

FORECAST OF ELECTRIC LOADS & RESOURCES 2005-2014

March 2005

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Connecticut Municipal Electric Energy Cooperative
30 Stott Avenue
Norwich Industrial Park
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Introduction & Background

The Connecticut Municipal Electric Energy Cooperative ("CMEEC") 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 to serve the needs of Connecticut municipal utility and other utility systems. CMEEC sells power at wholesale to several distribution companies.

The CMEEC Member utilities are (1) Norwalk 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"), and (5) South Norwalk Electric & Water ("South Norwalk"). The Wallingford Department of Public Utilities ("Wallingford") is a CMEEC Participant who along with the Bozrah Power & Light Company ("Bozrah") and the Mohegan Tribal Utility Authority ("MTUA") is a full-requirements wholesale customer of CMEEC.

The loads of the CMEEC Members, Wallingford, Bozrah and the MTUA are represented on an integrated, single-system basis for purposes of ISO New England operations.

The joint power supply system established by the Connecticut Municipal Electric Energy Cooperative, or "CMEEC", is intended to meet the diversified needs of the seven Connecticut community-owned utilities that are its five Members and two Participants. Of necessity and by mandate, CMEEC's sole purpose is to meet these requirements reliably and at the lowest possible cost over the long term. CMEEC has met these resource requirements through a combination of member-owned generation, long-term contractual arrangements and short-term market purchases. Today, CMEEC's portfolio consists of member-owned generation, unit entitlement contracts, long-term system contracts, intermediate and short-term system contracts and market purchases.

The enclosed forecast for 2005-2014 addresses some potential growth for CMEEC's Members/Participants. The year 2004 showed overall growth in the residential and small, medium and large general service categories. Some of the increase was attributed to the hot, humid weather during the summer months. There is significant anticipated growth in all customer categories in Norwich and in the Residential, Small, Medium Service and Large Firm Categories in Wallingford. Employment growth from the Foxwoods and the Mohegan Sun Casinos continues to impact the Southeastern Connecticut area economy. The largest percentage increase in CMEEC loads is anticipated in South Norwalk where growth is expected to increase across all sectors throughout the forecast period, especially in the Residential, Small and Large General Service Categories due to the proposed Reed Putnam project.

The long-term forecasts of electric demand and the energy required by each of the CMEEC utilities, Wallingford, Bozrah and the MTUA are primary tools used to ascertain future CMEEC power needs. When the primary individual forecasts are combined, the result is a CMEEC agency forecast filed with the Connecticut Siting Council and used to make power supply decisions responsive to current situations. In 2005, CMEEC has developed a set of forecasts for Member utilities, which result in the combined projections contained in this submittal. The enclosed forecasts contain the best available information at the time of their development.

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The following material and tables are in response to the specific itemized requirements of Sec. 16-50r of the General Statutes and is provided on behalf of CMEEC and its member systems. 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):

The required estimates provided in Table I reflect forecasted energy and demand for the period as well as data on summer and winter peak demands. CMEEC is currently in the process of restructuring its power supply portfolio, therefore Tables II and III will not be provided again in this year's forecast report. A portion of CMEEC's supply strategy relies on maintaining an open market position and buying in the ISO New England markets. CMEEC has secured 97% of its energy resources and 100% of its Installed Capability needs for 2005. ISO New England is in the process of finalizing market rules for locational ICAP which will take effect in January 2006. CMEEC has secured 82% of its energy requirements for 2006 and 70% for 2007. We estimate that we have secured approximately 32% of our ICAP needs for 2006. Energy balancing and daily optimization will be managed at the short-term and spot markets. CMEEC is in the process of implementing a strategy for meeting its resource needs subsequent to 2007, including investigating options for developing demand and supply resources within the CMEEC Member communities and/or contracting with third parties. ISO New England's market-based system allows NEPOOL Participants to meet in part or whole their Installed Capability, Energy and Ancillary Service needs through a spot-market power exchange.

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

Historical energy use and peak loads for the eight-Member CMEEC system, which includes Wallingford, Bozrah and the Mohegan Tribal Utility Authority (MTUA) are provided in Table IV.

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

The current existing generating facilities owned by CMEEC and CMEEC Members and Participants are shown in Table V. The mix of existing generating facilities and system power agreements which serve the total CMEEC system are shown in Table VI. Anticipated retirement dates of CMEEC's Member's current existing generating facilities are shown in Table VIII.

