summer Peak Forecasts

Net Electrical Energy Output Requirements (GWH)

Year	Unadjusted Output	Solar	Company Energy Efficiency	Large Customer Additions	Electric Vehicles	Adjusted Output	Annual Change (%)
HISTORY NORMALIZED FOR WEATHER							
2017						21,755	
FORECAST							
2018	22,051	(35)	(59)	-	3	21,958	0.9%
2019	21,961	(124)	(223)	-	12	21,614	-1.6%
2020	21,900	(202)	(411)	-	25	21,286	-1.5%
2021	21,734	(259)	(583)	-	44	20,892	-1.8%
2022	21,591	(327)	(720)	-	65	20,543	-1.7%
2023	21,464	(396)	(825)	-	87	20,243	-1.5%
2024	21,418	(464)	(930)	-	110	20,024	-1.1%
2025	21,232	(533)	(1,035)	-	134	19,664	-1.8%
2026	21,120	(601)	(1,140)	-	161	19,378	-1.5%
2027	21,022	(670)	(1,245)	-	191	19,107	-1.4%
Normalized Compound Rates of Growth (2017-2027)							
	-0.3%					-1.3%	

50/50 Reference Plan (MW)

Year	Unadjusted Peak	Solar	Company Energy Efficiency	Large Customer Additions		Adjusted Peak	Annual Change (%)
HISTORY NORMALIZED FOR WEATHER							
2017						5,098	
FORECAST							
2018	5,130	(30)	(20)	24	-	5,104	0.1%
2019	5,166	(52)	(20)	34	-	5,128	0.5%
2020	5,183	(68)	(20)	37	-	5,132	0.1%
2021	5,221	(80)	(20)	37	-	5,158	0.5%
2022	5,271	(92)	(20)	39	-	5,198	0.8%
2023	5,312	(103)	(20)	39	-	5,228	0.6%
2024	5,340	(108)	(20)	39	-	5,251	0.4%
2025	5,374	(108)	(20)	39	-	5,285	0.6%
2026	5,412	(108)	(20)	39	-	5,323	0.7%
2027	5,446	(108)	(20)	39	-	5,357	0.6%
Normalized Compound Rates of Growth (2017-2027)							
	0.7%					0.5%	

Extreme Hot Weather Scenario (MW)

Year	Unadjusted Peak	Solar	Company Energy Efficiency	Large Customer Additions		Adjusted Peak	Annual Change (%)
HISTORY NORMALIZED FOR WEATHER							
2017						5,098	
FORECAST							
2018	5,584	(30)	(20)	24	-	5,559	9.0%
2019	5,624	(52)	(20)	34	-	5,586	0.5%
2020	5,646	(68)	(20)	37	-	5,595	0.2%
2021	5,688	(80)	(20)	37	-	5,625	0.5%
2022	5,742	(92)	(20)	39	-	5,669	0.8%
2023	5,787	(103)	(20)	39	-	5,703	0.6%
2024	5,819	(108)	(20)	39	-	5,730	0.5%
2025	5,856	(108)	(20)	39	-	5,768	0.7%
2026	5,898	(108)	(20)	39	-	5,810	0.7%
2027	5,936	(108)	(20)	39	-	5,848	0.7%
Normalized Compound Rates of Growth (2017-2027)							
	1.5%					1.4%	

2.2 ISO-NE Wholesale Electric Markets

This section reports on the most recent ISO-NE forward capacity auction.

The twelfth FCA took place on Monday, February 5, 2018. Virtually all of the information about FCA 12 has been taken from the ISO-NE press release, which can be found at the following location:

https://www.iso-ne.com/static-assets/documents/2018/02/20180208_pr_fca12_initial_results_release.pdf

