New York State Energy Plan and Final Environmental Impact Statement

November 1998

George E. Pataki, Governor

New York State Energy Planning Board

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NEW YORK STATE ENERGY PLAN

and

FINAL ENVIRONMENTAL IMPACT STATEMENT

New York State
Energy Planning Board

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SECTION 1.1

EXECUTIVE SUMMARY

The use of energy has a profound impact on New York State's economy and its environmental quality. New Yorkers spend over $33 billion annually to meet their energy needs - the equivalent of over $1,800 for every man, woman, and child in the State. A variety of energy products fuel the State's economy, enabling New York to use its own indigenous resources, its skilled workforce, and its substantial infrastructure to produce many valuable goods and services. At the same time, the production and use of energy has a significant impact on the State's air, land, and water resources, requiring New York to consider the environmental implications of its energy decisions.

The New York State Energy Planning Board releases the State Energy Plan (SEP) recognizing the effect energy use has on the State's economy and environment, and that energy markets in New York and throughout the nation are changing dramatically. The SEP is intended to provide strategic direction and policy guidance, and to coordinate State government's activities and responses to the fundamental changes that will occur over the next several years.

Changes occurring in the energy market are giving consumers greater opportunity to choose energy suppliers and lower costs, thus providing the economic stimulus necessary to allow New York to improve its competitive position in regional, national, and international markets. Moreover, encouraging energy efficiency and sustainable development of New York's natural resources, maintaining a well-functioning transportation system, and improving environmental quality will stimulate new business opportunities and put New York on the path to enhancing its economic health and environmental well-being well into the next century.

Governor Pataki's commitment to reduce energy costs by lowering taxes, streamlining and eliminating unnecessary regulations, and providing electricity and natural gas customers with greater choice underpins New York's energy strategy. In concert with these efforts, New York is pursuing market-based and flexible approaches to achieving environmental quality objectives and improving its transportation system to move people and goods more efficiently. Properly functioning markets will also promote technological

innovation, and deliver new, more energy efficient products and services to consumers at competitive prices.

In addition to fostering competition in natural gas and electricity, Governor Pataki has moved to cut base rates for these services. Opening the natural gas market to competition has resulted in gas cost savings to an expanding pool of customers purchasing gas on a market basis. The base rates of most gas utilities have been frozen for several years and some rates have been decreased in the process, thus providing additional savings. Electric rates have also been reduced. As a result of restructuring agreements reached with the State's electric utilities, revenues will be reduced over the next five years by a projected $4.6 billion Statewide, resulting in rates that are on average 9.7% lower in 2002 than 1997 rates.

The reductions, along with the Governor's actions to improve the State's business climate, will promote economic development and job growth in the State. Electricity rates for industrial customers will be dramatically reduced toward the national average under the restructuring agreements, and new, low-cost supplies are being made available for economic development under numerous programs, including the "Power for Jobs" program. The resulting increase in economic activity will help keep New York competitive in the global economy.

The 1998 SEP is a departure from past energy plans. It provides broad energy policy direction rather than dictating a host of specific government actions, in part because of the rapid changes occurring in energy markets and industries. The policy goals identified in this SEP are designed to support efficient and effective competition in energy industries and to ensure the benefits of competition and consumer choice are available to all New Yorkers.

Specifically, this SEP advances strategies and policies designed to:

- Allow consumers to make their own energy choices by providing them with accurate information and access to safe, adequate, and reliable energy products, services, and systems.
- Ensure that energy suppliers and consumers are afforded non-discriminatory access to energy transmission, transportation, and local distribution systems.
- Promote continued economic growth and the development of energy industries within the State that create and retain jobs.

- Allow consumers to enter and exit energy markets more freely, but with safeguards that ensure system reliability and equitable cost-sharing, guard against unfair business practices and discriminatory or predatory behavior, and protect against arbitrary service shut-off.
- Encourage transportation choices that promote mobility and reduce congestion.
- Promote a clean and healthy environment for all New Yorkers.

The Energy Planning Board released the Draft SEP for public review and comment on May 12, 1998. Staff from the Energy Planning Board agencies held a public briefing on the analyses underlying the development of the draft Plan in Albany on June 10, 1998. Five hearings were held in Albany, Buffalo, Mineola, New York City, and Syracuse during June and July of 1998 to receive public comments on the Plan. Written comments were received through July 27, 1998. A total of 340 comments were received from 46 individuals and organizations on the draft SEP.

The members of the Energy Planning Board appreciate the time and effort by the individuals and organizations who appeared at the public comment hearings or submitted comments on the draft SEP. The Energy Planning Board has carefully reviewed and weighed the comments received on the draft SEP and, where appropriate, has revised the SEP to reflect those comments and observations.

Plan Organization

The SEP is organized into four sections. Section 1.0 presents the Board's energy policies and long-range planning objectives and strategies. Section 2.0 presents the six issues the Board identified in 1997, after public notice and comment, for the draft SEP to address. Section 3.0 provides energy supply assessments required by statute for electricity, natural gas, petroleum, and coal, and assessments of the potential for energy efficiency and renewable energy resources to meet a portion of New York's future energy requirements. Section 4.0 identifies the parts of this plan that comprise the final generic environmental impact statement under the State Environmental Quality Review Act (SEQRA). Section 5 summarizes the comments received regarding policies, strategies, recommendations, and analyses contained in the draft SEP and lists the individuals or organizations which provided comments.

This SEP meets the requirements of Article 6 of New York's Energy Law, and contains: a statement of the State's energy policies and long-range planning objectives and strategies; forecasts of energy demand and

price; and an assessment of available supplies to meet anticipated future energy demand. The SEP also provides policy guidance for energy-related decisions to be made in the public and private sectors of the State.

Issue Report Findings

Factors that Affect Energy Prices

- New York's energy prices for all fuels have been historically higher than national average prices, and price differentials have widened over the past decade. This occurrence is a major stimulus in driving New York to introduce greater competition and consumer choice.

- Price differentials have been larger for electricity than for other fuels. New York's average electricity price is higher than the average price in 11 states studied. New York's higher average price is driven by a combination of factors, including higher state and local taxes, wage and benefit costs, capital costs, operation and maintenance costs, and fuel and purchased power costs.

- New York's average gasoline and diesel fuel prices have been higher than those in most of the other states studied, due largely to the imposition of a State sales tax on gasoline and diesel fuel. New York's average home heating oil price is higher than the price in any other eastern state studied, due largely to the higher cost of doing business in New York, including higher wages and local property taxes. New York's average commercial distillate oil prices are higher than prices in all other states studied, due largely to the State's Petroleum Business Tax.

- New York's average residential and commercial natural gas prices reflect the higher cost of doing business in New York and the State's location at the downstream end of the interstate natural gas pipeline system.

Effects of Competition on New York

- The natural gas and electric industries are now in transition to retail competition. In the interim, customers will experience reduced prices as a result of multi-year rate plans and the ability to choose suppliers.

- Electric rates are expected to decrease by 9.7% through 2002.

- Adequate energy supplies and system reliability can be maintained or enhanced in a competitive market.

- Using some of the benefits of restructuring the electric and natural gas utility industries to maximize economic development is sound policy for New York.

- Siting of major electric facilities under Article X of New York's Public Service Law may be premised on a determination that the proposed facilities would promote or contribute to a competitive market for wholesale or retail provision of electricity.

- Increased competition in the energy markets will not have an undue adverse impact on the environment, as compared with traditional industry regulation, because environmental oversight will continue and mitigation measures will be implemented as necessary.

- Restructuring the gas and electric industries will provide consumers with competitive energy prices and services, stimulate economic growth, and improve the job market.

Energy and Economic Development

- Energy prices are often a major factor in business location and expansion decisions. Reducing energy costs in New York will make businesses and industries more competitive with other states and regions of the country.

- Increased competition is expected to lower energy prices. Utility- and State-sponsored energy efficiency and economic development programs will continue to be necessary to help expand New York's economic base, at least through the transition to competition.

- Investing in cost-effective efficiency, renewable energy, and alternative fuel vehicle technologies can create additional job opportunities, particularly when equipment or components are manufactured in New York and installed using in-State labor.

Energy and the Environment

- Over the past 25 years, air quality in New York has improved. The number of days per year on which ground-level ozone measurements have exceeded standards declined from an average of 40 to 4 days per year. Sulfur dioxide and particulate emissions decreased by nearly three-quarters and one-half, respectively.

- Ground-level ozone nonattainment continues to be a significant and pervasive threat to human health in spite of the substantial air quality improvements over the past 25 years.

- A variety of research has consistently verified that air pollutant emissions originating primarily from Midwestern states significantly influence the ability of New York and other Northeastern states to meet national ozone standards. New York's 1997 State Implementation Plan submitted to the U.S. Environmental Protection Agency documents that the New York City Metropolitan area cannot attain national ozone standards unless regional air pollution control requirements are extended to Midwestern states.

- Electricity restructuring throughout the U.S. could influence New York's air quality. On the one hand, greater fuel efficiency could translate into lower emissions, and greater retail access could provide customers the choice of "green power." On the other hand, the ability of higher-emitting, lower-cost power plants in the Midwest to increase their electricity exports to other regions of the nation could require the State to spend more to meet federal air quality standards as a result of the

long-range, cross-boundary transport of air pollutants. There could be incentives to operate older, dirtier power plants longer as a result of greater competition. Also, increased competition could shift generation from higher-cost, lower emitting facilities to lower-cost, higher emitting facilities.

Energy and Transportation

- Current trends indicate expected growth in energy use in the transportation sector, reflecting increases in vehicle miles traveled and congestion. By implementing various initiatives to encourage the efficient movement of people and goods, New York is seeking to limit these increases. Some of these initiatives include increased use of car and van pools, walking, bicycling, telecommuting, and improved traffic signaling and incident management techniques.

- New York is continually repairing and rebuilding infrastructure for all modes of transportation. This ensures efficient use of the State's transportation system by providing alternatives to driving, thereby keeping additional single passenger vehicles from the road. It also provides for economic development opportunities by reducing costs to businesses and allows for delivery of goods to markets in a cost-effective and timely manner.

- New York is a leader in the use and promotion of new technologies to improve the efficiency of energy use in transportation. These technologies have the capability to reduce delay, assist motorists, and provide information to travelers. An example of successful implementation of this type of program is the E-Z Pass system currently in use on the New York State Thruway and other major highway facilities in the New York City metropolitan area.

- The use of alternative transportation fuels increases fuel diversity and improves air quality. New York supports alternative transportation fuels by participating in the Clean Cities Program and by implementing the Clean Water/Clean Air Bond Act of 1996 and the Congestion Mitigation Air Quality program of the Transportation Equity Act for the 21st Century (TEA-21).

Role of Government

- The role of government in energy markets is changing rapidly as competition increases in the formerly highly regulated electricity and natural gas industries. The public policy goal is to ensure continued access to safe and reliable service at competitive prices.

- New York State must continue to protect consumers from fraudulent and discriminatory business practices, while eliminating and streamlining regulations that are obsolete, burdensome, or irrelevant.

- New York State must help ensure that barriers to competition are minimized and that energy and transportation systems are maintained safely and reliably.

- New York State continues to play a major role in taking the necessary actions to maintain and improve environmental quality consistent with existing federal and State environmental goals.

- Competition in the electric industry is anticipated to provide considerably more innovation, although recent trends indicate such innovation may not be across the full range of needed

research. Government funding should be withdrawn in those research areas where competition provides new technology. However, to the extent that significant public R&D needs continue to exist, government funding will be required.

- A System Benefits Charge (SBC) is necessary and has been established in New York for funding public benefit energy efficiency, low-income, energy research and development, and environmental protection programs to ensure that these programs continue to be funded during the transition to the competitive provision of these services.

Energy Resource Assessment Findings

Electricity

- In a properly functioning market, participants should be able to determine when and where generation or demand reduction measures are needed to meet customer needs.

- Plans for new generation facilities that promote or contribute to effective competition will be consistent with the long-range plans for expansion of the electric system envisioned by this SEP, and will likely be in the public interest, if environmental impacts are found to be acceptable after any necessary mitigation.

- The competitive market, as envisioned in this SEP, will not cause a decline in system reliability.

- Additional generation capability could be required as soon as 2001 through 2005 under the current 22% reserve margin criterion, and as late as 2010 if the reserve margin criterion is reduced to 18% Statewide, or even later if reserve margins lower than 18% are deemed appropriate to meet reliability goals. As the electricity market becomes more competitive, the decision to build new electricity generating capacity will be driven by a combination of system reliability concerns and potential economic and environmental benefits.

- Electric prices are projected to move downward toward the national average in the near term as the result of the Public Service Commission's Competitive Opportunity Proceeding, the Long Island Power Authority acquisition of certain capacity assets of the Long Island Lighting Company, reduction in the gross receipts tax, and the renegotiation of electricity sales contracts with independent power producers. Ratepayers are projected to save a cumulative $4.6 billion through 2002.

- Of the $4.6 billion in savings, 14% will go to industrial customers and 86% to commercial and residential customers. Projected near-term rate decreases for customer classes vary widely among utility territories. Industrial rate decreases range up to 25% and commercial/residential rate decreases range up to 19%.

- Although less certain, over the longer term electric prices are expected to reflect the effects of overall competition and inflation, and are forecast to remain stable or decrease by as much as 1.9% annually in real terms through 2016.

- Electric demand is forecast to increase over the 20 year forecast period within a range of 0.7% to 1.6% per year.

Natural Gas

- Natural gas demand is projected to grow from 1.0% to 3.0% annually through the 2016 forecast period, depending on economic growth and the amount of gas used to generate electricity.

- New York is expected to have adequate gas supplies to meet projected demand over most of the planning period. Pipeline and storage capacity are expected to expand as needed to meet anticipated demand.

- Natural gas prices are projected to decline in real terms over the planning period.

- The gas industry is being reshaped as traditional services are unbundled and offered on a more competitive basis. The role of Local Distribution Companies (LDCs) as natural gas merchants will diminish, mergers and acquisitions, and the movement toward "energy companies" could result in fewer and larger combination natural gas and electric companies, and some functions now performed by LDCs will be provided competitively by new energy service companies.

Petroleum

- The change in petroleum demand is projected to range from -0.1% to 1.5% annually through the 2016 forecast period, depending on economic growth and the amount of petroleum used to generate electricity.

- Petroleum businesses rely on global market forces to produce adequate oil supplies to meet customer demand. This international competition has expanded crude oil supply worldwide by 46% from 1984 to 1995 and resulted in petroleum fuel price declines, in real terms, over the past 15 years.

- While petroleum fuels are the single largest source of energy consumed in New York, petroleum's market share declined from 51% in 1990 to 40% in 1995. Petroleum is expected to be the dominant transportation fuel over the forecast period.

- New York's dependence on OPEC oil is projected to exceed nearly 50% by 2016, although the risk of a future supply disruption by producing nations is expected to be less important because oil producing and consuming nations are establishing joint refining and distribution networks and trading arrangements. New York's dependence on foreign crude oil that is refined at domestic refineries is expected to decline from 61% to roughly 40% as imported refined products are projected to nearly double over the 20 year forecast period.

Energy Efficiency

- Pursuing cost-effective energy efficiency opportunities can play an important role in helping to achieve the goals of this SEP.

- Despite past successes, there are abundant opportunities to capture even greater energy efficiency gains in all customer classes and across all fuel sectors.

- The transition to competition in the electricity and natural gas industries has changed the way energy efficiency services will be delivered, and is making information gathering and dissemination more challenging.

- The best way to deliver energy efficiency services will be through mechanisms tailored to competitive energy markets. For example, using energy performance contracting, transforming markets with high efficiency equipment, and providing enhanced energy services and technical assistance will be more effective in delivering energy efficiency in a competitive market than traditional rebate programs.

Renewable Energy

- Renewable resources currently contribute approximately 10% of New York State's energy supply mix, largely met by the contributions of large hydroelectric generation and smaller amounts of biomass combustion.

- Photovoltaics, hydropower, wind, and biomass have the potential to help meet a portion of New York's energy needs. However, there continue to be many barriers to their use.

- Value-added renewable energy products will help to increase the penetration of renewable technologies in the competitive energy marketplace. Global markets will provide abundant opportunities for New York businesses in the manufacture of renewable energy components and products.

- Fuel cells produce electricity, heat, and water electrochemically without moving parts, noise, or certain air pollutants. Although many fuel cells currently use hydrogen derived from fossil fuels, some fuel cells are beginning to rely on hydrogen-rich gas produced from renewable biomass resources.

- Environmental disclosure and green pricing mechanisms represent possible catalysts to increasing the use of renewable energy in the State's overall fuel mix.

Coal

- The change in coal demand is projected to range from -0.7 to 0.7% annually through the 2015 forecast period, depending on economic growth.

- Coal consumption in New York has been stable, accounting for nearly 10% of primary energy use since 1981, compared to 25 % of primary energy use nationally.

- Use of coal has decreased in New York's commercial, industrial, and residential sectors and increased for electricity generation. Electricity generation currently accounts for 81% of New York's coal use. Coal-fired electricity generation provided approximately 20% of New York's

electricity generation in 1997. The majority of coal use is expected to continue to be used for generating electricity over the forecast period.

SECTION 1.2

ENERGY POLICY AND LONG-RANGE PLANNING OBJECTIVES AND STRATEGIES

INTRODUCTION

The energy policies, goals, and objectives contained in the SEP support competition and customer choice as a means to build a stronger New York. New York's energy policy is based on the principle that increased economic activity, improved environmental quality, and greater energy efficiency can be achieved by promoting competition and relying more on markets to deliver energy services to consumers. Furthermore, by pursuing energy policies that support sustainable growth and enhance environmental quality, New York can lead the nation in developing domestic and international markets for clean energy and commercializing new energy technologies.

To allow all New Yorkers greater choice and flexibility in meeting their energy needs, Governor Pataki is developing energy policies that eliminate unnecessary government regulation and control. New York's approach to restructuring energy markets, particularly in the electricity and natural gas industries, recognizes that there is not a simple solution to ensuring that the benefits of competition are available to all consumers. We recognize that the best way to improve New York's energy situation is to pursue a comprehensive approach that fosters lower taxes, fewer mandates, less government regulation, and greater use of incentives to support the development of competitive energy markets. State government will continue to have a major role in seeing that the transition to competition is fair to the State's consumers and that it meets environmental goals.

While New York's high electricity costs are singled out as a deterrent to economic growth, progress has been made in understanding why these costs are high and how they can be lowered in a manner that is fair and equitable to consumers, electric and gas utilities, independent power producers, shareholders, energy service companies, and power marketers. New York's energy situation may be similar to situations elsewhere in the country, but our needs remain different enough to warrant selective and specific State actions.

To support sustainable economic growth, New York is reducing energy taxes, making more low-cost public power available to businesses and not-for-profit corporations, and encouraging greater customer choice in energy decisions, emphasizing that energy efficiency and the development of renewable and clean fuel technologies are key components to improving New York's energy situation. For example, reducing the gross receipts tax (GRT) on electric and gas utility revenues by one-third is expected to provide customer bill savings of $250 million annually when fully implemented in 2000. The petroleum business tax and motor fuel excise tax are also being reduced to create additional refunds and credits that together will increase to $85 million in 2001.

Additionally, the base rates of most gas utilities have been frozen for several years, and some rates have been decreased. Cumulatively, Statewide electric revenue will be reduced by over $4.6 billion through the year 2002, as a result of PSC proceedings, the GRT reductions, and the takeover by the Long Island Power Authority of certain Long Island Lighting Company assets. Of these rate reductions, roughly 14% of the total will go to industrial customers and 86% to customers in the residential/commercial classes, with industrial customers receiving a 25% reduction in some instances.

Furthermore, the Public Service Commission (PSC), recognizing that public benefit programs previously undertaken by regulated utilities in the areas of energy efficiency, research and development, low-income services, and environmental protection may not be adequately provided during the transition to competition, established a system for funding such programs with a non-bypassable System Benefits Charge (SBC). The PSC designated NYSERDA as the Statewide administrator for public benefit programs funded by the SBC. A total of $234 million is expected to be available to fund SBC programs over a three year period that began in July 1998.

To encourage alternative fuel vehicle use, an investment tax credit equal to 50% of the incremental cost of electric vehicles and 60% of the incremental cost of clean-fuel non-electric vehicle equipment is effective this year. Additionally, the State is providing a 50% investment tax credit on the cost of installing refueling equipment and has permanently extended the sales tax exemption for certain incremental costs related to alternative fuel vehicles. These tax incentives are the centerpiece for spurring the development and acceptance of clean vehicle technology.

To promote the viability of solar photovoltaic technology, New York is providing an investment tax credit for residential investments in PV equipment. Additionally, electric utilities are required to interconnect residential photovoltaic systems to utility electric distribution systems (up to 0.1% of the utility's electric demand) and provide net-metering services that allow customers to sell excess electricity back to their local electric utility at prevailing residential electricity rates.