(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:

In response to the ISO New England "Requests for Proposals for Southwest Connecticut Emergency Capability" issued December 1, 2003, South Norwalk Electric Works (SNEW) has filed the following petitions now before the Council:

a) Petition for Declaratory Ruling for a Temporary 22.8 MW generator, filed February 26, 2004.

b) Petition for Declaratory Ruling for a 50 MW repowering of the SNEW power plant, filed February 27, 2004.

- (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 such facilities currently planned for ownership by CMEEC participants. CMEEC is involved in feasibility studies for other new generation sources; however these investigations are preliminary and confidential and are subject to confidentiality agreements.

- (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**

The CMEEC/NU Transmission Service Agreement provides CMEEC parity rights to use the NU system, including all transmission additions or modifications. Additionally, CMEEC is a member of the New England Power Pool and is eligible to receive service pursuant to the NEPOOL Open Access Transmission Tariff. CMEEC is a signatory to the Hydro-Quebec Interconnection Agreements -- both of which provide transmission services.

It is CMEEC's position that fair and equitable implementation of the ISO New England RTO must include the right for transmission dependent utilities to acquire ownership interest in proportion to their load of at least all new facilities being developed under the RTO structure. CMEEC therefore is seeking ownership rights in such new facilities.

- (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 upgrading projects are underway in CMEEC Member service territories and Wallingford.

The feasibility of replacing the 27.6 kV South Norwalk bulk power substation with a new 115 kV substation or the upgrading of the existing feeders from CL&P continues to be explored. The primary objective of this is to serve anticipated load increases arising from economic development projects and to improve power delivery reliability and economy. A two-step program has been developed. Time and details of this project depend on load growth projections, most significantly for the proposed Reed/Putnam project, and on the potential development of a new 50 MW generating facility. The existing 27.6 kV substation would be retired if a new substation is commissioned.

East Norwalk (Third Taxing District) has installed three (3) 2,000 KW emergency generators as part of the ISO New England Special Southwest Connecticut Gap Generation Program. These generators will operate when called on by the ISO New England at step 12 of Operating Procedure #4 power supply emergencies. The generators will also operate to supply emergency power to an adjacent commercial building on loss of utility service.

Norwich Public Utilities (NPU) continues to upgrade its 4.8kV distribution system to 13.8kV to increase efficiency by reducing system losses and to improve reliability through better voltage conditions and newer equipment. In 2004, Matlack conversion work was completed on Lafayette, Sherman and Sachem Streets, bringing the project to about 90% completion. The remainder of Matlack conversion work on Uncas, Oneco and Williams streets should wrap up in the first half of 2005. Taftville upgrades and Circuit 804 conversions will be the main focus in 2005. Improvements to the underground distribution infrastructure in the Norwich Business Park (B-Park) will also be accomplished in 2005. NPU substations, generating stations and several distribution switches are monitored and controlled via Supervisory Control and Data Acquisition (SCADA) system in NPU's control room 24/7. With the addition of Matlack Substation to SCADA in 2004, all of NPU's electric substations are monitored and controlled from our control room. In

2005, a portion of the B-Park will be added to SCADA to allow for monitoring and switching capabilities from NPU's control room for improved reliability. In 2004, construction began on the Occum fish passage, which will be operational in the spring of 2005.

Jewett City is continuing the upgrading of its distribution network in an intended development of long-range system expansion. The first phase, a new 7.5 MVA substation was completed and came on-line in February 1994. The second phase, the transferring and upgrading of three distribution lines from the old substation to the new substation is complete. Jewett City has installed three banks of capacitors on each of their circuits on their distribution system. Jewett City is pleased with the initial results of the additional installed capacitors. Jewett City is continuing gathering data to make a final determination if any additional work needs to be done.