Holyoke, MA—February 8, 2018—New England's annual capacity auction for power system resources concluded Tuesday with sufficient resources to meet peak demand in 2021-2022, and preliminary results indicate the clearing price was the lowest in five years due to a surplus of capacity in the region. The auction is run by ISO New England Inc. to procure the resources that will be needed to meet consumer demand for electricity in three years. The 12th FCM auction (FCA #12) closed at a preliminary clearing price of $4.63 per kilowattmonth (kW-month) across New England, compared to $5.30/kW-month in last year's auction. Resources totaling 40,612 MW, including 35,007 MW of existing capacity and 206 new resources totaling 5,605 MW, qualified to participate in the FCM, while the regional capacity target for 2021-2022 is 33,725 MW. The auction concluded with commitments from 34,828 MW to be available in 2021-2022, with 1,103 MW of surplus capacity system-wide. The auction rules allow the region to acquire more or less than the capacity target, providing flexibility to acquire additional capacity and enhanced reliability at a cost-effective price. While the auction secured sufficient capacity to meet demand system-wide for 2021-2022, some existing resources dropped out during the auction. Reliability reviews were conducted on resources totaling about 2,775 MW that submitted bids during the auction to withdraw from the capacity market for one year when the auction price fell below the level they needed to justify the financial risks of a capacity supply obligation (CSO) during 2021-2022. Resources with a CSO can be financially penalized for failing to perform during shortage events. Resources without a capacity obligation can still participate in the daily wholesale electricity markets. When a resource seeks to delist, or remove itself, from the capacity market, the ISO conducts a reliability review to determine if the power system will maintain system reliability without that resource, without overloading transmission lines. If transmission security could be jeopardized, the ISO can reject a one-year delist bid and retain a resource, with a capacity commitment, until it is no longer needed for reliability. The reliability reviews of delist bids submitted during FCA #12 show that certain transmission lines could be overloaded if two units totaling about 1,300 MW were not available during stressed system conditions in 2021-2022. "The forward capacity market is designed to ensure resource adequacy—that there are enough resources in the right places to meet peak demand. This auction procured sufficient resources at a competitive price," said Robert Ethier, vice president of market operations at ISO New England. "However, our analysis indicates that transmission lines in a particular sub-region could be overloaded in extreme summer weather, jeopardizing reliability, if about 1,300 MW of submitted delist bids were not available. The ISO will address that potential reliability risk by retaining the resources for the 2021-2022 capacity commitment period. All other delist bids, including other bids in that sub-region, were accepted." For FCA #12, the region was divided into three zones: Northern New England ("NNE"), including Vermont, New Hampshire, and Maine; Southeast New England ("SENE"), including Southeastern Massachusetts, Rhode Island, Northeastern Massachusetts, and Greater Boston; and Rest of Pool, including Connecticut and western and central Massachusetts. NNE was modeled as an export-constrained zone, while SENE was modeled as an import-constrained zone.

Preliminary results of FCA #12:

- The auction closed for most resources at $4.63/kW-month after four rounds of competitive bidding. The clearing price will be paid to all resources in all three capacity zones in New England and 524 MW of imports from New York and 57 MW from one interconnection with Québec.

    - Imports over two other interconnections from neighboring regions, Québec and New Brunswick, continued into a fifth round, which closed at $3.70/kW-month for 442 MW from Québec and $3.16/kW-month for 194 MW from New Brunswick.

    - Previous clearing prices (all per kilowatt-month): FCA #7 (2013), $3.15 floor price, except $14.99 for new resources in the former Northeast Massachusetts/Boston zone; FCA #8 (2014), $15 for new and $7.025 for existing resources; FCA #9 (2015), $9.55 system-wide except SEMA/RI: $17.73 new and $11.08 existing; FCA #10 (2016), $7.03; FCA #11, $5.30.

    - At $4.63/kW-month, the total value of the capacity market in 2021-2022 will be approximately $2.07 billion (preliminary estimate).

- Capacity clearing the auction totaled 34,828 MW to meet the 33,725 MW net installed capacity target for 2021-2022.

    - 30,011 MW of generation, including 174 MW new.

        - No large new generators cleared in the auction, but included in the 174 MW of new generation is a new, 58-MW natural gas unit and a total of 87 MW of increased generating capacity at some existing power plants.

    - 3,600 MW of energy-efficiency and demand-reduction measures, including 514 MW of new—the equivalent of a large power plant.

    - 1,217 MW total imports from New York, and Québec and New Brunswick, Canada.

- In all, 132 MW of wind and 86 MW of solar facilities cleared FCA #12 (most photovoltaic resources in New England are on the distribution system and don't participate in the wholesale markets). Those totals include 1 megawatt of new wind and 21 megawatts of new solar facilities.

- In all, 511 MW of resources, including one large generator, the 383-MW Bridgeport Harbor 3 coal-fired unit, submitted retirement bids that were accepted before FCA #12.

Chapter 3: ENERGY EFFICIENCY

Chapter Highlights

- Energy savings resulting from Connecticut Energy Efficiency Fund programs are a cost-effective resource available to Connecticut customers by reducing customer bills and helping to mitigate peak energy prices.
- Connecticut Energy Efficiency Fund programs are recognized nationally and provide economic development benefits to the State.
- On October 31, 2017, the state of Connecticut passed a budget for biennium ending June 30, 2019. This budget swept approximately $127 million from the energy efficiency fund and $20 million from the Regional Green House Gas Initiative over the next two fiscal years into the state's General Fund.
- The energy efficiency forecast includes 34 MW of energy savings from Incremental Energy Efficiency pursuant to CT Public Act 15-107 Section 1(b) *An Act Concerning Affordable and reliable Energy*.