Through the use of Petroleum Overcharge Recovery funds, New York is providing financial assistance to improve the efficiency of schools and public buildings, as well as developing advanced vehicle technology. Furthermore, $230 million from the Clean Water/Clean Air Bond Act is being used to promote clean-fuel buses and cars, convert school heating systems from coal to natural gas, and assist businesses in reducing air emissions.

Additionally, legislation was adopted that makes 450 megawatts (MW) of low-cost economic development power available from a combination of electricity provided by the New York Power Authority (NYPA) and obtained by NYPA through competitive solicitation, to businesses and not-for-profit corporations to enhance job creation and retention in New York.

Moreover, the PSC, recognizing that greater competition can lead to more choices and lower prices, encouraged New York's utilities to open their markets to competition and restructure corporate operations and affiliations so competition can provide new products and services to customers. The PSC is working with utilities to reduce potentially stranded costs through use of price cap and performance regulation which will lower prices further.

Regulations have been reduced and streamlined by each of the member agencies that comprise the State Energy Planning Board. Additionally, the Energy Planning Board streamlined and reduced its own information-filing requirements that apply to major energy suppliers. This action was initiated by the Energy Planning Board, recognizing that energy markets are changing and that government should serve as a catalyst to promote competition by reducing unnecessary or duplicative regulatory requirements.

POLICY OBJECTIVES AND STRATEGIES

Over the next several years, greater competition will emerge among fuels, technologies, and suppliers of energy and related services. New Yorkers will be offered greater choices in picking energy suppliers, products, and services which will encourage lower prices and the development of cleaner and more efficient uses of energy. As competition unfolds, government's responsibility is to make sure that the transition to greater choice is orderly and that the benefits of competition are available to all customers, regardless of their size or economic influence.

Energy Policy Objectives

In this changing energy marketplace, there are certain functions that government is best suited to carry out, such as developing and improving New York's transportation infrastructure to allow for the free-flowing movement of people and goods, and providing for public health, safety, and a clean environment. To fulfill these objectives, State government policies need to be based on longer-term perspectives that encourage and support development of new technologies, more efficient energy-consuming practices, and improved energy systems.

New Yorkers want inexpensive, reliable, clean, and efficient energy supplies. To this end, the SEP's energy policies and long-range planning objectives are intended to meet New York's energy needs by pursuing competition, ensuring fairness, equity, and system reliability, and improving the State's environment and natural resources.

Promote Competition

New York is committed to creating a climate for businesses and residents that supports sustainable economic development and growth. New York will help ensure this by:

- Providing New Yorkers with access to competitively priced energy products and services to meet their energy needs and supporting the creation and retention of jobs and economic growth.
- Reducing unnecessary government regulation and allowing greater competition to foster the development of energy markets and resource providers to satisfy New York's energy needs.

- Supporting a market environment that provides equal treatment to all market participants.

Ensure Fairness, Equity, and System Reliability

New York is committed to ensuring that consumers are treated fairly and equitably in energy markets and that the reliability of the State's energy systems is maintained or enhanced. New York will help ensure this by:

- Encouraging competition in the delivery of energy products and services to all New Yorkers, while working to prevent fraud and monopolistic practices.
- Stimulating economic growth by improving the efficiency and use of energy by:
  - Overcoming barriers that restrict efficient use of energy and facilitating the development and commercialization of energy-efficient technologies and practices.
  - Improving energy building codes, appliance and equipment standards, and life-cycle purchasing practices for energy-using equipment.
  - Encouraging more efficient and reliable energy systems emphasizing longer-term commitments to improving system infrastructure.
  - Developing renewable and indigenous resources and positioning the State to take advantage of emerging opportunities.
- Maintaining and improving New York's transportation infrastructure in a manner that promotes greater mobility and enhances intermodal system capabilities.

Promote a Clean and Healthy Environment

New York is committed to improving the quality of its environment and the sustainable development of its natural resources. New York will help assure this by:

- Encouraging market-based strategies as a means to meet environmental requirements.
- Fostering development of clean, efficient, and sustainable energy systems.

Energy Policy Strategies

The 1998 SEP provides State agencies and authorities with broad policy direction and guidance so that energy, environmental, economic development, and transportation policy decisions are made in a coordinated and consistent manner. The SEP recognizes that competitive markets provide the best means for allocating and pricing energy resources. However, it also recognizes that not all sectors of the economy can respond adequately to market forces and that government must continue to ensure that certain system protections are maintained. The following strategies are designed to achieve the policy objectives listed above:

(1) To promote competition, New York should:

- Allow customers to have greater choice in electricity and natural gas products and services.
- Encourage reduction of energy taxes as a means to lower energy costs and make energy prices more competitive, thereby promoting economic development including the retention and creation of jobs.
- Support the development of an independent system operator (ISO) and power exchange to ensure reliable operation of the bulk electricity transmission system while facilitating market-based power sales and transactions among market participants.
- Support market initiatives to develop new electric-generating facilities and encourage competitive procurement of energy supplies and services by regulated load-serving entities, mindful of short- and longer-term economic and environmental considerations.
- Encourage electric and natural gas utilities to work aggressively with marketers to expand competition in choice of supplier and services and to minimize strandable costs in a competitive market.
- Adopt legislation that allows utilities to refinance or securitize a reasonable portion of assets likely to be stranded as a way to lower rates.
- Encourage the New York Power Authority's role in a restructured electricity industry to enhance economic development, provide low-cost power to municipalities, promote energy efficiency and development of environmentally clean energy sources, and assist in maintaining a reliable and integrated bulk power system in New York.
- Continue to investigate nuclear energy's role in a restructured electricity industry, focusing on economic competitiveness, potential air quality benefits, the effect of

continued operation on host localities, decommissioning, and ownership and operation in a competitive market, pursuant to the PSC's Opinion and Order No. 98-7.

- Support and foster the development, maintenance, and improvement of an adequate energy supply infrastructure throughout the State to ensure uninterrupted supplies of energy are delivered to New York consumers, while relying on market participants to deliver energy supplies or efficiency improvements to meet demand.

(2) To assure fairness, equity, and system reliability, New York should:

- Encourage market-based approaches to delivering energy efficiency services for all fuels, while allowing customers to have access to competitively priced and adequate supplies of energy and energy services.

- Support the PSC's decision to establish a system benefits charge (SBC) pursuant to PSC Opinion and Order No. 98-3 as a transition mechanism to fund activities that may not be "adequately addressed by competitive markets." This covers programs in the areas of energy efficiency services, research and development, low-income pilot energy efficiency and management, and environmental protection. The funding amounts to be provided for SBC programs were established in the individual electric utility restructuring settlement agreements, amounting to a total of $234.3 million. The PSC has designated the New York State Energy Research and Development Authority (NYSERDA) as the SBC administrator over the next three years, and the PSC has deferred to a future decision whether the SBC programs should continue beyond then. NYSERDA submitted its implementation plan and the PSC, by Order dated July 2, 1998, approved this plan with certain clarifications and modifications. Based on the July 2nd Order, the allocation of SBC funds will be approximately 69% for energy efficiency, 17% for R&D, 13% for low income, and 1% for environmental disclosure.

- Maximize the potential for cost-effective investments in energy efficiency opportunities in public and private buildings by providing technical and financial assistance to capital and energy efficiency improvement projects.

- Capture the benefits of updating New York's energy conservation construction code and equipment efficiency standards as a cost-effective means of delivering energy efficiency services to consumers, considering recent advances in building and energy systems technology, and improving building practices.

- Provide retail customers with a choice of their natural gas provider and access to ancillary services, including storage.

- Encourage economic development by pursuing energy-efficient and environmentally sound transportation choices that enhance mobility and promote clean fuel and vehicle technologies.

- Continue transportation infrastructure renewal that promotes intermodal capabilities to reduce congestion, maintains energy-efficient travel, and facilitates economic activity.

- Build on and assist federal efforts that reauthorized surface transportation legislation resulting in the passage of the Transportation Equity Act for the 21st Century (TEA-21) to ensure that resources are allocated fairly, and mobility and air quality improvements are promoted.

(3) To promote a clean and healthy environment, New York should:

- Work with businesses, industry, the environmental community, and the federal government to design flexible and innovative strategies to implement New York's State Implementation Plan, as required by the Clean Air Act, in a manner that improves New York's competitive position and enhances mobility.

- Support development and implementation of an appropriate cap and trade program for nitrogen oxide (NO_x) emissions, to include states west and south of New York.

- Encourage the federal government to develop appropriate strategies to address CO_2 emissions and global warming in cooperation with states, industry, and other stakeholders.

- Support innovative ways of offering electricity customers greater choice in selecting renewable resources to meet electricity needs, such as through "green pricing" initiatives, environmental disclosure, or other mechanisms.

- Encourage wider use of high efficiency technologies, green buildings initiatives, and environmentally preferred products with State government taking the lead in implementing and demonstrating the benefits.

Section 2

ISSUE REPORTS

SECTION 2.1

FACTORS THAT AFFECT ENERGY PRICES

INTRODUCTION

This report compares New York's energy prices to prices paid in other states and to national averages. To remain competitive while promoting continued economic growth, New York is taking steps to reduce its energy costs, both in absolute dollars and in comparison with other states and regions, by reducing taxes and introducing greater competition in the electric and natural gas industries.

In today's economy, energy prices and contract terms are important factors in business location and expansion decisions. Business decisions, however, are influenced by many factors other than energy prices, such as proximity to transportation and consumer markets, access to capital, availability of workforce skills, labor costs, taxes and government regulations, and environmental policies. This analysis focuses on retail energy prices and the composition of these prices, but recognizes that "non-energy" factors, such as property taxes and labor costs, also exert a direct influence on the cost of providing energy services. Such costs are passed through to consumers and reflected in the prices they pay. Therefore, these factors are included, to the extent possible, in analyzing the component costs of energy prices.

The analysis compares New York's retail energy prices and components to those of various states that compete with New York in attracting business. The states studied include two New England states (Massachusetts and Connecticut), two Mid-Atlantic states (Pennsylvania and New Jersey), one Midwestern state (Ohio), three Southeastern states (North Carolina, South Carolina, and Florida), and one South Central state (Texas). Two West Coast states (California and Washington) are also included to present a wider perspective. The energy prices analyzed include electricity, natural gas, heating oil, gasoline, and diesel fuel.

NEW YORK ENERGY PRICES COMPARED TO THE U.S. AND SELECTED STATES

New York's retail energy prices are generally higher than national average prices for comparable fuels and customer sectors. Further, the State's energy prices have increased over the past decade, causing the differences between New York's prices and those of other states to widen for certain fuels.

New York's average residential electricity price in 1996 (the latest year for which comparative data are available) was 68% higher than the national average, as indicated in Figure 2-1. Similarly, average commercial and industrial electricity prices were 59% and 15% higher, respectively, than comparable national averages.

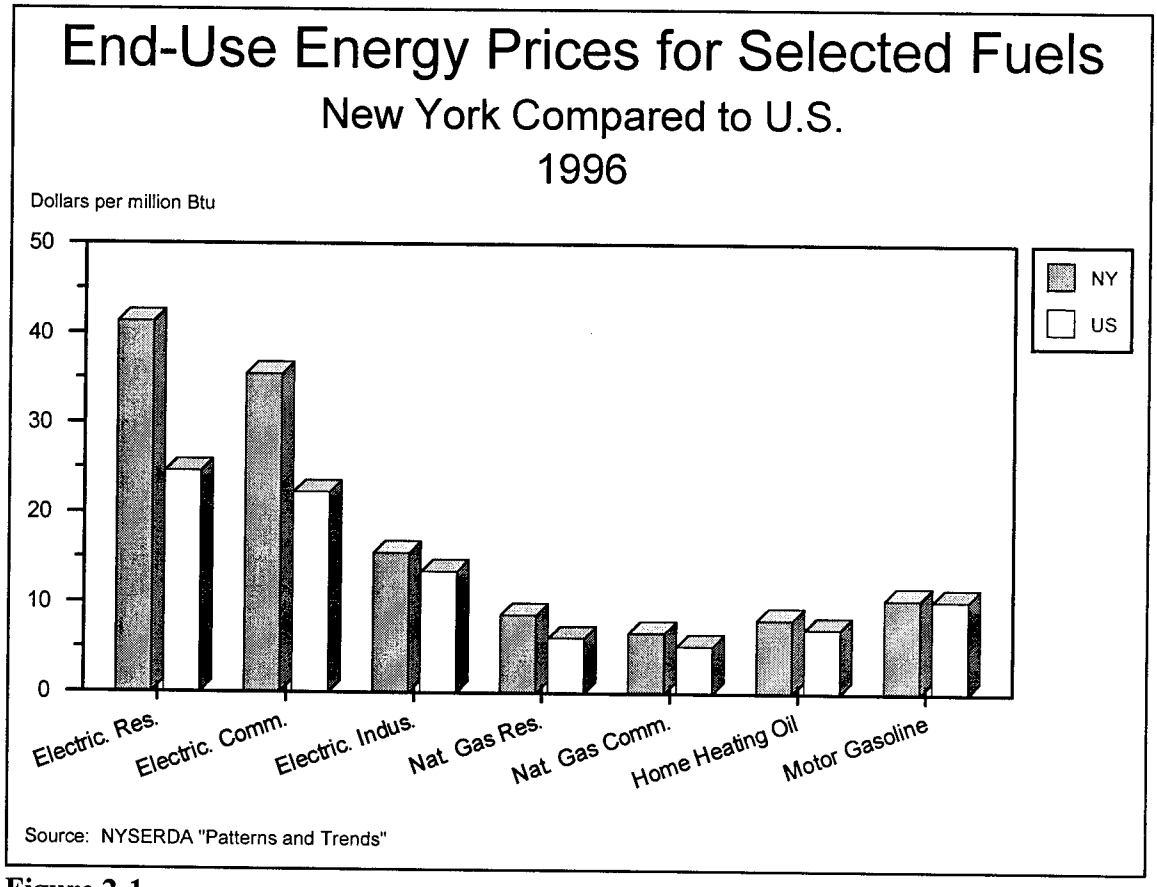

Figure 2-1

The differences in energy prices for other fuels, although not as great as those for electricity, exhibit similar patterns. New York's average residential and commercial natural gas prices in 1996 were 42% and 28% higher, respectively, than the national averages. For petroleum products, such as home heating oil and gasoline, the price differences between New York and the national averages were generally lower than for either electricity or natural gas. In 1996, New York's average home heating oil price was 15% higher than the national average, while its gasoline price, averaged across all grades, was only about 1% higher than the national average.[1]

Price differentials between New York and the national average are lower for petroleum-based fuels than for other energy types. This occurs because petroleum product commodity costs, which comprise a large proportion of retail prices, are determined by world markets. Retail prices for petroleum products fluctuate over time, based on available global supply and aggregate demand at any given point in time. Typically, these economic forces are well beyond the control of New York's decision-makers and consumers. New York has a somewhat greater influence on natural gas and electricity prices, particularly the latter, as most of New York's electricity is produced in-State and all is delivered through a State-regulated distribution system.

Not only are New York's energy prices generally higher than the national average, but, as shown in Figure 2-2, the differences between New York and national average prices have increased for certain fuels, particularly for electricity and natural gas. For example, from 1985 to 1996, the latest year for which comparative data are available, New York's average price for residential electricity increased from 47% higher to 68% higher than the national average. Similarly, New York's average residential natural gas price increased from about 27% higher than the national average to about 41% higher.[2] Over the same period, New York's average home heating oil price increased from about 4% higher than the national average to about 15% higher. In contrast, New York's average gasoline price decreased relative to the national average, from 5% higher than the national average in 1985 to only about 1% higher in 1996.

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[1] The effects of individual cost components, such as federal and state taxes, on retail prices of various fuels are discussed later in this issue report under the heading "Cost Components of Energy Prices."

[2] While the State's natural gas prices have increased compared to other states and the national average, in real terms, they have declined over the past decade.

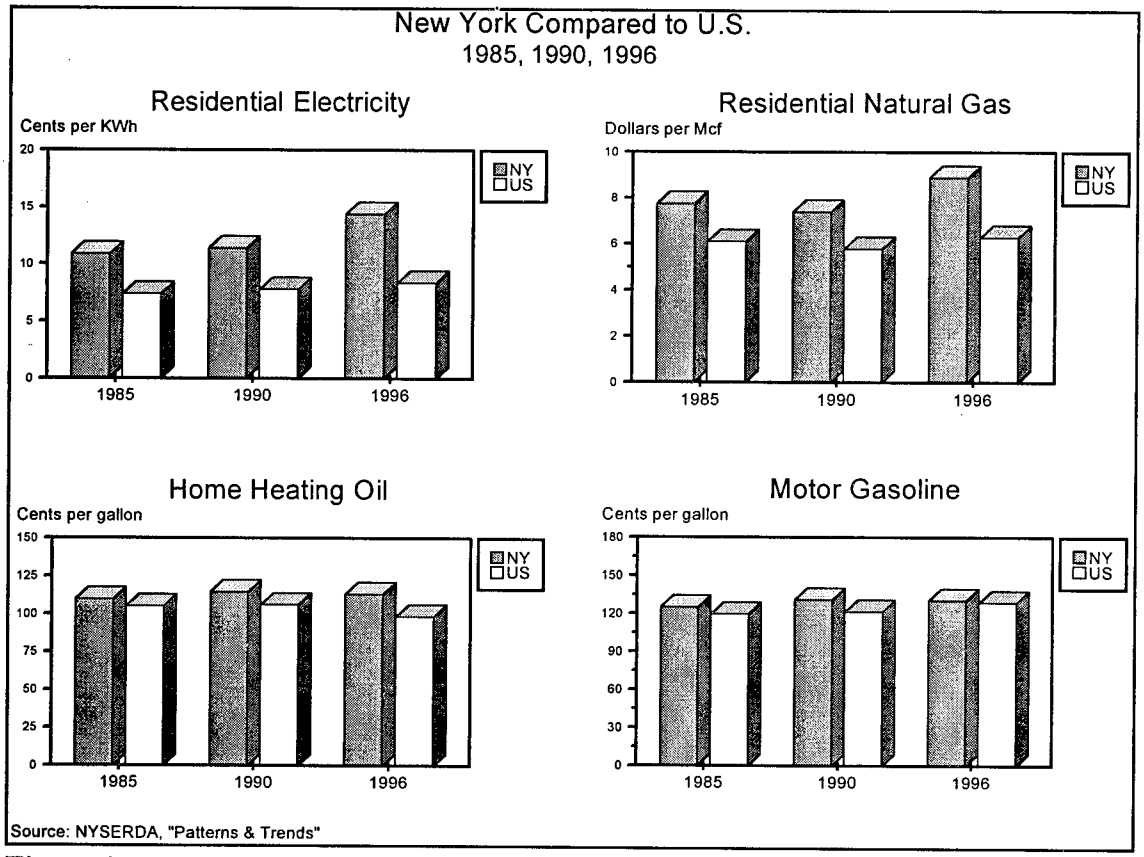

Figure 2-2

The rates of change in price for selected fuels that underlie the above discussion are shown in Figure 2-3. The trends presented in this figure underscore the fact that certain of New York's energy prices have increased at higher rates than the comparable national average. For example, from 1990 to 1996, New York's average residential electricity price increased by 24%, while the national average price increased by 8%. Similarly, New York's average residential natural gas price increased by 20%, while the national average increased by 8%. In contrast, New York's average industrial electricity price decreased by 9%, while the national average decreased by 2%. Over the same period, New York's average gasoline price decreased by 0.4%, while the national average increased by 6%.

