CONNECTICUT SITING COUNCIL

Review of the Connecticut Electric Utilities' Ten-Year Forecasts of Loads and Resources

2004

Connecticut Siting Council

The Connecticut Siting Council (Council), formerly known as the Power Facility Evaluation Council, was established in 1971 to balance the need for adequate and reliable public services at the lowest reasonable cost to consumers while protecting the environment and the ecology of Connecticut. The Council is part of the executive branch of the State of Connecticut and derives its operating revenues from application fees and assessments charged to the applicants. The Council is an appointed body in which the membership is determined by statute according to the nature of the facility being reviewed.

Pursuant to Connecticut General Statutes (CGS) § 16-50i(a), electric facilities subject to Council review include electric transmission lines of a design capacity of sixty-nine kilovolts or more, including associated equipment but not including a transmission line tap, as defined in CGS § 16-50i(e); any electric generating or storage facility using any fuel, including nuclear materials, including associated equipment for furnishing electricity but not including an emergency generating device, as defined in CGS § 16-50i(f) or a facility owned and operated by a private power producer, as defined in CGS § 16-243b, which is a qualifying small power production facility or a qualifying cogeneration facility under the Public Utility Regulatory Policies Act of 1978, as amended, or a facility determined by the Council to be primarily for a producer's own use and which has, in the case of a facility utilizing renewable energy sources, a generating capacity of one megawatt of electricity or less and, in the case of a facility utilizing cogeneration technology, a generating capacity of twenty-five megawatts of electricity or less; and any electric substation or switchyard designed to change or regulate the voltage of electricity at sixty-nine kilovolts or more or to connect two or more electric circuits at such voltage, which substation or switchyard may have a substantial adverse environmental effect, as determined by the Council under CGS § 16-50j, and other facilities which may have a substantial adverse environmental effect as the Council shall, by regulation, prescribe.

Pursuant to CGS § 16-50j, energy and telecommunications matters are reviewed and voted on by the following members: the Commissioner of the Department of Environmental Protection, or their designee; the Chairman of the Department of Public Utility Control or their designee; one designee of the speaker of the House; one designee of the president pro tempore of the Senate; and five members of the public appointed by the Governor including the chairperson, at least two of whom shall be experienced in the field of ecology, and not more than one of whom shall have an affiliation, past or present, with any utility or governmental utility regulatory agency, or with any person owning, operating, controlling, or presently contracting with respect to a facility, a hazardous waste facility as defined in CGS § 22a-115, a regional low-level radioactive waste facility as defined in CGS § 22a-163a or ash residue disposal area. The Council meets most often regarding energy and telecommunications matters, typically every two or three weeks.

STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

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October 29, 2004

Citizens of Connecticut:

It is with great pleasure that I provide you this copy of the Connecticut Siting Council's "Review of the Connecticut Electric Utilities' Ten-Year Forecasts of Loads and Resources 2004." This report compiles and analyzes load growth forecasts of the State's electric utilities and plans to meet the demand for energy through the year 2013.

This analysis, undertaken pursuant to Connecticut General Statutes § 16-50r (a), requires

- "(1) A tabulation of estimated peak loads, resources and margins for each year;
- (2) data on energy use and peak loads for the five preceding calendar years;
- (3) a list of existing generating facilities in service;
- (4) 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;
- (5) 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 electrical requirements, and the location of such facilities;
- (6) a list of planned transmission lines on which proposed route reviews are being undertaken or for which certificate applications have already been filed;
- (7) a description of the steps taken to upgrade existing facilities and to eliminate overhead transmission and distribution lines in accordance with the regulations of standards described in section 16-50t; and
- (8) for each private power producer having a facility generating more than one megawatt and from whom the person furnishing the report has purchased electricity during the preceding calendar year, 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."

These subjects have been fully examined by the Council with full opportunity for public participation. The results of this process have been summarized in this report, and within the Executive Summary that is enclosed, which we hope you will find to useful and informative.

I invite you to review this public report and challenge the analyses contained herein. With your help I am confident that Connecticut can accurately determine its energy future while safeguarding the environment and ensuring the health and well-being of its citizens.

Please feel free to contact the Council's staff or me if you seek additional information. Thank you.

Very truly yours,

Pamela B. Katz, P.E.
Chairman

CONNECTICUT SITING COUNCIL

Connecticut Siting Council Report 2004

Table of Contents

NOTES

Docket No. F-2004 Connecticut Siting Council Review of the Forecast of Electric Loads and Resources

SUMMARY

Pursuant to Connecticut General Statutes § 16-50r, the Connecticut Siting Council (Council) is authorized to review the State's electric utilities' Ten-Year Forecasts of Electric Loads and Resources, including their plans to balance public demand for safe, reliable, and cost-effective electricity with an efficient mix of programs and resources to meet this demand. The Council has reviewed these forecasts since 1974; this report is the 30th issued by the agency.

The peak electric load in 2003 was 6,604 megawatts (MW), a 3.6 percent decrease from the previous high in 2002 of 6,851 MW. Nevertheless, as the weather and the economy are constantly changing, ISO-New England and electric utilities must maintain contingency plans to avoid power outages during periods of unusually high electric demand. Specfically, this plan includes:

- operate all available generating units to their reasonable limits;
- purchase power from available resources, in and out of Connecticut;
- arrange to temporarily shift load on high load days to substations and transmission facilities outside Connecticut;
- explore additional interruption of service with industrial and commercial customers;
- maximize use of customer-owned emergency generators; and
- public awareness efforts for conservation and load shifting.

The northeastern United States and eastern provinces of Canada experienced the largest blackout in United States history on August 14, 2003. Southwest Connecticut was affected in part because of supply deficiencies and voltage instability problems due to insufficient transmission and inadequate resources within the region. Prior to that event, the Council had completed a nearly two year review under Docket No. 217 for a new 345-kV transmission line proposal between Bethel and Norwalk that culminated in an approval for the project. The Council is currently reviewing a 345-kV transmission line proposal between Middletown and Norwalk under Docket No. 272. In addition, ISO-New England has sought up to 300 MW of quick-start capacity in southwest Connecticut. Also, on June 25, 2004, the Cross Sound Cable was reactivated pursuant to a settlement agreement. The utilities continue to monitor electricity usage for transmission and substation upgrades to improve system reliability, promote efficiency, and reduce energy losses.

The restructuring of the electric industry in 1998 by the Connecticut legislature resulted in proposals for the construction of several electric generating facilities, primarily fueled with natural gas. Consistent with the Council's charge to regulate the placement of new generation while protecting the environment, the Council has approved seven applications for natural gas-fired facilities totaling 3,682 MW of capacity and denied two applications for facilities totaling 1,200 MW of capacity. Each of these new facilities has been assessed and approved after considering the benefits and effects that would be expected upon the community and the environment. However, the development of these new facilities has been slower than expected, with only 2,106 MW or 57 percent of

Combined-Cycle Gas Turbine with Generator

approved capacity operating in Connecticut. Nevertheless, the State benefits significantly from the recent addition of the Milford Power facility.

The energy generating sector is experiencing volatility in the market structure overseen by ISO-New England. To some degree, this is to be expected in a newly competitive market. However, existing generation remains hampered by the aging transmisson grid and its "bottlenecks", creating ineffective pricing of electricity. In addition, market mechanisms need to be assessed and applied to planning strategies to determine if there are sufficient incentives to ensure an adequate supply of generation and demand-side resources to provide reliable service.

Furthermore, the choice to use natural gas to generate electricity has placed a substatial demand on the natural gas industry. Unlike fuel oil that can be stock-piled on site or delivered by barge, natural gas is delivered via pipelines with limited capacity. The challenge to provide large quantities of fuel for the generation of electricity is countered by the priority to provide fuel for residential heating. Severe cold weather can result in high natural gas demand for both heating and electric generation. In particular, the unusually cold weather in mid-January 2004 resulted in several natural gas fired generating units having their natural gas service interrupted.

Another area of concern is the limited amount of dual-fuel capability in New England. Generating units with natural gas as their sole fuel source cannot switch to an alternate fuel such as oil in the event their natural gas supply is interrupted. ISO-New England is currently investigating how to develop more dual-fuel capability in the region.

In addition, the Council believes Connecticut should continue monitoring all loads and resources to confirm that the market can deliver additional generation resources to meet public demand and operate in a manner that is safe, environmentally sound, and economical to enable the continuation of the State's economic advancement.

INTRODUCTION

The Connecticut Siting Council (Council) has the legislative charge to annually review forecasts of electric loads and resources in the State of Connecticut pursuant to Connecticut General Statutes § 16-50r.

Pursuant to such statutory provisions, every person engaged in generating electricity with a capacity of one megawatt or greater, or transmitting and distributing electricity, shall file a report to the Council by March 1 of each year and this report shall include, as applicable: (1) A tabulation of estimated peak loads, resources and margins for each year; (2) data on energy use and peak loads for the five preceding calendar years; (3) a list of existing generating facilities in service; (4) 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; (5) 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 electrical requirements, and the location of such facilities; (6) a list of planned transmission lines on which proposed route reviews are being undertaken or for which certificate applications have already been filed; (7) 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; and (8) for each private power producer having a facility generating more than one megawatt and from whom the person furnishing the report has purchased electricity during the preceding calendar year, 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.

LOAD FORECAST

Load Growth

The State's electric utilities, The Connecticut Light and Power Company (CL&P), The United Illuminating Company (UI), and the Connecticut Municipal Electric Energy Cooperative (CMEEC) predict incremental load

Three Single-Phase Transformers to create a Three-Phase Bank (Distribution)

growth throughout the forecast period. Total annual energy output requirements for the State are projected to grow from 33,217 gigawatt-hours (GWh) in 2003, at an average annual growth rate of 1.6 percent, to 38,570 GWh in 2013. CL&P projects an average annual rate of growth of 2.0 percent through the forecast period. CMEEC projects a 0.56 percent average annual growth rate, and UI projects a modest 0.22 percent average annual growth rate.

Historically, the demand for electricity has been related to economic growth. That positive relationship is expected to continue, although the ratio is uncertain. Connecticut's increased electricity consumption is attributable to the development of larger homes, an active economy, and a standard of living that results in increased use of electro-technologies (i.e. electric appliances, computers, and especially air conditioning).

Peak Loads

In 2003, the statewide non-coincident summer peak load was 6,604 MW — a 3.6 percent decrease from the previous high in 2002 of 6,851 MW taking into account the peaks from all three utilities. (The peaks may not necessarily occur on the same day of the year, but nevertheless are combined and the results would not be materially different.) However, annual summer peak loads are expected to increase over the forecast period, as indicated on Figure 1.

According to the State's utilities projection, the total peak load growth will increase by 1,267 MW, or approximately 19.2 percent, from 6,604 MW in 2003 to 7,871 MW by year 2013. The New England Power Pool (NEPOOL) Forecast Report of Capacity, Energy, Loads and Transmission 2004 – 2013 (CELT Report) predicts that the total peak load growth in Connecticut will increase approximately 11.3 percent from 6,985 MW in 2004 to 7,775 MW in 2013 based upon a percentage of demand for the region. However, this may not have included subtle nuances in local utility forecasting. Figure 1 illustrates the effects associated with external forces and increased peak demand due to hot weather over the reference forecast period including the extreme weather scenario. However, the data in Figure 1 takes into account past and projected future savings from conservation and load management programs.