CL&P 2016 - 2018 Conservation and Load Management Plan

Energy efficiency is a cost-effective resource available to policymakers to address rising energy costs, reliability challenges, and greenhouse gas reduction. Efficiency and load response programs in Connecticut reduce the amount of energy homes, businesses and schools consume, helping to decrease demand for energy from power plants, reducing the harmful emissions those power plants produce, and reducing consumer energy bills in all sectors. Energy efficiency programs also provide economic development benefits for Connecticut and help mitigate winter peak energy prices resulting from natural gas pipeline constraint during winter high-use periods.

Connecticut is a nationally recognized leader in implementing high-quality energy-efficiency programs. Since 2000, the American Council for an Energy Efficiency Economy ("ACEEE") has ranked Connecticut as one of the top states for energy efficiency. In the ACEEE's *2017 State Energy Efficiency Scorecard*, Connecticut ranked sixth in the nation. This ranking reflects the success of Connecticut's energy efficiency programs.

Eversource with guidance from the Energy Efficiency Board, maintain their conservation and load management programs' success through an evolving, integrated approach that reaches out to customers in their homes, at their jobs, in schools and in the community. Through seminars, workshops, teacher training, museum partnerships, trade and professional affiliations, retail partnerships and marketing, Eversource is helping to shape a more efficiency-minded consumer that not only participates in award-winning programs, but makes wiser energy choices every day.

In 2011, Public Act 11-80, *An Act Concerning the Establishment of the Department of Energy and Environmental Protection and Planning for Connecticut's Energy Future Efficiency*, was passed which laid the groundwork for pursuing all cost-effective energy efficiency. In 2013, Public Act 13-298, *An Act Concerning Implementation of Connecticut's Comprehensive Strategy and Various Revision to the*

Energy Statutes, provided the framework for increased conservation spending in Connecticut for electric and natural gas conservation programs. On December 22, 2015, DEEP approved the 2016 – 2018 Conservation and Load Management Plan ("Three Year Plan") submitted by the Connecticut electric and gas utility companies on October 1, 2015.[4] The C&LM Plan was based upon input from members of the public, industry groups and private enterprise, and was developed in collaboration with the Energy Efficiency Board ("EEB"). The Plan included unprecedented levels of funding for both electric and natural gas energy efficiency programs based on Public Act 13-298.

Funding for C&LM programs currently comes from several sources. Since the passage of the state's restructuring legislation in 1999, a 3-mil electric charge has served as the primary funding source.5 Public Act 11-80 and the subsequent DEEP approval of the Plan provide an additional 3 mil Conservation Adjustment Mechanism charge for conservation. In addition, C&LM programs receive funding from other sources including the ISO-NE's Forward Capacity Market and from the RGGI.

On October 31, 2017, the state of Connecticut passed a budget for biennium ending June 30, 2019. This budget swept approximately $127 million from the energy efficiency fund and $20 million from the RGGI over the next two fiscal years into the state's General Fund. For Eversource, the reduced energy efficiency budgets will result in approximately a 17 percent reduction in funding for energy efficiency electric programs in 2017, a 33 percent reduction in 2018, and a 17 percent reduction in 2019, and commensurate reductions in savings during this timeframe.

On September 7, the Public Utilities Regulatory Authority ("PURA") approved Eversource's incremental energy efficiency bid pursuant to Docket No. 17-01-11, PURA Review of Public Act 15-107(B) Small-Scale Energy Resource Agreements (the "Decision"). This Decision authorized the procurement of 34 MW passive demand resources by incrementally scaling up participation in a subset of existing energy efficiency programs over a period of four years beginning on October 1, 2017. The net effect of this of incremental energy efficiency bid will largely mitigate the impact of the State of Connecticut energy efficiency budget sweep.

The annual energy savings forecast in Table 3-1 is based on a reduced C&LM funding commensurate with the Connecticut energy efficiency budget sweep and the additional energy efficiency due to Incremental Energy Efficiency bid pursuant to CT Public Act 15-107 1(b) as described above.

3.1 Ten-Year C&LM Forecast

Table 3-1 presents the potential cumulative annualized energy savings and summer and winter peak-load reductions forecasted for C&LM programs implemented in the CL&P service territory for the C&LM Plan budget. The forecast is based on anticipated savings from the 2018 Update to the 2016-2018 C&LM Plan. Forecasted savings beyond 2019 assumes similar programs, and savings as anticipated in 2018. However, savings in years 2019 and beyond reflect anticipated changes in energy efficiency budgets and production costs.

