



February 25, 2020

Mr. Robert Stein, Chairman
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

Dear Mr. Stein:

The Connecticut Municipal Electric Energy Cooperative (CMEEC) herewith submits an original and fifteen (15) copies to the Connecticut Siting Council of our Forecast of Electric Loads and Resources for 2020-2029 Report as required by Section 16-50R of the Connecticut General Statutes.

Should you require any additional information, please contact me.

Very truly yours,

CONNECTICUT MUNICIPAL ELECTRIC
ENERGY COOPERATIVE

A handwritten signature in black ink, appearing to read "David Meisinger", is written over the typed name.

David Meisinger
Chief Executive Officer

CJC/

Enclosures

Cc: Service List

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FORECAST OF ELECTRIC LOADS AND RESOURCES 2020-2029

March 1, 2020

Connecticut Municipal Electric Energy Cooperative
30 Stott Avenue
Norwich, Connecticut 06360

Introduction and Background

The Connecticut Municipal Electric Energy Cooperative ("CMEEEC") is a not-for-profit joint-action power supply agency empowered to finance, plan, acquire, construct, operate, repair, extend, or improve electric generation and transmission facilities and sell power at wholesale and other markets to serve the needs of the Connecticut municipal electric utilities ("MEUs") and other electric utility systems and customers.

The CMEEEC Member utilities (collectively, the "Members") are (1) Norwalk's Third Taxing District Electrical Department ("East Norwalk"), (2) Groton Utilities ("Groton"), (3) Jewett City Department of Public Utilities ("Jewett City"), (4) Norwich Public Utilities ("Norwich"), (5) South Norwalk Electric & Water ("South Norwalk"), and (6) Borah Power & Light Company ("Borah"). The Mohegan Tribal Utility Authority ("MTUA") is also a full-requirements wholesale customer of CMEEEC. The loads of the CMEEEC Members, and the MTUA are represented on an integrated, single-system basis for purposes of ISO-New England ("ISO-NE") operations.

The joint power supply established by CMEEEC is intended to meet the diversified power supply needs of all CMEEEC's Members and customers. CMEEEC's mission is to meet these requirements reliably and at the lowest possible cost over the long-term. Today, CMEEEC's portfolio consists of CMEEEC and member-owned generation, unit entitlement contracts, long-term contracts, intermediate and short-term system contracts, financial instruments, and ISO New England (ISO-NE) market purchases.

The enclosed forecast for 2020-2029 shows negative or flat load growth for CMEEEC's Members Collectively while its special contract customers show flat or slightly positive load growth in Connecticut. CMEEEC's projections for the 2020-2029 period reflect an average compound growth rate of 0.18% for total system energy requirements and -0.47% for annual summer coincident peak demand. Some of the negative impact on the Groton Utilities load has been due to the installation of rooftop solar at the U.S. Submarine Navy housing complex. Load growth in South Norwalk Electric and Water load has been due to the October 2019 opening of the SONO Collection shopping center.

Future growth is further modulated by reductions in usage rates resulting from the conservation programs planned and implemented by the municipal electric distribution utilities (MEUs). These programs remain very active and are popular with all sectors of MEU end users. The long-term forecasts of electric demand and the energy of the CMEEEC Member and customer utilities are the primary tools used to ascertain future CMEEEC power needs. These forecasts utilize regression techniques using 13 years of historical weather data to normalize the load history and model the peak loads. Member and customer normalized data are used to produce probabilistic models; these models are adjusted to account for changing dynamics in each member territory and take into consideration residential customer attrition where applicable. When the primary 50th percentile individual forecasts are combined, the result is a CMEEEC system-wide energy, peak demand and capacity requirements forecast, which is filed with the Council herein and used to make power supply decisions.