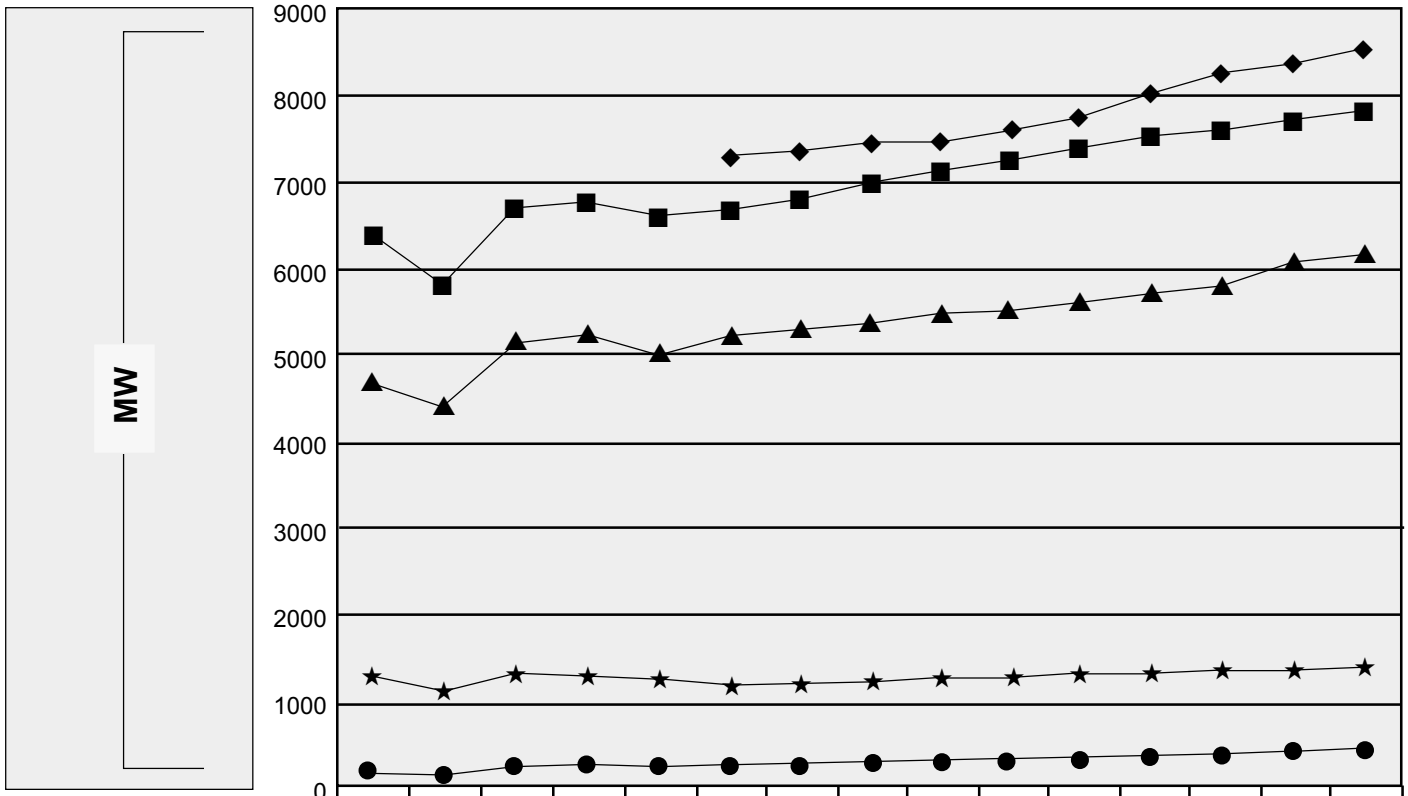
The historic data in Figure 1 are based on actual peak loads in the State. However, the projected (future) data are weather-normalized. Weather-normalized means that the data are based on average historical weather conditions over a 30 year time period. For example, CL&P's model assumes a mean daily temperature of 83 degrees F for a summer peak day based on average peak temperatures from 1972-2001. For the extreme weather scenario, CL&P's projected loads are based on a peak day mean daily temperature of 88 degrees F. Electric planning and design philosophy must take into account extreme weather to allow the system to handle the load during high demand periods.

Although the purpose of forecasting is to identify the risk associated with the supply and demand of electricity, such projections are affected by weather that can dramatically change demand, the price of electricity, consumer usage patterns, and conservation. There is further concern that the separation of generation from transmission/distribution companies could, if not carefully monitored, isolate the functions of supply and demand, create deeper load pockets and locked-in generation, and further constrain the existing transmission system.

Conservation and Load Management

The Conservation and Load Management (C&LM) Fund was augmented by the legislature pursuant to Public Act 98-28 creating an assessment of three mills per

Figure 1: State and Utility Peak Demand by Year
(in Megawatts)



	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
CT Peak Extreme Weather						7275	7410	7546	7637	7736	7860	7998	8145	8309	8468
CT Peak	6345	5896	6795	6851	6604	6765	6890	7017	7098	7187	7302	7429	7567	7721	7871
CL&P Peak	4750	4433	5126	5183	4980	5171	5288	5407	5481	5562	5667	5787	5919	6064	6209
UI Peak	1273	1153	1318	1300	1274	1235	1239	1243	1246	1250	1254	1257	1261	1265	1268
CMEEC Peak	322	310	351	368	350	359	363	367	371	375	381	385	387	392	394

Megawatts

kWh sold to each end use customer of a publicly traded electric distribution company. The C&LM Fund supports energy efficiency, increased productivity and ultimately reduces the peak electric demand in Connecticut. In 2003, customers of CL&P and UI contributed over $88 million into the C&LM Fund.

Section 20 of PA 03-02 diverted $1 million per month from the C&LM Fund to the State's General Fund. Subsequently, the Department of Public Utility Control (DPUC) ordered both electric distribution companies to only expend C&LM funds collected through June 30, 2003 due to budget uncertainty. By July 1, 2003, most C&LM programs were suspended.

PA 03-06, approved on August 20, 2003, required a significant portion of the Fund to be used to securitize a bonding mechanism with the proceeds going to the State's General Fund. This allowed for the continued provision of some C&LM services. The amount available for conservation programs in 2003 was reduced by 25 percent and the impact to the C&LM budget in 2004 is expected to be a reduction in program funding of 44 percent.

Despite these vicissitudes, Connecticut residents and businesses saved approximately 130.7 GWh of energy in 2003. Assuming an average cost of 10 cents per kWh, customer savings approximated $13 million. The pro-

jected long-term savings over the life of the measures is predicted to be $206 million.

The estimated peak load reduction in Connecticut due to energy conservation and load management programs in 2002 and 2003 were 98.5 MW and 89.5 MW respectively. The Energy Conservation Management Board estimates that an additional 18.5 MW load reduction could have been achieved with full funding.

RESOURCE FORECAST

Supply Resources

It is anticipated that the State's supply resources are adequate to meet demand during the forecast period, provided all active generators committed to the ISO-New England (ISO-NE) remain available for continuing use (see Table 1). However, some subregions such as southwest Connecticut are severely threatened with supply deficiencies and voltage instability problems due to insufficient transmission and inadequate resources within the region. These problems became particularly apparent during the blackout of August 14, 2003.

In the event the Millstone nuclear units or other large base load units are not available, the State's electric generators and transmission/distribution companies would institute the following plan to avoid capacity deficiencies during peak demand periods:

- operate all available generating units to their reasonable limits;
- purchase power from available resources, in and out of Connecticut;
- arrange to temporarily shift load on high load days to substations and transmission facilities outside Connecticut;
- explore additional interruption of service with industrial and commercial customers;
- maximize use of customer-owned emergency generators; and
- public awareness efforts for conservation and load shifting.

These response mechanisms have proven to be adequate in the past; however, it is increasingly important for resources to be strategically located on the grid to ensure supply can technically and economically serve pockets of high demand. Furthermore, some of the facilities called upon to generate at their maximum capacity in the past may not be able to do so because of age, constraints on the transmission system, or air emission limitations.

In 2001 and 2002, Connecticut and the region benefited from the addition of the Wallingford and Killingly facilities with a total nominal power output of 1,042 MW. More recently, in 2004, the Milford Power facility, with a nominal power output of 544 MW, became fully operational. With all planned supply resources in place, Connecticut is expected to have a sufficient margin to meet summer peak demand in the near term. However, this scenario is speculative and subject to a number of variables, conditions, and expectations that are subject to change.

Public Act 02-64 instituted sulfur dioxide emission limits on older oil-fired electric generation by the beginning of 2005. While this suggests a scenario that may reduce or eliminate a significant amount of generation such as those located in Milford, New Haven, Norwalk, Bridgeport, Montville, and Middletown, the act also allows the Connecticut Department of Environmental Protection to waive such emissions limits when low sulfur fuel is not available and/or the restriction threatens the reliability of the electricity supply as administered by ISO-NE. Furthermore, the eventual loss of generation in Bridgeport and Norwalk will exacerbate transmission capabilities in southwest Connecticut and could overload grid connections between New York and New England and also between Connecticut and the rest of New England. Indeed, ISO-NE predicts a substantial loss of reliability to southwest Connecticut if these units are prematurely retired before replacement by new additional generation, new transmission capability, or both. Ultimately, the State will be reliant on generation from NEPOOL, the success of ISO-NE Load Response Programs and utility CL&M programs, and the continued operation of committed resources, particularly transmission resources, during periods of high peak demand.

Existing Generation Facilities

Approximately 2,007 MW of the State's current electric generation capacity is oil-fired and will be 40 years old or older by 2013. Because the industry generally rates the service life of these units to be 40 years, it may soon place some of these units into retirement. As depicted below in Table 1, this number reduces to 1,900 MW if Devon 7 is deactivated in the near future. Until recently there has been little investment in new facilities since the mid-1970s, a period of high fuel costs and uncertain supply. Figure 2 demonstrates that during the 1980s, various technologies such as renewables, coal, and nuclear have diversified electric generation in Connecticut. The most recently installed electric generators in Connecticut are natural gas-fired turbines.

Reliability has emerged as a key issue due to the age of many Connecticut generating plants. Consequently, facility operators, ISO-NE, and State regulators must continue to assess, test, and confirm individual facility availability. Such continuous measures include confirmation of unit ratings, repairs, and operational schedules.

As depicted in Figures 3a and 3b, the State's fuel mix

Table 1: CT Balance of Supply and Demand for Electricity as of August 2004
Reported in Megawatts (MW)

		status quo generation scenario			less retirement of units scenario		
		2004	2006	2013	2004	2006	2013
Installed capacity [1]		6884 [6]	6777 [7]	6777	6884 [6]	6777 [7]	6777
Capacity additions:							
	Meriden [2]			544			544
	Middletown [2]			520			520
	Oxford [2]			512			512
Transmission Import Capability [3]		2200	2200	2200	2200	2200	2200
Cross Sound Cable [4]		-330	-330	-330	-330	-330	-330
Load Shift/OP - 4 Action		562	562	562	562	562	562
Units 40 years of age or greater retired							-1900
Resources to meet Peak Demand	A	9316	9209	10785	9316	9209	8885
Peak Demand - Summer [5]	B	6765	7017	7871	6765	7017	7871
CT Reserves	C = A - B	2551	2192	2914	2551	2192	1014
Reserve/Resources [8] 100%	D = C/A	27%	24%	27%	27%	24%	11%