Groton Utilities continues its aggressive system upgrade. The distribution system upgrades supporting Pfizer are nearing completion with the testing of the final substation under way. To date three 35 kV substations have been rebuilt and a new 35 kV underground circuit was installed that connects two of the three rebuilt substations. All 35 kV substations are metal-clad with vacuum type breakers. To complete the Pfizer Loop Project, Groton Utilities will be constructing two new overhead 35 kV lines to Electric Boat and rebuilding a one mile section of the 35 kV, 306 line. Completion of the project is scheduled for July of 2005. A spare 95 MVA transformer has been purchased and delivered and is stored for emergency replacement if needed at Buddington Substation. Discussions have begun with Electric Boat about a major upgrade of circuits serving this facility. Conversion of overhead distribution circuits from 8.32 kV to 13.8 kV is continuing. Groton continues to work with CL&P to achieve an upgrade to the 400 line interconnecting Groton with the area grid. That line is currently the only 69 kV transmission circuit into Buddington Substation, a primary 115 kV. This upgrade will provide additional reliability to support the Submarine Base in Groton. Groton Utilities is continuing its SCADA (Supervisory Control and Data Acquisition) upgrades to new facilities and when additional equipment is brought on line. An Outage Management System and GIS System enhancements have been installed to better serve our customers during emergencies. Several residential sub-divisions have been approved and several hundred residential units are under construction or have been completed in recent months. Additional sub-divisions have been submitted for approval. Major reconstruction of 5 Navy Housing complexes is under way.

Bozrah is continuing its ongoing program concerning the eight-mile Lebanon voltage conversion project. Line crews are 90% complete with this project. Completion of the project is scheduled for July 2005. As part of the Stockhouse Road Substation Project, a third 32 MVA transformer was purchased and installed. Also the existing metal-clad switchgear is scheduled to be replaced this year. The transformer was installed as a backup to the existing two substation transformers. The project goal is to increase reliability by retiring aging equipment and increase the number of distribution feeders from two to five.

Wallingford continues to upgrade its facilities through reconstruction and reconductoring of distribution circuits throughout its service territory, both overhead and underground. All new distribution extensions within Wallingford's service territory are currently placed 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 Member service areas who have generating capacity greater than 1 MW retain the power for ongoing internal utilization and/or for peak shaving against utility power purchases. CMEEC does not purchase electricity from private power producers at this time. Therefore, Table VII is not provided in this year's forecast. While neither CMEEC nor its Members have formal arrangements in place to purchase power from most of those facilities on a routine basis at this time, these customers are asked to generate power and/or shed load during emergency conditions as defined in NEPOOL's Operating Procedure #4. CMEEC has been actively involved in the ISO New England Load Response Program. At the present time, CMEEC has enrolled approximately 24 MW of customer

emergency generation and load reductions. In addition, the pending Connecticut Department of Environmental Protection Distribution/Generator permit program may provide an opportunity for more local generation purchases.

TABLE I
 CONNECTICUT MUNICIPAL ELECTRIC ENERGY COOPERATIVE
 10-YEAR FORECAST OF RETAIL SALES BY CUSTOMER CLASS, ENERGY REQUIREMENTS AND PEAK DEMAND
 2005-2014

