APPENDIX A: NEW YORK GAS AND ELECTRIC SYSTEM INFRASTRUCTURE

A-1. GAS INFRASTRUCTURE

The gas industry infrastructure in New York consists of eight interstate US pipelines and one intrastate pipeline [33]; thirteen gas distribution companies [34] (commonly referred to as LDCs); and local gas production and storage facilities.

INTERSTATE PIPELINES SERVING NEW YORK

All of the pipelines in the state were included in the analysis. The geographic territories of the pipelines vary widely. By virtue of these pipelines, New York has a diversified supply mix, receiving gas from US production in the Southwest, the Gulf Coast and Appalachia as well as New York; Canadian supplies from both western and eastern basins; and small amounts of imported liquefied natural gas (LNG) from various foreign sources (delivered via exchange/displacement from New England).

Three of the pipelines serve only the upstate area, three serve only the downstate area and four serve both. The pipelines are listed below by the areas they serve.

Table A1
Pipelines Serving New York State by Region
(As of January 1, 2002)

Upstate Only	Both regions	Downstate Only
Dominion Transmission	Columbia Gas Transmission	Algonquin Gas Transmission
Empire Transmission	Iroquois Gas Transmission	Texas Eastern Transmission
National Fuel Gas Supply	Tennessee Gas Pipeline	Transcontinental Gas Pipeline
	Trans Canada Pipeline (at international borders)	

New York has a very limited amount of in-state storage, most of which comes from LNG facilities within the LDCs. The Stagecoach project will add some new high-deliverability, underground storage.

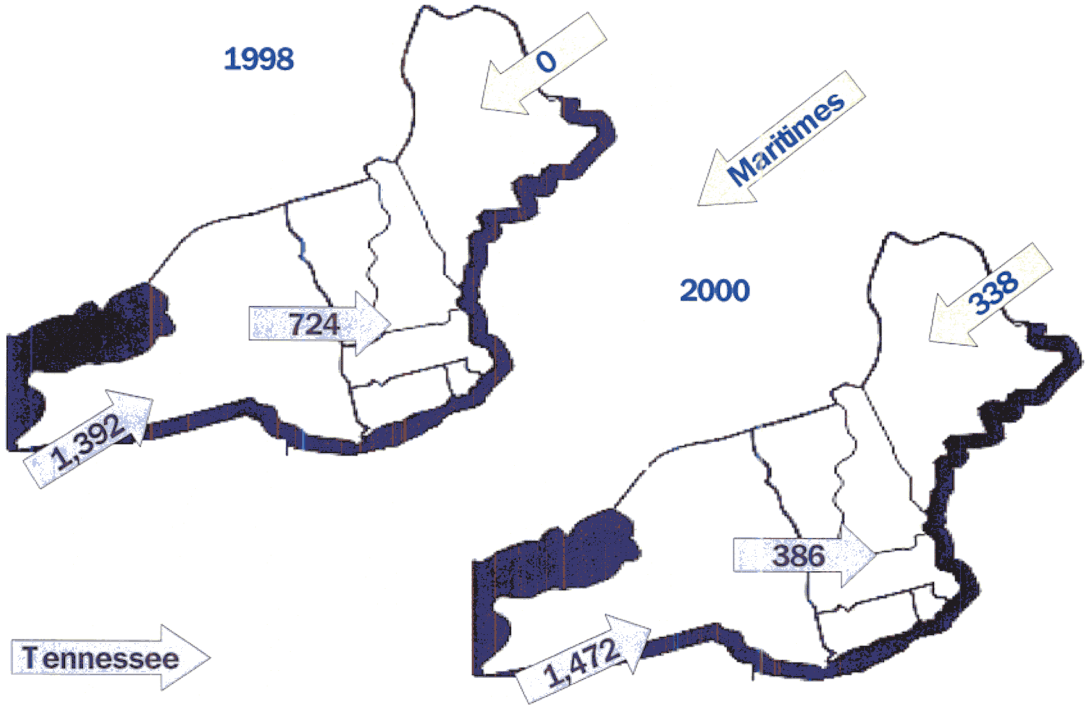
[33] A second intrastate pipeline, North Country Pipeline was excluded from the analysis. The power load served by North Country (Saranac) was included within our analysis as part of NYSEG.
[34] Three very small LDCs were excluded from the analysis, Woodhull and Filmore (both municipal companies) and Corning Natural Gas.