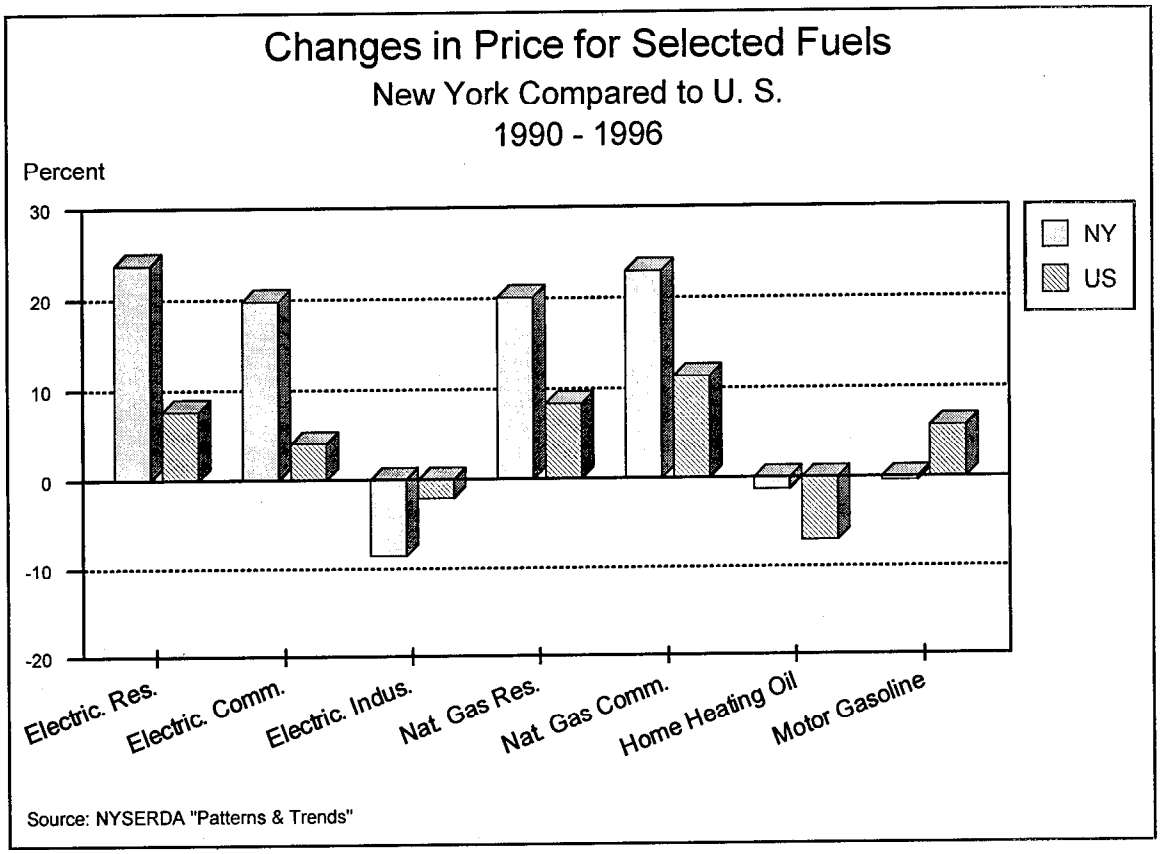

Figure 2-3

New York's average electricity price across all customer sectors in 1996 was higher than all 11 of the other states studied, as shown in Figure 2-4. Compared to neighboring states, New York's average electricity price was 95% higher than Ohio's, 59% higher than Pennsylvania's, 19% higher than Connecticut's, 10% higher than Massachusetts', and 10% higher than New Jersey's. Compared to Southeastern states, New York's average electricity price was 84% and 82% higher than North Carolina's and South Carolina's, respectively. In addition to being higher than that in any other state studied, New York's average electricity price increased at a faster rate than the price in any state studied with which it competes, as shown in the lower segment of Figure 2-4. From 1990 to 1996, New York's average electricity price increased by about 19%. Generally, states with higher prices had larger percentage price increases over this period, while lower-price states experienced lower rates of increase, with the exception of Washington. For example, electricity prices in Massachusetts and New Jersey increased by about 16%, while those in Pennsylvania and Ohio increased by 4% and 7%, respectively, over this period.

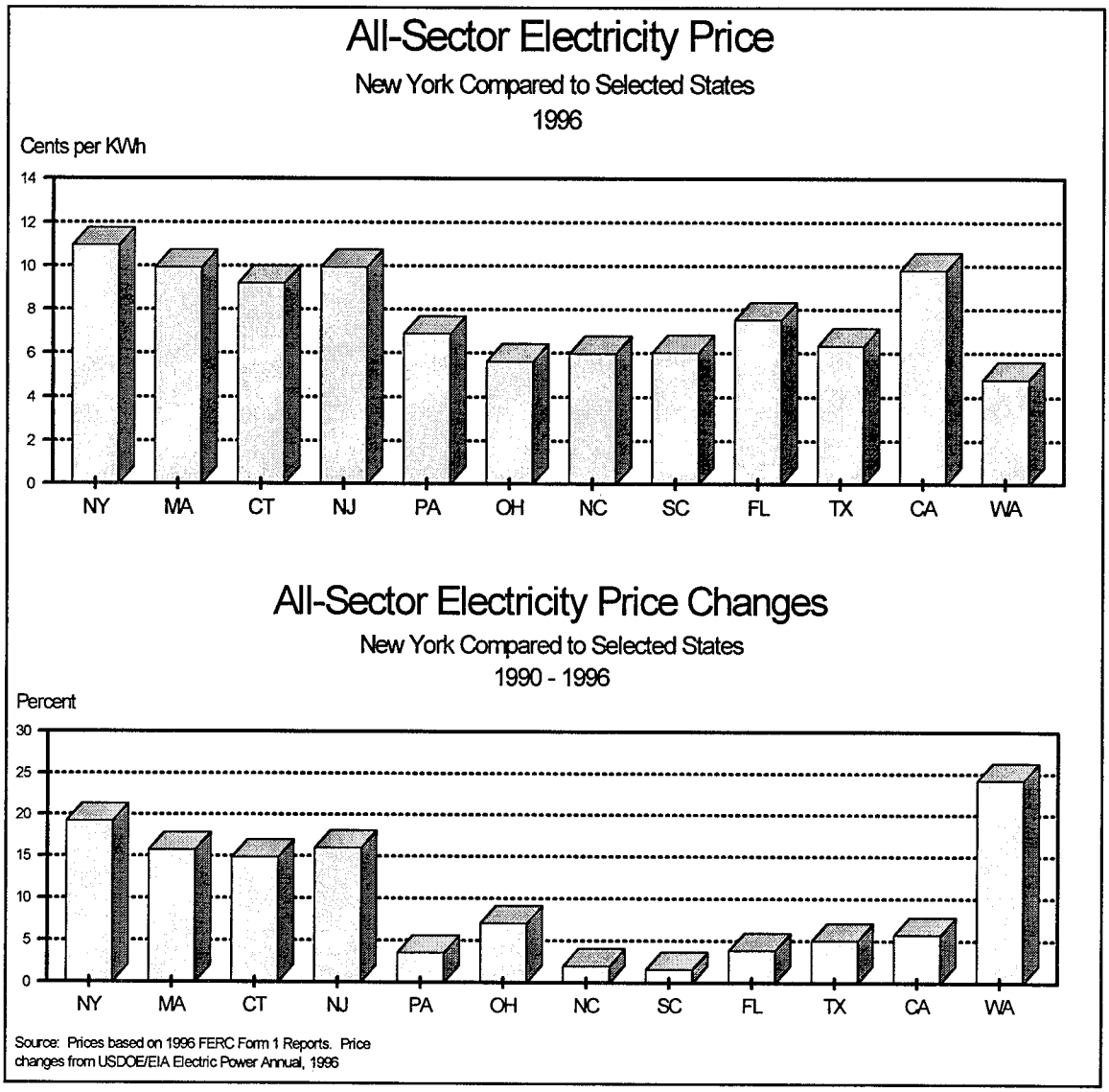

Figure 2-4

COST COMPONENTS OF ENERGY PRICES

This section presents a component analysis of retail energy prices for the 11 states studied to isolate the primary drivers behind New York's higher energy prices. The analysis identifies cost components for electricity, natural gas for residential and commercial use, distillate heating oil for residential and commercial use, gasoline, and diesel fuel.

Electricity

New York's average price of electricity from investor-owned utilities is higher than in any of the states studied, as shown in Figure 2-5. Compared to the New England, Mid-Atlantic, Midwestern, and Southeastern states that compete with New York for business, New York's average electricity price ranges from 10% higher than New Jersey's and Massachusetts' to 95% higher than Ohio's. New York's high average electricity price is driven by a combination of higher cost components (on a revenue-per-kWh basis), including costs for operation and maintenance (O&M), wages, and benefits; capital costs; costs for fuel and purchased power; and State and local taxes.

New York's capital cost component, which includes depreciation, interest payments, and net income, is greater than that of most of the other states studied. The exceptions are New Jersey and California. New York's high capital cost component is due largely to remaining undepreciated plant assets associated with several large nuclear facilities.

New York's cost component for O&M, wages, and benefits is greater than that in any other state studied. Compared to those states that directly compete with New York (*i.e.*, states other than those on the West Coast), this component ranges from 39% higher than Massachusetts to more than three times higher than Ohio. This is largely the result of the State's higher labor costs, as well as higher O&M costs associated with maintaining transmission and distribution infrastructure in the densely populated New York City metropolitan region.

New York's fuel and purchased-power cost component is higher than that of Pennsylvania, Ohio, Texas, Washington, and the three Southeastern states, but significantly lower than that of the two New England states, New Jersey, and California. New York's electricity generation facilities, on average, use a more diversified, higher-cost fuel mix than many other states, with a lower proportion of coal, and higher proportions of natural gas and oil. This is largely the result of stringent environmental regulations that preclude coal-burning at generation facilities in the downstate metropolitan region.

For New York and the four states with higher fuel and purchased-power costs, purchased power comprises a larger proportion of this component than does direct utility fuel cost. Generally, utilities with lower fuel and purchased-power costs have lower proportions of purchased power. Purchased-power costs often

include a capacity (fixed-cost) charge, as well as an energy (variable-cost) charge, meaning that purchased power represents an "all-in" cost of generation. Direct utility fuel costs, on the other hand, represent only variable costs, and therefore do not include any capital costs of generation. Use of purchased power can cause average utility electricity prices to increase, to the extent existing power purchase contracts commit the utility to purchase capacity that may not be needed to meet its current load and margin requirements.

Taxes, including federal income tax, Gross Receipts Tax (GRT), franchise tax, local property tax, and State sales tax, are a significant contributor to New York's high electricity prices. On an average revenue-per-kWh basis, taxes represent about 22% of New York's retail electricity price, compared to about 15% to 17% for most of the states studied. On a cents-per-kWh basis, New York's federal, State, and local tax components total 2.40 cents per kWh (including State sales tax). This amount is at least twice that of most of the other states studied, with New Jersey, Florida, and Pennsylvania closest to New York at 1.68, 1.21,

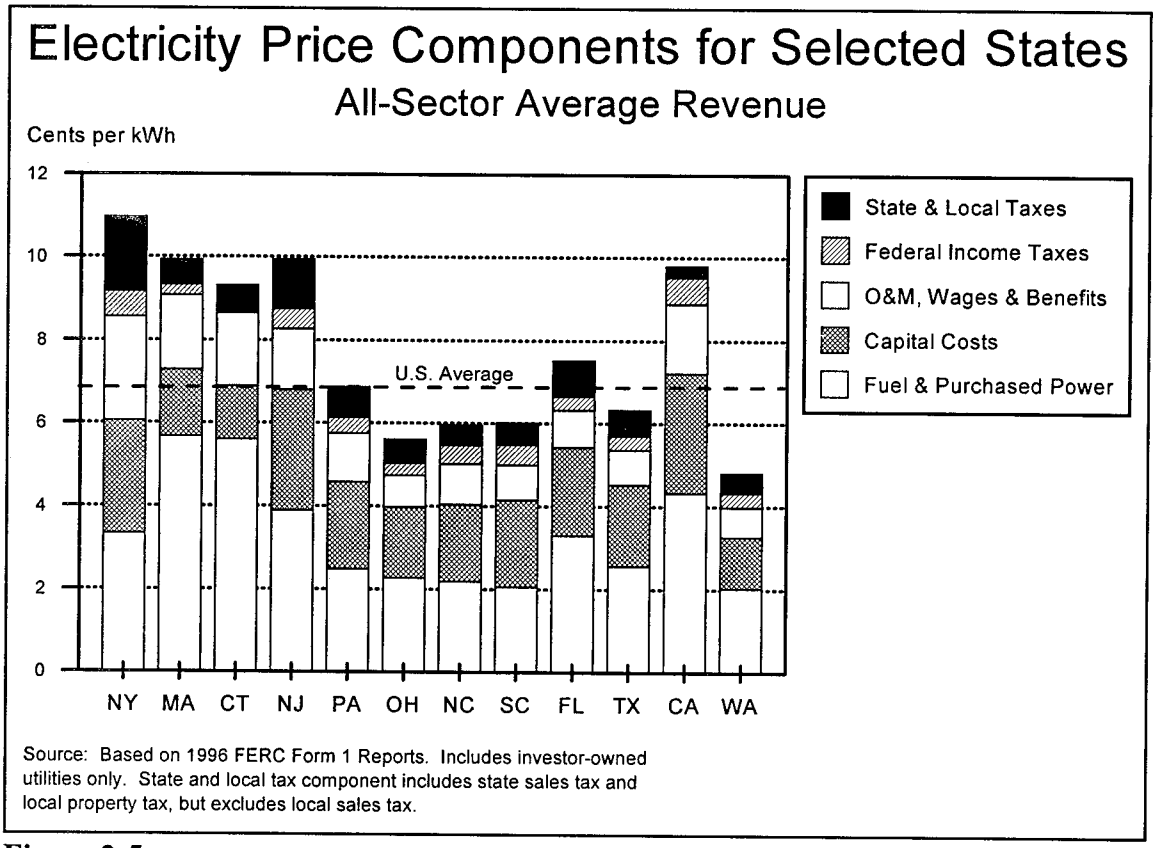

Figure 2-5

and 1.13 cents per kWh, respectively. Some states that have relatively high taxes on a percentage of revenue basis have relatively low taxes on a cents-per-kWh basis. For example, North Carolina's taxes represent 16% of total electricity revenue, but, because its average price of electricity is very low, taxes are only 0.95 cents per kWh, or about 40% of the amount for New York.

Tables 2-1 and 2-2 compare New York's electricity cost components in additional detail to national averages and provide further perspective on the factors contributing to the State's high electricity prices. In 1996, New York's average electricity price exceeded the national average by 3.91 cents, or about 57%, as shown in Table 2-1. Of this amount, 1.09 cents, or about 28%, was due to higher State and local taxes; 0.95 cents, or about 24%, was due to higher fuel and purchased-power costs; 0.60 cents, or about 15%, was due to higher wages and benefits; 0.51 cents, or about 13%, was due to higher O&M costs; and 0.60 cents, or about 15%, was due to higher capital costs.

As shown in Table 2-2, the difference between New York's average price and the national average increased by 1.25 cents from 1990 to 1996. Over this period, New York's average price increased by 1.54 cents per kWh, more than five times the national average increase of 0.29 cents per kWh. Of the 1.25 cents increased-price difference between New York and the national average, the largest components were increased fuel and purchased-power costs of 0.56 cents, or about 45%, and increased depreciation costs of 0.34 cents, or about 27%. Increased State and local taxes contributed 0.07 cents, or about 6%, of the increased-price difference between New York and the national average.

Components of Average Revenue/kWh (1996)
New York Compared to U.S.

	NY	U.S.	Difference	Percent of Difference
	----------Cents per kWh----------			
O&M, Wages & Benefits	*2.51*	*1.40*	*1.11*	*28.4%*
O&M	1.15	0.64	0.51	13.0%
Wages & Benefits	1.36	0.76	0.60	15.3%
Fuel & Purchased Power	*3.34*	*2.39*	*0.95*	*24.3%*
Fuel	0.92	1.15	-0.23	-5.9%
Purchased Power	2.42	1.24	1.18	30.2%
Capital Costs	*2.71*	*2.11*	*0.60*	*15.3%*
Depreciation	0.95	0.79	0.16	4.1%
Interest & Net Income	1.76	1.32	0.44	11.3%
Taxes*	*2.21*	*0.96*	*1.25*	*32.0%*
Federal	0.61	0.45	0.16	4.1%
State and Local	1.60	0.51	1.09	27.9%
Total	*10.77*	*6.86*	*3.91*	*100.0%*

* Taxes do not include sales tax, as sales tax data are not available at the U.S. level. Including State sales tax would increase New York's tax component by about 0.2 cents/kWh.

Table 2-1

Increase in Average Revenue/Kwh by Component, 1990-96
New York Compared to U.S.

	NY	U.S.	Difference	Percent of Difference
	----------Cents per kWh----------			
O&M, Wages & Benefits	*0.18*	*-0.09*	*0.27*	*21.6%*
O&M	0.08	-0.08	0.16	12.8%
Wages & Benefits	0.10	-0.01	0.11	8.8%
Fuel & Purchased Power	*0.71*	*0.15*	*0.56*	*44.8%*
Fuel	-0.84	-0.22	-0.62	-49.6%
Purchased Power	1.55	0.37	1.18	94.4%
Capital Costs	*0.43*	*0.12*	*0.31*	*24.8%*
Depreciation	0.51	0.17	0.34	27.2%
Interest & Net Income	-0.08	-0.05	-0.03	-2.4%
Taxes*	*0.22*	*0.11*	*0.11*	*8.8%*
Federal	0.12	0.08	0.04	3.2%
State & Local	0.10	0.03	0.07	5.6%
Total	*1.54*	*0.29*	*1.25*	*100.0%*

* Taxes do not include sales tax, as sales tax data are not available at the U.S. level.

Table 2-2

Residential Natural Gas

New York's average natural gas price for residential customers in 1996 was $8.90 per thousand cubic feet (Mcf), which was lower than Connecticut and Florida, about the same as Massachusetts, but higher than all the other states studied, as shown in Figure 2-6. The wellhead price component for natural gas is identical for all states because this price is determined by North American market conditions rather than by actual production costs. Many other states assess taxes on residential natural gas sales that are comparable to New York's. While New York does not collect general sales tax on residential natural gas sales, the residential retail price does include GRT of 3.50%[3] and franchise tax of 0.75%, equivalent to about 36 cents per Mcf.[4]

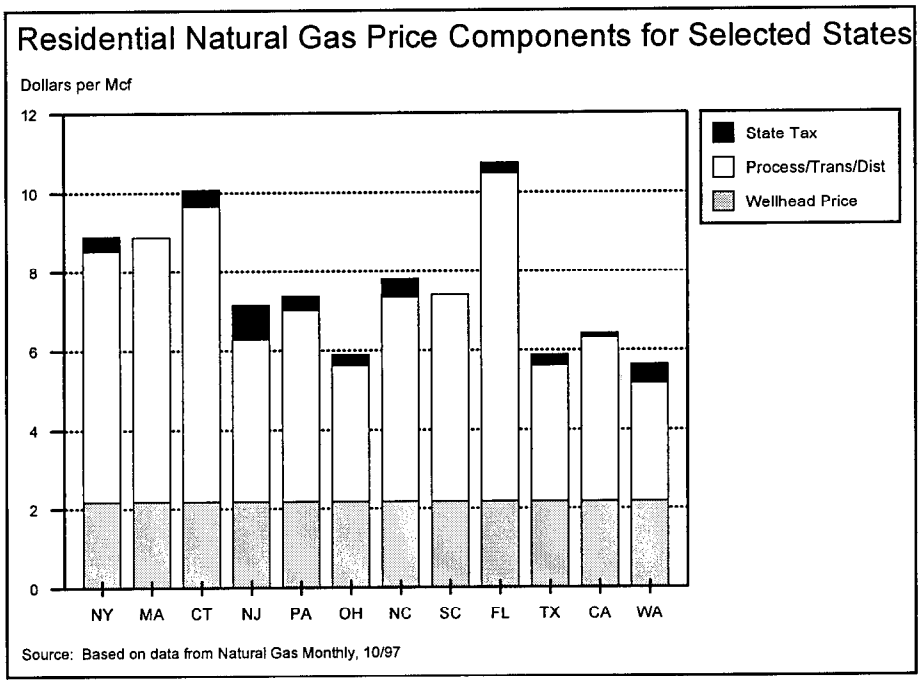

Figure 2-6

[3] Tax legislation enacted in 1997 will reduce the GRT to 2.50% by 2000. The reductions occur in three stages, beginning in 1998.

[4] This analysis of the price components of various fuel types (with the exception of electricity) counts property taxes, and federal and state income taxes, when applicable, as distribution costs. Data are not available to estimate the specific amounts of these types of taxes for natural gas and petroleum products. As a result, the tax components shown for these fuels reflect only taxes that are specifically added to the retail price of fuel, such as GRT, franchise tax, Petroleum Business Tax (PBT), excise tax, and State sales tax. Local sales tax is not included due to variability within states.

New York's average price for residential natural gas appears to be higher than those of the other states studied, primarily due to variability in the processing/transportation/distribution component[5] of the price. Distribution costs, which comprise the major portion of this component, are higher in New York than in most other states. This is largely due to the higher costs of installing, maintaining, and repairing natural gas distribution facilities in the densely populated New York City metropolitan region. For example, the low-cost trenching techniques used for most natural gas systems are not possible to use in New York City. Distribution costs in the downstate region are further increased by programs to replace aging cast iron natural gas pipes. New York's higher natural gas price compared to states to its south and west is also partially due to the State's location near the end of the interstate pipeline distribution system.