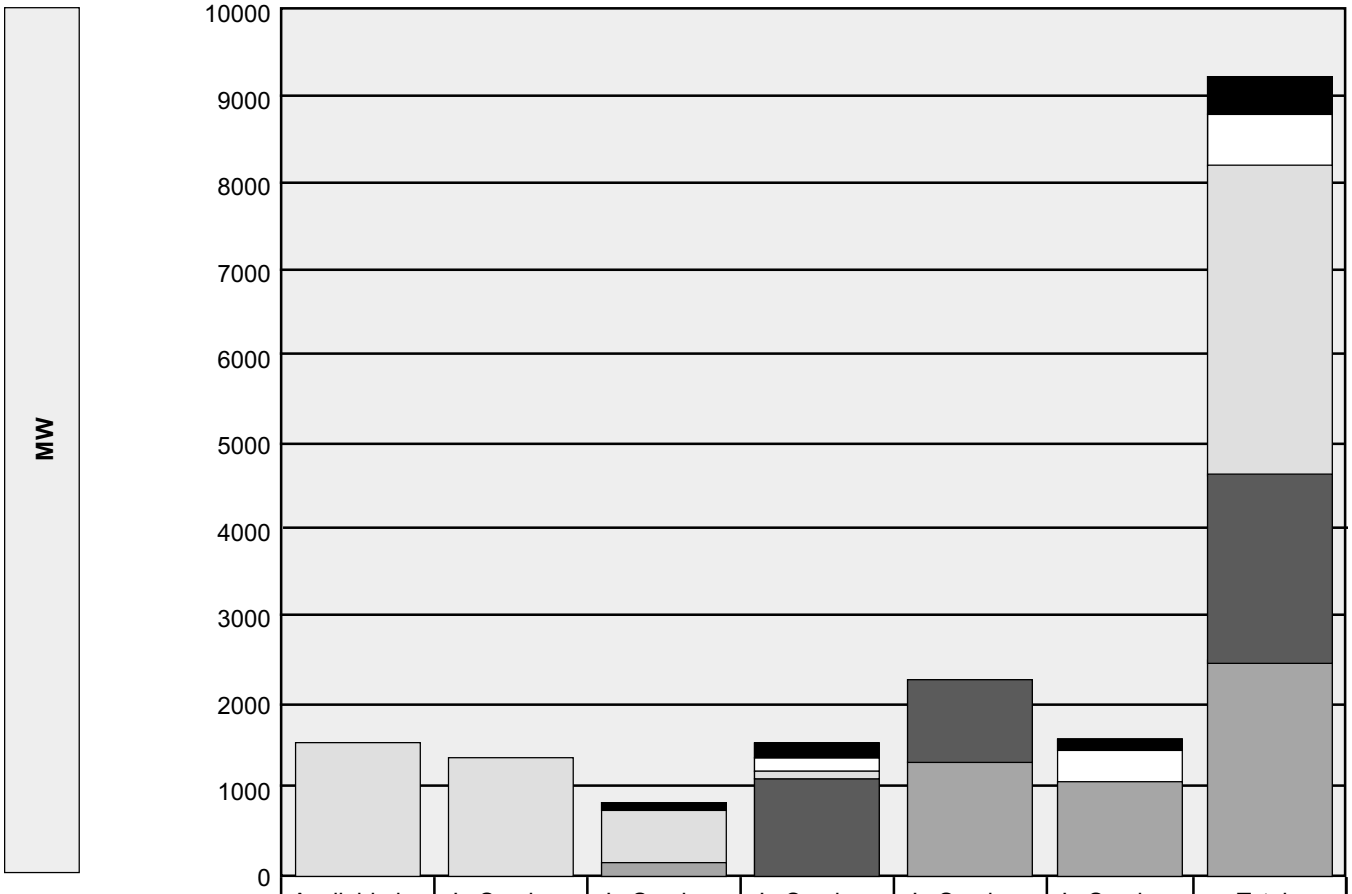
1. Summer rating as reported in CSC Review of the Connecticut Electric Utilities' 2004 Ten-Year Forecasts of Loads and Resources - Appendix A. The output of the Lake Road facility was not included in the above analysis due to the fact that it is electrically more a part of Rhode Island than Connecticut.
2. The proposed schedule for commercial operation of these facilities are either postponed or uncertain.
3. The Transmission Import Capability was obtained from the ISO-NE Regional Transmission Expansion Plan (RTEP), which takes into account the Norwalk to Northport #1385 cable.
4. The high voltage direct current (HVDC) Cross Sound Cable has a normal export rating of 330 MW. When the cable is exporting electricity to Long Island, it is considered a load to Connecticut.
5. Projected peak demand as reported by CL&P, UI, and CMEEC forecast filings to the CSC on March 1, 2004.
6. Installed Capacity include Milford Power and excludes Lake Road and Devon 8.
7. Installed Capacity excludes Devon 7 which may face deactivation in the near future.
8. The Connecticut balance of supply and demand for electricity represents an ideal situation. Actual transmission constraints may limit the simultaneous operation of all generation.

for electric generation will continue to evolve from primarily oil-fired units to natural gas-fired units over the next ten years. Figure 3b assumes the retirement of oil-fired generation 40 years of age or older and the addition of Middletown, Meriden, and Oxford gas-fired generation. This fuel mix scenario is consistent with the U.S. Department of Energy's (DOE) projected fuel consumption for electric generation as depicted in Figure 4. However, without increased diversity of supply resources, the State faces an inherent risk of reduced reliability in the event of natural gas curtailment.

Seasonal Claimed Capability

Seasonal Claimed Capability (SCC) ratings are the maximum dependable load carrying ability, in megawatts of a generating unit or units, excluding capacity required for station use. SCC ratings are computed per ISO-NE rule M-20 for installed capacity and correspond to the power generating capacities at 20 degrees F and 90 degrees F for winter and summer values respectively. The SCC for a facility that may be claimed by NEPOOL must be verified by conducting a claimed capability audit.

Figure 2: Distribution of Connecticut's Electric Generators by Fuel and Age



	Available by 2006	In Service: 2000-2004	In Service: 1990-1999	In Service: 1980-1989	In Service: 1970-1979	In Service: 1969 or before	Totals (MW)
renewable			66	151		123	340
coal				181		372	553
gas/oil	1576	1431	613	52			3672
nuclear				1155	882		2037
oil/gas			129		1420	1035	2583

Figure 3a: Connecticut Electric Fuel Mix (2004)

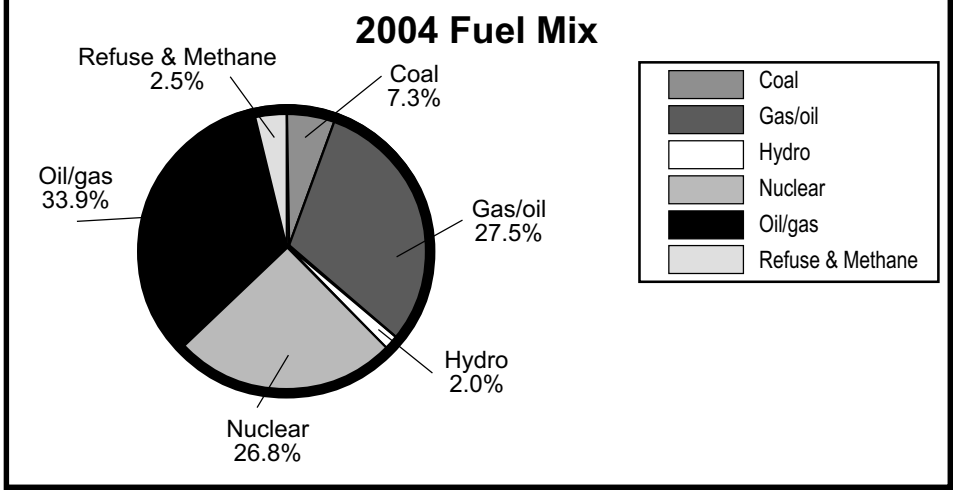


Figure 3b: Connecticut Electric Fuel Mix (2013)

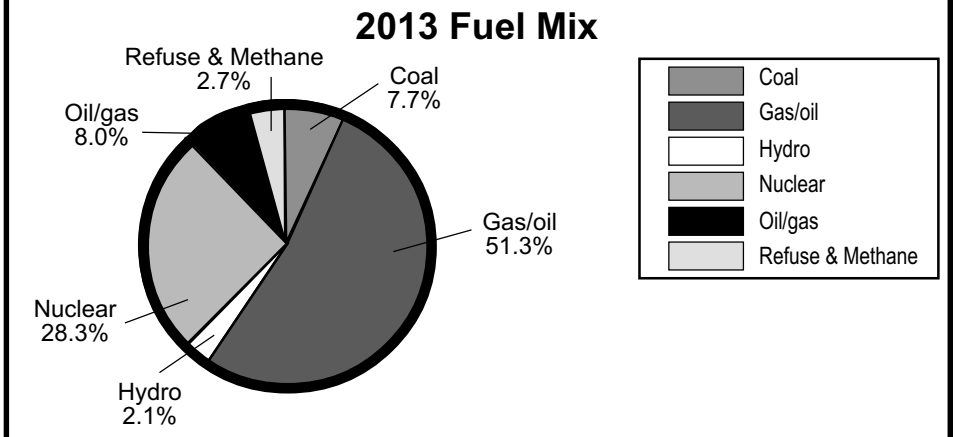
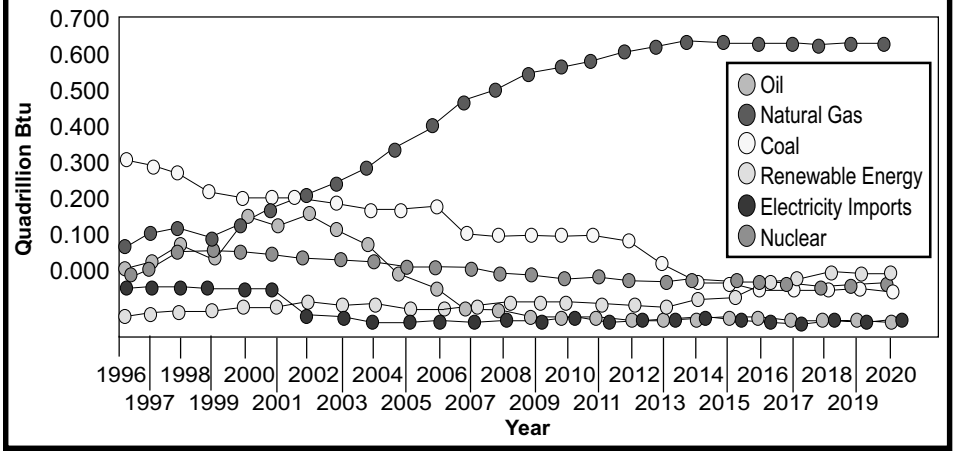


Figure 4: Fuel Consumption for Electric Generation within ISO-New England 1996-2020



Fossil-fueled plants generally have a higher SCC rating in the winter than the summer due to increased efficiency in colder ambient temperatures.

Appendix A lists the summer and winter SCC ratings for the generating facilities located in Connecticut. The SCC values in Appendix A for generation available for dispatch to the electric grid are based on the August 2004 ISO-NE SCC Report. The retained generation SCC values in Appendix A are based on the April 2004 CELT Report.

Black Start Capability

Black start capability (BSC) is the ability of a generating station to start and commence generation without any outside source of electricity. ISO-NE audits BSC, has programs to compensate generators for BSC, and determines what BSC is necessary. Currently, existing generating units that have black start capability include Cos Cob #10, 11, and 12; Branford #10; Franklin Drive #10; Torrington Terminal #10; Middletown #10; Montville #10 and 11; Stevenson #1 through 4; Rocky River; Tunnel #10; and PPL Wallingford Units #1 through 5. This totals approximately 418 MW of (summer) capacity. However, in the event of a blackout, units without black start capability that have been shut down cannot restart until sufficient outside grid power is available to start to the units.

Nuclear Power Generation

Connecticut currently has two operational nuclear electric generating units (Millstone 2 and 3) contributing a current total of 2,037 MW (summer rating), approximately 26.8 percent of the State's capacity. Nuclear capacity, which formerly accounted for 45 percent of the state's operating capacity, has been reduced by the retirement of the Connecticut Yankee and Millstone Unit 1 facilities in December 1996, and July 1998, respectively.

Although no nuclear power capacity is currently planned as a new supply option, it is anticipated that small gains in electrical output will be seen via upgrading the low pressure turbine rotors at the existing Millstone 2 and 3 facilities. Dominion Nuclear Connecticut, Inc. (Dominion), owner of the Millstone units, performed this upgrade for Unit 2 in the fall of 2003 during the refueling outage. While this upgrade was expected to increase the output of Unit 2 by an estimated 19 MW, preliminary results indicated an increase in power output of approximately 6 MW. Dominion has planned further activities to address the difference between the predicted and actual increased output. The low-pressure turbine rotors for Unit 3 were replaced in April 2004. The expected power increase for Unit 3 is estimated at 27 MW.