The pipelines serving New York and New England traditionally have been long haul transmission lines, with ultimate supplies coming from the U.S. Southwest and Gulf Coast as well as Western Canada (and some small quantities of Appalachian production). For this reason, the Northeast was always at the farthest end of the pipe, with the commensurate high cost and limited flexibility. All of the gas that entered the region stayed in the region. No other region's capacity could be diverted to the Northeast to provide even temporary relief for any "crisis." As a consequence, the capacity in the region was limited to what the region both needed and was willing to pay for.

With the advent of U.S. imports from the Sable Island production (offshore Nova Scotia), the Northeast finally had relatively short haul production from the north that greatly expanded both the pipeline delivery capacity, as well as the supply of gas in the region and enhanced the flexibility of pipeline deliveries. These incremental pipeline flows not only supplied new markets (*e.g.*, new combined cycle electric generators in New England), but also offloaded pipeline capacity coming from the south so that capacity might be used in other areas. Sable Island gas does reach into New York occasionally. Much more importantly, however, is the fact that it meets some of New England's market requirements, thereby allowing the pipeline capacity that flows through New York (to New England) to be utilized in New York, if needed. This displacement effect (illustrated in Figure A1) is of greater regional consequence than the actual volume itself.

Figure A1

Volumes on Maritimes & Northeast are Displacing Flows on Tennessee into New England (MMcf/d)



A-2 ELECTRIC INFRASTRUCTURE

ELECTRICITY DEMAND AND SUPPLY SITUATION IN THE NORTHEAST

Table A2 shows New York summer and winter peak demands for the previous ten years, as reported in the NYISO Load and Capacity Data report for 2001 (the Gold Book). Summer peak loads in New York have grown to just over 30,000 MW. Winter peak loads are typically about 5,000 MW below the summer peak.

Table A-2

New York Summer and Winter Peak Demands

Year	Summer Peak (MW)	Winter Peak (MW)
1991	26,839	22,981
1992	24,951	22,704
1993	27,136	23,810
1994	27,062	23,343
1995	27,206	23,508
1996	25,587	22,728
1997	28,700	22,568
1998	28,160	23,879
1999	30,311	24,051
2000	28,138	23,764

According the NYISO Locational Installed Capacity Requirements Study for the 2002-2003 Capability Year (dated 14 March 2002), peak demand for 2002 is forecasted to be 30,475 MW. Peak summer electricity demand for NYCA is forecasted to grow at an annual rate of 1.3% between 2002 and 2005 – just under 400 MW per year. In contrast, winter peak loads are only forecast to grow at approximately 200 MW per year over the same period.

Similar growth rates are forecasted for surrounding markets:

- ISO-NE – Actual 2001 summer peak load in New England was approximately 25,000 MW, which translated to 23,790 MW on a weather-normalized basis. Summer peak loads are forecasted to grow at a rate slightly above those in New York--at 1.6% per year (or approximately 400 MW per year). Winter peak load is forecasted to grow at 1.3% (or 300 MW per year) for the next ten years.

- PJM—with an actual 2001 Summer peak load of approximately 54,000 MW, PJM loads are forecasted to grow at a rate comparable to loads in New York. Summer peak load is forecasted to grow at 1.5% per year (or approximately 800 MW per year) and Winter peak load is forecasted to grow at 1.4% (or 650 MW per year) for the next ten years.

Specific load forecasts for the ISO-NE and PJM markets are shown in Table A3.

Table A-3

Forecasted NEPOOL Peak Loads

Summer Peak Load (MW)												
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2015	2020
Load	23,650	24,140	24,493	24,860	25,308	25,718	26,012	26,377	26,724	27,075	36,300	37,870
Winter Peak Load (MW)												
	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2015-16	2020-21
Load	21,485	21,775	22,105	22,480	22,823	23,102	23,438	23,712	24,013	24,317	27,700	28,800

Source: 2001 CELT Report

Forecasted PJM Peak Loads

Summer Peak Load (MW)												
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2015	2020
Load	51,358	52,134	53,025	53,882	54,793	55,730	56,567	57,437	58,249	59,073	36,300	37,870
Winter Peak Load (MW)												
	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2015-16	2020-21
Load	43,110	43,763	44,378	45,025	45,669	46,283	46,903	47,533	48,120	48,749	27,700	28,800

Source: 2001 MACC Report

Growth in electricity generating capacity in ISO-NE and PJM will significantly outpace the growth in forecasted demands over the next several years. As listed in Table 2 below, this analysis includes approximately 10,300 MW of new capacity that is assumed to be added in ISO-NE between 1999 and 2003 and approximately 9,400 MW in PJM over basically the same time period. Virtually all of the units included in ISO-NE are either operating or currently under construction and nearly all of the additions listed for PJM are in operation or under construction. It is assumed that all of the units will finish construction and enter service as scheduled.