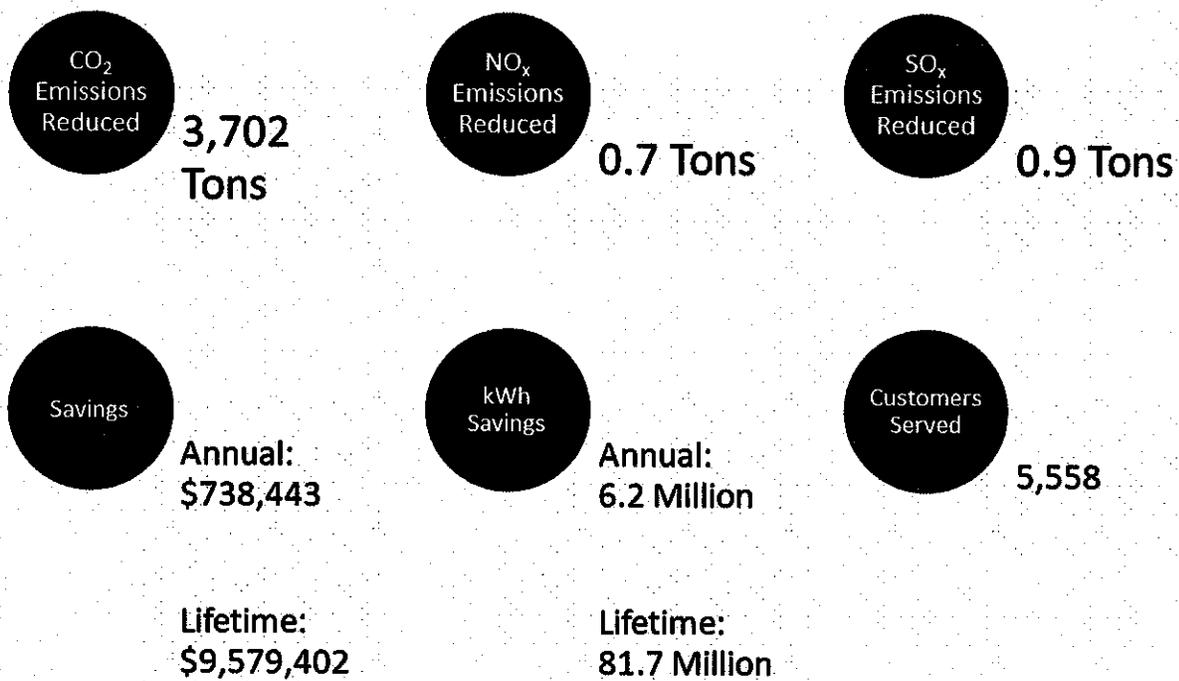
The new Fitch Substation in East Norwalk is expected to meet the needs of that community for several decades and the similar SNEW South Norwalk 115 kV to 13.8 kV SONO substation which opened in 2014 likewise sets the stage for meeting future load growth with improved reliability over the previous 27.6 kV supply system. Corresponding with this major supply route change SNEW has upgraded its distribution system to 13.8 kV, reducing losses and improving distribution level reliability.

With respect to grid related issues, CMEEC participates in NEPOOL studies which include delivery capability review for Member Utilities and the Mohegan Tribal Utility Authority points of receipt. A study of Southwestern Connecticut was completed in 2018. A current study is the Eastern Connecticut Area Study (ECT), which looks at grid level needs out to 2027. This study is expected to be completed in late 2020 and its recommendations may specify upgrades in CMEEC's Municipal Electric Utilities (MEU) and the Mohegan Tribal Utility Authority assets. Similarly, ongoing interconnection studies including storage and offshore wind inter-connections could trigger local upgrades.

Conservation and Load Management

The Connecticut Municipal Electric Energy Cooperative (CMEEC), a joint action supply and transmission agency established by the state's municipal electric utilities (MEUs), is owned and governed by the cities of Groton and Norwich, the borough of Jewett City, Bozrah Light and Power Company, and the Second (South Norwalk) and Third (East Norwalk) Taxing Districts of Norwalk, Connecticut. In addition, CMEEC provides all power requirements to the Mohegan Tribal Utility Authority. In 2019, the MEUs provided a fully integrated portfolio of energy efficiency initiatives that resulted in 1,071 kW coincident summer peak demand reduction and 6,267 MWh in annual energy savings, at a cost of about 2.7 cents per lifetime kWh. Please refer to the additional detailed information below summarizing the total aggregate efforts of all CMEEC's MEUs.

Municipal Electric Utilities	Assistance to Customers
Bozrah Light and Power	\$127,841
Groton Utilities	\$499,909
Jewett City Department of Public Utilities	\$14,897
Norwich Public Utilities	\$769,180
Norwalk Third Taxing District	\$148,933
South Norwalk Electric and Water	\$192,319
Total Assistance	\$1,753,078



Program	Program Budget 2019	Actual Utility Costs 2019	% of Budget Spent	Proj. Annual Savings (kWh)	Annual Energy Savings (kWh)	% of Annual kWh Saved	Lifetime Savings (kWh)	Actual kW Impact	Proj. Summer Peak kW Demand Reduction	Summer Peak kW Demand Reduction	% of Summer Peak kW Saved
Residential											
Home Energy Savings Program	\$595,957	\$270,690	45%	266,630	233,300	87%	3,121,770	174	49	24	4
Efficient Products - Lighting	\$297,978	\$56,529	19%	1,373,000	598,701	44%	5,987,014	566	167	90	5
Efficient Products - Equipment	\$297,978	\$72,006	24%	61,730	67,390	109%	1,062,159	30	12	5	4
Subtotal - Residential	\$1,191,914	\$399,225	33%	1,701,360	899,392	53%	10,170,943	769	228	120	5
Commercial											
New Construction	\$17,871	\$247,619	1386%	0	445,858		6,616,502	376	0	160	
Equipment Replacement - Prescriptive	\$71,484	\$37,970	53%	37,710	55,686	148%	980,707	20	8	9	12
Equipment Replacement - Custom	\$357,612	\$46,653	13%	980,850	0	0%	0	0	112	0	
C&I Existing Facility Retrofit	\$1,340,903	\$847,406	63%	3,074,070	4,866,523	158%	63,959,810	996	406	782	19
Subtotal - Commercial	\$1,787,870	\$1,179,648	66%	4,092,630	5,368,067	131%	71,557,019	1,393	526	951	18
Renewables	\$382,269	\$174,205	46%								
Administration		\$453,630									
Total - All Programs	\$3,362,053	\$2,206,708	66%	5,793,990	6,267,458	108%	81,727,962	2,162	754	1,071	14