Nuclear power offers unique benefits and constraints. By releasing no production-connected sulfur oxides, nitrogen oxides, or carbon dioxide, nuclear power essentially represents a zero-air-emission generation source. In the event Connecticut were to permanently lose the contribution of its nuclear facilities now operating in Connecticut, the operators would no longer have a surplus of sulfur dioxide allowances granted under the 1990 Clean Air Act Amendments (CAAA), and face the possible loss of future emission allowances under the CAAA. Nonetheless, there remains issues related to nuclear power plants of scheduled and unscheduled outages; nuclear waste storage, transport and disposal; public safety; security; and facility costs.

Coal Power Generation

Connecticut currently has two coal-fired electric generating facilities contributing 553 MW--approximately 7.3 percent of the State's current capacity. The AES Thames facility is located in Montville and burns domestic coal. The Bridgeport Harbor #3 facility is located in Bridgeport and burns imported coal. Coal reserves in the United States are expected to last over 240 years, based on 1998 consumption levels. Despite this apparent benefit of supply and transport via an existing rail infrastructure, coal is not actively being considered as a supply-side fuel option due largely to the relatively high expense of facility installation and the concern for control of air emissions, including possible future carbon dioxide regulations. However, given proposed national energy policies encouraging development of clean-coal technology, and the United States' possession of approximately 24 percent of the world's current estimated total recoverable coal, it may be a fuel that will be more seriously considered in the future.

Petroleum Power Generation

Connecticut has 26 oil-fired electric generating facilities, some of which can also burn natural gas, contributing a total of 2,583 MW-- approximately 33.9 percent of the State's current capacity. This takes into account the loss of approximately 107 MW of oil-fired generation due to the deactivation of the Devon 8 unit on June 7, 2004. In addition, new generation fueled solely by oil has largely been ruled out for future new supply due in part to the volatility of the crude oil market. The United States holds an estimated two percent of the world's known oil reserves excluding reserves in oil shale. Approximately 60 percent of the United States' oil is imported, making it potentially vulnerable to market manipulation by exporting nations. More recently the price of crude oil has reached record highs in excess of $50 per barrel. Thus, Connecticut utilities have sought to diversify their fuel mix with less reliance on crude oil. The Council believes that plans for fuel diversification should always include an assessment of fuel availability, cost, and environmental effects which may result in the event that generating facilities are required to use secondary fuels.

Natural Gas Generation

Connecticut currently has 17 natural gas-fired electric generating units, some which can burn oil, contributing a total of 2,096 MW-- approximately 27.5 percent of the State's current capacity. This includes the recent addition of Milford Power Units 1 and 2 with a combined summer SCC of approximately 485 MW. In addition, natural gas is expected to be the fuel of choice for the foreseeable future because of lower emission factors compared to coal and oil.

Natural Gas Turbine Electric Generating Plant

Natural gas electric generating facilities are preferred primarily because of the higher efficiency technology, cleaner emissions, and the relatively low capital cost per kWh produced (see Table 2). However, despite the lesser impacts on air quality than that of coal or oil-fired facilities, it is not clear if natural gas generation will be able to economically meet future nitrogen oxide and carbon dioxide emissions limits and how competition will affect the supply and pricing of natural gas.

As depicted in Table 3, based on natural gas supply capacity (2001), the annual average daily consumption (2001), and the average consumption per MW of generation for new combined cycle natural gas facilities, New England could develop 14,795 MW of natural gas-fueled electricity. This takes into account the existing Tractebel liquified natural gas (LNG) facility in Everett, Massachusetts. Based on 2001 data, the Tractebel facility has the capability to send out 450 million cubic feet of natural gas per day to the pipeline interconnections and 100 million cubic feet per day can be shipped out by truck. However, various other LNG facilities are planned in Rhode Island, Maine, New Brunswick, and Nova Scotia.

Notwithstanding new supplies expected from the Sable Island Basin and new pipeline capacity, the use of natural gas for base load facilities, combined with other heating and transportation uses, may result in over-dependence and lack of fuel diversity.

Furthermore, ISO-New England's draft 2003 Regional Transmission Expansion Plan (RTEP03) Technical Report includes the following text: "New England's projected reliance upon natural gas-fired generating units has potentially negative system-wide impacts. The advent of several thousand megawatts of new gas-fired combined cycle units in New England could have serious reliability impacts on the system should gas pipe line interruptions or extremely cold weather occur. ISO-NE has formed a Fuel Diversity Working Group and Electric and Gas Operations Committee. The effort will focus on understanding the dynamic relationships between the electric and natural gas infrastructure in New

Table 2: Cost and Lead Times for New Electric Generation Technologies

Technology	Size (MW)	Leadtime (Yrs)	Cost (2004 $/kW)
Conventional Pulverized Coal	400	4	1,400
Gas Combined Cycle	250	3	800
Gas Combustion Turbine	160	2	500
Wind	30	3	1,300
Biomass	30	4	1,750

Source: Creative Energy Concepts. "Distributed Energy Systems: Central Power Generation Economics"

Table 3: Natural Gas Capacity and Consumption Rates for New England (thousand cubic feet per day)

Existing Capacity Year 2001		Average Daily Consumption Year 2001		Total Capacity 4,431,000
Algonquin	1,561,000	Connecticut	392,282	Total Consumption 1,945,505
Tennessee	1,404,000	Maine	259,093	
Iroquois	237,000	Massachusetts	947,373	
Vermont Gas	49,000	New Hampshire	64,036	Available Capacity 2,485,495
Portland Natural Gas	230,000	Rhode Island	261,063	
Maritimes & Northeast	400,000	Vermont	21,658	
Tractebel LNG	550,000			Average Consumption per MW of Generation 168
Total Capacity	4,431,000	Existing Consumption	1,945,505	
				Potential New Generation in NE 14,795 MW

Source: New England Energy Supply & Demand 2001: A New England Council Report; and http://www.eia.doe.gov

England, and how electric reliability could be impacted. The effort will provide guidance to the NEPOOL community and the gas pipeline operators on operating procedures, market rules, and transmission planning and regulatory matters."

Over the last four years, ISO-NE, through Levitan and Associates Inc. (Levitan) conducted several studies of the New England interstate pipeline system's ability to serve the local natural gas distribution companies as well as the increasing demand from the electric generating market. The first study, dated 2001, indicated that about 3,230 MW of gas-fired generation would be at risk of unavailability in 2004-2005. The second study in 2002 found that 3,900 MW of gas-fired generation would be at risk during a peak day during the winter of 2004-2005.

Extremely cold weather occurred in mid-January 2004 which had a negative impact on natural gas-fired generation in New England. Indeed, ISO-NE reported that the New England peak electric demand of 22,817 MW on January 15th coincided with record cold tempera-

tures. This resulted in a higher demand for natural gas for heating as well as base load generation.

ISO-NE received numerous reports of gas interruptions from generating units. Many of these generators were interrupted during the peak natural gas demand periods due to the terms of their contracts. In January of 2004, ISO-NE asked Levitan to update the steady state analysis of New England's pipeline deliverability to capture the actual operating conditions of New England's pipelines during the January 13 through 17 time period.

ISO-NE notes that of the roughly 30,000 megawatts of summer New England electric generation capacity, about one-third are units that operate with natural gas as their sole fuel source. This can affect the reliability of a significant amount of generating capacity as these units currently cannot switch to an alternate fuel source such as oil when natural gas delivery is interrupted.

Through Levitan, ISO-NE developed a study entitled "Natural Gas and Fuel Diversity Concerns in New England and the Boston Metropolitan Electric Load Pocket." In addition to forming a Fuel Diversity Working Group, ISO-NE is also investigating how to develop more dual-fuel capacity within New England.

Hydroelectric Power Generation

Connecticut hydroelectric generation consists of 28 facilities contributing 149 MW, approximately two percent of the State's current capacity. Hydropower, long considered to be an environmentally acceptable source of power, has recently come under increased scrutiny by both recreational and environmental advocacy groups. Their concerns include the effects of dams on river flow, water quality, fish populations, and wildlife habitats. The Falls Village, Bulls Bridge, Shepaug, Stevenson, and Rocky River stations, totaling 117 MW of capacity, are undergoing relicensing review with the Federal Energy Regulatory Commission (FERC). The Scotland station's license is due for renewal in 2012. Thus, while hydropower may be considered a clean and renewable energy source, renewal of existing licenses or development of any additional large units in Connecticut would likely be limited by environmental constraints.

Miscellaneous Small Generation

There are approximately 105 MW of electricity generated by 59 independent entities in Connecticut including homes, businesses, hospitals, etc. Their portion of generation is not credited to the State's capability to meet demand because ISO-NE does not control their dispatch. However, these units serve to reduce load on the grid particularly during peak demand. These units range between 10 kW to 29.5 MW in size and are fueled primarily by natural gas with several others using oil, refuse, hydro, solar, wind methane, and propane. The installation of additional privately-owned generation is expected, but only at competitive terms or by an entity that views self-generation as a benefit.

Import Resources

Connecticut utilities have held contracts for 479 MW from a total of 1,500 MW of import capability from the Hydro-Quebec Phase I and Phase II projects. These contracts and others in New England expired on August 31, 2001, making 1,500 MWs available for sale to wholesale and retail electric suppliers. Although the Hydro-Quebec interconnection tie is not counted toward Connecticut generation capability, it is expected to assist in meeting New England's energy needs on a competitive basis.

Distributed Energy Resources (DER)

Commercial technologies such as reciprocating engines and small combustion turbines are used in a variety of applications for energy, cogeneration, and emergency power. In 1999, the DOE examined 275 distributed energy resource projects and discovered that the most used DER projects were diesel and petrol-driven reciprocating engine-generators, photovoltaics, and demand-side management (DSM). The use of fuel oil-driven reciprocating engines presents issues with pollutants (emissions and noise) compared to natural-gas and renewable-fueled technologies. (Cleaner gas-fired reciprocating engines are being used which may address these concerns.) DSM technologies are aimed at reduc-

ing overall energy consumption and should be considered at every opportunity to counter the growing demand for energy.

Emerging technologies include fuel cells and wind turbines. The Council has reviewed numerous requests to install fuel cells for use as combined heat and power at schools and waste-water treatment plants. Wind turbines would need to be located in windy areas such as on hilltops or the shores of Long Island Sound, but the siting of these facilities could potentially compromise the preservation of scenic resources. Another source of energy being used widely but only for specific purposes (i.e. wireless communications and transportation) are batteries. However, batteries can only supply power for a limited amount of time before the charge is depleted and recharging becomes necessary.

Electric Restructuring

Pursuant to Public Act 98-28, An Act Concerning Electric Restructuring (Act), electric consumers who are customers of Connecticut's two private investor-owned electric utilities, The Connecticut Light and Power Company and The United Illuminating Company are permitted to choose their retail electric supplier as of January 1, 2000. A municipal electric utility may also engage in competitive generation supply if it reciprocally opens its service territory to other competitive retail suppliers. The law allowed licensed independent retail generation suppliers to compete for consumers within the State with the intent that competitive supply would spur an increase in competitive pricing options, potentially decrease the price of electricity, foster technological innovation, and improve environmental quality by promoting new facilities with lower emission profiles.

Pursuant to the Act, the DPUC established and completed the procedures for unbundling the generation from the transmission and distribution components of electric utility service. The DPUC developed individual line-item charges for the non-bypassable service charges that fund: the energy conservation programs; investments in renewable energy technologies; and the systems benefit charge which supports education programs, public policy programs, and provides assistance to utility workers and municipalities that are impacted by restructuring. While many of the market-based provisions of the Act have already been executed including the divestiture of non-nuclear and nuclear generation and the initiation of consumer choice of electric generation supply, continued monitoring of electric supply markets is necessary to ensure the development of an open competitive market.