[4] DEEP, Public Act 11-80 – Section 33 – 2016-2018 Conservation and Load Management Plan submitted by The Connecticut Light and Power Company, The United Illuminating Company, Yankee Gas Services Company, Connecticut Natural Gas Corporation, Southern Connecticut Gas Company.

[5] Conn. Gen. Stat. § 16-245m.

3.2 Forecast Sensitivity

The C&LM programs utilize a complementary mix of lost opportunity, retrofit, and market transformation implementation strategies to achieve savings. The energy savings and peak-load reductions projected in this forecast are sensitive to changes in a number of factors including changes in the electricity marketplace and consumer attitudes. In particular, the impact of federal policy on lighting standards is unclear at this point and may impact future savings.

Table 3-1

CL&P C&LM Programs Annual Energy Savings

and

Peak Load Reduction by Customer Class

Connecticut Light and Power

2017-2026

GWh Sales Saved

	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Residential	113	254	381	458	523	578	624	662	692	716
Commercial	148	317	469	611	743	866	980	1,086	1,185	1,277
Industrial	44	95	141	183	223	260	294	326	355	383
Total	**306**	**666**	**991**	**1,252**	**1,489**	**1,704**	**1,898**	**2,074**	**2,233**	**2,376**

MW Reductions (Passive Resource Summer Impacts)

	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Residential	17	39	59	70	79	86	93	98	103	107
Commercial (non-Load Response))	20	43	63	82	100	116	131	146	159	171
Industrial (non-Load Response)	6	13	19	25	30	35	39	44	48	51
Total	**43**	**94**	**141**	**176**	**208**	**237**	**264**	**288**	**310**	**329**

MW Reductions (Passive Resource Winter Impacts)

	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Residential	24	55	82	99	115	128	139	149	158	165
Commercial (non-Load Response))	23	48	71	92	112	130	147	163	178	192
Industrial (non-Load Response)	7	14	21	28	33	39	44	49	53	57
Total	**54**	**117**	**174**	**219**	**260**	**297**	**330**	**361**	**389**	**414**

Table 3-1

CL&P C&LM Programs Annual Energy Savings
and
Peak Load Reduction by Customer Class

Connecticut Light and Power

2018-2027

GWh Sales Saved

	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Residential	76	215	287	347	401	448	489	525	556	585
Commercial	140	283	437	549	653	750	840	924	1,002	1,075
Industrial	42	85	131	165	196	225	252	277	300	322
Total	**258**	**583**	**855**	**1,061**	**1,250**	**1,423**	**1,581**	**1,726**	**1,859**	**1,982**

MW Reductions (Passive Resource Summer Impacts)

	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Residential	10	29	39	48	56	63	69	75	80	84
Commercial (non-Load Response))	19	38	58	73	87	100	112	123	133	143
Industrial (non-Load Response)	6	11	18	22	26	30	34	37	40	43
Total	**35**	**78**	**115**	**143**	**169**	**193**	**215**	**235**	**253**	**270**

MW Reductions (Passive Resource Winter Impacts)

	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Residential	15	40	56	70	82	93	102	111	119	126
Commercial (non-Load Response))	22	45	69	86	103	118	132	145	157	168
Industrial (non-Load Response)	7	13	21	26	31	35	39	43	47	50
Total	**44**	**98**	**146**	**182**	**215**	**245**	**273**	**299**	**322**	**344**

Notes:

1) This table includes only passive resources. It does not include 47.5 MW of Load Response demand savings (active resources) which Eversource maintains through the ISO-NE program.
2) Total savings assumes that all measures will continue to provide savings throughout the forecast period.
3) From 2018-2020, the forecast includes 34MW of summer peak savings from Incremental Energy Efficiency bid pursuant to Public Act 15-107 Section 1(b)

Chapter 4: TRANSMISSION PLANNING AND SYSTEM NEEDS

4.1 Transmission is planned and built for the long term

Transmission systems enable varying amounts and sources of generation to serve load over a long term. The addition of significant amounts of remote renewable generating capacity or the retirement of local generation may increase the need to import or export power to or from Connecticut, and the transmission system may need to be expanded. Transmission system additions are proposed and built to accommodate the future, considering many scenarios.