Commercial Natural Gas

The relationship of New York's average commercial gas price to those of other states studied is similar in most respects to that of the residential natural gas price, as shown in Figure 2-7. In 1996, New York's average price of $7.14 was lower than Connecticut's, less than 1% higher than Massachusetts', and higher than prices in all the other states to its west and south. Many other states assess taxes on commercial natural gas sales that are comparable to New York's. New York's retail commercial gas price includes GRT of 3.50% and franchise tax of 0.75% (about 28 cents per Mcf), as well as State sales tax of 4% (about 27 cents per Mcf). As with residential natural gas sales, the differences in average prices from state to state are largely due to variation in distribution costs.

[5] *Processing* refers to any cleaning or liquid removal that occurs after the natural gas is removed from the wellhead. *Transportation* refers to moving the natural gas from the wellhead to the entry point of the local distribution carrier's network. *Distribution* refers to moving the natural gas through the local distribution carrier's network and delivering the product to end-users. Besides the direct costs of installing, maintaining, and repairing the natural gas distribution system itself (*e.g.*, materials, wages, workers' compensation premiums, etc.), distribution costs include, for example, local property taxes, income taxes, and return on equity.

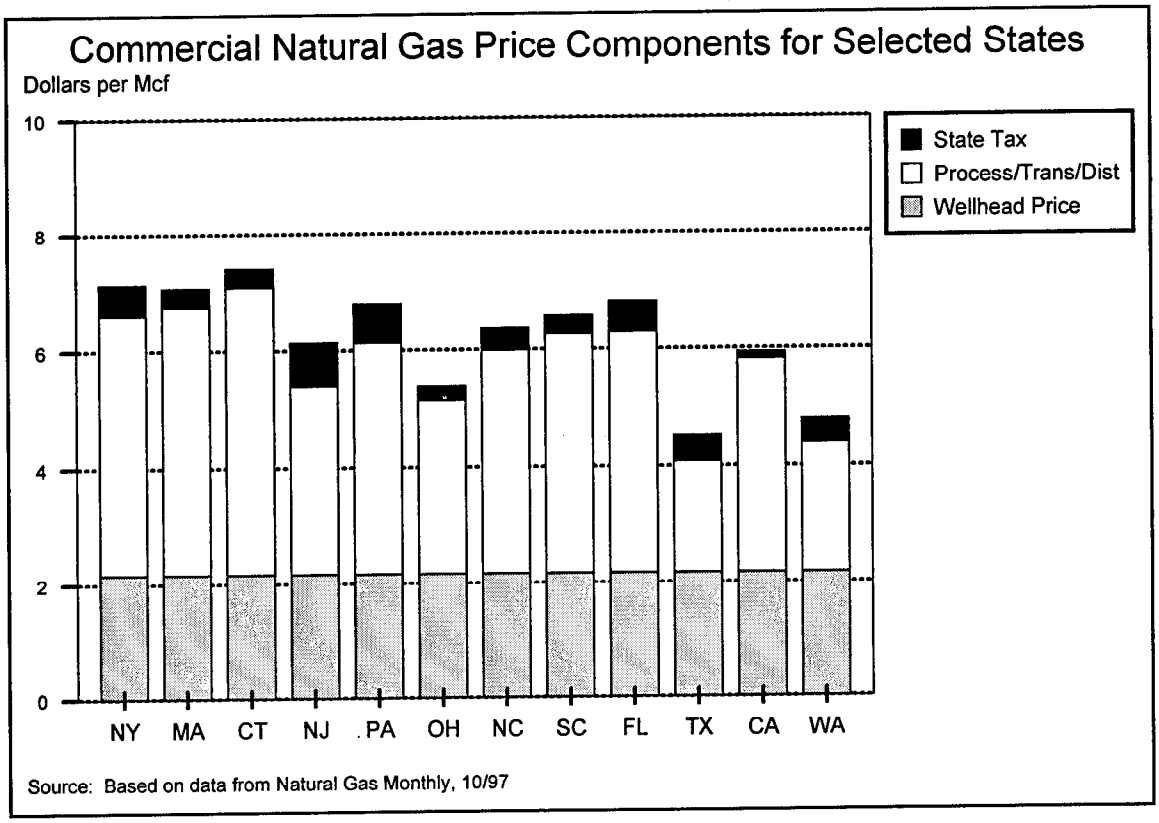

Figure 2-7

Home Heating Oil

New York's average price for home heating oil in 1996 was $1.08 per gallon, which was 3 to 9 cents higher than the average price in most of the other states studied. Only the two West Coast states had average prices higher than New York's, as shown in Figure 2-8. Of the states studied, California, North Carolina, Ohio, and Washington tax the use of home heating oil; New York State does not. New York's higher home heating oil price is largely a result of higher costs of doing business, particularly downstate, which include higher local property taxes, wages, workers' compensation premiums, and State income taxes.

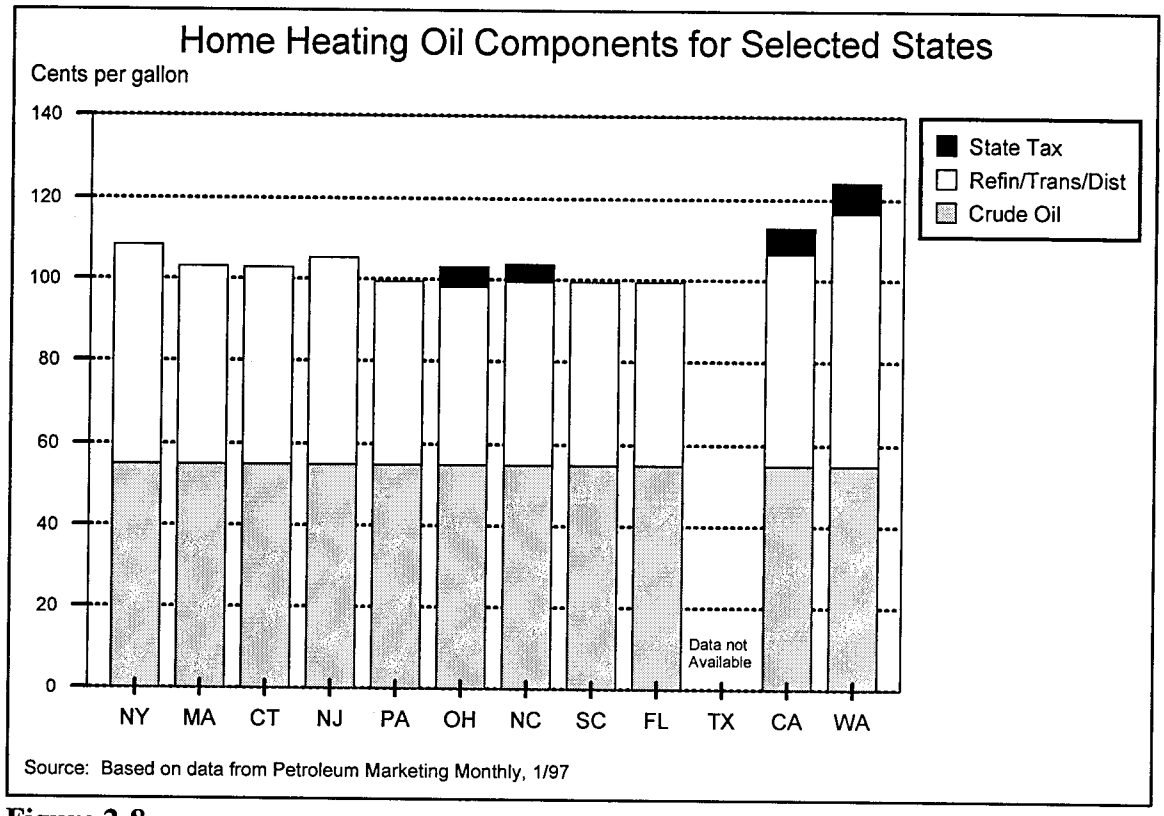

Figure 2-8

Commercial Distillate Oil

New York's 1996 average distillate oil price for commercial customers was 97 cents per gallon, which was considerably higher than the average price in each of the other states studied, as shown in Figure 2-9. The states with average prices closest to New York's were California, which was seven cents per gallon lower, and Connecticut, which was six cents per gallon lower. Most of the studied states' average prices were 13 to 16 cents per gallon lower than New York's. Many of the states studied, like New York, collect some amount of sales tax on commercial distillate oil, but no other state collects a Petroleum Business Tax (PBT) or other oil tax comparable to New York's. The PBT increases New York's average commercial distillate oil price by 7.79 cents per gallon.[6]

[6] Tax rates in effect as of March 1, 1997.

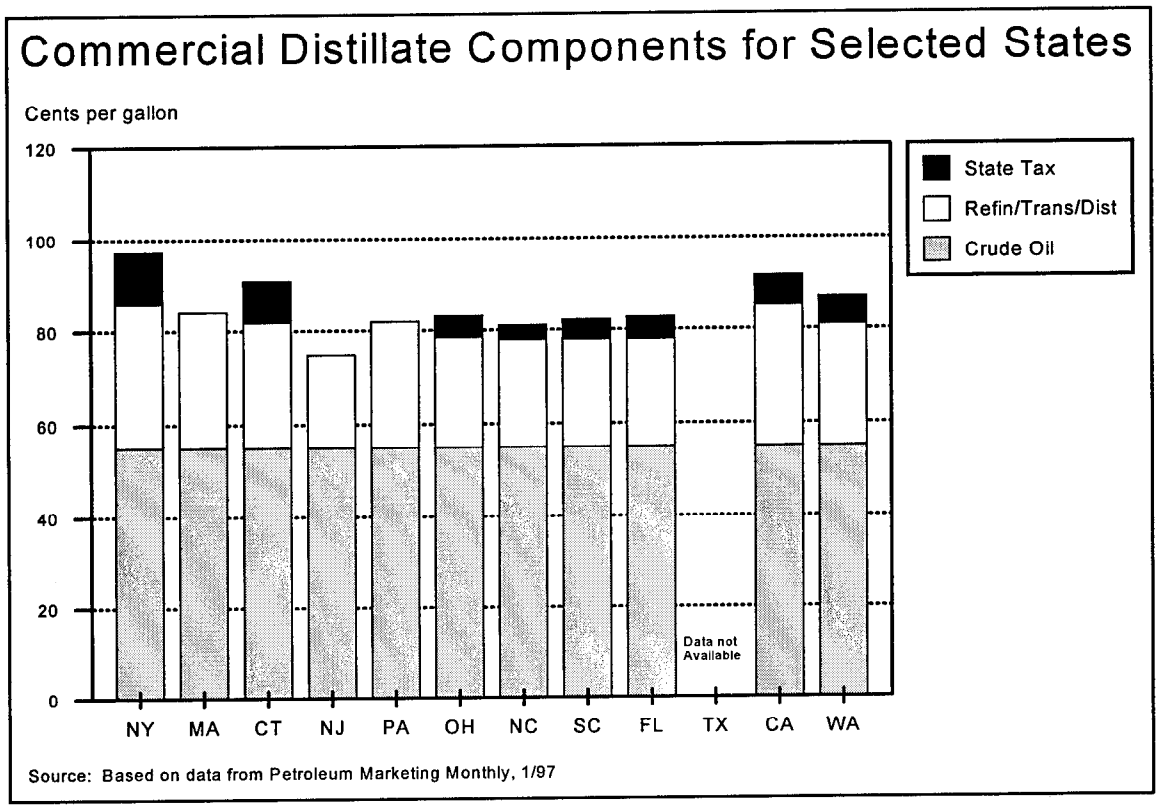

Figure 2-9

Gasoline

New York's 1996 average gasoline price for all grades of gasoline was $1.29 per gallon (excluding local sales taxes), as shown in Figure 2-10.[7] This price was higher than that in any of the states studied, with the exception of Connecticut and Washington. Connecticut's average price was 19 cents per gallon higher than New York's, due primarily to higher state taxes. Washington's average price was higher than New York's, due primarily to higher costs of transporting gasoline to retail outlets. Average gasoline prices in New Jersey and South Carolina were much lower than New York's (by nine and 16 cents per gallon,

[7] Local sales taxes were excluded in the analysis of motor fuel prices because such taxes, levied at the county and city level, vary within individual states; statewide averages were not available. In New York, local sales taxes on gasoline range from zero to 4.5 cents per gallon.

respectively) as a result of lower state taxes. Average gasoline prices in the remaining states studied were between one and eight cents per gallon less than in New York.

Gasoline prices vary from state to state largely as a result of regional differences in costs of doing business and differences in state tax policies. Refiner acquisition costs of crude oil are identical for all states because crude oil commodity prices are determined by world markets. Similarly, the federal gasoline tax of 18.3 cents per gallon is the same for all states.

In New York, State-imposed taxes total 27.4 cents per gallon, comprising about 21% of the average retail gasoline price. New York's taxes on retail sales of gasoline include the Petroleum Business Tax (PBT) of 14.35 cents per gallon; the gasoline excise tax of 8.0 cents per gallon; the State general sales tax of 4% or about 4.8 cents per gallon; and miscellaneous environmental and licensing taxes totaling 0.25 cents per gallon.[8] Most of the states studied, with the exception of Connecticut, New Jersey, and South Carolina,

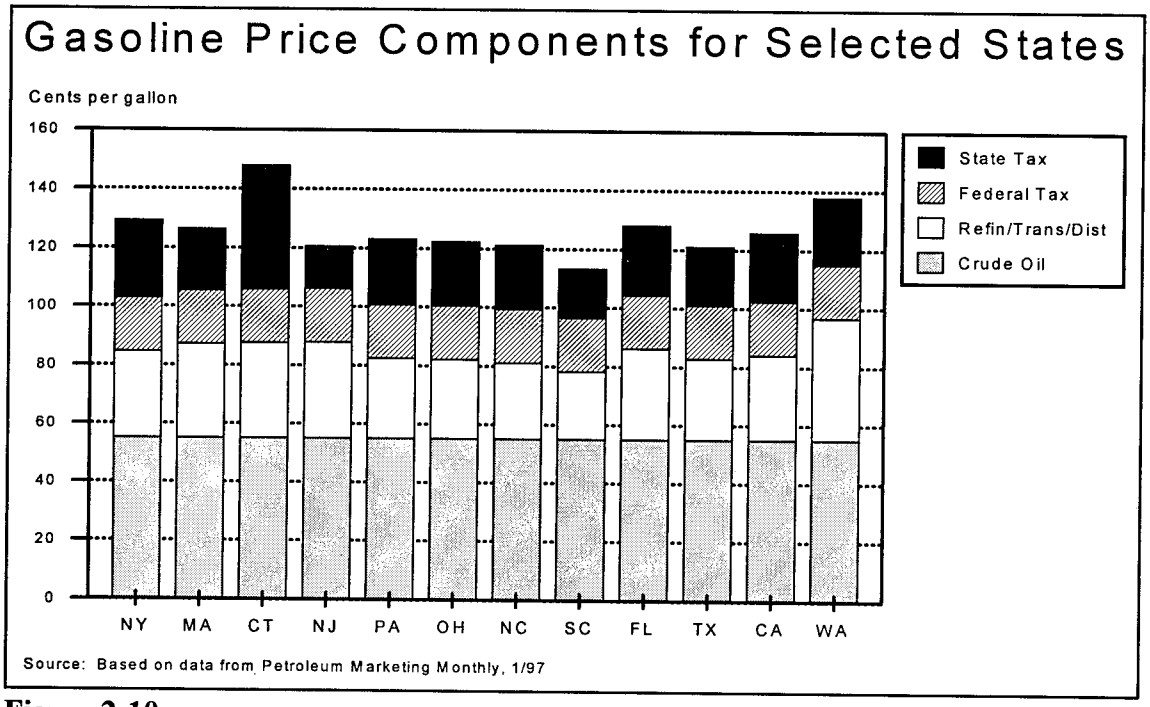

Figure 2-10

[8] Tax rates in effect as of March 1, 1997.

impose a combination of excise or other taxes on gasoline. The combined effect of these taxes on retail price is comparable to that of New York's excise tax and PBT. For example, New York's excise tax and PBT are 22.35 cents per gallon; similar state taxes in Massachusetts, Pennsylvania, and Ohio are 21.00, 22.35, and 22.00 cents, respectively. New York's average price appears to be higher than those of the other states studied largely due to the fact that it collects general State sales tax on gasoline. Of the study group states, New York and California are the only states to assess a sales tax on gasoline.

Diesel Fuel

As shown in Figure 2-11, New York's 1996 average price for diesel fuel was $1.46 per gallon (excluding local sales tax). This price was higher than that in any of the other states studied. New York's average price appears to be higher largely because it collects general State sales tax on diesel fuel. States with the lowest diesel fuel prices are New Jersey and South Carolina, both of which have relatively low state taxes as well as low refining, transportation, and distribution costs.

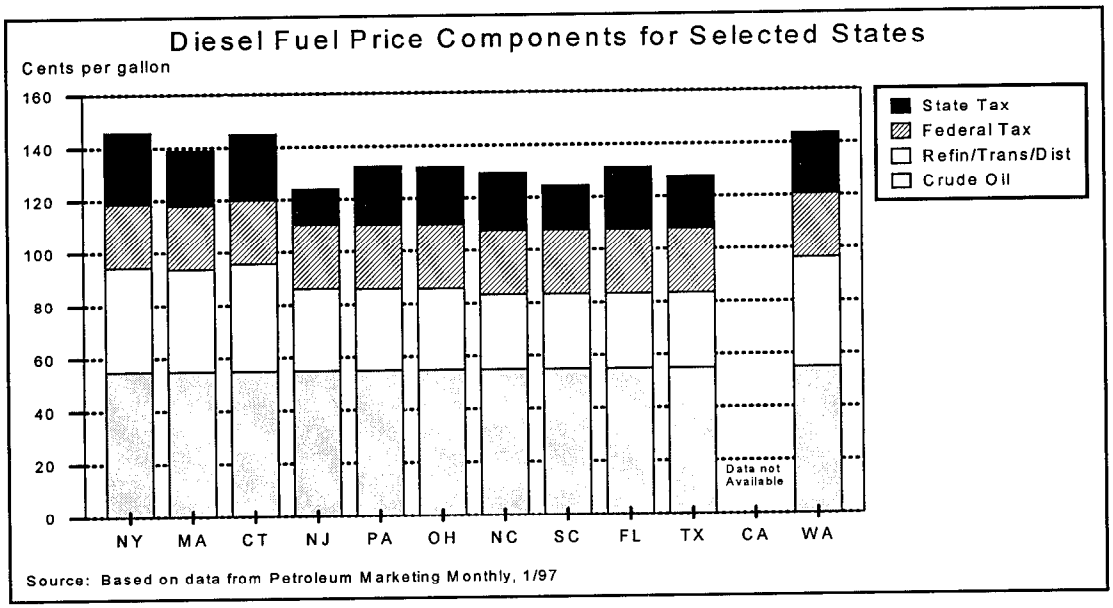

Figure 2-11

SECTION 2.2

ENERGY AND ECONOMIC DEVELOPMENT

INTRODUCTION

New York's economy will benefit from policies that promote reducing the cost of energy to consumers, ensuring reliability of its energy infrastructure and developing energy-related industries in the State. Reducing energy costs in New York can help to attract new businesses and make it easier for existing businesses to remain and expand within the State. Moreover, the increase in business profitability and consumer purchasing power that results from lower energy costs will stimulate business investment and consumer spending, and will further employment growth within the State.

New York's transition to competitive natural gas and electricity markets is expected to lower end-use energy prices and create new opportunities for economic development in the State.[9] At the same time, promotion of cost-effective energy efficiency technologies, renewable energy resources, and alternative-fueled vehicles stimulates in-State job creation, particularly when these technologies or their components are manufactured in New York.

ROLE OF ENERGY PRICES IN LOCATION AND EXPANSION DECISIONS

Geographic variation in energy prices gives businesses some degree of control over the prices they pay, but only to the extent that they can select one location over another. As a result, energy prices are a major factor in business location and expansion decisions. (See Section 2.1, Factors that Affect Energy Prices, for a comparison of New York's energy prices and components to those of selected other states.) Other considerations, of varying importance depending on the type of business, include availability and reliability of energy supply, availability of raw materials and other process inputs, access to capital, proximity to transportation systems and markets, availability of a skilled workforce, labor costs, taxes, government regulation, and environmental policies.

[9] Economic development is defined as activity that enhances the economy's capacity to produce goods and services and create or retain employment opportunities.

In a national survey of businesses that primarily included manufacturers, 81% of respondents considered energy cost and availability to be either an important or very important site-selection factor.[10] Given the particularly high cost of energy in New York, the State's manufacturers may regard energy costs as being even more significant than is indicated by the national survey. This inference is substantiated by the experience of New York's Empire State Development, which has found that energy costs are often cited by businesses as the first or second most important location consideration.