The vast majority of customers eligible are still being served through the two utilities' default service formerly called the Standard Offer, now called the Transitional Standard Offer (TSO), both of which were capped per the legislation. Relatively few customers (less than 2 percent) have chosen an alternative electric supplier. Market conditions, minimal consumer awareness and interest, and lack of viable supply options are factors that may affect consumer decisions regarding their choice of an electric supplier. The standard offer rate, which was capped at 10 percent below 1996 base rates, expired on December 31, 2003. Pursuant to Public Act 03-135, the 2003 legislature initiated a transitional service rate (TSO) to be established by the DPUC that eliminates the 10 percent reduction, thereby returning to 1996 base rate levels effective from January 1, 2004 through December 31, 2006. The legislature thus provided consumers with a buffer against potential spikes in electric rates due to potential volatility in market pricing.

Public Act 03-135 revised the 1998 restructuring law on the Connecticut Renewable Portfolio Standards (RPS), requiring that retail electric suppliers provide four percent of their energy from Connecticut Class I and Class II renewable energy sources in 2004, increasing to ten percent in 2010 and thereafter. This is intended to promote a new Connecticut market for cleaner energy sources. In addition, Public Act 03-135 required that on or after January 2004, one or more Alternative Transitional Offer (ATSO) options provide energy that exceeds the RPS, and also may include an option utilizing strategies or technologies that reduce overall electricity consumption by the consumer.

Independent electric generators, a non-regulated entity, provide the supply of electricity to the grid via the wholesale electricity market in New England. The generators bid into the regional wholesale market which is governed and operated by ISO-NE. ISO-NE has recognized a market disparity in the value of the resource compared to the compensation allocated to generators for both older fossil-fueled and newer gas-fueled facilities. As a result, ISO-NE continues to monitor the market

and develop strategies to address resource adequacy and market pricing and mechanisms to provide the best assurance of maintaining and developing generation and transmission capacity in the region and in our state. However, challenges remain as market uncertainty is making it more difficult to attract new generation in the State.

Facility Siting

As a consequence of restructuring legislation, the Council's jurisdiction and statutory decision criteria have been modified to provide uniform treatment between utilities and private power producers so that a full range of environmental and economic effects can be appropriately considered for new generation facilities.

To date the Council has approved the following natural gas-fired electric generating facilities:

- 520 MW Bridgeport Energy LLC project in Bridgeport became operational in August of 1998.
- 544 MW Milford Power Company, LLC f/k/a PDC-El Paso LLC project in Milford became fully operational in May 2004.
- 544 MW NRG Northeast Generating LLC project in Meriden was approved by the Council on April 27, 1999 and has until April 27, 2006 to complete construction.
- 792 MW Lake Road Generating Company, L.P. project in Killingly became fully operational May 2002.
- 512 MW Towantic Energy LLC project in Oxford was approved by the Council on June 23, 1999 and has an approved extension of time to complete construction by June 26, 2006.
- 250 MW Wallingford PPL project in Wallingford became operational July 2001.
- 520 MW Kleen Energy Systems, LLC project in Middletown was approved by the Council on March 25, 2003 and has until November 21, 2006 to complete construction.

The total nominal capacity of these projects is 3,682 MW.

Since the deregulation of the electric industry in 1998, 2,106 MW, or approximately 57 percent of approved capacity is now operating in Connecticut. Delays in project development in Meriden, Middletown and Oxford are due to project specific obstacles encountered. Nevertheless, Milford Power Units 1 & 2 are currently in service. However, all of the projects listed above are experiencing a certain level of uncertainty in the market overseen by ISO-NE as is the natural gas industry in response to the newly created demand by the electric generation sector.

Until recently, most of these gas-fired plants were constructed near intersections of electric and natural gas transmission infrastructure, many on green field sites and away from load centers. Meanwhile, policy makers envisioned a more streamlined development through the repowering of existing facilities that already possess access to electric and/or gas infrastructure and are located near load centers. Consequently, the Council believes siting of future generation and transmission facilities would best be considered collectively, and on a regional basis, to enable efficient electric dispatch and fuel supply.

As the electric industry has been restructured, pursuant to Public Act 03-140, the Connecticut Energy Advisory Board (CEAB) was reconstituted and given the legislative charge to perform a variety of functions related to energy infrastructure planning on a statewide basis. Specifically, CGS § 16a-3(b) reads as follows:

> "The Board shall, (1) prepare an annual report pursuant to section 17 of this act; (2) represent the state in regional energy system planning processes conducted by the regional independent system operator, as defined in section 16-1; (3) encourage representatives from the municipalities that are affected by a proposed project of regional significance to participate in regional energy system planning processes conducted by the regional independent system operator; (4) issue a request-for-proposal in accordance with subsections (b) and (c) of section 19 of this act; (5) evaluate the proposals received pursuant to the request-for-proposal in accordance with subsection (f) of section 19 of this act; (6) participate in a forecast proceeding conducted pursuant to subsection (a) of section 16-50r; and participate in a life-cycle proceeding conducted pursuant to subsection (b) of section 16-50r."

TRANSMISSION SYSTEM

Connecticut's high voltage electric transmission system consists of approximately 1,300 circuit miles of 115-kV, 398 circuit miles of 345-kV, 5.8 circuit miles of 138-kV and 104 circuit miles of 69-kV lines as depicted in Appendix B. The electric utilities maintain the system and expand it where needed to serve load centers and new generation.

As shown in Appendix C, many of the transmission line projects being planned consist of the rebuilding, reconductoring, or uprating of existing lines to increase each line's capacity to meet load growth and/or generation dispatch conditions. Much of this development is lagging behind the build out of new electric generation. With this added capacity much of the existing electric transmission system is not able to meet demand.

Further, Connecticut has three 345-kV outside connections that are approximately 35 to 40 years old and were designed when loads were considerably smaller than today. Given the present size of the loads and the future projected loads, it is likely that these ties will have to be supplemented in the not too distant future. Nevertheless, the Council notes that new transmission is planned for the year 2008 which would begin at the Card substation in Lebanon, Connecticut, continue to the Lake Road generating station in Killingly, Connecticut, and then end at the Sherman Road substation in Rhode Island. (See Appendix C.)

Two new 345-kV transmission projects have been proposed that would enhance system reliability, decrease congestion and increase import capabilities. One of these projects, proposed by CL&P, is between Bethel and Norwalk; and the other, a joint venture between CL&P and UI, is from Middletown to Norwalk. The two utilities propose that these projects would benefit the State with connection to other regional systems and provide access to a greater supply of bulk power. The Bethel-Norwalk line was approved July 2003 by the Council as Docket No. 217. The Middletown-Norwalk line, filed jointly by CL&P and UI in October 2003, is currently under Council review as Docket No. 272.

The Council also approved a Northeast Utilities application (Docket No. 224) to replace existing 138-kV submarine lines between Norwalk and Northport, New York, and (Docket No. 208) Cross Sound Cable application for a merchant Direct Current (DC) submarine line between New Haven and Brookhaven, New York.

The Cross Sound Cable, connecting with Long Island, has a 330 MW capacity and is capable of transmitting electricity in either direction. The cable was ordered to operate by the U.S. Department of Energy Secretary due to the blackout of August 14, 2003. The cable was later ordered to be deactivated on May 6, 2004 by the U.S. Energy Secretary when the emergency situation was deemed to no longer exist. However, on June 24, 2004, a settlement was reached among the Long Island Power Authority (LIPA), the Connecticut Department of Environmental Protection, DPUC, CL&P, and the Cross Sound Cable Company, LLC regarding the Cross Sound Cable. The agreement calls for LIPA and CL&P to replace the existing #1385 Norwalk to Northport cable using a solid cable that does not contain a liquid coolant. Further, a $6 million fund for the study and preservation of Long Island Sound was created. LIPA, CL&P, and Cross Sound Cable, LLC will each contribute $2 million to the fund. As a result of the agreement, the Cross Sound Cable was reactivated on June 25, 2004.

While the generation and transmission infrastructure were under high demand during the hot and dry summer of 1999, most outages were attributed to failure of distribution feeders leaving high voltage substations, and distribution transformers near end use customers. The State's utilities have determined that the failures were largely due to aged equipment and have replaced such equipment accordingly.

However, the Department of Public Utility Control Docket No. 99-08-01, DPUC Investigation into Electric Capacity and Distribution noted that the southwestern corner of the state appeared to require some transmission and distribution reinforcements. The distribution companies have pursued numerous modifications to the existing 115-kV transmission system serving that area as load continued to grow. These modifications have included routine breaker upratings, line rebuilds and installations of capacitor banks. The DPUC investigated possible shortages of electricity in southwest Connecticut (SWCT) during summer periods of peak demand for 2002 and beyond (Docket No. 02-04-12). The following is an excerpt from that decision:

"It should also be noted that unplanned transmission line outages and generating unit outages are regular oc-

Table 4: ISO-NE Quick-Start Capacity in SWCT and In-Service Dates

Technology	2004 Summer MW	2005 Summer MW	2006 Summer MW	2007 Summer MW
On-Peak Energy Conservation	1	4	5	5
Emergency Generation	94	153	154	154
Load Reduction	21	53	74	74
Combined Energy Generation & Load Reduction	3	12	22	27
Total	**119**	**222**	**255**	**260**

currences in the electric system. However, transmission constraints and load growth in the area exacerbate the effects of outages in the system. This is the case since the system is often being operated near its limits. Therefore, as outages occur, the effects of the outages on the system become more severe. The outages noted above are not unusual and similar events have occurred in the past. However, the consequences are becoming more severe, and ISO-New England and the utilities have had to take more drastic measures to avoid widespread blackouts. Since unplanned outages are unavoidable, it should be expected that the consequences of such events on the system would become more severe as time goes on, unless measures are taken that either decrease load or increase transmission capabilities."

This investigation also found numerous instances where the existing transmission and distribution system came precipitously close to blackouts. On August 14, 2003, SWCT became part of a blackout that encompassed parts of Ohio, Pennsylvania, New York and Ontario, Canada. This larger eastern grid collapse, the largest in US history, served to reinforce current grid operators' analyses that numerous electric systems adjacent to transmission congested zones are vulnerable to grid instability.

In addition, ISO-NE and the Federal Energy Regulatory Commission (FERC) indicate that SWCT is at high risk during the next several years for electric service interruptions. To address this risk in part, ISO-NE sought to procure up to 300 megawatts of quick-start capacity in the SWCT region. A summary of this capacity is depicted in Table 4.

Pursuant to ISO-NE Request for Proposal (RFP) awards, the Council has received and ruled on several applications to install temporary generators in SWCT. For example, on March 4, 2004, the Council ruled favorably on Petition No. 662 for proposed installation of a temporary 22.8 MW peaking project in South Norwalk. However, this unit was not installed. On May 19, 2004, in Petition No. 672, the Council also ruled favorably on the proposed installation of four 2 MW diesel generators in Wallingford which would be activated when called upon by ISO-NE when step 12 of Operating Procedure 4 is triggered. On June 23, 2004, the Council ruled favorably on Petition 676 in which the Third Taxing District of the City of Norwalk sought approval to install three 2 MW diesel generators in East Norwalk, also to address the electric reliability requirements in SWCT. On October 7, 2004, the Council approved Petition No. 663 for the proposed repowering of the existing South Norwalk Electric and Water (SNEW) Generating Station to provide 50 MW of fast response capacity.

ISO-NE systematically assesses load requirements, establishes reserve margins across the power pool, and dispatches energy as necessary. In addition, ISO-NE assesses each new electric generation facility requesting connection to the electric grid for transmission system reliability. ISO-NE continues to monitor transmission interfaces that deliver power to Connecticut. The State is currently only able to import approximately 2,200 MW relevant to in-state resources without compromising grid voltage and system operating stability.