4.2 Transmission Planning and National Reliability Standards

Eversource's transmission facilities are part of the New England regional grid and must be designed, operated and maintained to ensure compliance with mandatory NERC and the Northeast Power Coordinating Council ("NPCC") and ISO-NE reliability standards and criteria.

On December 20, 2012, the Federal Energy Regulatory Commission ("FERC") issued a final ruling approving revisions to NERC's "Bulk Electric System" definition. Key revisions to the approved definition removed language allowing for broad discretion across the reliability regions in North America and establish a "bright-line" threshold that includes all facilities operated at or above 100 kilovolts. The revised definition requires that more facilities be covered and be compliant with the NERC Transmission Planning Reliability Standards than under the previous definition. Periodic transmission planning assessments and studies have been expanded to adhere to this revised definition to comply with the NERC reliability standards.

On March 19, 2015 FERC approved Order 1000 that requires a transition in the way New England plans the transmission system. In May 2015, ISO New England implemented changes to the regional and interregional transmission planning process to comply with the directives in FERC Order No. 1000 which establishes new electric transmission planning and cost allocation requirements for public utility transmission providers. This will introduce competition into the development of regulated transmission solutions. It removes arrangements that protect the right of first refusal ("ROFR") for incumbent transmission providers.

4.3 Transmission Planning Process

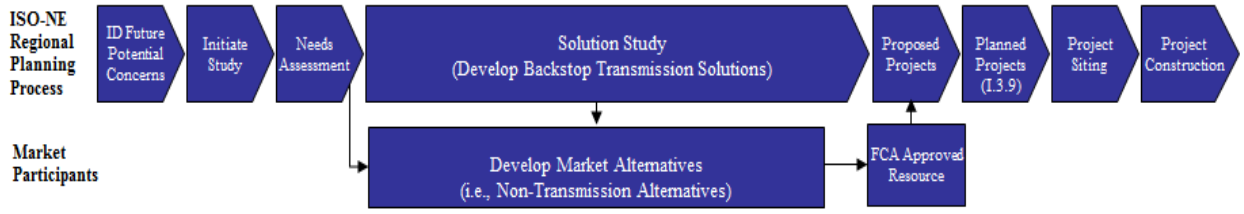
Within the ISO-NE regional planning process established for compliance with NERC and NPCC planning standards, ISO-NE performs reliability assessment studies of the New England transmission system. Individual sub-area studies ("Needs Assessments") are performed to identify system needs over a ten-year horizon. When a system reliability problem is identified from a needs assessment, ISO-NE and the Transmission Owners ("TO") develop one or more transmission system options (i.e., backstop transmission solutions) to resolve the transmission reliability needs and ensure that NERC and NPCC reliability standards are met.

The transmission system solution options are then further evaluated to determine their feasibility of construction, potential for environmental impacts, estimated costs, longevity, operational differences, etc. When analysis of the options is complete, the TOs recommend a proposed transmission project to ISO-NE and the Planning Advisory Committee ("PAC"). In parallel, market

participants can develop and propose Non-Transmission Alternatives ("NTA") to resolve the identified needs.

These transmission studies, and the transmission solutions, are documented in a Solution Study report, and in aggregate, provide a basis for updating ISO-NE's Regional System Plan ("RSP") as depicted in the sequence of the process below:

Transmission Planning Process Figure 1



Eversource performs routine inspections of its own transmission facilities to ensure the safe installation, operation, and maintenance of the transmission electric power systems including bulk power substations, overhead and underground transmission lines and or related equipment.

4.4 Connecticut's Transmission System and Serving Load

Eversource plans, builds and operates transmission infrastructure with a goal of safely and reliably delivering power to its customers, under a wide variety of supply and demand conditions.

- Eversource is responsible to meet reliability standards mandated by the FERC and implemented by NERC. Penalties for non-compliance can be up to $1.2 million per event per day, based on the severity of the violation.

4.5 Assessment of Transmission Needs in Connecticut's Sub-areas

Eversource divides its service territory into several areas as described below for the purpose of assessing the reliability of its transmission system. ISO-NE has identified reliability projects within those areas that are needed in Connecticut.

- The ISO-NE Southwest Connecticut Zone ("SWCT") area is the largest load area within Connecticut which comprises fifty-four towns, including all Avangrid's service territory, Wallingford Electric and some of the Connecticut Municipal Electric Energy Cooperative ("CMEEC") service territory. This area includes the towns essentially west of Interstate 91 and south of Interstate 84, and accounts for approximately half of the state's peak electric load demand. In July of 2014, the Southwest Connecticut 2022 Preferred Solution was presented to ISO-NE PAC. Eversource received ISO-NE approval for the SWCT preferred Solution in April of 2015 and is currently under construction. There also is a local reliability project proposed in the Norwalk Stamford subarea known as the Greenwich Substation and Line project to meet load serving needs. This project is currently under development. In June of 2017, ISO-NE initiated a Needs Assessment that will analyze the performance of

the sub-area in 2027. Eversource is currently working with ISO-NE and CMEEC on the 2027 Needs Assessment.