For most businesses in New York, the cost of energy represents less than 5% of total product cost. This fact, however, may be a misleading indicator of how energy prices can affect profits. In many industries, profit margins are extremely thin, representing less than 5% of gross sales.[11] An energy cost reduction, therefore, can have a substantial effect on a business's profitability.[12] Moreover, facilities in New York compete not only with those of other companies, but with facilities of the same company located in states with substantially lower operating costs. In some cases, same-company facilities compete for additional capacity and jobs; in other cases, they compete to remain in operation. Corporations routinely favor locations that have the greatest profit potential. Less profitable facilities will, at best, not be expanded. At worst, they will be closed, with a resultant loss of jobs. In this way, energy costs have a significant and direct effect on economic development in New York.

NATURAL GAS AND ECONOMIC DEVELOPMENT

Providing consumers in New York with the ability to choose natural gas suppliers began nearly 15 years ago when National Fuel Gas, a local distribution company (LDC), established a transportation service to allow local gas producers to sell gas directly to customers. Several years later, all the LDCs in New York were required to provide transportation service for larger customers. The subsequent lowering of the minimum volume threshold for obtaining such service allowed more customers to participate. Today, more than 40% of the natural gas delivered to New York's industrial and commercial customers is

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[10] *Area Development, Sites and Facility Planning*, "Corporate Survey," December, 1997.

[11] Glen Weisbrod (Hagler Bailly Consulting, Inc.) and Howard Friedman (DynCorp), "Economic Competitiveness Impacts of Utility Rates and Programs," April 1, 1996, p.8.

[12] Illustrative example: A product costs $100 to produce, of which 5%, or $5, is due to energy costs. The product sells for $105, so the profit margin is also 5%, or $5. If energy costs decrease by $1, or 20%, the profit margin would increase by $1 or 20%.

purchased directly from suppliers. This long history of offering large retail customers a choice of gas suppliers has provided significant economic benefits for these customers.

An historic expansion of the natural gas delivery infrastructure occurred in the early 1990s, increasing the availability of natural gas to customers throughout the State. This expansion involved the investment of more than $1 billion in new pipeline facilities in New York State alone,[13] providing significant temporary employment, and expanding both State and local tax bases. It also expanded the availability of natural gas to many industrial, commercial, and residential customers, thereby providing an economic alternative to other energy supplies.[14]

In 1996, the New York Public Service Commission (PSC) further expanded competition by providing retail customers with a choice of gas suppliers through small customer aggregation programs.[15] The PSC has also taken action to reduce and "freeze" gas rates, and to implement other performance incentives.[16] The combination of an increasingly competitive supply market with efforts to lower and freeze rates should result in significant economic benefits for gas customers in New York State.

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[13] Three new pipelines were constructed (Iroquois Gas Transmission System, Empire State Pipeline, and North Country Pipeline) and several existing interstate pipelines were expanded (*e.g.*, Consolidated Natural Gas Transmission, Tennessee Gas Pipeline, and National Fuel Gas supply systems). Between 1989 and 1994, the winter natural gas delivery capacity to New York increased by approximately 22%.

[14] These projects also facilitated the development of approximately 5,000 megawatts of gas-fired generation capacity within the State, creating substantial construction employment, as well as some permanent employment, and increased tax bases. While construction of these plants provided significant economic benefits, the pricing of electricity produced and sold to utilities has contributed to New York's higher electricity prices.

[15] Some utilities currently limit participation in these programs.

[16] In late 1995, the PSC approved a 32-month rate plan for the New York State Electric and Gas Company that provides a total price freeze for residential customers (allowing no rate changes even for variations in the cost of gas) and provides non-residential customers with options for indexed or fixed pricing. In 1996, the PSC approved a rate plan for the Brooklyn Union Gas Company that reduces rates by $3.8 million per year and freezes rates (exclusive of changes in gas costs) for six years. It also provides rate flexibility, allowing the company to shift some revenue responsibility between classes to reduce rates to commercial customers. Both companies have proposed to extend these programs, and a similar program has been proposed by the Long Island Lighting Company. Discussions are also underway on future restructuring and rate issues for the Rochester Gas and Electric Corporation. Recently, the PSC required that LDCs offer a fixed price natural gas option for firm commercial and industrial customers and residential customers. These plans are intended to address price volatility during the transition to a fully competitive market.

ELECTRICITY PRICE REDUCTIONS DURING TRANSITION TO COMPETITION

A PSC Order in the Competitive Opportunities Proceeding[17] set forth its "vision for the future of the electric industry," which includes "reduced prices resulting in improved economic development for the state as a whole." The PSC expects New York's competitive position to improve with the creation of additional jobs and increased opportunities for businesses and residents as a result of these lower prices.

Settlement agreements have been reached with six of New York's electric utilities.[18] Although the agreements vary on several restructuring issues, the conceptual approaches to economic development are similar in that they freeze or reduce electricity rates for all customers, with the largest rate reductions targeted for the more price-elastic, non-captive industrial and commercial customers.

LOW-COST ENERGY PROGRAMS TO PROMOTE ECONOMIC DEVELOPMENT

New York lost over 342,634 (or nearly 26%) of its manufacturing jobs over the 1985 to 1994 period.[19] This highlights the importance of job retention in the State's industries that drive economic activity, including manufacturing and other higher-wage industries that export services from the State. Economic driver industries, which are typically large, higher-wage industrial and commercial customers, support a variety of other industries that provide intermediate inputs to production of goods and services, and also support numerous service industries and retail establishments.

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[17] Case 94-E-0952, *In the Matter of Competitive Opportunities Regarding Electric Service.*

[18] A settlement agreement is a negotiated resolution signed by major parties to the proceeding. The benefit is that full litigation, which is likely to be extremely contentious, time-consuming, and costly, may be avoided. Settlement agreements reached with the Consolidated Edison Company of New York, Inc., Central Hudson Gas and Electric Corporation, Orange and Rockland Utilities, Inc., Rochester Gas and Electric Corporation, New York State Electric and Gas Corporation and the Niagara Mohawk Power Corporation. On Long Island, the Long Island Lighting Company (LILCO) and Brooklyn Union Gas Company merged to form KeySpan Energy Corporation. In a complementary transaction, the Long Island Power Authority acquired LILCO's stock, its transmission and distribution system and certain of its generating assets. For a detailed discussion of the Competitive Opportunities Proceeding, including Recommended Decisions, see the Effects of Competition on New York issue report, Section 2.3.

[19] New York State Department of Labor, *Employment Review*, December, 1996, p.7.

Governor Pataki has taken a number of steps to make New York State more attractive to business by reducing State taxes, providing incentives to lower local taxes, reducing workers' compensation costs, and modifying or removing certain regulations that hinder business productivity, and economic growth. The high cost of electricity, however, remains a major obstacle in efforts to retain, expand, and attract businesses. New York's success in working with businesses that could relocate or expand in other states frequently depends on the availability of low-cost electricity offered by various utility and State-sponsored programs. Even though a competitive market is expected to lower electricity prices, New York's prices are likely to remain higher than those of most other states in the short-term. Existing energy-related economic development programs for businesses, therefore, will continue to be necessary to help preserve and expand New York's economic base.

Utility Flexible Rates and Fixed Discount Programs

Since 1983, New York State's electric and gas utilities have fostered economic growth by providing discounted rates to commercial and industrial customers and establishing Economic Development Zones pursuant to State law. Utilities have designed economic development programs to suit the needs of their particular regions by offering varying terms and levels of discounts from the standard tariff rates, ranging from 5% to 50%. Programs include Flexible Rates, Area Development Rates, Business Incentive Rates, Economic Revitalization, and Economic Development Zone Rates.[20] These programs are designed to encourage business retention and expansion, and to encourage new businesses to expand or locate in economically depressed areas, while preventing rate increases for remaining customers that might otherwise be necessary if the participating customers were to leave the utility system. Utility economic development programs provide an estimated $70 million in discounts annually.

[20] *Flexible Rates* are designed to allow individually negotiated contracts with customers who have competitive alternatives to standard utility service. *Area Development Rates* are designed to attract new businesses in depressed areas of a utility service territory having existing, underutilized facilities. *Business Incentive Rates* are designed to bring in new businesses or expand existing commercial or industrial load in a utility's service territory. *Economic Revitalization* programs are designed to retain customers by helping them regain economic competitiveness. *Economic Development Zone Rates* are designed to attract businesses to locate in specially designated zone areas. There are currently 46 such zones in New York characterized by "persistent and pervasive poverty, high unemployment, limited new job creation, a dependance on public assistance income, dilapidated and abandoned industrial and commercial facilities, and shrinking tax base," Section 956 of the General Municipal Law.

New York Power Authority Low-Cost Power Programs

Besides providing electricity to government and other public entities, the New York Power Authority (NYPA) provides low-cost electricity to New York businesses through a number of programs designed to promote economic development. At the end of 1996, NYPA was providing 1,600 megawatts to 210 businesses, ranging from heavy manufacturing to financial services. This low-cost power supports more than 150,000 jobs Statewide.[21]

Electricity to meet NYPA's economic development objectives is produced at nuclear and hydroelectric facilities. A portion of the power generated at the James A. FitzPatrick Nuclear Power Plant, in accordance with State law, is designated as Economic Development Power (EDP), which is allocated to businesses on the basis of job creation and business retention.[22] To receive EDP, companies must commit to maintain a specific level of jobs and, in the case of business retention, invest in real property improvements. The State Economic Development Power Allocation Board, created by the Legislature, evaluates applications and makes recommendations to the NYPA trustees. Special hydroelectric allocations include 250 megawatts earmarked under State law for job creation and retention in New York's three western most counties, and an additional 445 megawatts designated by federal law for industries located within 30 miles of the Niagara Power Project.[23]

The Power for Jobs program, signed into law by the Governor in July 1997, is designed to assist businesses in the transition to more competitively-priced electric power. The program authorizes NYPA to allocate 450 additional megawatts of low-cost electricity to New York businesses that commit to preserve or create jobs, with up to 100 megawatts set aside for small businesses and not-for-profit corporations. Applications

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[21] NYPA has total generating capacity of 7,031 megawatts (summer) and provides about 25% of New York's electricity. In 1996, NYPA's output consisted of 62% hydropower, 32% nuclear and 6% natural gas and oil. Besides providing electricity, NYPA provides energy efficiency assistance and other customized services to assist its customers and other public entities to lower energy costs.

[22] EDP provides for job creation and business revitalization throughout the State. Provisions for business retention apply only in New York City and seven suburban downstate counties.

[23] New York's businesses also benefit from NYPA's Municipal Distribution Agency (MDA) power, another designated portion of FitzPatrick nuclear power that is sold to downstate local municipal distribution agencies. Similarly, NYPA's sales of low-cost power to the State's 51 municipal electric systems and rural cooperatives benefit many businesses located within these service territories.

are recommended by the EDP Allocation Board to the NYPA trustees. Half the electricity provided under the Power for Jobs program is produced at the FitzPatrick Nuclear Power Plant; and the remainder will be purchased by NYPA under a competitive procurement process. The Power for Jobs program is funded by Gross Receipts Tax credits to compensate investor-owned utilities for net lost revenues, and by a contribution from NYPA. In addition to its value in creating and retaining jobs, Power for Jobs will benefit all electric customers in New York by helping to stabilize the customer base from which utility fixed costs are recovered.

OTHER STATE ACTIVITIES TO ENHANCE ECONOMIC COMPETITIVENESS

New York State Energy Research and Development Authority (NYSERDA)

NYSERDA's research and development program is designed to encourage economic development by improving energy efficiency, promoting New York State-manufactured energy and environmental products, and maximizing the contribution of the State's renewable and indigenous energy resources. These objectives are achieved by creating partnerships with businesses, utilities, universities, and municipalities to advance technology research and development and to facilitate the transfer of new technology into the marketplace. Through its Energy Efficiency Services program, NYSERDA also works directly with businesses, institutions, and municipalities to improve their energy efficiency and cut operating costs through the use of commercially available technologies.

Legislative Actions

Tax legislation enacted in 1997 promotes economic development by reducing the energy taxes paid by the State's employers. The Gross Receipts Tax (GRT), collected by utilities but paid by both businesses and consumers, will be lowered from the current level of 3.50% of total utility revenues to 2.50% by 2000.[24] The legislation also reduces the Petroleum Business Tax (PBT) on oil used by commercial and industrial

[24] The GRT reductions occur in three stages, beginning in 1998.

customers by up to eight cents per gallon,[25] and completes the phase-out of the 15% business tax surcharge. The business tax surcharge was a "tax on a tax" that added 15% to the amount of GRT collected from all customers.

Securitization Legislation

"Securitization" of utility stranded costs[26] is the issuance of asset-backed securities to refinance utility debt associated with stranded costs. These bonds, which would be serviced and repaid from the utilities' proceeds from their supporting assets, would result in savings to utility customers. Securitization legislation was twice passed by the State Senate, and the State Assembly passed a securitization provision in a bill toward the end of the 1997 Legislative Session. The two houses, however, have not agreed on a securitization program.

Emission Reduction Credits

Title I of the federal Clean Air Act (CAA) amendments of 1990, in addressing ozone nonattainment,[27] requires that new and expanding facilities with emissions that exceed certain thresholds for nitrogen oxides (NO_x) and volatile organic compounds (VOCs) must obtain emission reduction credits (ERCs) to offset their emissions by a ratio greater than one-to-one.[28] ERCs can be purchased from facilities that have been shut down or from facilities that have implemented emission control measures to reduce their emissions below regulatory limits.

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[25] Effective in 1997, the net PBT on commercial heating fuel and railroad fuel was reduced by three and seven cents per gallon, respectively. Effective in 1998, the manufacturing fuel oil PBT will be eliminated, with a benefit of 6-8 cents per gallon. Also, the net PBT on diesel fuel will be reduced by 0.75 cents per gallon in 1998, with an additional one-cent-per-gallon decrease in 1999.

[26] Stranded costs are costs associated with utility investments that, under a restructured industry, will not be fully recoverable in rates or through the sale of the asset because of competition-induced price declines.

[27] For a more detailed discussion of air quality and other environmental issues, see the Energy and the Environment issue report, Section 2.4.

[28] Affected facilities, which could be electric generation, industrial or commercial, must offset emissions at a ratio of 1.3:1 in the New York City metropolitan area and 1.15:1 in the rest of the State.

The requirement that new facilities obtain ERCs means that economic development in New York will not occur at the expense of air quality. Moreover, in as much as new facilities are required to obtain ERCs for more tons than they emit, aggregate Statewide emissions are likely to decrease as new facilities are built.

To increase the availability of ERCs to new and growing businesses in New York, Governor Pataki issued an executive order that requires State agencies to evaluate opportunities to create ERCs by pursuing energy efficiency measures, fuel-switching, or the shutdown of institutions, such as health care facilities. All ERCs, whether created by State agencies or private businesses, must be certified by New York's Department of Environmental Conservation, which maintains a public registry of ERCs available for purchase. ERCs created by State agencies may be offered by New York's Empire State Development as part of a financial incentive package to private businesses moving to or expanding operations in New York.

The ERC requirement does not apply in many out-of-state regions with which New York competes for business, such as the Midwest and the South,[29] in spite of these regions' contribution to ozone nonattainment in the Northeast. New York is addressing this issue through petitions to the U.S. Environmental Protection Agency.

ECONOMIC DEVELOPMENT POTENTIAL OF REDUCING ENERGY COSTS

Reducing energy costs in New York will make the State's businesses and industries more competitive with other states and regions of the nation. As a result, New York will be better able to attract new businesses, and to retain and expand existing businesses. Moreover, lower energy costs will increase business profitability and consumer purchasing power which will stimulate business investment and consumer spending, and contribute to continued job growth.

[29] The ERC offset requirement for new and expanded facilities applies to the northeastern states in the Ozone Transport Region (OTR), established by Title I of the CAA amendments. The OTR includes Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, northern Virginia, and Washington, DC.

The following economic analysis, using the REMI Statewide economic model for New York,[30] demonstrates the importance of energy rate reductions as a means to stimulate increased economic growth in the State. The model simulates inter-industry transactions and trading flows into and out of the State, based on the cost of doing business. The relative cost of doing business is built up for each industry based on wages, costs of intermediate inputs, fuel costs, and taxes. Important indicators of economic development potential include *gross output*, or total sales value of goods and services produced, which is an indicator of total economic activity in the State; *gross state product*, which measures only the value-added portion of economic activity in the State; *annual wages*, which measures the aggregate income paid to in-State-employees; and *employment*, which is the number of in-State jobs.

This analysis reflects the expected effects on economic activity of increased business profits and consumer spending that results from reducing electricity costs. Due to the remaining uncertainty regarding restructuring, stranded cost recovery, legislation dealing with securitization of assets and other issues, this analysis does not estimate the effects on economic activity associated with a reduction of utilities' revenue.

The analysis estimates that an electricity rate reduction of $100 million per year would stimulate the development of approximately 1,100 to 1,600 jobs in New York, while increasing the State's gross output of goods and services by $155-$230 million, gross state product by $99-$114 million,[31] and annual wages by $43-$53 million. Generally, incremental jobs, wages and output of goods and services created as a result of an energy rate reduction would be sustained over time because the incremental business profits and consumer purchasing power would be available in each subsequent year, resulting in a continued higher level of business investment and consumer spending.

New York's future economic growth depends on retaining and creating jobs that lead to increased economic activity across all sectors of the State's economy. As indicated by the above analysis, energy rate reductions are likely to result in economic benefits for the State. Additional in-State jobs supported by one job in selected industries are shown in Table 2-3. For economic driver industries, *i.e.*, higher-wage and

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[30] The REMI Economic and Demographic Forecasting Model, developed by Regional Economic Models, Inc. of Amherst, MA., is a 53-sector dynamic structural model of the New York State economy that is linked to a U.S. economic model.

[31] As gross state product reflects only the value-added portion of consumer spending, $10 of incremental discretionary income spent at a retail store would contribute a much smaller amount to gross state product if the item purchased was produced in another state or nation.

export-oriented industries that help support a variety of other industries, the economic impacts associated with retaining, attracting, or expanding the business operations in New York extend far beyond the facility's on-site jobs. For example, one electrical equipment manufacturing job and one chemical manufacturing job are estimated to support an additional 0.9 and 1.8 jobs, respectively, in other industries in New York. Similarly, one data processing job and one job in the credit/finance industry are estimated to support 0.7 and 2.1 additional jobs, respectively. This analysis underscores the importance of pursuing energy policies that stimulate economic growth in New York.

Additional Jobs Supported by One Job in Selected Industries

	Additional Jobs
Manufacturing	
Electrical Equipment	*0.9*
Printing	*1.1*
Chemicals	*1.8*
Large Commercial	
Data Processing	*0.7*
Credit/Finance	*2.1*
Small Commercial	
Food/Drink	*0.1*
Other Retail	*0.3*

Table 2-3

EMPLOYMENT IMPACTS OF ENERGY EFFICIENCY IMPROVEMENTS

Energy efficiency improvements can increase economic development in the State by reducing annual spending for energy.[32] Since New York imports most of its primary energy supplies from other states and foreign sources,[33] a large portion of the State's $33-billion annual energy expenditure flows out of the State's economy to pay for fossil fuels consumed directly by end-users or used to generate electricity.[34] While imported energy supplies also contribute to some economic activity within the State, investment in

[32] For a discussion of the energy-reduction potential of energy efficiency technologies, see the Energy Efficiency Resource Assessment, Section 3.4.

[33] In 1996, about 10% of New York's total end-use energy requirements were met from indigenous resources, of which over 90% was hydroelectric power.

[34] In 1995, New York's $33 billion end-use energy expenditure consisted of $14.7 billion for electricity, $5.7 billion for natural gas, $12.9 billion for petroleum products, and $0.1 billion for coal. Petroleum products include distillate and residual oil, motor gasoline, aviation fuels, kerosene, and propane.

cost-effective energy efficiency reduces economic leakage, as more dollars are retained in New York's economy, thereby increasing discretionary income within the State. Savings that result from cost-effective energy efficiency improvements can be used to foster additional business and consumer investment, as well as to increase consumer spending for non-energy related products and services, some of which create additional new jobs in the State. In addition to the jobs created by in-State spending of energy savings, jobs are created by the purchase and installation of new equipment, to the extent that the equipment or its components are manufactured in New York, purchased from in-State suppliers and installed by in-State labor. For example, the estimated number of jobs per $1 million investment that would be created as a result of purchase, installation, and operation of a diversified package of cost-effective energy efficiency measures at a manufacturing facility is shown in Table 2-4. For this facility, implementation of energy efficiency measures is estimated to result in a Statewide employment increase of 58 job-years for each $1 million invested.[35] Of this amount, 17 job-years, or 29%, are associated with equipment purchase and installation, while 41 job-years, or 71%, are associated with energy savings. Most of the job-years associated with equipment purchase and installation are likely to be concentrated in the first year, while the job-years associated with energy savings are likely to be distributed more evenly over the life of the equipment, which is assumed to be 10 years.