The regional importance of these interconnections must not be overlooked. As Connecticut undertakes a review of import capability as a measure of responsibility and potential reduction of regional disparity, the electric

Table 5: Planned Bulk Substations and Substation Expansions in Connecticut

Planned Substation Changes and Additions	Distribution Company	Date of Completion
Install a new 345-kV Kleen Switching Station in Middletown	CL&P	TBD[1]
Install the new 345-kV South Kensington Switching Station in Berlin	CL&P	TBD[2]
Expand the existing Long Mountain Switching Substation in New Milford	CL&P	2005
Expand the existing 115-kV Southington Substation in Southington	CL&P	2005
Install the new 115-kV Shunock Substation in North Stonington	CL&P	2005
Expand the existing 345-kV Plumtree Substation in Bethel	CL&P	2005
Install the new 345-kV Norwalk Substation in Norwalk	CL&P	2005
Expand the existing 115-kV Haddam Substation in Haddam	CL&P	2005
Install the new 345-kV Haddam Substation in Haddam	CL&P	2005
Expand the existing 115-kV Triangle Substation in Danbury	CL&P	2006
Expand the existing 115-kV Middle River Substation in Danbury	CL&P	2006
Expand the existing 115-kV Tracy Substation in Putnam	CL&P	2006
Install the new 345-kV Tracy Substation in Putnam	CL&P	2006
Install the new 115-kV Trumbull Junction Substation in Trumbull	UI	2006
Install the new 115-kV Metro North Union Avenue Substation in New Haven	UI	2006
Install the new 115-kV East Devon Substation in Milford	CL&P	2007
Expand the existing 115-kV Devon Substation in Milford	CL&P	2007
Expand the existing 115-kV Norwalk Harbor Station in Norwalk	CL&P	2007
Install the new 115-kV Wilton Substation in Wilton	CL&P	2007
Install the new 345-kV Beseck Switching Station in Wallingford	CL&P	2007
Install the new 345-kV East Devon Switching Substation in Milford	CL&P	2007
Expand the existing 115-kV Glenbrook Substation in Stamford	CL&P	2007
Expand the existing 345-kV Scovill Rock Switching Substation in Middletown	CL&P	2007
Install the new 345-kV Singer Substation in Bridgeport	UI	2007
Expand the existing 115-kV Pequonnock Substation in Bridgeport	UI	2007
Expand the existing 115-kV Elmwest Substation in West Haven	UI	2007
Install a new 115-kV Substation in Western Fairfield	UI	2007
Expand the existing 345-kV Card Substation in Lebanon	CL&P	2008
Install the new 115-kV Jack's Hill Substation in Oxford	CL&P	2008
Install the new 115-kV Stepstone Substation in Guilford	CL&P	2008
Expand the existing 115-kV Barbour Hill Substation in South Windsor	CL&P	2009
Install the new 345-kV Barbour Hill Substation in South Windsor	CL&P	2009

[1] The Kleen Switching Station associated with the proposed Kleen Energy generating plant has been delayed due to delays in construction of the plant.
[2] The South Kensington 345-kV Switching Station associated with the proposed Meriden Power generating plant has been delayed due to delays in the construction of the plant.

transmission system must be considered a regional facility capable of inter- and intra-region export and import of power. Consequently, Connecticut must continually examine its position in a regional context to import and export capacity. Such examination will likely favor the construction of regional facilities that strengthen the system grid for overall increased reliability. Some regional interconnections may not be popular to local land use authorities or local residents. However, State siting should maintain a regional perspective for maximum integration and efficient dispatch to reduce the cost of uplift to load pockets. Regional interconnections are being considered with possible federal preemption through FERC and oversight by a Regional

Double-Circuit 345-kV Transmission Structure with a Double-Circuit 115-kV Transmission Structure in the background

Transmission Organization (RTO). However, until these entities exist or obtain jurisdiction to coordinate regional facilities, Connecticut and other states will need to cooperatively consider regional interests.

As shown in Table 5, as many as 17 new bulk power substations and/or switchyards may be needed in high load areas within the State over the next five years. Many of these substations are part of the upgrade to the 345-kV system requiring switching and/or step-down capability.

Because the development of both new transmission and substation facilities may be considered undesirable by local communities, utilities must carefully assess supply locations, load center demands, and the need for new or upgraded facilities far in advance of actual construction. While the importance of regional interconnections must be understood, on-site generation and targeted energy efficiency opportunities and conservation and load management programs must be continually evaluated as part of new transmission system planning alternatives.

Transmission lines and electric substations have received increased scrutiny by groups concerned about the possible effects of electric and magnetic fields (EMF). In 1999, an international panel of experts issued a final report titled Research on Power-Frequency Fields Completed Under the Energy Policy Act of 1992, National Academy Press, 1999, Washington, D.C. U.S.A. The report stated that the results of their investigation "do not support the contention that the use of electricity poses a major unrecognized public-health danger." Nonetheless, EMF remains a concern to many communities, and siting decisions should consider possible links between exposure and health.

RESOURCE PLANNING

The Council fully endorses and participates in the assessment of resources, modeling, and planning initiatives to maintain electric reliability. These processes include programs for conservation and load management, resource supply, and transmission planning. The complexity and necessary integration of these programs has substantially increased as growing demand has stressed existing resources. In addition, consumer costs, congestion management, targeted demand-side programs, regional transfers, and the difficulty in facility siting has presented issues that have made decision-making difficult and not without consequences. The loss of conservation and load management funding may further complicate matters.

As shown in Appendix B, the Council continues to assess existing electric transmission, fuel supply, generation, and demand-side resources as well as planning options to maintain and improve reliability. Many design studies have been initiated to correct some of these problems with transmission enhancement. However, multiple scenarios for demand-side planning, new natural gas pipeline siting, new generation siting, and dispatch of existing generation facilities must be considered before final decisions are made by State regulators and the ISO-NE. In Connecticut, enhancement plans to the 115-kV system such as transformer replacements, and capacitor bank and conductor replacements are substantially completed in northwest Connecticut, the Norwalk-Stamford area, and southwest Connecticut. These and other subregional plans are expected to complement other enhancements throughout the New England electric power system consistent with reliability criteria established by NEPOOL, the Northeast Power

Coordinating Council, and the North American Electric Reliability Council. The assessment of these enhancement plans and recommended strategies will be difficult and time consuming, but will allow the public participation and community involvement necessary for the efficient deployment of facilities.

In view of recent electric and gas transmission industry activity in proposing and constructing infrastructure in the State, the legislature passed An Act Concerning the Preservation of the Family Farm and Long Island Sound relating to electric power line, gas pipeline, and telecommunications crossings (Public Act No. 04-222). By virtue of this Act the legislature extended the moratorium on development of said projects until June 3, 2005. Also, PA 02-95 and Executive Order No. 26, created a task force to assess economic considerations and environmental preferences and the appropriateness of installing transmission lines underground or overhead and crossing Long Island Sound; feasibility of meeting all or part of the region's electric power needs through distributive generation; and electric reliability, operational and safety concerns of the region's transmission system, and the technical and economic feasibility of addressing those concerns with available electric transmission system equipment. The Institute of Sustainable Energy at Eastern Connecticut State University released two reports one titled "Comprehensive Assessment & Report Part 1 - Energy Resources & Infrastructure of Southwest Connecticut", dated January 1, 2003, and the second report, titled "Comprehensive Assessment & Report Part II - Environmental Resources and Energy Infrastructure of Long Island Sound" dated June 3, 2003. These reports examine and evaluate the State's processes for balancing energy reliability and the need for transmission expansion projects, both for Connecticut and for the region, with enhanced protection of the natural resources of Long Island Sound.

More environmental organizations at the local, state, regional, national and international levels are collaborating to develop strategies to address emissions of nitrogen, sulphur, and carbon oxides. Much of this activity surrounds the use of energy in its many different forms. In particular, a Report from the New England Climate Coalition entitled “Global Warming in New England: Progress, Opportunities, and Challenges After Two Years of the Regional Climate Change Action Plan” dated September 2003, identified specific plans that could be implemented immediately for regional achievement. These plans include:

• LED Traffic Light Project. Promote the replacement of conventional traffic lights in the region with more efficient, cost-effective LED traffic signals that are estimated to use 85 percent less energy than conventional lights.

• College & University Partnerships in Emission Reductions. This project would encourage institutions to reduce greenhouse gas emissions to 10 percent below 1990 levels by 2012. Such an initiative could result in the reduction of 600,000 to 650,000 metric tons of carbon

• State Purchasing Programs for High Efficiency-Low Emission Office Equipment. This project would encourage the purchase of more energy efficient office equipment. Such an initiative could result in the reduction of 10,000 metric tons of carbon annually.

• Use of Cleaner, More Energy-Efficient Vehicles in State/Provincial Fleets. This project would encourage the purchase and use of cleaner, more efficient vehicles to reduce carbon dioxide emissions. Vehicle use represents about 40 percent of the total energy consumed in the U.S.

Furthermore it is hoped that this plan may encourage overall increased energy efficiency and the use of alternative fuels.

CONCLUSION

This forecast has modeled Connecticut's electric energy future for the next ten years and illustrates that supplies are expected to meet demand. However, these forecasts are models that are based on assumptions that are subject to change over time.

The change in the State's fuel mix for electric generation, over-reliance on natural gas as a fuel, limited dual-fuel capability, transmission constraints and outages, reduction of C&LM program funds, and the separation of electric generation from transmission and distribution continue to raise concerns for the reliability of Connecticut's electric capacity.

Issues that warrant attention include:

- targeted subregion strategies in load pockets to address transmission constraints, load growth, and generation resources;
- emergency contingency planning to manage electric supply and demand;
- regional siting to improve system efficiency and reduce costs of generation in transmission constrained areas;
- long-term system reliability;
- facility management for reliable operation;
- scheduled maintenance for predictable operations;
- responding to a changing economy that has proven difficult to predict;
- long-term management of volatile fuel supplies;
- reinstate conservation and load management funding to pre-2003 levels; and
- maintaining regional transmission systems to accommodate high demand during adverse weather conditions.

Refinement of policy may also be warranted in the following areas, as Connecticut's role is better defined by market conditions:

- fuel - encouragement of fuel diversity, including more dual-fuel capability as well as developing renewable alternative fuel facilities;
- fuel storage - incentives for back-up fuel storage;
- interconnection - maintain and expand connections with adjacent electric systems for reliability;
- local generation - encouragement of distributed energy at load centers;
- planning - continued forecast modeling for electric supply, demand, and transmission;
- regulation - streamlined siting for regional generation, electric transmission, and gas pipelines;
- education - continued education on all elements of electric restructuring, supply options, and market-based decisions; and
- conservation and load management and energy efficiency - refined policies as well as education to provide economic alternatives to reduce energy consumption.

In addition, market mechanisms need to be assessed and applied to planning strategies to determine if there are sufficient incentives to ensure an adequate supply of generation and demand-side resources to provide reliable service.