YEAR	Residential Service MWh Sales	Small General Service MWh Sales	Medium General Service MWh Sales	Large General Service MWh Sales	Other Service MWh	Total Retail Sales MWh	Mohegan Tribal Authority MWh	Hydro Gener. MWh	Subtrans. & Distri. Losses MWh	Systems Energy Requirements Met by CMEEC MWh [1]	CMEEC Summer Coincident Peak Demand MW [2] [3]	CMEEC Winter Coincident Peak Demand MW [2] [3]	Load Factor %
1992	424,463	118,862	250,533	707,087	47,619	1,548,564	0	11,292	68,988	1,606,260	267.49	266.51	68.4
1993	441,802	115,140	250,426	711,377	47,119	1,565,864	0	11,372	72,747	1,627,239	286.08	263.33	64.9
1994	450,933	114,205	256,064	697,152	48,728	1,567,082	0	6,524	83,816	1,644,374	296.86	281.06	63.2
1995	448,638	114,746	247,902	710,876	51,182	1,573,344	0	3,845	85,114	1,654,613	311.63	296.47	60.6
1996	477,285	114,380	251,441	784,919	52,647	1,680,872	15,491	3,774	74,266	1,766,855	230.17	279.85	69.3
1997	468,598	113,766	245,795	749,385	53,356	1,630,900	45,138	3,216	78,568	1,751,390	319.54	264.34	62.6
1998	472,381	115,427	249,085	747,566	53,839	1,638,298	48,027	3,524	63,026	1,745,827	309.16	263.73	64.5
1999	492,997	116,139	287,677	682,328	57,565	1,636,706	48,036	2,111	75,553	1,758,184	322.39	286.24	62.3
2000	504,537	119,702	335,887	641,300	59,936	1,661,362	61,694	2,825	67,067	1,787,298	310.46	285.36	65.5
2001	514,722	122,207	337,878	642,227	61,560	1,678,594	101,918	2,118	65,812	1,844,206	351.12	277.51	60.0
2002	527,056	119,644	344,415	640,657	66,843	1,698,615	147,846	2,173	74,766	1,919,054	367.87	299.49	59.6
2003	556,621	122,552	357,194	639,020	68,528	1,743,915	150,594	3,163	64,837	1,956,183	349.93	302.38	63.6
2004	559,744	127,358	362,651	667,561	70,485	1,787,699	151,435	2,315	67,714	2,004,533	345.27	332.36	66.1
2005	565,298	127,531	364,714	647,874	72,239	1,777,656	146,082	3,000	63,399	1,984,136	356.58	320.13	63.5
2006	568,655	128,579	366,949	650,255	72,792	1,787,430	148,404	3,000	63,823	1,996,656	364.15	325.96	62.6
2007	574,927	129,938	369,270	652,691	73,293	1,800,120	150,763	3,000	65,449	2,013,332	370.97	331.65	62.0
2008	579,333	130,786	371,543	654,659	73,796	1,810,117	153,503	3,000	65,933	2,026,553	375.26	335.70	61.5
2009	583,381	131,584	373,794	656,636	74,297	1,819,691	155,596	3,000	66,381	2,038,668	379.82	339.34	61.3
2010	589,257	132,976	378,040	658,572	74,970	1,833,816	158,072	3,000	66,889	2,055,777	394.19	342.32	59.5
2011	592,911	133,779	380,285	667,010	75,475	1,849,461	160,587	3,000	67,900	2,074,948	395.87	345.40	59.8
2012	596,698	134,600	382,597	670,113	75,994	1,860,002	163,506	3,000	68,434	2,088,942	397.25	348.49	59.9
2013	600,359	135,395	384,836	672,201	76,497	1,869,288	165,739	3,000	68,881	2,100,909	400.03	352.21	60.0
2014	604,067	136,207	387,097	674,391	77,005	1,878,767	168,378	3,000	69,334	2,113,479	402.17	355.35	60.0
% INCREASE 2004-2014	0.76	0.68	0.65	0.10	0.89	0.50	1.07	0.24	0.53	0.53	1.54	0.67	

[1] Totals are the sum of kilowatthours rounded to the nearest megawatthour (MWh) less CT Steele Interruptible.

[2] The forecasted CMEEC coincident peak demands were computed by summing the Groton, Norwich (inclusive of the contribution of Norwich's Second Street and Tenth Street hydro units), Jewett City, East Norwalk, South Norwalk Wallingford and Bozrah noncoincident peak demands and multiplying by an average historical coincidence factor.

[3] The historical 1994 CMEEC winter and summer peak demand numbers reflect both Wallingford and Bozrah as if they were part of CMEEC at that time. The historical 1995 CMEEC winter and summer peak demand numbers reflect Bozrah as if they were part of CMEEC at that time.

TABLE IV

March 2005

CONNECTICUT MUNICIPAL ELECTRIC ENERGY COOPERATIVE (CMEEC)

**HISTORICAL ENERGY USE AND PEAK LOAD
2000-2004**

<u>Year</u>	<u>CMEEC Coincident Peak Load (MW) [1]</u>	<u>CMEEC Energy (MWh) [1]</u>
2000	310.46	1,787,298
2001	351.12	1,844,206
2002	367.87	1,919,054
2003	349.93	1,956,183
2004	345.27	2,004,533

[1] Reflects CMEEC Member loads inclusive of Wallingford, Bozrah and the Mohegan Tribal Utility Authority (MTUA) for 2000-2004.

TABLE V

CONNECTICUT MUNICIPAL ELECTRIC ENERGY COOPERATIVE (CMEEC)

EXISTING GENERATION FACILITIES OWNED BY
CMEEC AND ITS MEMBERS

As of March 2005

<u>Generating Facility</u>	<u>Winter Rating (MW)</u>	<u>Summer Rating (MW)</u>
Norwich Combustion Turbine (Oil-Fired) [1]	18.800	15.255
Norwich Second Street (Hydro)	0.95	0.95
Norwich Tenth Street (Hydro)	1.12	0.98
Norwich Occum (Hydro)	[2]	[2]

[1] Represents CMEEC current joint-ownership share. The full capability of the Norwich combustion turbine unit is under contract to CMEEC.