Employment Impact per $1 Million Investment in Energy Efficiency*

	Total Job-Years	*Percent*
Purchase/Installation	17	29
Energy Savings	41	71
Total	58	100%

* Example based on simulation for a paper-products manufacturing facility using the REMI model. The diversified package of energy efficiency measures includes lighting improvements, energy efficient motors, variable-speed drives, and various process improvements that reduce both electricity and natural gas consumption. The measures, most with payback periods under four years, were recommended as a result of an on-site energy evaluation performed under NYSERDA's FlexTech program.

Table 2-4

While the direction of the net job creation from investing in energy efficiency is clear, the precise number of jobs created is highly site- and industry-specific and very sensitive to assumed parameters regarding

[35] One job-year represents one person working full-time for one year. Consequently, 58 job-years could represent 58 people working for one year or, alternatively, an average of 5.8 people working for 10 years.

business and consumer spending patterns, payback periods, and useful lifespans of the technologies installed. The above example is based on a package of very cost-effective measures, most of which have payback periods of less than four years. Further, the measures are assumed to accrue savings for only 10 years. Payback periods for potential energy efficiency measures could be longer, which would reduce the net job impact. On the other hand, many measures could be expected to accrue savings for more than 10 years, which would increase the net job impact.

SECTION 2.3

EFFECTS OF COMPETITION ON NEW YORK

INTRODUCTION

Since the 1994 State Energy Plan (SEP) was issued, much has been discussed and written about the movement to competition in the natural gas and electricity industries. New York is one of many states reassessing the effectiveness of its regulation of these industries, which together with the loosely regulated oil and coal industries, form the vital energy infrastructure on which the State's economy depends.

When the 1994 SEP was adopted, the debate in the electric industry was centered on how much competition should be allowed and how soon competition should be instituted. The emerging competitive market in natural gas was just beginning to unfold. The 1994 SEP stopped short of endorsing wide-scale retail choice for natural gas or electric suppliers. With regard to electricity and natural gas, the 1994 SEP encouraged the development of a fully competitive wholesale market, but did not set a definitive goal when customers would have full retail access to alternative electric and natural gas suppliers. In the past few years, consensus has been reached in New York that competition for providing retail electricity and natural gas services is desirable and should be allowed. Recently, New York State has taken aggressive steps to introduce retail competition to its electric and natural gas industries. In 1996, the New York State Public Service Commission (PSC) implemented a program designed to provide all customers the right to choose natural gas suppliers, and it has recently adopted plans to allow electricity consumers the same freedom of choice. These steps constitute a dramatic change in providing these energy commodities and services, which, as mentioned above, have traditionally been provided by single companies responsible for supply, delivery, retail sales, and service. These efforts will provide significant assistance in the State's efforts to stimulate economic development.

This section examines the conditions leading to, and the benefits expected from, New York's decision to provide customer choice in both of these critical industries. It will also describe New York's vision for competitively providing electricity and natural gas, and the State's plans for achieving that vision.

MAJOR FORCES FOR CHANGE

The movement toward allowing competition in this country for services traditionally provided by regulated monopolies is not new. In the United States, the trucking, railroad, airline, and telecommunications industries have already been restructured to encourage greater competition and more customer choice.

Prior experience in restructuring highly regulated industries has demonstrated overall significant benefits such as decreased prices, increased customer choice, and product innovation. The other major sources of energy, such as coal and petroleum, effectively operate in a competitive energy market and provide consumers with choice of suppliers and services. Allowing competitive forces freer reign in electricity, natural gas, and customer service markets is expected to provide similar benefits. However, because electricity and natural gas are so vital to public health and safety, as well as to the State's economy, policy makers have been moving cautiously. Thus, the decision to restructure New York's electric and natural gas industries has been made only after an exhaustive review of the impacts of, and alternatives to, restructuring.

Price Differentials and Technological Changes

New York State electricity and natural gas customers have in recent years become increasingly dissatisfied with high energy prices, especially in comparison to prices for other commodities and services. Consumer dissatisfaction with both utilities and regulators, and regional price disparities in energy prices have been strong motivators for structural changes in the energy industries. New York's natural gas and electric prices are not competitive with most other regions of the country. As discussed in the Factors that Affect Energy Prices Issue Report (see Section 2.1), many reasons exist for variations in price among states and regions, including proximity to commodity supplies, labor costs, taxes, legislative and regulatory mandates, and environmental regulations.

In addition, technological advances will continue to increase efficiency in natural gas and electricity production, storage, and use. Such innovations can cause shifts in the economies of scale in production, and also have profound effects on the utilization of electricity and natural gas. The effects of technological developments on these industries is difficult to predict and has confounded the best attempts by regulators to formulate policy based on forecasts of future fuel availability and usage.

Energy Policy Evolution

The restructuring movement originated in federal and state laws and regulations, implemented in reaction to changing economic and technological forces. These laws and regulations have set the stage for a new era of competition in energy services.

Natural Gas Policy Evolution

As the natural gas system is largely interstate in nature, federal laws and regulations have profoundly affected the production, transmission, and delivery of natural gas. At one time, natural gas prices were strictly controlled and natural gas was available only for certain uses, such as heating. However, decontrol of natural gas wellhead prices started in the 1980s and, in Order 636, the Federal Energy Regulatory Commission (FERC) eliminated the merchant role of regulated interstate pipeline companies[36] and transferred responsibility for natural gas supply acquisitions to local natural gas distribution companies (LDCs)[37]. In New York State, the PSC has required LDCs to unbundle services and provide customers with the ability to choose natural gas suppliers through small customer aggregation programs. Emerging forces will continue to change the natural gas markets and the way consumers purchase this commodity. (See Section 3.2, the Natural Gas Resource Assessment, for details.)

Electricity Policy Evolution

Federal statutory and regulatory changes have also reshaped the electric industry. Beginning in the late 1960s, a combination of factors led to sizable increases in electric prices which, in turn, caused customers to reduce demand. These factors included inflation (which increased the capital costs for construction of utility plants), fuel cost increases, and growing difficulties in siting new large nuclear and coal plants due to the increased awareness of their perceived potential negative environmental impacts.

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[36]A gas merchant sells gas. Interstate pipeline companies now simply transport customer-owned gas, and their marketing affiliates compete with producers and other marketers to sell gas.

[37]LDCs distribute gas to retail customers and are regulated by the PSC.

In 1978, the U.S. Congress passed the Public Utility Regulatory Policies Act (PURPA) to blunt America's ever-increasing appetite for foreign oil, especially for the production of electricity. PURPA encouraged the use of indigenous, renewable, and energy-efficient cogeneration technologies by exempting such facilities (called qualifying facilities, or QFs) from most state regulation and by mandating that utilities purchase their electrical output.

PURPA specified that the price paid by the purchasing utility be the cost the utility would otherwise incur in generating the power itself or in purchasing it elsewhere, the utility's so-called "avoided-cost." PURPA directed FERC to promulgate regulations that would govern transactions between utilities and QFs and delegated to the states responsibility for implementing the law's requirements, including calculation of avoided-costs. In New York State, the PSC set avoided-cost schedules based on long-range forecasts of electricity prices, and legislation was passed that set a floor price of six cents per kilowatt hour for utility contracts with QFs to further stimulate their development.

However, primarily because the price of oil did not increase as forecasted, many of the contracts signed between the utilities and QFs for power became over-priced and contributed to sharp increases in electricity rates in the early 1990s. Although the State Legislature repealed the Six Cent Law in 1992, and the PSC revised its avoided-cost projections downward, the existing contracts for QF power were "grandfathered," putting upward pressure on rates.

Congress' enactment of the Energy Policy Act of 1992 (EPAct) signaled its support of the movement toward competition for the wholesale electricity market. In adopting EPAct, Congress stated explicitly that it is federal policy to promote competition among generators for the benefit of ratepayers. In implementing Congress' action, FERC provided a major push forward for the competitive electric market with the release of Orders 888 and 889 in April 1996. These orders require all public electric utilities to file open access, nondiscriminatory transmission tariffs that make transmission service available to any wholesale market participant on the same rates, terms, and conditions they provide to themselves. FERC has also streamlined its process for considering merger applications by focusing on competitive market impacts. (For a more detailed discussion of the evolution of electricity policy, see the Appendix entitled "Effects of Competition on New York," that is available on request.)

INDUSTRY RESTRUCTURING - A VISION FOR THE FUTURE

In many ways, the restructuring of the electric industry has been patterned after the reorganization and selective deregulation that has taken place in other regulated industries, particularly natural gas. However, production, distribution and sales functions in the electric industry are more tightly integrated than in the gas industry.

The current electric industry structure is dominated by vertically integrated utility monopolies that own the generation, transmission, and distribution systems. Although 23% of New York State's electricity comes from independent power producers,[38] this production has been tied to firm long-term contracts that have not operated in a competitive market. There are many different ways to increase competition in the electric industry, each of which would affect customers and providers differently. The PSC considered two basic industry models. One emphasizes wholesale competition, where electricity generation is separated from transmission and distribution and is largely deregulated. Under this model, the regulated distribution utility would buy power from competing generators, which might include both completely independent companies, and separate subsidiaries or business units of current utilities. The market, rather than regulators of utilities, would set the rate for wholesale power. The second model introduces competition at the retail level as well as the wholesale level. Under this model, consumers could choose their generation supplier and also the company that would provide them with other services, such as billing, advice on energy efficiency and conservation and possibly metering. The rates for these services would be largely deregulated, especially the rates for electric generation.

In its Opinion and Order regarding competitive opportunities for electric service, Opinion No. 96-12, the PSC endorsed an industry structure that allows for direct retail access to competitive sources of electricity. In reaching this decision, the PSC considered, among other things, the desires of consumers to shop for electricity from a variety of electric providers, the consumers' ability to obtain full information about electric service and pricing options, the benefits of having rates set by the market rather than by a regulatory body, and the ability of consumers to choose the level of electric service reliability they desire. Generation and energy/customer services are in the process of being deregulated. Generation and

[38] In 1997, New York generated or imported 148,882 GWh of energy; Independent Power Producers generated 34,783 GWh, or 23% of the total.

transmission reliability will be coordinated by an independent system operator (ISO). The ISO will use short-term bid prices to manage the hour-to-hour operation of the system, and will coordinate ancillary services to ensure reliable operation of the electric supply of the transmission grid. Many customers now have a choice among suppliers of electricity, because bilateral contracts will be allowed between generating companies, marketers, energy service companies (ESCOs), and end-use customers. Customers now have the option of purchasing electricity not only from the generating stations in their local area, but from generators from other parts of the State and even from other states. This increased choice for consumers will provide them with the opportunity to purchase electricity from sources that may have lower prices than their current suppliers.

A regulated distribution company (the existing utility or successor) will operate and maintain the distribution system in each service territory and be obliged to connect customers. In the long-term, unregulated ESCOs might be the primary interface with customers, acting as intermediaries between customers and suppliers providing power. An ESCO would contract with generating, and transmission and distribution companies to purchase power and delivery services, which could then be repackaged to end-users. ESCOs could also choose to purchase electricity on the spot market and use electricity futures contracts to help electricity buyers and sellers manage the business risk. These mechanisms are relatively new to the electric industry and mark the beginning of a new era in electric power pricing. At least until the market is fully developed, the regulated distribution company will likely be the provider of last resort and serve customers who either cannot, or choose not to be, served by ESCOs.

For both the electric and natural gas industries, many important and complex issues and tasks remain in making the transition to a competitive market, especially with regard to public interests. These include: determining how to assign responsibility for utility costs associated with investments that could become uneconomic in a competitive environment (strandable costs); subjecting all generation technologies to market discipline; ensuring that all consumers continue to receive safe and reliable service; monitoring the environmental effects of restructuring; ensuring that environmental and social programs continue to be provided as electricity markets become more competitive; and ensuring that no entity is able to exercise undue market power that will compromise competition. (These issues and tasks are discussed in the Appendix entitled, "Effects of Competition on New York.")

Customer Perspective on Industry Restructuring

From the customer's perspective, unbundled services and increased competition are not goals in themselves, but vehicles to reduce costs and offer greater service options. Customer interest in unbundling or in changing suppliers will be measured by public perception of value which, in turn, will be a function of cost savings and service qualities. Therefore, customer participation in the emerging retail natural gas and electric markets will likely be influenced by:

- Potential cost savings and perceived value, which may be uneven across customer sectors or groups.
- Service reliability, including standards and continued service availability for low-income and payment-troubled customers.
- Customer confidence, including the degree of customer interest in combination services and the need for innovative aggregation service offerings for small customers.

Some, and perhaps all, customers might be able to select a company to provide any or all of the following services and a variety of pricing options: purchase of electricity from the supplier, energy efficiency services, metering, and billing, or any combination of these services. A service firm might be able to offer, for example, a package of services that includes telecommunications, natural gas, and electric service. The range of options may be limited only by the imagination and the economic realities of the marketplace.

In a fully competitive retail market, customers should be able to choose the combinations of price, service, reliability, and environmental characteristics that suit them best. Competition will encourage suppliers to be responsive to customers, not only delivering service at lower cost, but also providing service and products consistent with customer needs and desires.

ENVIRONMENTAL IMPACTS OF RESTRUCTURING

Certain aspects of electric industry restructuring could have potential impacts on the environment, both positive and negative, particularly with regard to air quality. Competition could result in the retirement of existing oil- and coal-fired plants and the construction of more efficient natural-gas-burning units. Increased choice could allow customers to choose clean or renewable power for all or a portion of their

supply. Energy service companies might successfully package electricity sales with energy conservation services, resulting in lower usage.

Conversely, older, higher-polluting plants might compete successfully and become dispatched more frequently. Increased access to the transmission system could allow electricity generated from dirtier and cheaper plants, that are not subject to stringent air emission controls, to reach new markets. As a result, the long-range transport of air pollutants could affect the ability of downwind areas to meet ambient air quality standards.

These considerations led the PSC to issue a positive declaration of potential environmental impact under the State Environmental Quality Review Act (SEQRA). Therefore, the PSC prepared a Final Generic Environmental Impact Statement (FGEIS), which was issued shortly before it issued Opinion No. 96-12, its policy statement on competition. The PSC found that, although the move to competition will have environmental impacts that would be hard to distinguish from alternative actions, such as maintaining the current industry structure, several mitigation measures to minimize potential adverse impacts are needed. These include: use of a system benefits charge to support energy efficiency, research and development, and environmental programs, and advocacy at the federal level to require upwind sources of air emissions to adhere to equitable environmental standards in the new competitive industry, as described in the Energy and the Environment Issue Report (see Section 2.4). New York's efforts in regional and national policy forums have resulted in policy actions designed to mitigate the potential for upwind sources to affect New York air quality negatively.

In addition, the settlement agreements approved under the PSC's competitive opportunities proceeding, and the Long Island Lighting Company/Brooklyn Union Gas Company merger agreement, contain one or more provisions requiring the utilities to undertake certain actions designed to protect the environment. These provisions include: an assessment of alternatives (such as demand-side management or distributed generation) to large upgrades of the transmission or distribution system; support for equitable interstate air emission standards; support for renewable and clean distributed generation technologies; an analysis of the effect of distribution pricing structures on energy usage; support for the adoption of updated energy conservation construction codes; funding for the System Benefits Charge; if securitization legislation is enacted, a provision that the PSC consider allocating a portion of the savings for energy efficiency and technology; the retirement of SO_2 allowances, rather than trading or banking; support for long-term

environmental monitoring; and support for the inclusion of certain environmental protection provisions in federal utility restructuring legislation. Additionally, the PSC conducted a review of the settlement agreements under SEQRA, finding that the impacts were within the conditions and thresholds of the FGEIS.

In approving these settlements, the PSC also recognized the importance of informed customer choice and the need to give customers useful environmental information. Therefore, the PSC endorsed agreements reached by the utilities and parties to cooperate to develop and implement a mechanism — if feasible, meaningful, and cost-effective — to disclose fuel mix and principal emissions characteristics of the generation sources of each electricity retailer. The staff of the Department of Public Service, with extensive consultation with the utilities and interested parties, developed recommendations for an environmental disclosure mechanism and issued a white paper on the topic in August 1998. A recommendation and evaluation of party comments were considered by the PSC and an Order was approved in November 1998.

As a result of the finding and conditions developed in the FGEIS, issued as a result of Opinion No. 96-12, the PSC continued to examine the environmental impacts associated with implementing each step of the settlement agreements, including divesiture plans to auction and transfer most utility-owned electric generating facilities.

After examining several power plant divestiture plans, the PSC issued a Supplement Generic Environmental Impact Statement (SGEIS) which addressed issues not adequately examined in the FGEIS including land-use agreements and property tax mitigation. These site-specific issues are associated with the specific and detailed divestiture and property transfer plans filed by three utilities (Orange and Rockland Utilities, Inc., New York State Electric and Gas Corporation and the Niagara Mohawk Power Corporation). The PSC adopted a Final SGEIS for each of the three divestiture plans and adopted mitigation for property tax impacts under certain circumstances. The PSC also completed the SEQRA review of a fourth divestiture plan (Consolidated Edison Company of New York, Inc.), but did not require additional mitigation because no additional potential impacts were identified. The PSC will continue to examine the environmental impacts associated with the move to competition to ensure that appropriate mitigation measures are implemented, as necessary, as the electric industry is restructured over the next five years.

COMPETITION PLANS AND PROGRESS

Natural Gas Developments and Trends

Federal

Federal regulatory actions are pivotal in the continuing evolution of the natural gas industry. The issuance of FERC Order 636 raised numerous transitional issues about the economic efficiency of interstate pipeline rates and the equity of cost allocations, especially to customers that continue to take bundled service from LDCs. FERC continues to examine interstate pipeline rate design, natural gas supply curtailment policies, and pipeline capacity contract turnback and release rules. FERC decisions will have a significant impact on LDCs, marketers, and customers in the near future as the natural gas industry becomes more competitive.

State

Opening up the interstate pipeline system to customer-owned natural gas conferred the benefit of increased competition and lower prices chiefly on large-volume customers. The PSC recognized that this benefit, while important to the State's economy, should be made available to all customers.

Large-usage customers were allowed to purchase natural gas from non-LDCs and, in 1996, LDCs were required to unbundle services for small customer aggregation programs. These two actions provide customers with the ability to choose natural gas merchants. Marketers may now compete for customers, aggregate small customer demands, and pay the LDC to deliver natural gas to these customers. Customers need only purchase those services that they require from the LDC, such as transportation or storage. To provide access to the natural gas producers and to soften the rate impact of these changes, the PSC allowed LDCs to assign upstream interstate pipeline capacity to customers converting to transportation-only service for a period of three years. At the end of this period, some of the transportation contracts will begin to expire and customers will then be able to contract directly with pipeline companies for interstate transportation needs.

Although the PSC required LDCs to implement unbundled small-customer aggregation programs in 1996 to give all customers, including residential consumers, the ability to choose among natural gas suppliers, the unbundling of natural gas services for small customers is in its infancy.[39] Progress in small customer aggregation, however, has been slower than expected. PSC staff estimates that, as of July 1998, 39,500 small customers have taken advantage of transportation services, which represents about 5% of total natural gas retail customer demand. Work is continuing to further unbundle services, resolve rate and administrative issues, remove barriers to market entry for natural gas merchants, eliminate barriers to a reduced merchant role for LDCs, and educate customers. Further actions are being considered to clarify the roles and responsibilities of LDCs and upstream merchants to ensure a fair, open, sustainable, and reliable competitive multi-provider environment, while preserving system reliability and expanding customer choice.

The Department of Public Service (DPS) staff conducted a study that involved 15 roundtable discussions with representatives of all stakeholder groups to explore issues related to the future role of LDCs and address the challenges posed by the changes within and affecting the natural gas industry. The PSC recently released the DPS staff report for comment. The DPS study found several major emerging trends likely to be experienced in New York, and provided views gathered from stakeholders on the future role of industry segments and regulatory challenges.

- The role of LDCs as natural gas merchants will diminish.
- The merchant function will increasingly be provided by larger and more integrated companies, with marketers expected to become the dominant players.
- Through mergers and acquisitions, and the movement to "energy companies," there may be fewer and larger combination natural gas and electric companies.
- Some of the other functions now performed by LDCs will be provided on a competitive basis by new entrants as the marketplace creates new products, alliances, and solutions.

[39] LDCs in New York have provided interruptible transportation service for larger commercial and industrial customers since the mid-1980s; such transportation now accounts for approximately 32% of LDC deliveries (excluding those to utility power plants) on a Statewide basis.