- The Eastern Connecticut Area extends in a westerly direction for about twenty miles from the Rhode Island border and north from Long Island Sound to the Massachusetts border. The area is served by both Eversource and CMEEC. The Eastern Connecticut Needs Assessment was completed in 2013. Eversource is currently reviewing the Eastern Connecticut solutions to address the needs identified in Eastern Connecticut. In June of 2017, ISO-NE initiated a Needs Assessment that will analyze the performance of the sub-area in 2027. Eversource is currently working with ISO-NE and CMEEC on the 2027 Needs Assessment.

- The Greater Hartford / Central Connecticut ("GHCC") needs assessment was completed in February, 2014, and a needs report was published in April, 2014. The preferred solutions for the identified needs were presented to PAC in July, 2014. The preferred solution consists of transmission improvements in each if the four subareas, and include elements that will perform a "double duty" of both meeting local load-serving needs and addressing the remaining need for increased Western Connecticut import capability. Eversource received ISO-NE approval for the GHCC preferred Solution in April of 2015 and the project is currently under construction.

- The four GHCC subareas are:
    - The Manchester - Barbour Hill Area includes towns north and south of Manchester. These include Glastonbury to the south and the Massachusetts border towns of Enfield, Suffield, and Somers to the north.
    - The Middletown Area consists of a five- to ten-mile-wide band east and west of the Connecticut River from Hebron to Old Lyme. The westerly section consists of the area included in a triangle that runs from Middletown to Old Saybrook and back to the eastern part of Meriden.
    - The Greater Hartford Area includes the towns in the vicinity of the Capitol city and stretches north to the Massachusetts border, west to the Farmington River, and south to the Route 691 interchange with the Berlin Turnpike. It straddles the Connecticut River in the heart of central Connecticut.
    - The Northwestern Connecticut Area is the portion of the state bounded north and west by the Massachusetts and New York state borders, easterly toward Route 8 and southerly to the SWCT region.

A list of all transmission projects and their components is listed by transmission line and substation in tables 4-1 and 4.2, below. Transmission line reinforcements and asset condition projects are identified by entries under the "from" and "to" station headings in Table 4.1. Station reinforcements are identified by single line entries under the "from" station heading in Table 4.2. The term "station" is interchangeable with substation or switching station. The tables include information on the project's proposed In-Service-Date ("ISD").

Table 4-1: Eversource Proposed Transmission Line Projects in Connecticut

From Station	City or Town	To Station	City or Town	Voltage kV	ISD	Miles	Project Description	Status
Southington Southington	Southington Southington	Todd Canal	Wolcott Southington	115 115	2018	N/A	(GHCC) - Replace Line reactors	Under Construction
South Meadow	Hartford	Bloomfield	Bloomfield	115	2018	N/A	Rebuild Line Section	Under Construction
Devon	Milford	Trumbull Jct.	Trumbull	115	2018	4.4	Reconductor - Line Section	Under Construction
Devon	Milford	Avangrid – Border	Trumbull	115	2018	4.5	Reconductor – Line Section	Under Construction
Plumtree	Bethel	Brookfield Jct.	Brookfield	115	2018	3.4	(SWCT) – New Line	Under Construction
Beacon Falls	Beacon Falls	Indian Well (Avangrid) Devon	Derby Milford	115	2018	N/A	(SWCT) - Loop in and out of Pootatuck	Under Construction
Plumtree	Bethel	Stony Hill Bates Rock	Brookfield Southbury	115	2018	N/A	(SWCT) – Line Reconfiguration	Under Construction
Plumtree	Bethel	West Brookfield Shepaug	Brookfield Southbury	115	2018	N/A	(SWCT) – Line Reconfiguration	Under Construction
Frost Bridge Thomaston	Watertown Thomaston	Campville Campville	Harwinton Harwinton	115 115	2018	N/A	(GHCC) – Line Separation	Under Construction
Newington	Newington	Newington Tap	Newington	115	2018	0.01	(GHCC) – Reconductor Line Section	Planned
Newington	Newington	SW Hartford	Hartford	115	2018	4.0	(GHCC) - New Line & Series Reactor	Planned
West Brookfield	Brookfield	West Brookfield Jct.	Brookfield	115	2018	1.4	(SWCT) – Reconductor Line Section	Planned
South Meadow	Hartford	SW Hartford	Hartford	115	2018	N/A	(GHCC) - Install a series reactor	Planned
Stepstone	Guilford	Green Hill	Madison	115	2018	N/A	Line Structure Replacements	Proposed
Millstone	Waterford	Manchester	Manchester	345	2018	N/A	Line Structure Replacements	Proposed
Long Mountain	New Milford	Plumtree	Bethel	345	2018	N/A	Line Structure Replacements	Proposed
Card	Lebanon	Lake Road	Killingly	345	2018	N/A	Line Structure Replacements	Proposed
Millstone	Waterford	Haddam	Haddam	345	2018	N/A	Line Structure Replacements	Proposed
Montville	Montville	Haddam Neck	Haddam	345	2018	N/A	Line Structure Replacements	Proposed
Millstone	Waterford	Montville	Montville	345	2018	N/A	Line Structure Replacements	Proposed
Millstone	Waterford	Card	Lebanon	345	2018	N/A	Line Structure Replacements	Proposed
Scovill Rock	Middletown	East Shore(Avangrid)	New Haven	345	2018	N/A	Line Structure Replacements	Proposed
Long Mountain	New Milford	Eversource Border (CT/NY)	Kent	345	2018	N/A	Line Structure Replacements	Proposed
Southington	Southington	Scovill Rock	Middletown	345	2018	N/A	Line Structure Replacements	Proposed
Manchester	Manchester	North Bloomfield	Bloomfield	345	2018	N/A	Line Structure Replacements	Proposed
Rocky River	New Milford	Bulls Bridge	New Milford	115	2019	6.6	Rebuild Line	Planned