The following material and tables are in the specific itemized requirements of Sec.16-50r of the General Statutes and provided on behalf of CMEEC and its Members and customers. Items (1) through (8) listed below correspond to the numbers included in that section.

- (1) Provide a tabulation of estimated peak loads, resources and margins for each year (of the forecast period):

Table I shows forecasted energy and demand for the period as well as data on summer and winter peak demands. Table II reflects the forecasted annual peak demands for the 2020-2029 periods for both the 50/50 forecast as well as the 90/10 extreme condition forecast.

CMEEC is a participant in ISO NE and meets its net power needs through the ISO-NE market system. CMEEC also maintains power and related resources delivered to the Markets. Market resources over the forecast period include NYPA and Hydro Quebec ICAP credits (20 - 30 MW), Conservation & Load Response ICAP Credits (5 MW), A.L. Pierce (75 – 95 MW), Norwich Jet (15 - 18 MW). CMEEC maintains distributed generator resources (50 - 70 MW), an increase from years past incorporating our combined project with the Navy and State of Connecticut to further secure the energy future of the Submarine Base and to help attain local reliability goals.

- (2) Provide data on energy use and peak loads for the five preceding calendar years:

Historical aggregated energy use and peak loads for the six-member CMEEC system and the Mohegan Tribal Utility Authority (MTUA), are provided in Table III.

- (3) Provide a list of existing generating facilities in service:

Generating facilities owned by CMEEEC and CMEEEC Members are listed in Table IV. The mix of existing generating facilities and system power agreements that serve the CMEEEC system are listed in Table V. Anticipated retirement dates of CMEEEC Member generating facilities and Member cogeneration and small power production facilities are listed in Table VI and Table VII respectively.

- (4) Provide a list of scheduled generating facilities for which property has been acquired, for which certificates have been issued, and for which certificate applications have been filed:

CMEEEC executed a lease in 2014 with the United States Navy for use of an approximately 1 acre federally owned site located at the Naval Submarine Base in Groton. CMEEEC is currently developing a 7.4 MW fuel cell generating facility to be located at the Naval Submarine Base. The project is expected to be completed by July 31, 2020.

- (5) Provide a list of planned generating units at plant locations for which property has been acquired or at plant locations not yet acquired that will be needed to provide estimated additional electric requirements:

There are no planned CMEEEC owned generating units responsive to this question.

CMEEEC has entered into a Power Purchase Agreement (“PPA”) with Fuel Cell Energy (FCE) for purchase of all output and products of a nominally rated 7.4 MW dual unit fuel cell being built on Navy owned property at SUBASE New London in Groton CT and leased by CMEEEC. FCE will develop, construct, own and operate the plant which is expected to be in service by July 31, 2020. Power will be delivered to the Groton Utilities distribution system and can be made capable to support the operation of a proposed SUBASE microgrid.

- (6) Provide a list of planned transmission lines on which proposed route reviews are being undertaken or for which certificate applications have already been filed.

There are no planned transmission lines.

- (7) Provide a description of the steps taken to upgrade existing facilities and to eliminate overhead transmission and distribution lines in accordance with the regulations and standards described in Section 16-50t.

Several projects are recently completed, underway or in various stages of completion in the CMEEEC Member service territories, which are summarized below.

South Norwalk Electric & Water (SNEW) continues to see growth in electric sales due to various residential and commercial construction projects in South Norwalk. These construction projects provide SNEW with the opportunity to make improvements to the electric distribution system by replacing aging cable, connectors, poles, and switches. Recently, in 2019, SNEW completed a system-wide tree trimming program, along with the replacement of deteriorated poles. While there were several significant storm events in 2019, SNEW's system remained resilient, given the system improvements over the past few years. In 2020, SNEW continues to survey and replace deteriorated poles and make system improvements to the overhead and underground systems. The underground system plan is to have two aging submersible transformers replaced in 2020 along with the continued replacement of aging SF6 gas switches. Overhead system reliability will be improved by adding fuse protection, along with closely monitoring tree trimming requirements. SNEW is currently in the process of converting all its high-pressure sodium street lights to LED street lights. Our streetlight replacement process involves a comprehensive audit of all our street lights to ensure the new LED fixtures properly distribute light and maximize energy efficiency.