The DPS staff study concluded that the most effective way to establish a robustly competitive market in natural gas supply is to separate the merchant and distribution functions, ensuring that natural gas is universally provided on a competitive, deregulated basis. This would also resolve "level playing field" issues between LDCs and other merchants, including any subsidies embodied in existing bundled-sales services, as well as tax inequities. The need to regulate LDC purchasing practices would be eliminated, substituting instead market discipline to set prices. A number of impediments to achieving this model must be addressed and, most likely, additional issues will arise along the way.

Electricity Developments and Trends

Federal

The past two years has seen the introduction of several federal legislative proposals that would mandate restructuring of the electric industry to introduce competition. Most notable are proposals to mandate national retail competition and strandable-cost policy, modifications to or repeal of the Public Utility Holding Company Act (PUHCA) and PURPA, privatization of the federal power agencies, and protections for public policy programs (*e.g.*, renewables, demand-side management, public benefit research and development, and low-income efficiency programs). These proposals, if adopted, could dramatically change the electric industry, from the generating station to the customer's meter.

In some respects, federal restructuring legislation might assist state attempts to adopt competition. On the other hand, it could compromise the progress that some states, including New York, have made in moving toward a competitive industry, especially with regard to the State's concerns for system reliability, environmental protection, and ratepayer impacts.

The PSC, through the National Association of Regulatory Utility Commissioners (NARUC), continues to urge the Federal government not to mandate retail access by a date certain, but if it does, to grandfather programs already established by the states and allow states the flexibility needed to resolve strandable costs and benefits, and other issues, unique to individual states.

State

Nearly every state, including New York, has been engaged in evaluating whether to encourage structural changes in response to competitive challenges. Increasing electricity rates in New York since the mid-1980s, and resulting actions by consumers, particularly industries, to bypass the utility systems (by exiting the State or installing or using their own generating equipment), led the PSC to initiate a proceeding on March 19, 1993, to address these matters. The PSC also believed that competitive markets could bring benefits to consumers that a regulated market could not. As a result, the PSC issued guidelines for implementing flexible pricing for customers with competitive options. In 1994, the PSC expanded this investigation to include issues related to moving all customers to a competitive electric market.

Utility Restructuring Filings

After conducting Statewide hearings and receiving comments from hundreds of parties throughout the State, the PSC set forth its vision for a restructured electric industry in its "Opinion and Order Regarding Competitive Opportunities for Electric Service" issued on May 20, 1996. The PSC called for a wholesale market structure, which allows trading through a pool and bilateral contracts. Retail customers would also have access to alternative suppliers as soon as practicable. Utilities were also to separate generation functions from transmission and distribution (T&D) functions, preferably by divesting power plants.

The PSC's goals for transition to retail competition included:

(1) Lowering rates for consumers;
(2) Increasing customer choice;
(3) Continuing reliability of service;
(4) Continuing environmental and public policy programs;
(5) Allaying concerns about market power; and
(6) Continuing customer protections and the obligation to serve.

The centerpiece of this activity was the PSC's directive to five of the State's electric utilities to submit filings by October 1, 1996, that were to describe how the utilities would comply with the PSC's policy direction. (Of the remaining two utilities, the Niagara Mohawk Power Corporation had already filed its

restructuring proposal and the Long Island Lighting Company (LILCO) has negotiated a buyout with the Long Island Power Authority (LIPA), as described below.) The plans were to address, at a minimum, the utilities' proposed new structures, retail access proposals, long-term rate plans, public benefit programs, market power issues, and energy services. The plans were filed as required, and thereafter, in a collaborative effort by interested parties, settlement agreements for restructuring the electric systems of Central Hudson Gas and Electric Company, Consolidated Edison Company of New York, Inc., Orange and Rockland Utilities, Inc., Niagara Mohawk Power Corporation, Rochester Gas and Electric Corporation, and New York State Electric & Gas Corporation were submitted to the PSC for review.

Six utilities have received approval to commence a phased-in restructuring of their companies and provide the opportunity for retail customer access, and five companies have started to divest themselves of most of their generation assets. These restructuring plans, including the LIPA/LILCO agreement, call for an overall statewide decrease in rates of approximately 10% over a five-year period. Illustration 2-1 outlines the implementation schedule for the retail competition.

The PSC also recognized that individual utility proposals might require an environmental review. In Opinion No. 96-12[40], and further clarified in Opinion No. 96-17[41], it required each utility to file with its restructuring plans an Environmental Assessment and a recommendation for further environmental reviews. The information provided has assisted the PSC in determining the need for additional mitigation measures with respect to company restructuring.

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[40] Cases 94-E-0952, *et al.*, *Opinion and Order Regarding Competitive Opportunities for Electric Service*, Opinion No. 96-12 (issued May 20, 1996).

[41] Case 94-E-0952, *et al.*, *Competitive Opportunities Proceeding Rehearing Petition*, Opinion No. 97-17 (issued October 24, 1996).

Implementation Schedule for Retail Competition						
	CHG&E	**Con Ed**	**NMPC**	**NYSEG**	**O&R**	**RG&E**
Phase-In of Retail Access	9/98 8% of Load [Capacity & Energy] 1/1/99-12/31/99 16% 1/1/2000-12/31/00 24% 1/1/01-5/30/01 28% 7/1/01 Full Retail Access	6/1/98 10% of Load [1,042 MW] [Capacity & Energy] 4/1/99 20% (2,042MW] 4/1/00 30% (3,042MW] 4/1/01 40% [4,042MW] 12/31/01 Full Retail Access*	11/98 Large Trans. Level (≥60kV 2MW) Industrial & Commercial Customers 5/99-8/99 Other I&C 4/99-12/99 Residential Customers Phased-In; Full Retail Access by Year End	Aug. '98 Lockport Division & Norwich City (About 23,000 Small Industrial Customers) Aug. '99 Full Retail Access	12/97 Expansion of PowerPick [Energy Only] to All Industrial Customers 5/1/98 Expand Power Pick to All Customers 5/1/99 Full Retail Access	"Single Retailer" Plan 7/1/98 10% of Load [670 MW]; Energy Only 7/1/99 20% [1,300 MW] [Capacity & Energy] 7/1/00 30% [2,000 MW] 7/1/01 Full Retail Access

Illustration 2-1

* Full retail access will be implemented no later than 18 months after the ISO goes into operation.

Concurrent with these State-initiated efforts, towns, cities, and counties throughout New York State have been examining the feasibility of establishing their own municipal electric utilities. Some communities have voted in favor of municipalization. Considering the current differences between the electric rates of investor-owned utilities and those of existing municipal electric systems, this phenomenon is not surprising. The potential benefits of municipalization, however, must be weighed against the uncertainty of the costs involved and the potential benefits of retail competition. The economic viability of municipalization is site-specific, and dependent on the availability of low-cost power supplies. Low-cost hydroelectric power that municipalities currently have access to, from the New York Power Authority, is fully subscribed and would not be available to

newly municipalized systems. Additionally, the recovery of stranded costs by utilities is an important consideration in determining the economics to a municipality. Stranded cost recovery is permitted under Open Access FERC Ruling 888A, and could be part of the acquisition process for condemnation and take-over of a utility's distribution system.

The New York State Legislature has been monitoring the PSC's actions with respect to changes in the State's electric utility industry. In 1997, the Legislature enacted a reduction in the utility gross receipts tax and also passed the "Power for Jobs Act," which allocated 400 megawatts of low-cost power available to large and small businesses and not-for-profit corporations during the transition to retail competition. In 1998, the Power for Jobs Act was amended, increasing the power allocation from 400 megawatts to 450 megawatts. As amended, the allocation of power under the Act will be 267 megawatts during the first year, 133 megawatts during the second year, and 50 megawatts the third year. A broad restructuring proposal ("Competition Plus") is pending, as are several focused proposals, including one that would allow for "securitization" (refinancing with legal guarantees for repayments by ratepayers) of intangible utility assets in cases where such refinancing will provide ratepayer savings. As the transition moves forward, it will become clearer what, if any, legislation will be needed to ensure that effective competition is achieved.

Retail Pilot Programs

In July 1996, Orange and Rockland Utilities, Inc. (O&R) implemented a three-year retail access pilot program called "PowerPick." The program is designed to allow O&R's customers access to providers of electricity other than the utility itself. This was the first program in New York State that gave residential, commercial, and industrial customers the opportunity to choose a non-utility provider of electric service. The program includes only the energy component of the electric supply. All other energy services and systems-quality functions are maintained by O&R.

Total overall electricity bill savings for O&R's largest industrial customers, is approximately 3.5%. The small and medium commercial and industrial customers, and the residential customers are experiencing savings in the 2.5% to 3% range.

In February 1997, the PSC called on four upstate electric utilities to implement four retail access pilot programs. The PSC endorsed the general concept of the Dairylea Cooperative, Inc. retail access pilot proposal,

a multi-utility program directed at upstate commercial farms and food processors, because it encompassed multiple service territories and rate classifications and offered a valuable opportunity for all stakeholders to gain first-hand experience with retail access. The PSC made clear that the retail pilot program should move beyond the energy-only framework underlying O&R's PowerPick program, but be designed to limit stranded costs. The Farm and Food Processor Pilot has been well-subscribed, with approximately 25% of the eligible customers choosing alternative suppliers so far.

These undertakings have offered stakeholders important vehicles for implementing and testing key systems and procedures that will be critical to competition as consumer choice progresses from concept to reality. By implementing these programs and incorporating the lessons learned into broader retail access efforts, the PSC is ensuring a smoother transition to the new era of consumer choice.

LIPA/LILCO/Brooklyn Union Realignments

Two utility realignments have occurred that afford the State an opportunity to reduce electric and natural gas rates, and further the State's objective of providing competition for the electric and natural gas industries on Long Island. The first is a merger of the gas and fossil-generating assets of the Long Island Lighting Company (LILCO) and the Brooklyn Union Gas Company (Brooklyn Union) to form KeySpan Energy Corporation. KeySpan now controls the natural gas operations of the two utilities, as well as electric energy generating capacity that was owned by LILCO.

In a complementary transaction, the Long Island Power Authority (LIPA) acquired the stock of LILCO in exchange for $2.5 billion in cash and the assumption of $3.6 billion of LILCO debt securities. LIPA acquired LILCO's electric T&D system, its Shoreham regulatory asset, and its 18% ownership share in the Nine Mile Point II nuclear facility. LIPA entered into a management services agreement under which KeySpan provides day-to-day operation and maintenance of LIPA's assets, including the electric T&D system. In addition, LIPA and KeySpan have entered into a power supply agreement under which KeySpan's generation subsidiary sells power and, to the extent LIPA requests, energy from KeySpan's on-Island power plants. The agreement has resulted in an average 20% rate reduction for Long Island's electric customers.

LIPA has proposed a retail choice program called "Long Island Choice" for Long Island's electric customers that is targeted to begin in 1999. The program will be implemented in three phases. Phase 1 includes 400 MW

of deliverables beginning on August 1, 1999. Phase 2, with 800 MW, is to start on May 1, 2000, and Phase 3, in 2001, with all customers having choice by 2003. This is five years ahead of the schedule mandated by the State Public Authorities Control Board.

Long Island Choice will provide all of LIPA's electric customers with the opportunity to purchase both capacity and electric energy from suppliers of their choice. It will also provide customers with the opportunity for additional savings over the 20% average rate reduction already achieved by the LIPA restructuring effort and the opportunity for Long Island customers to choose "green power" options.

ISO Filing

On December 19, 1997, the members of the New York State Power Pool (NYPP)[42] filed a revised proposal with FERC to establish an Independent System Operator (ISO). Under this proposal, the eight NYPP members would transfer operation of the bulk transmission system to one entity governed by a ten-member independent board. The ISO would receive power generation bids and delivery schedules from power exchanges and bilateral arrangements. It would operate under reliability standards set by an 11-member State Reliability Council. (For a more detailed discussion, see the Effects of Competition on New York Appendix.) The ISO would provide the means necessary for ensuring fairness, equity, and system reliability in a restructured electricity industry.

On June 30, 1998, the Federal Energy Regulatory Commission (FERC) approved the NYPP ISO filing in principle. FERC did not specifically rule on the transmission pricing issues, but will separately. PSC staff, the electric utilities, and the market participants have been actively involved in the implementation of the ISO. A board of directors for the ISO was selected in November 1998. Complex software development and testing, including market participant trials whereby test energy bids by the participants are taken and evaluated by the ISO, are expected to be complete by the fall. The target for actual ISO operation and the beginning of an open and competitive marketplace for electricity in New York State is January 1999.

[42] The members are the seven investor-owned electric utilities and the New York Power Authority.

Energy Service Company Issues

Companies providing basic energy and energy services, such as efficiency measures and energy management, are referred to as Energy Service Companies (ESCOs). The PSC established eligibility requirements for ESCOs that are intended to provide assurances that ESCOs are competent and will provide basic customer protection; ensure that ESCO performance will not harm the electric system or the regulated utilities' customers; and gather information about the development of the ESCO market.

The PSC also decided to require utilities to retain the obligation to supply service to all customers who request them to do so. In essence, they will be the so-called "provider of last resort" at least during the transition to retail competition, in order to ensure that all customers have access to electricity.

It is anticipated that there will be a significant number of firms entering the New York market to compete to provide customers with a combination of electricity and other energy services (and perhaps also other non-energy services such as telecommunication services). Rebundling services will allow ESCOs to compete based on providing value-added services, rather than just the price of electricity. Energy efficiency services are expected to be offered as part of these service packages, and this approach may be more successful in promoting customer action in the longer run in that regard than prior utility programs.

ESCO Metering and Billing

To enhance potential service innovations, the PSC signaled its intention to allow competition in metering services, as soon as safety issues and technical barriers can be addressed. PSC staff was directed to report back, no later than February 1999, on the results of its efforts to resolve technical issues and safety concerns in allowing competition for metering services. In regard to billing issues, PSC staff issued a draft report to the parties for comment that contained recommendations regarding billing options and format in a competitive market. On March 4, 1998, the PSC issued an order in which it prescribed the billing options utilities should provide to ESCOs. PSC staff continues to evaluate whether additional billing options are needed to foster competition.

Nuclear Issues

Nuclear plants make a significant contribution to New York's electricity supply by generating about 20% of the electric energy consumed in the State. Nuclear power plants have several unique characteristics such as: large initial capital investments, especially for Nine Mile 2; high "fixed" operating costs; low short-term variable costs; large decommissioning and spent fuel storage costs; and stringent safety oversight by federal regulators. Furthermore, societal benefits of nuclear power, such as fuel diversity, clean air advantages, employment of highly skilled professionals, and high-paying jobs (which represent a source of tax revenues to the State, municipalities and school districts, but pose a problem to utilities that wish to compete), warrant special consideration of this generation alternative. Finally, unit retirement costs include not only decommissioning costs, but other early shutdown costs, such as the cost of storing spent fuel at existing reactor sites, site restoration, cleanup of non-radioactive wastes, and demolition as needed. If not properly planned and executed, these costs also can be exorbitant.

Since 1993, the New York State Department of Public Service (DPS) has been investigating ways to increase competition. As part of that process, four of the six utility operators of nuclear plants in New York State proposed that those plants remain with the monopoly transmission and distribution companies, continuing traditional ratemaking, with all prudently incurred costs recovered in electric rates under price cap regulation during a four- or five-year transition period. The utility proposals generally anticipated that at the end of the transition period, above-market generation investment would continue to be recovered from customers. The transition period would offer utilities, regulators, taxing authorities, and others time to evaluate and make needed preparations to manage the changes each will encounter in the forthcoming competitive market.

DPS staff examined each of the unique characteristics of nuclear power and prepared a white paper, recently issued for comment, that suggests that nuclear power should be subject to the discipline of market-based pricing like other generation technologies, with the exception of decommissioning costs. DPS staff suggests that the optimal, least-cost method for "regulating" nuclear units is to operate them in a competitive market, thereby giving customers the opportunity to provide direct feedback to management on the value (*e.g.*, price, reliability, etc.) of its product.

The PSC in Opinion No. 96-12 stated that the opportunity for recovery of sunk costs[43] was conditional on the utilities mitigating potential losses to the extent possible. Mitigation of stranded sunk costs requires that utilities secure the highest possible value for their generation assets, whether fossil, hydro, or nuclear. DPS staff advocates sale of generation plants to third parties, preferably in an auction, to mitigate stranded costs and eliminate uncompetitive subsidies.

According to the white paper, operating risks (including regulatory ones) should be transferred to investors. Companies' management would evaluate nuclear plants as they strive to compete in the market and maximize their market share by optimizing their generation portfolio. Prudently incurred decommissioning costs, other shut down costs, and costs of storing spent fuel irradiated prior to the market period would be assured in electric rates through a non-bypassable wires charge on most customers. Costs of maintaining nuclear safety, which rests with utility management under the oversight of the U.S. Nuclear Regulatory Commission (NRC), would be recovered from the market. The NRC, whose Chairman has publicly advocated the compatibility of economic deregulation and nuclear safety, would continue to decide if the resources allocated by management to maintain safety are adequate.

The DPS staff proposal has been issued to stimulate discussion on the proper treatment of nuclear power in a competitive market. The current transition period offers stakeholders and policy makers time to frame the issues properly and decide what role nuclear power will have.

SITING OF MAJOR ELECTRIC FACILITIES

In New York, the siting of major electric generating facilities, over 80 MW in size, is subject to Article X of the Public Service Law. As required by the Energy Law, this SEP provides an analysis of the electric load and capability forecasts over the planning period. In the past, these analyses formed a basis on which the Board on Electric Generation Siting and the Environment (the Siting Board) could determine the public need for such facilities and their compatibility with long-range planning objectives for electric and natural gas supply in the State. The implementation of competition limits the usefulness of that type of analysis, because market forces will determine the need for new generating facilities.

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[43] Sunk cost is an investment that has already been incurred, and cannot be avoided by any strategy going forward.

Article X of the Public Service Law provides for a single forum to consider the siting of major electric generating facilities by consolidating all State and local approvals into one certificate issued by the Siting Board. To grant a certificate, the Siting Board must find, *inter alia*, that the facility: is compatible with public health, safety and the environment; complies with State and local laws; is in the public interest; and either was selected pursuant to an approved procurement process or is reasonably consistent with the policies and long-range energy planning objectives and strategies contained in the most recent SEP.

In Case 98-E-0096, Athens Generating Company L.P. petitioned the PSC for a Declaratory Ruling that the PSC's Competitive Initiatives constitute an approved capacity procurement process that is reasonably consistent with the 1994 SEP. On April 16, 1998 the PSC concluded that it has the requisite legal authority and issued a declaratory ruling that competition in the electric generation market is an electric capacity procurement process that is reasonably consistent with the 1994 SEP. The Commission also stated that it is the Siting Board's jurisdiction to find that a particular generating facility was selected pursuant to an approved procurement process based on an Article X application. To the extent that new generation facilities, even those not selected pursuant to an approved procurement process, will promote or contribute to competition in electric markets, including the reduction of market power conditions, they will be consistent with the long-range plan for expansion of the electric power system in New York State envisioned by this SEP, and the public interest will likely be served so long as environmental impacts are also found to be within acceptable ranges or can be mitigated.

This SEP promotes competition as a long-range energy planning objective and strategy. It emphasizes competition as a procurement strategy in the electric generation market to a much greater extent than did the 1994 SEP.

CONCLUSION

The natural gas and electric industry transition to full retail competition has progressed in the mid-1990s as pressure for market-based energy prices and customer choice has increased. Significant utility structural and financial realignment remain to be implemented, along with development of a robust ESCO industry. Adequate supplies of natural gas and electricity, along with continued levels of system reliability, should enable the new competitive industry to provide customer choice.

Transition to a fully competitive energy industry will not be complete until after 2000. In the interim, customers will experience reduced prices as the result of multi-year rate plans and increased ability to choose suppliers.

SECTION 2.4

ENERGY AND THE ENVIRONMENT

INTRODUCTION

Energy production and use have a profound effect on the quality of New York's environment and on the health and welfare of the State's residents. The challenge is to achieve and maintain a high-quality, clean and healthful environment while continuing to promote economic progress, thereby enabling the State's industries to compete and grow in a global economy.

Environmental issues associated with energy production and use include emissions of air pollutants and impacts on air quality and acidic deposition (acid rain); visibility; eutrophication of estuaries; thermal discharge of cooling water; fish impingement and entrainment; oil spills; and disturbance of natural habitats. Due to the immediacy of emerging issues that need to be addressed, this report focuses largely on issues related to the impacts of air emissions on New York's air quality. The federal Clean Air Act (CAA) amendments of 1990 have established aggressive timetables for achieving stringent air quality targets. Moreover, the complexity of air quality compliance issues is increased by the effects of long-range transport of air pollutants from other states and the potential adverse environmental effects from electric utility industry restructuring.