Appendix A
Existing Electric Generation Facilities
as of August, 2004

Facility	Owner	Town	Fuel	Summer Rating	Winter Rating
AES Thames	AES Thames, Inc.	Montville	Coal/Oil	181.00	182.15
Aetna Capitol District	Capitol District Energy Ctr.	Hartford	Gas/Oil	51.69	57.77
Bantam #1	NGC	Litchfield	Hydro	0.07	0.32
Branford #10	NRG	Branford	Oil	16.17	21.28
Bridgeport Energy	Bridgeport Energy LLC	Bridgeport	Gas	453.67	532.92
Bridgeport Harbor #2	PSEG Power, LLC	Bridgeport	Oil	130.50	147.97
Bridgeport Harbor #3	PSEG Power, LLC	Bridgeport	Coal/Oil	372.21	370.37
Bridgeport Harbor #4	PSEG Power, LLC	Bridgeport	Oil	9.92	14.72
Bridgeport Resco	CRRA	Bridgeport	Refuse	58.71	58.74
Bristol RRF	Ogden Martin Systems-CT	Bristol	Refuse/Oil	13.20	12.74
Bulls Bridge #1- #6	NGC	New Milford	Hydro	8.40	8.40
C. H. Dexter	Alstom	Windsor Locks	Gas/Oil	38.00	39.00
Colebrook	MDC	Colebrook	Hydro	1.37	1.37
Cos Cob #10	NRG	Greenwich	Oil	17.88	22.78
Cos Cob #11	NRG	Greenwich	Oil	18.24	23.23
Cos Cob #12	NRG	Greenwich	Oil	18.44	23.34
Dayville Pond	Summit Hydro Power	Killingly	Hydro	0.06	0.06
Derby Dam	McCallum Enterprises	Shelton	Hydro	7.05	7.05
Devon #7	NRG	Milford	Oil/Gas	107.00	109.00
Devon #11	NRG	Milford	Gas/Oil	29.58	39.10
Devon #12	NRG	Milford	Gas/Oil	29.24	38.45
Devon #13	NRG	Milford	Gas/Oil	33.33	42.33
Devon #14	NRG	Milford	Gas/Oil	29.62	40.19
Exeter	Oxford Energy, Inc.	Sterling	Tires/Oil	26.00	25.66
Falls Village #1- #3	NGC	Canaan	Hydro	9.76	11.00
Franklin Drive #10	NRG	Torrington	Oil	15.42	20.53
Glen Falls	Summit Hydro Power	Plainfield	Hydro	0.10	0.10
Goodwin Dam	MDC	Hartland	Hydro	2.06	2.06
Hartford Landfill	CRRA	Hartford	Methane	2.56	2.56
Kinneytown A	Kinneytown Hydro Co.	Ansonia	Hydro	0.25	0.25
Kinneytown B	Kinneytown Hydro Co.	Seymour	Hydro	0.65	0.65
Lake Road #1	Lake Road Generating Co., L.P.	Killingly	Gas/Oil	250.33	285.95
Lake Road #2	Lake Road Generating Co., L.P.	Killingly	Gas/Oil	223.36	258.98

Appendix A
Existing Electric Generation Facilities
as of August, 2004

Facility	Owner	Town	Fuel	Summer Rating	Winter Rating
Lake Road 3	Lake Road Generating Co., L.P.	Killingly	Gas/Oil	252.63	288.25
Lisbon RRF	Riley Energy Systems	Lisbon	Refuse	12.96	13.04
Mechanicsville	Saywatt Hydro Associates	Thompson	Hydro	0.10	0.10
Middletown #2	NRG	Middletown	Oil/Gas	117.00	120.00
Middletown #3	NRG	Middletown	Oil/Gas	236.00	245.00
Middletown #4	NRG	Middletown	Oil	400.00	402.00
Middletown #10	NRG	Middletown	Oil	17.12	22.02
Milford Power 1	Milford Power Company, LLC	Milford	Gas/Oil	234.00	267.24
Milford Power 2	Milford Power Company, LLC	Milford	Gas/Oil	250.53	288.04
Millstone #2	Dominion Nuclear CT, Inc.	Waterford	Nuclear	882.14	881.96
Millstone #3	Dominion Nuclear CT, Inc.	Waterford	Nuclear	1155.00	1155.48
Montville #5	NRG	Montville	Oil/Gas	81.00	81.59
Montville #6	NRG	Montville	Oil	407.40	409.91
Montville #10 & #11	NRG	Montville	Oil	5.30	5.35
New Haven Harbor #1	PSEG Power, LLC	New Haven	Oil/Gas	447.89	454.64
New Milford Landfill	Vermont Electric Power Company	New Milford	Methane/Oil	3.01	3.01
Norwalk Harbor #1	NRG	Norwalk	Oil	162.00	164.00
Norwalk Harbor #2	NRG	Norwalk	Oil	168.00	172.00
Norwalk Harbor #10 (3)	NRG	Norwalk	Oil	11.93	17.13
Norwich 2nd St./Greenville Dam	CMEEC	Norwich	Hydro	0.95	0.95
Norwich 10th St.	CMEEC	Norwich	Hydro	0.98	1.17
Norwich Jet	CMEEC	Norwich	Oil	15.26	18.80
Pinchbeck	William Pinchbeck, Inc.	Guilford	Wood	0.01	0.01
PPL Wallingford Unit #1	PPL EnergyPlus, LLC	Wallingford	Gas	43.50	48.95
PPL Wallingford Unit #2	PPL EnergyPlus, LLC	Wallingford	Gas	44.34	55.34
PPL Wallingford Unit #3	PPL EnergyPlus, LLC	Wallingford	Gas	44.31	49.20
PPL Wallingford Unit #4	PPL EnergyPlus, LLC	Wallingford	Gas	44.51	49.79
PPL Wallingford Unit #5	PPL EnergyPlus, LLC	Wallingford	Gas	43.54	54.54
Preston RRF	SCRRF	Preston	Refuse/Oil	16.01	16.95
Putnam	Putnam Hydropower, Inc.	Putnam	Hydro	0.58	0.58
Quinebaug	Quinebaug Associates LLC	Killingly	Hydro	0.98	2.81
Rainbow Dam	Farmington River Power Co.	Windsor	Hydro	8.20	8.20
Robertsville #1- #2	NGC	Colebrook	Hydro	0.32	0.62

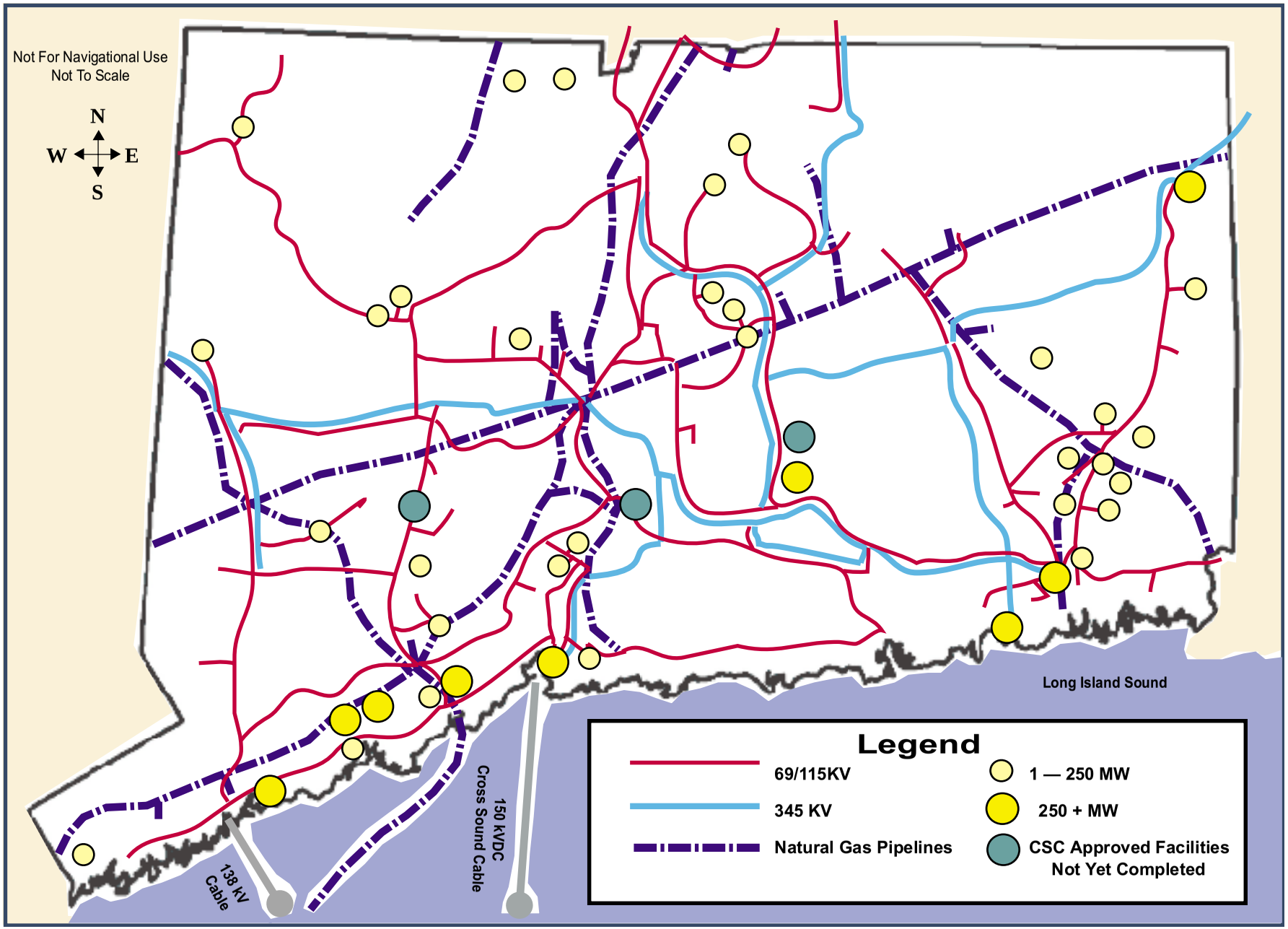
Appendix A
Existing Electric Generation Facilities
as of August, 2004

Facility	Owner	Town	Fuel	Summer Rating	Winter Rating
Rocky Glen	Rocky Glen Hydro LP	Newtown	Hydro	0.04	0.04
Rocky River	NGC	New Milford	Hydro-pump strg.	29.17	29.01
Scotland #1	NGC	Windham	Hydro	1.69	2.20
Shepaug #1	NGC	Southbury	Hydro	41.51	42.56
South Meadow #5	CRRA	Hartford	Refuse	25.60	29.23
South Meadow #6	CRRA	Hartford	Refuse	27.11	30.45
South Meadow #11	NGC	Hartford	Oil	35.78	46.92
South Meadow #12	NGC	Hartford	Oil	37.70	47.87
South Meadow #13	NGC	Hartford	Oil	38.32	47.92
South Meadow #14	NGC	Hartford	Oil	37.35	47.35
Stevenson #1- #4	NGC	Monroe	Hydro	28.31	28.90
Taftville #1- #5	NGC	Norwich	Hydro	2.03	2.03
Torrington Terminal #10	NRG	Torrington	Oil	15.85	20.96
Toutant	Toutant Hydro Power, Inc.	Putnam	Hydro	0.16	0.16
Tunnel #1- #2	NGC	Preston	Hydro	1.53	2.10
Tunnel #10	NGC	Preston	Oil	15.89	20.76
Wallingford RRF	CRRA	Wallingford	Refuse/Oil	6.35	6.90
Willimantic 1	Willimantic Power Corp.	Willimantic	Hydro	0.42	0.42
Willimantic 2	Willimantic Power Corp.	Willimantic	Hydro	0.39	0.39
Wyre Wynd	Summit Hydro Power	Griswold	Hydro	1.80	1.80
	Seasonal Claimed Capability of coal-fired plants			553.21	552.52
	Seasonal Claimed Capability of natural gas-fired plants			2096.18	2436.04
	Seasonal Claimed Capability of oil-fired plants			2583.36	2727.07
	Seasonal Claimed Capability of hydroelectric plants			148.93	155.30
	Seasonal Claimed Capability of methane-fired plants			5.57	5.57
	Seasonal Claimed Capability of nuclear plants			2037.14	2037.44
	Seasonal Claimed Capability of refuse-fueled plants (inc. tires)			185.94	193.71
	Seasonal Claimed Capability of wood-fired plants			0.01	0.01
	Total Seasonal Claimed Capability available for dispatch to the electric grid.			**7610.34**	**8107.66**