East Norwalk (TTD) put in service a new PTF level substation in December 2013 (Fitch 47R) which is the subject of CSC DN 426. The project has been completed in accordance with the CT Siting Council and the City of Norwalk Planning and Zoning Commission. This project addresses reliability and replaces aging portions of the distribution system which posed unacceptable risks to TTD. In addition, it allows for TTD to satisfy additional load growth within their system and eliminates two underground supply cables owned by Eversource which were originally installed in 1946. These cables have been repaired continuously because of system faults. TTD's completed SCADA system monitors TTD's transmission system and allows for control of distribution substations. This system will allow for future expansion and will ensure compliance with NERC/NE-ISO regulations.

Norwich Department of Public Utilities (NPU) continues to upgrade its 4.8kV distribution system to 13.8kV with a number of benefits: increasing efficiency by reducing system losses; improving reliability through better voltage conditions and newer equipment; and reducing operating costs.

All NPU substations, generating stations and several distribution switches are monitored and controlled 24 hours a day, seven days a week via a Supervisory Control and Data Acquisition (SCADA) system in the utility's Control Room. All stations have been moved to NPU's fiber optic network for more reliable communication and monitoring.

The Greenville Dam and Occum Dam fish passages both operated successfully during 2019. NPU continues to work closely with DEEP on fish and eel passages, a pit tagging program, as well as shad trucking to promote the migration of shad to new spawning grounds. The Occum Dam continues to pass American Shad with NPU's annual performance monitored by DEEP. NPU's Greenville and Occum Dams are certified by

the Low Impact Hydro Institute (LIHI) and continue to accrue renewable energy certificates (RECs).

In 2019 NPU completed construction of a new on-site Control Room and Technology Center, which provide increased operational efficiency of the electric distribution system during both routine and emergency situations.

Over the last several years, NPU has successfully installed 20,669 electric AMI meters as part of a multi-year project. The remaining 59 electric meters are waiting for service upgrades before AMI meters can be installed.

NPU has integrated the AMI system with its Outage Management System providing Control Room Operators with real time information on customer outages for improved outage response and storm management. NPU uses this data to increase communication and information sharing with customers.

Jewett City Department of Public Utilities (JCDPU) is continuing the upgrading of its distribution network in an intended development of long-range system expansion and as part of this effort, any business or residential expansion would involve underground cable installation. All JCDPU customers are now served through smart meters. Jewett City recently completed the overhaul of their backup substation and this work will go towards increasing the reliability within their service territory. Jewett City DPU is beginning the task of correcting a Load Power Factor deficiency and this work will extend out in time for the next year (expected to be complete by end of 2020).

Groton Utilities completed the re-conductor project on Tollgate Road. As part of the project, numerous overhead services drop loop (SDL) cables were replaced with underground cable installed in conduit to increase reliability. In addition, the project consisted of replacing open wire (bare conductor) with tree resistant cable. Tree resistant cable improves reliability and reduces power outages due to the insulation covering the conductor. Outages caused by tree contact will be reduced. Also, the utility poles were replaced due to age and new secondary cables were installed.

As part of a four-year maintenance program, Groton Utilities personnel perform the following: relay cleaning and testing, substation breaker maintenance, infrared scanning that looks for loose connections, transformer testing and vegetation control.

The number of power interruptions due to tree contact are on the decline due to extensive tree trimming. A second tree trimming crew was hired for a full year. Both tree trimming crews are hard at work reducing the potential of power interruptions by removing trees and tree branches away from power lines.

Groton Utilities and Bozrah have deployed about 15,000 electric meters onto its AMI System.

Bozrah Light and Power installed seven (7) underground services throughout the year in the prior two years. Bozrah's preferred construction method is to place all power

distribution facilities underground.

- (8) For each private power producer having a facility generating more than one (1) megawatt, and from whom CMEEC has purchased electricity during the preceding calendar year, provide a statement including the name, location, size, and type of generating facility, the fuel consumed by the facility, and the by-product of the consumption:

Generally, the customers in CMEEC Members service areas who have generating capacity greater than 1 MW retain the power for ongoing internal utilization and/or load management. Table VII summarizes major on-site generation capability at customer locations within the municipal service territories. CMEEC does not have formal arrangements in place to purchase power from those facilities at this time. Many of these customers, however, are asked to generate power and/or shed load during high load or emergency conditions as defined in NEPOOL's Operating Procedure #4.