[2] Winter and summer ratings are based on average river flow conditions. The nameplate rating for the Occum hydro station is 0.80 MW. This hydro unit remains a resource of the Norwich Department of Public Utilities; the generation of this hydro unit is used by Norwich to directly offset Norwich load.

TABLE VI

As of March 1, 2005

MIX OF EXISTING GENERATION - CMEEC RESOURCES

<u>Unit Designation</u>	<u>In-Service Date</u>	<u>Net Winter Capacity (MW)[1]</u>	<u>CMEEC Share (MW)</u>	<u>Net Summer Capacity (MW)[2]</u>	<u>CMEEC Share (MW)</u>	<u>CMEEC Percent of Unit (%)</u>
<u>Long-Term System & Asset Contracts [3]</u>						
Base System Purchase		15.00	15.00	15.00	15.00	
Base System Purchase		30.00	30.00	30.00	30.00	
Base System Purchase		75.00	75.00	75.00	75.00	
Base Unit Entitlement Purchase		59.24	59.24	59.24	59.24	
Base System Purchase		50.00	50.00	50.00	50.00	
Base System Purchase [6]		48.00	48.00	42.00	42.00	
Base System Purchase [7]		<u>50.00</u>	<u>50.00</u>	<u>50.00</u>	<u>50.00</u>	
Total System Contracts		327.24	327.24	321.24	321.24	
<u>Municipal Generation</u>						
Norwich Combustion Turbine	1972	18.80	18.80	15.25	15.25	100.0000
Norwich Tenth St. Hydro	1966	1.12	1.12	0.98	0.98	100.0000
Norwich Second St. Hydro	1927	0.95	0.95	0.95	0.95	100.0000
Total Municipal Generation		20.87	20.87	17.18	17.18	
TOTAL CMEEC CAPACITY RESOURCES			348.11		338.42	

Other Energy Resources

NYPA Hydro (Firm & Peaking) [4]			13.60		13.60	NA
Short-Term Purchases [5]			Varies		Varies	NA

[1] Represents NEPOOL Winter Maximum Claimed Capability.

[2] Represents NEPOOL Summer Maximum Claimed Capability.

[3] System Purchases, Contract Purchases & Unit Entitlement Purchases from several counterparties.

[4] Represents maximum hourly contract deliveries to CMEEC. New York Power Authority (NYPA) hydro purchases began July 1, 1985. Energy contributions from NYPA are considered to be firm contracts and used to reduce electric requirements thereby reducing CMEEC Capability Responsibility in NEPOOL.

[5] The MW amounts shown for Short-Term Purchases vary from month to month from 0 MW to 50 MW through December 2005.

[6] Base system energy call scheduled for the day ahead.

[7] Base system on-peak energy call for January, February and June through August 2005 scheduled for the day-ahead.

Table VII

Connecticut Municipal Electric Energy Cooperative (CMEEC)

**COGENERATION & SMALL POWER PRODUCTION FACILITIES
GREATER THAN 1 MW IN TOTAL SIZE [1]**

March 2005

<u>Facility Name</u>	<u>Facility Type</u>	<u>Facility Location</u>	<u>No. Of Units</u>	<u>Prime Mover</u>	<u>Type Fuel</u>	<u>Summer & Winter Capacity</u>	<u>Years Installed</u>
Pfizer, Inc.	Cogeneration	Groton CT	5	Steam Turbine	Duel Fuel	32,500 kW	1948, 1950 1993 & 2001
U.S. Naval Sub Base	Cogeneration	Groton CT	3	Steam Turbine	Duel Fuel	13,500 kW	1966, 1978 & 1993
			1	Steam Turbine	Duel Fuel	5,000 kW	1996
			1	Diesel Engine	#2 oil	1,500 [2]	1960 (est.)

[1] The customer retains power from each of these facilities.

[2] This diesel generator is used to provide black start capability.

TABLE VIII

CONNECTICUT MUNICIPAL ELECTRIC ENERGY COOPERATIVE

March 2005

Anticipated Unit Retirement and/or Contract Expiration Dates

<u>Conventional Hydro</u>	<u>Retirement Date</u>
Norwich Tenth Street Hydro	01/01/2044
Norwich Second Street Hydro	01/01/2044
<u>Peaking</u>	
Norwich Combustion Turbine	Not Scheduled