Table 2

ISO-NE New Capacity Additions

Unit Name	Installation Date	Winter Capacity (MW)
Dighton (CPN)	6/1/99	169
Bridgeport Harbor Station	7/1/99	520
Androscoggin Energy Center (Jay)	11/1/99	165
Maine Independent Station (Veazie)	5/1/00	520
Berkshire Power (Agawam)	6/1/00	272
Bucksport Cogen	6/1/00	174
Rumsford (CPN)	6/1/00	265
Tiverton Power Plant	6/1/00	265
Millenium Power Partners (Charlton)	11/1/00	360
Calpine Westbrook Power	3/1/01	540
Blackstone (AMNAPO)	5/1/01	580
Milford (EPPSCO) 2	5/1/01	272
Milford (EPPSCO) 1	5/1/01	272
Wallingford CC	6/1/01	250
Lake Road (Killingly)	10/1/01	792
Kendall Square (Cambridge)	12/1/01	263
ANP Bellingham	2/1/02	580
Mystic Station Expan CC8	3/1/02	775
Mystic Station Expan CC9	3/1/02	775
Fore River (Weymouth)	6/1/02	750
AES Londonderry	6/1/02	720
Newington CC (COEDDE)	6/1/02	525
RI Hope Energy (Johnston)	7/1/02	522
Total		**10,326**

PJM New Capacity Additions

Unit Name	Installation Date	Winter Capacity (MW)
AES CT in Accomac County 1	9/1/00	135
Burlington PSEG Power	10/1/00	186
Linden (PSEG)	10/1/00	160
Connectiv Hay Road Wilmington	1/1/01	333
AES Iron Wood NUG	1/1/01	700
AES CT in Accomac County 2	6/1/01	165
Hunlock Creek CT	6/1/01	44
Kraft Foods Coger	6/30/01	88
Rockland Township	7/1/01	250
Archbald CT PEI Power	8/1/01	45
Liberty at Eddystone	10/1/01	170
AES Red Oak (Sayerville)	11/1/01	100
Calpine plant at Ontelanee	11/1/01	170
Williams Hazelton PA	1/1/02	568
Bergen PSEG Power	5/1/02	545
East Coast Power -- Linden	5/1/02	500
Kelson Ridge CC Phase 1	6/1/02	830
Linden CC1 PSEG Power	1/1/03	550
Linden CC2 PSEG Power	5/1/03	593
Marcus Hook Refinery	5/1/03	593
Cecil County	6/1/03	563
Hunterstown, Gettysbug PA	6/1/03	800
Marcus Hook Refinery	1/1/04	725
Hay Road Conversion to CC	1/1/04	550
Total		**9,363**

New capacity additions in New York State are not, in general, as far along the construction time line as those in the adjacent markets. Planned new capacity additions for New York are shown in Table 1 in the body of this report. Most of the capacity additions planned for the NYCA are scheduled for service beginning in 2004 or after – with only the NYPA combustion turbines and re-activated steam units currently in operation, and the LIPA "Powering Long Island" gas turbine projects scheduled to come on-line this summer.

Of the planned capacity additions, only the Athens project is currently under construction. However, several of the projects have met the requirements of Article X of the New York State Public Service Law. Article X sets forth a review process for consideration of any application to construct and operate an electric generating facility with a capacity of 80 megawatts or more. An applicant must meet Article X requirements to obtain the Certificate of Environmental Compatibility and Public Need (Certificate) that is needed before construction of such a facility can begin. Any application filed under Article X is evaluated by the New York State Board on Electric Generation Siting and the Environment (Siting Board).

Additional power will be available to New York via a 330 MW underwater HVDC cable between Connecticut and Long Island currently under construction.