Appendix A
Existing Electric Generation Facilities
as of April, 2004

Facility	Owner	Town	Fuel	Summer Rating	Winter Rating
Connecticut Valley Hospital	State of Connecticut	Middletown	Oil	2.05	2.05
Fairfield Hills Hospital	Fairfield Hills Hospital	Newtown	Oil	3.95	3.95
Federal Paper Board	Federal Paper Board	Sprague	Oil	9.00	9.00
Fishers Island Elec. Co.	Fishers Island Elec. Co.	Groton	Oil	1.10	1.10
Groton Sub Base	U.S. Navy	Groton	Oil/Gas	18.50	18.50
Loctite	Loctite	Rocky Hill	Gas	1.18	1.18
Norwalk Hospital	Norwalk Hospital	Norwalk	Gas	2.36	2.36
Norwich State Hospital	Norwich State Hospital	Norwich	Oil	2.00	2.00
Pfizer (consist of five units)	Pfizer	Groton	Oil	29.50	29.50
Pratt & Whitney	UTC	E. Hartford	Gas	23.80	23.80
Pratt & Whitney	UTC	Middletown	Oil	1.00	1.00
Smurfit-Stone Container Co.	Smurfit-Stone Container Co.	Montville	Refuse	2.00	2.00
Southbury Training School	State of Connecticut	Southbury	Oil	1.50	1.50
	Total Natural Gas-fired Generation less than 1 MW each			4.41	4.41
	Total Propane-fired Generation less than 1 MW each			0.03	0.03
	Total Hydroelectric Generation less than 1 MW each			2.21	2.21
	Total Methane-fueled Generation less than 1 MW each			0.13	0.13
	Total Solar (photovoltaic) Generation less than 1 MW each			0.15	0.15
	Total Wind-powered Generation less than 1 MW each			0.05	0.05
	Generation retained by facility			**104.92**	**104.92**
	Total MWs of generation in Connecticut.			**7715.26**	**8212.58**

Appendix B
State of Connecticut
Existing Energy Infrastructure
As of January 2004



Appendix C
Planned
Transmission Lines in Connecticut

Planned Transmission Lines in Connecticut	Length (miles)	Voltage (kV)	Expected Date to be In Service
Plumtree S/S, Bethel - Norwalk S/S, Norwalk (new) (approved in Council Docket No. 217)	8.6	345	2005
Plumtree S/S, Bethel - Norwalk S/S, Norwalk (new) (approved in Council Docket No. 217)	11.8	345	2005
Plumtree S/S, Bethel - Norwalk S/S, Norwalk (reconfigure 1470/1565 lines) (approved in Council Docket No. 217)	1.3	115	2005
Plumtree S/S, Bethel - Norwalk S/S, Norwalk (reconfigure 1470/1565 lines) (approved in Council Docket No. 217)	10.0	115	2005
Norwalk Harbor Station, Norwalk - Northport Station, Northport, NY (replace) (approved in Council Docket No. 224)	5.8	138	TBD*
East Devon S/S, Milford - Singer S/S, Bridgeport (new substations and line)	3.1	345	2007
Singer S/S, Bridgeport - Norwalk S/S, Norwalk (new substation and line)	15.5	345	2007
Devon S/S, Milford - Wallingford Station, Wallingford #1640 line (rebuild portion of line)	27	115	2007
Devon S/S, Milford - June St. S/S, Woodbridge #1685 line (rebuild portion of line)	13.4	115	2007
North Haven S/S, North Haven - Wallingford Station, Wallingford #1630 line (rebuild portion of line)	0.3	115	2007
North Haven S/S, North Haven - Branford S/S, Branford #1655 line (rebuild portion of line)	1.3	115	2007
East Devon S/S, Milford - Devon S/S, Milford (new)	1.3	115	2007
East Meriden S/S, Meriden - North Wallingford S/S, Wallingford #1466 line (rebuild portion of line)	1.4	115	2007
June St. S/S, Woodbridge - Southington S/S, Southington #1610 line (rebuild portion of line)	10.5	115	2007
Devon S/S, Milford - Devon Switching Station, Milford (rebuild)	0.1	115	2007
Devon S/S, Milford - Devon Switching Station, Milford (rebuild)	0.1	115	2007
Southington S/S, Southington - Wallingford S/S, Wallingford #1208 line (rebuild portion of line)	2.9	115	2007
Devon S/S, Milford - Derby Junction, Shelton - Beacon Falls, S/S, Beacon Falls #1570 line (reconductor portion of line)	3.8	115	2007
Bunker Hill S/S, Waterbury - Baldwin Junction, Waterbury - Beacon Falls S/S, Beacon Falls #1575 line (reconductor portion of line)	3.8	115	2007
Devon S/S, Milford - Lucchini Junction, Meriden - Southington S/S, Southington #1690 line (remove portion of line)	23.9	115	2007
Scovill Rock S/S, Middletown - Chestnut Junction, Middletown (new)	2.6	345	2007
OxBow Junction, Haddam - Beseck S/S, Wallingford (new switchyard and line)	7.0	345	2007
Black Pond Junction, Middlefield - Beseck S/S, Wallingford (new switchyard and line)	2.8	345	2007
Black Pond Junction, Middlefield - Beseck S/S, Wallingford (new switchyard and line)	2.8	345	2007
Beseck S/S, Wallingford - East Devon S/S, Milford (new switchyard, substation and line)	33.4	345	2007
Hadam S/S - East Meriden S/S, Meriden #1975 line (rebuild portion of line)	8.4	115	2007
Glenbrook S/S, Stamford - Glenbrook Junction, Stamford (new)	0.1	115	2004
Card S/S, Lebanon - Lake Road Station, Killingly (new)	29.2	345	2008
Lake Road Station, Killingly - Sherman Road S/S, R.I. (new)	7.6	345	2008
Tunnel S/S, Preston - Ledyard Junction, Ledyard (rebuild & upgrade to 115-kV)	8.5	69	2012
Ledyard Junction, Ledyard - Gales Ferry S/S, Ledyard (upgrade to 115-kV)	1.6	69	2012
Gales Ferry S/S, Ledyard - Montville Station, Montville (upgrade to 115-kV)	2.4	69	2012

Appendix C
Planned
Transmission Lines in Connecticut

Planned Transmission Lines in Connecticut	Length (miles)	Voltage (kV)	Expected Date to be In Service
Ledyard Junction, Ledyard - Buddington S/S, Groton (upgrade to 115-kV)	4.7	69	2012
Card S/S, Lebanon - Wawacus Junction, Bozrah (rebuild)	12.7	115	2012
Norwalk S/S, Norwalk - Glenbrook S/S, Stamford circuit #1 (new)	8.1	115	2007
Norwalk S/S, Norwalk - Glenbrook S/S, Stamford circuit #2 (new)	8.1	115	2007
Norwalk Harbor Station, Norwalk - Glenbrook S/S, Stamford (new)	9.2	115	2007
Manchester S/S, Manchester - Hopewell S/S, Glastonbury (reconductor)	7.0	115	2005
East Meriden S/S, Meriden - North Wallingford S/S, Wallingford #1466 line (reconductor portion of line)	0.5	115	2009
Schwab Junction, Wallingford - Colony S/S, Wallingford (new)	1.5	115	2010
Manchester S/S, Manchester - Wapping Junction, South Windsor (rebuild)	5.1	115	2006
Wapping Junction, South Windsor - Barbour Hill S/S, South Windsor (rebuild)	2.4	115	2006
Plumtree S/S, Bethel - Triangle S/S, Danbury (rebuild)	1.8	115	2006
Plumtree S/S, Bethel - Triangle S/S, Danbury (rebuild)	1.8	115	2006
South End S/S, Stamford - Tomac S/S, Greenwich #1750 line (reconductor portion of line)	0.4	115	2009
Southington S/S, Southington - Schwab Junction, Wallingford (unbundle/rebuild)	6.3	115	2010
Frost Bridge S/S, Watertown - Walnut Junction, Thomaston (new)	6.4	115	2008
Frost Bridge S/S, Watertown - Campville S/S, Harwinton (rebuild)	10.3	115	2008
Farmington S/S, Farmington - Newington S/S, Newington (rebuild)	3.6	115	2008

* The in-service date is subject to completion of contractual arrangements with Long Island Power Authority (LIPA).

The members of the Council for energy and telecommunications matters are the following:

• Pamela B. Katz, P.E. is the chair of the agency appointed by the Governor. Ms. Katz is an Environmental and Safety Consultant; Professional Engineer; Certified Safety Professional; Licensed Environmental Professional; former Selectman, former Conservation Commission Chairman and present Planning Commissioner - Town of Simsbury; former Board member of Connecticut Resource Recovery Authority; and former Board member of Farmington Valley Health District.

• Colin C. Tait, Esq., is the vice-chair of the agency appointed by the Governor. Professor Tait is a law professor at the University of Connecticut Law School (teaching environmental and energy law); President of Norfolk Land Trust; past Chairman, Planning and Zoning Commissions, Towns of New Hartford and Colebrook; past member, Colebrook Inland Wetland Agency, Norfolk Planning and Zoning; and past member of the Appalachian Trail Conference Board of Managers.

• Gerald J. Heffernan is the designee for Chairman Donald W. Downes of the Department of Public Utility Control. Mr. Heffernan is the current Chairman of the Naugatuck Valley Revolving Loan Committee; member of the Board of Directors of Catholic Family Services; former supervisor of the Department of Public Utility Control's Management Audit Unit (for approximately 20 years); and former tax commissioner (1975-1979).

• Brian Emerick is the designee for the Commissioner of the Department of Environmental Protection (DEP). Mr. Emerick is a Supervising Environmental Analyst at DEP. Mr. Emerick has been employed by DEP for approximately 25 years.

• Brian O'Neil is appointed by the speaker of the House. Mr. O'Neil is the President of Maiden America, Inc.; member of the Stamford Board of Representatives; member of the Connecticut Greenways Council; member of the Mianus Greenways Coalition; former Vice Chairman of the Stamford Historic Neighborhood Preservation Program; member of the Fort Stamford Preservation Coalition; and former Board member of the Stamford Historical Society.

• Daniel P. Lynch is appointed by the president pro tempore of the Senate. Mr. Lynch is Chairman of the Board of Cash Can Inc.; Vice President of Redemption Unlimited; Treasurer of the Connecticut Redemption Association; consultant to the LHR International Trading, LLC; volunteer consultant to the Nutmeg State Games; and former member of the Connecticut Siting Council (1988-1995.)

• Philip T. Ashton is a member with utility experience appointed by the Governor. Mr. Ashton is a retired Chairman, President and CEO of Yankee Energy System; former Vice President, Transmission and Distribution, Northeast Utilities; Professional Engineer (Massachusetts and formerly Connecticut); Chairman, Meriden Flood Control Implementation Agency; Director and past Chapter Chairman, American Red Cross-Greater Hartford Chapter; former Chairman, Meriden Planning Commission; former Advisor on Energy to the U.S. Trade Representative; former Chairman, New England Gas Association; former Director, American Gas Association; and former Vice President, Power Engineering Society of the Institute of Electrical and Electronic Engineers (IEEE).

• Edward J. Wilensky is a member appointed by the Governor with experience in ecology. Mr. Wilensky is a former mayor of the Town of Wolcott (1983-1999); past Chairman of Bristol Resource Recovery Authority; past Chairman of Central Naugatuck Valley Council of Governments; past Vice Chairman of Connecticut Conference of Municipalities; former member of Governor's Task Force on Aquifer Management; former member of Board of Directors for Tunxis Recycling Operating Committee; former Chairman of Wolcott Planning and Zoning Commisson; former member of Board of Directors for Connecticut Interlocal Risk Management Agency (CIRMA).

• James J. Murphy, Jr. is appointed by the Governor. Attorney Murphy is Counsel at the law firm Berberick, Murphy & Whitty, P.C.; former State Senator, 19th District; former State Assistant Prosecutor, 10th Circuit Court; former State of Connecticut Criminal Justice Commission Chairman; former Board of Directors member, Eastern Connecticut Chamber of Commerce; Chairman, Stonington Board of Education; Exalted Ruler of the Norwich Lodge of Elks; and W.W. Backus Hospital Incorporator.

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