From Station	City or Town	To Station	City or Town	Voltage kV	ISD	Miles	Project Description	Status
Wilton	Wilton	Ridgefield Jct.	Ridgefield	115	2019	5.1	(SWCT) – Reconductor Line Section	Planned
Peaceable	Redding	Ridgefield Jct.	Ridgefield	115	2019	0.04	(SWCT) – Reconductor Line Section	Planned
Cos Cob	Greenwich	Greenwich	Greenwich	115	2019	2.4	New Line	Planned
Cos Cob	Greenwich	Greenwich	Greenwich	115	2019	2.4	New Line	Planned
Southington	Southington	Berlin Black Rock	Berlin New Britain	115	2019	5.2	Reconductor Line Section	Planned
Bean Hill (CMEEC)	Norwich	Tunnel	Preston	115	2019	N/A	Line Structure Replacements	Proposed
Bokum	Old Saybrook	Green Hill	Madison	115	2019	N/A	Line Structure Replacements	Proposed
Branford	Branford	North Haven (Avangrid)	North Haven	115	2019	N/A	Line Structure Replacements	Proposed
Card	Lebanon	Tunnel Montville	Preston Montville	115	2019	N/A	Line Structure Replacements	Proposed
Card	Lebanon	Stockhouse (CMEEC)	Bozrah	115	2019	N/A	Line Structure Replacement	Proposed
Fort Hill Farms(CMEEC)	Montville	Stockhouse (CMEEC)	Bozrah	115	2019	N/A	Line Structure Replacements	Proposed
Montville	Montville	Bean Hill (CMEEC)	Norwich	115	2019	N/A	Line Structure Replacements	Proposed
Killingly	Killingly	Brooklyn Fry Brook Tunnel	Danielson Plainfield Preston	115	2020	N/A	Laminated Structure Replacements	Proposed
Killingly	Killingly	Exeter Fry Brook Tunnel	Plainfield Plainfield Preston	115	2020	N/A	Laminated Structure Replacements	Proposed
Bean Hill (CMEEC)	Norwich	Tunnel	Preston	115	2020	N/A	Laminated Structure Replacements	Proposed
Card	Lebanon	Tunnel Montville	Preston Montville	115	2020	N/A	Laminated Structure Replacements	Proposed
Campville	Harwinton	Thomaston	Thomaston	115	2020	N/A	Laminated Structure Replacements	Proposed

Table 4-2: Eversource Proposed Substation Projects in Connecticut

Substation	City or Town	Voltage kV	ISD	Project Description	Status
Frost Bridge	Watertown	115	2018	Oil Circuit Breaker Replacement Project	Under Construction
Southington	Southington	115	2018	(GHCC) – Replace breaker with series reactor and add a new control house	Under Construction
Green Hill	Madison	115	2018	(GHCC) – Reconfigure substation and install a capacitor bank	Under Construction
Westside	Middletown	115	2018	(GHCC) – Install a capacitor bank	Under Construction
Stony Hill	Brookfield	115	2018	(SWCT) – Add a Synchronous Condenser & relocate a capacitor bank	Under Construction
Campville	Harwinton	115	2018	(GHCC) Add a circuit breaker	Under Construction
Southwest Hartford	Hartford	115	2018	(GHCC) – Upgrade terminal equipment	Planned
Newington	Newington	115	2018	(GHCC) – Reconfigure substation	Planned
Devon	Milford	115	2018	Devon Control House Modifications	Proposed
Card	Lebanon	345/115	2018	Replace Autotransformer	Proposed
Bloomfield	Bloomfield	115/23	2018	Replace transformer	Proposed
Scitico	Enfield	115	2019	Add two circuit breakers for generator	Under Construction
Cos Cob	Greenwich	115	2019	Add two circuit breakers	Planned
Greenwich	Greenwich	115/13.2	2019	Add a new substation	Planned
Beacon Falls	Beacon Falls	115	2019	Reconfigure substation to a ring bus	Planned
Scitico	Enfield	115/23	2019	Add a distribution transformer and a circuit breaker	Proposed
Stepstone	Guilford	115/23	2019	Add a distribution transformer	Proposed
Manchester	Manchester	115	2019	Manchester Control House Expansion	Proposed
North East Simsbury	Simsbury	115/23	2019	Add a distribution transformer	Concept
Sandy Hook	Newtown	115/23	2019	Add a distribution transformer	Concept
Newington	Newington	115/23	2019	Replace Transformer	Concept
Newtown	Newtown	115/13.8	2019	Replace both distribution transformers	Concept
Rood Ave	Windsor	115/23	2019	Add a distribution transformer	Concept
Plumtree	Bethel	115	2020	Oil Circuit Breaker Replacement Project	Proposed
Mansfield	Mansfield	115/23	2020	Add a distribution transformer	Concept
West Brookfield	Brookfield	115/13.8	2020	Add a distribution transformer	Concept
Carmel Hill	Woodbury	115/23	2020	Add a distribution transformer	Concept
Westside	Middletown	115/13.2	2020	Replace Transformer	Concept
Franklin Drive	Torrington	115/13.2	2020	Replace both distribution transformer	Concept
Mansfield	Mansfield	115/23	2021	Add a distribution transformer	Concept
Canton	Canton	115/23	2021	Replace distribution transformer	Concept

4.6 Incorporation of Renewables Through Transmission, Including Future Outlook

Northern Pass is Eversource's planned High Voltage Direct Current ("HVDC") transmission line from the Québec-New Hampshire border to Franklin, New Hampshire and an associated alternating current radial transmission line between Franklin and Deerfield, New Hampshire. Northern Pass will interconnect at the Québec-New Hampshire border with a planned Hydro Québec ("HQ") HVDC transmission line that will deliver 1090MW into the New England electrical system.

Northern Pass has made significant progress securing Project permits. Northern Pass has achieved several key milestones, including (1) receiving the New Hampshire Public Utilities Commission ("NHPUC") approval on February 12, 2018 of an agreement that allows Northern Pass Transmission LLC ("NPT") to lease transmission rights-of-way from Eversource. (2) winning the Massachusetts clean energy Request for Proposal ("RFP") on January 25, 2018, which successfully positioned Northern Pass to provide a firm delivery of hydropower to Massachusetts, (3) receiving the U.S. Forest Service Record of Decision on January 5, 2018, which allows NPT to bury approximately 11 miles of transmission lines in areas along existing roads through the White Mountain National Forest, (4) receiving the Province of Québec permit granted to HQ on December 21, 2017 to construct the hydroelectric transmission line that will connect at the border of New Hampshire, (5) receiving the Department of Energy ("DOE") Record of Decision and Presidential Permit on November 16, 2017, which will allow construction of transmission facilities at the Québec-New Hampshire border, and (6) receiving the DOE final Environmental Impact Statement ("EIS") issued on August 10, 2017, which concluded that the proposed Northern Pass route is the preferred alternative, providing substantial benefits with only minimal impacts.

On February 1, 2018, the New Hampshire Site Evaluation Committee ("NHSEC") voted to deny Northern Pass' siting application. Consistent with Eversource's and HQ's long-term relationship to bring clean energy into New England, Eversource and HQ continue to support Northern Pass and the many benefits this project will bring to our customers and region. Eversource intends to seek reconsideration of the NHSEC's decision and to review all options for moving this critical clean energy project forward.