BACKGROUND: IMPACTS OF CURRENT ENVIRONMENTAL REGULATIONS

Air Quality Trends

The U.S. Environmental Protection Agency (U.S. EPA), under the CAA, has established National Ambient Air Quality Standards (NAAQS) for six "criteria" pollutants: ozone, sulfur dioxide, particulate matter, nitrogen dioxide, carbon monoxide, and lead. NAAQS for these pollutants are set at levels that are believed necessary to protect public health and welfare.

From 1970 to 1995, regulation of air emissions resulted in significant improvement in observed air quality, as illustrated in Figures 2-12 through 2-14. The number of days per year on which ground-level ozone

measurements in New York State have exceeded the NAAQS has decreased from an average of 40.1 days per year between 1975 and 1980, to 7.8 days per year between 1990 and 1996 (Figure 2-12).[44] Since the 1970s, sulfur dioxide concentrations have been reduced by over 75 percent (Figure 2-13), while particulate concentrations have declined by 48 percent (Figure 2-14). Concentrations of lead, carbon monoxide, and nitrogen dioxide have also decreased substantially. (See Energy and the Environment Appendix for additional discussion on individual pollutants and existing regulations which underlie the emission trends.)

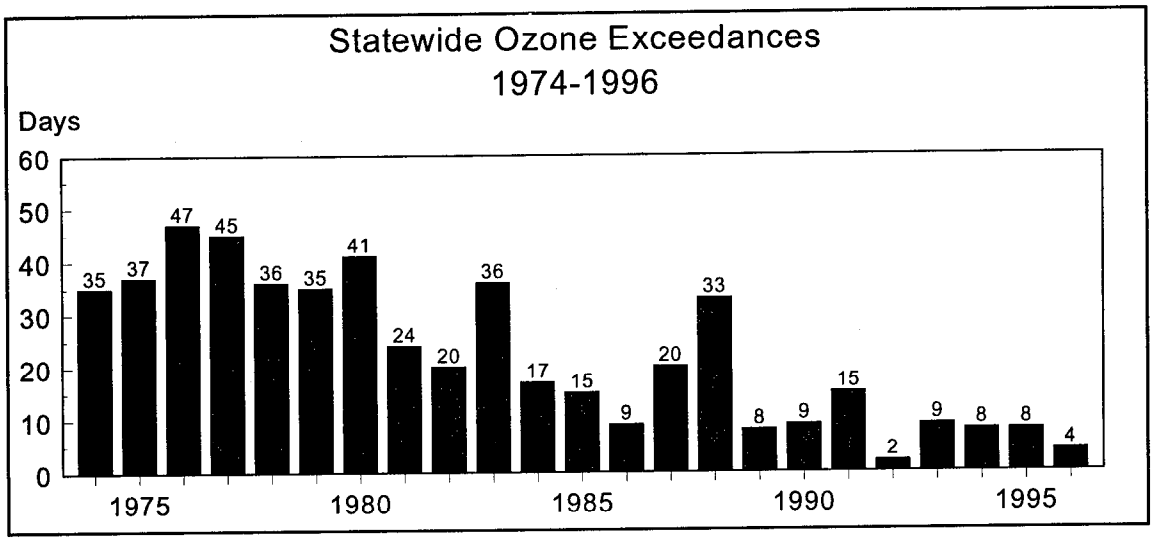

Figure 2-12

In spite of these improvements, ground-level ozone nonattainment continues as a significant and pervasive threat to human health.[45] Unlike most other pollutants, ground-level ozone is not emitted directly into the air by specific sources, but is formed by a photochemical reaction when sunlight reacts with volatile organic

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[44] As discussed later in this issue report, the primary standard for ozone is being revised, which will redefine the number of days that the ozone standard is exceeded. The State's initial determination of the potential for the additional locations throughout the State exceeding the new ozone standard will be based on the 1997 through 1999 compliance period.

[45] While the ozone that occurs naturally in the upper atmosphere (stratospheric ozone) plays a critical role in shielding the earth from harmful ultraviolet rays, ozone formed at ground-level (tropospheric ozone) causes health problems by damaging lung tissue, reducing lung function, and sensitizing the lungs to other irritants.

compounds (VOCs) and nitrogen oxides (NO_x).[46] Nationwide, more than 70 million people live in areas that do not meet the NAAQS for ozone. More than 13 million, or about 20% of these people, reside in New York State. More importantly, this group encompasses more than 75% of the State's population.[47] With the exception of carbon monoxide and particulate matter in the New York City metropolitan area, the State meets the standards for the other regulated pollutants.[48]

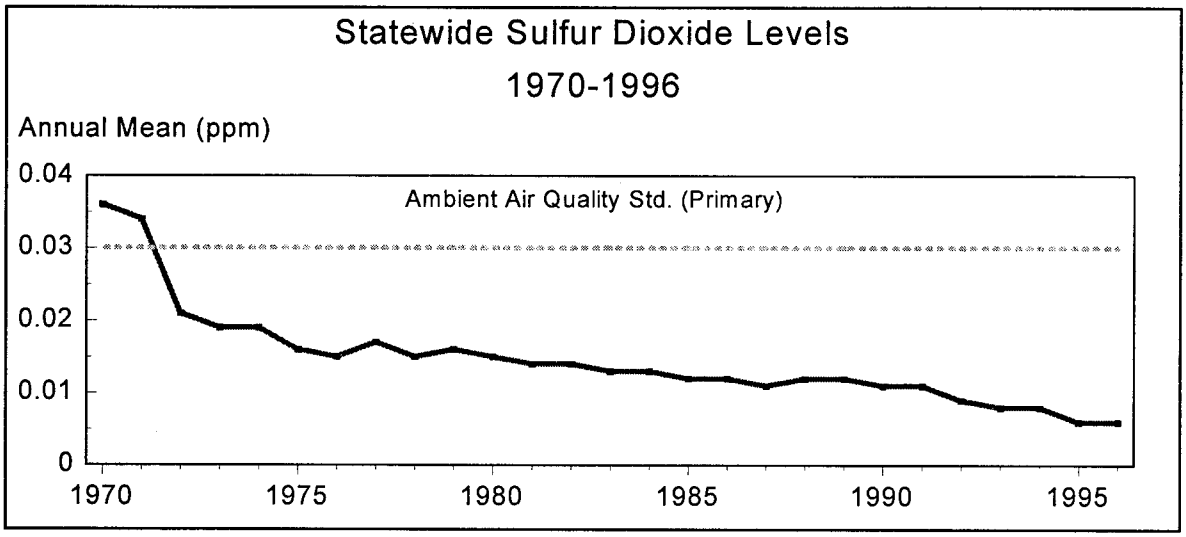

Figure 2-13

[46] Major sources of VOCs include motor vehicle exhaust, emissions from the use of solvents, and emissions from the chemical and petroleum industries. NO_x emissions result mainly from the combustion of fossil fuels in motor vehicles, electricity generation units, and industrial boilers.

[47] The CAA amendments of 1990 define these New York counties as "severe" ozone nonattainment areas: New York (Manhattan), Bronx, Kings, Queens, Richmond, Nassau, Suffolk, Westchester, Rockland, and Orange (lower portion). Counties classified as "moderate" are Putnam, Dutchess, and Orange (upper portion). Counties classified as "marginal" are Albany, Schenectady, Saratoga, Rensselaer, Montgomery, Greene, Niagara, Erie, Jefferson, and Essex (Whiteface Mountain).

[48] All of New York City, and Nassau and Westchester counties, are classified as nonattainment areas for carbon monoxide, even though only one exceedance of the NAAQS has been recorded during the past four years. Only Manhattan is classified as a nonattainment area for particulate matter.

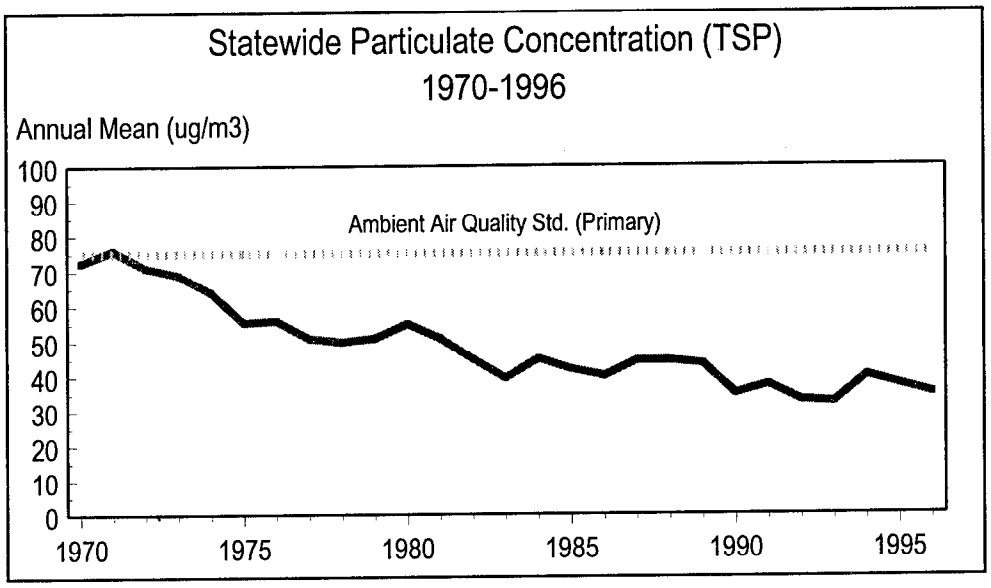

Figure 2-14

Acid Deposition

Acid deposition, commonly referred to as "acid rain," is formed largely from emissions of sulfur dioxide (SO_2) and NO_x. Lakes and streams in New York's Adirondack region are particularly susceptible to the effects of acid rain, due to the region's unique geological characteristics and its location downwind of major emission sources in neighboring states. New York has worked hard to reduce air pollution from sources within the State and was the first state to pass an acid deposition control act in 1984. Title IV of the federal CAA amendments of 1990 specifically addresses the acid rain issue by mandating substantial reductions in SO_2 emissions from electric utility sources throughout the nation. For New York utility sources, Title IV will require 43% reduction from 1980 emission levels, to be achieved in two phases. The first phase was completed in 1995; the second phase will be completed by 2000. As reported to Congress, while these reductions are significant, maintaining the proportion of chronically acidic surface waters in the Adirondacks at mid-1980 levels could require reducing sulfur deposition by 40-50% or more below the levels achieved by Title IV.[49] Because NO_x emissions

[49] U.S. EPA, *Acid Deposition Standard Feasibility Study Report to Congress*, Report EPA 4300-R-95-001a, October 1995.

are a precursor of ozone, as well as acid rain, they are addressed primarily by the ozone nonattainment provisions under Title I of the CAA amendments, on which a large portion of this issue report is focused.

Non-Air Impacts Associated with Energy Production and Distribution

Energy production and distribution can result in significant impacts on natural resources other than those related to air emissions. Electric generating stations and energy distribution (by wire, pipeline, vehicle, or vessel) can adversely affect fish and wildlife and the natural habitats on which they depend. Hydroelectric facilities, in particular, can cause irreversible changes to river habitats.[50] Construction of electrical transmission lines and natural gas pipelines can result in loss and fragmentation of forest habitat, as well as physical disturbance to wetlands and streambeds. Petroleum shipping can result in oil spills, with serious ecological consequences.

Thermal pollution in rivers and lakes can result from the discharge of cooling water from power plants. While organisms may be killed directly by exposure to the heated water, thermal pollution's effects on aquatic communities are generally more subtle. These include changes in local species composition; interference with spawning and other migratory behavior; growth of nuisance organisms; and changes in feeding, growth, and other biological functions of native flora and fauna. Organisms can also be killed by cold shock, which occurs when a power plant suddenly shuts down, causing a rapid cooling of the heated water to which the fish have become acclimated.

Additional impacts can result from the operation of power plant cooling water intake systems, which draw water from the State's lakes, rivers, and coastal waters. Fish may be killed by "impingement" when they become trapped against screens designed to keep debris from entering the plant's heat exchangers. Smaller fish and other aquatic organisms may be killed by "entrainment" when they are drawn through the screen mesh and pass through the generating station. Hydroelectric plants also directly kill fish by drawing them through the facility's penstocks and turbines.

The federal Clean Water Act (CWA) of 1972 established a comprehensive program to restore the chemical, biological, and physical integrity of the nation's water. Although the main objective of CWA is to eliminate

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[50] Adverse impacts of hydroelectric facilities include flooding of riparian habitat after dam construction, siltation of stream bottoms, conversion of riffle and stream habitats to lake habitats, rapid water level fluctuations, and the construction of migratory barriers.

chemical and biological pollution, it also protects fish and wildlife from the thermal pollution, impingement, and entrainment associated with the use of cooling water by energy facilities and other heavy industries.[51]

PLANNED ACTIONS TO IMPROVE NEW YORK'S AMBIENT AIR QUALITY

Ozone nonattainment is addressed by Title I of the CAA amendments of 1990, which has far-reaching implications for New York's emissions of NO_x and VOCs, the primary precursors of ozone. The severe nonattainment New York City metropolitan area is mandated to comply with the NAAQS by 2007. To facilitate the adoption of regionwide controls that are necessary to achieve the ozone standard throughout the Northeast, the CAA ammendments established the Ozone Transport Region (OTR).[52]

Under Title I, each state must implement whatever emission-control programs are necessary to ensure that NAAQS for ozone (and each of the other five criteria pollutants) are attained within its borders.[53] When the specific elements of a state's emission-control plan are approved by U.S. EPA, they become part of the legally binding document known as the State Implementation Plan (SIP).[54] Under the SIP process, New York is committed to numerous emission-control programs for NO_x and VOCs, some of which are discussed below.

NO_x Reduction

In 1994, New York signed a Memorandum of Understanding (MOU), adopted by the OTR states, setting a schedule for summertime NO_x reductions of up to 75% from 1990 levels for large fossil fuel-fired boilers

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[51] Fish and wildlife are protected from thermal pollution by CWA Section 316(a) and NYCRR Part 704. CWA Section 316(b) and NYCRR Part 704.5 require the best technology available to protect fish from impingement and entrainment. Further protection is associated with the Great Lakes initiative. Compliance is monitored and enforced by a federal permitting procedure, the National Pollution Discharge Elimination System.

[52] The OTR includes Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, northern Virginia, and Washington, DC.

[53] While Title I gives states considerable flexibility in developing emission-control programs, certain measures are specifically required for severe nonattainment areas and certain rules apply to all areas of OTR states. For example, in severe nonattainment areas, reformulated gasoline and vehicle inspection/maintenance programs are mandated, and any NO_x and VOC emissions from major new facilities must be offset at a ratio of 1.3:1. Because the entire State of New York is included in the OTR, an offset ratio of 1.15:1 applies to new facilities throughout the remainder of the State, even though much of the upstate area actually attains the NAAQS for ozone.

[54] Legal ramifications include authorization of severe penalties in the event of non-compliance. Penalties include loss of federal highway funds and a mandatory 2:1 offset requirement for new facilities, which represents a virtual ban on economic growth.

(primarily utility boilers). The scheduled NO_x reductions, summarized in Table 2-5, will occur in two phases (1999 and 2003) and vary in stringency according to a facility's proximity to areas of severe nonattainment. To

Ozone Transport Region NOx MOU
Required Reduction from 1990 Emissions

1999	Reduction (1)
Inner Zone (2)	65% reduction or reduce to 0.20 lb/MMBbtu
Outer Zone (3)	55% reduction or reduce to 0.20 lb/MMBtu
Northern Zone (4)	RACT (5)
2003 (6)	
Inner Zone	75% reduction or reduce to 0.15 lb/MMBtu
Outer Zone	75% reduction or reduce to 0.15 lb/Mmbtu
Northern Zone	55% reduction or reduce to 0.20 lb/MMBtu

Notes:

(1) Sources may choose the least stringent of the two options listed.

(2) Inner Zone includes all contiguous severe, serious, and moderate nonattainment areas stretching from Washington, DC to Boston.

(3) Outer Zone includes the remainder of the OTR, except the Northern Zone.

(4) Northern Zone includes Maine, Vermont, most of New Hampshire, and the northeastern attainment portion of New York.

(5) In 1995, utility sources in all OTR zones became subject to Reasonably Available Control Technology (RACT), as required under CAAA Title I. Controls implemented were primarily combustion controls, such as low-NOx burners (LNB) that reduced NOx emissions for affected sources on the order of 35%.

(6) Requirements for 2003 will be reassessed in 1998.

Table 2-5

implement the OTR NO_x Memorandum of Understanding, the OTR states developed a "NO_x Budget," effective in 1999, that caps total ozone season emissions from large stationary sources for each OTR state. The OTR NO_x Budget allows each state to allocate its capped NO_x emissions to specific sources as it sees fit and provides for trading of emission allowances to achieve compliance.

New York's NO_x Emission Budget and Allowance Program, developed pursuant to the OTR NO_x Budget, allocates the State's 46,985 tons of emission allowances to individual sources.[55] New York's NO_x Budget includes an energy efficiency set-aside program, which allocates 115 tons of allowances to qualified electric energy end-use efficiency measures. The set-aside program, administered by the New York State Energy Research and Development Authority (NYSERDA), recognizes that emission reductions needed to bring ozone nonattainment areas into attainment can be achieved, in part, by implementing energy efficiency measures, as well as by installing emission control devices on electric generation sources. The energy efficiency set-aside program will initially be a pilot program, with qualifying projects limited to certain energy performance contracting programs administered by NYSERDA. Analysis of results and evaluation of the administrative process developed will determine the extent to which the program will be expanded in 2003 when the final phase of the OTR MOU is implemented. It is anticipated that if and when a full-scale program is established, consideration will be given to allow other entities such as energy service companies, energy providers, municipalities, and individual customers to participate and compete for allowances.

VOC Reduction

In addition to requiring that NAAQS for ozone be achieved by 2007, Title I of the CAA amendments requires periodic demonstrations of Reasonable Further Progress (RFP) for VOC reductions to ensure that progress is being made.[56] By 1999, Title I requires that VOC emissions in the downstate nonattainment area be reduced by 24% from the 1990 baseline.

The following discussion highlights the major VOC-reduction programs planned to be implemented by 1999. The programs are listed in Table 2-6, along with their expected impacts.

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[55] Express terms of New York's NO_x Emissions Budget and Allowance Program are contained in proposed 6 NYCRR Subpart 227-3, issued September 4, 1998. The proposed rule is expected to be adopted and effective by May 1999. The NO_x Budget includes only large stationary sources with heat input capacity greater than 250 MMBtu per hour or electric generating output greater than 15 megawatts.

[56] Title I requires that, by 1996, VOC emissions in the downstate nonattainment area be reduced by 15% from the 1990 baseline and by at least 3% in each year thereafter, so that the ozone standard is achieved no later than 2007. After 1996, Title I allows NO_x to be substituted for the VOC reductions (on the basis of an equivalent percentage of total anthropogenic inventory), as both NO_x and VOCs contribute to ozone formation. The SIP revision submitted to U.S. EPA in March 1997 specifies the incremental contribution of each individual measure needed to meet the target VOC reductions for 1996 and 1999. In order to meet the 1999 target, VOC reductions in 1999 must total at least 359 tons per day including allowance for growth since 1990 and a 3% contingency margin.

1999 SIP VOC Reductions
Downstate Ozone Nonattainment Area

	Tons/Day	Percent of Required Reduction
Enhanced Vehicle I/M Program	72.6	20.2
Reformulated Gasoline	63.6	17.7
California Tier I Standards	24.4	6.8
Low Emission Vehicles (LEV)	6.5	1.8
Small Engine Standards	22.0	6.1
Gasoline Vapor Controls	2.0	0.6
Surface Cleaning	18.3	5.1
Consumer Products	12.2	3.4
Other Area Sources	14.5	4.0
Stationary Point Sources	32.0	8.9
NOx Substitution*	90.9	25.3
Total Required Reduction	**359.0**	**100.0%**

*An additional 26 tons/day is available, if needed, for NOx substitution.

Table 2-6

Enhanced Vehicle Inspection and Maintenance Program

Title I requires that each state implement an enhanced vehicle inspection and maintenance (I/M) program in severe ozone nonattainment areas, although states are given considerable flexibility in developing such a program.[57] New York's proposed I/M program for the New York City metropolitan area will affect the same geographic area as the existing idle-test program, which has operated since 1981. The program is targeted to reduce motor vehicle emissions by an estimated 24% for hydrocarbons (component of VOCs), 17% for NO_x, and 25% for carbon monoxide. Vehicles registered in downstate counties will be checked annually at decentralized inspection stations by a chassis dynamometer that measures emissions over a range of engine speeds. Repairs, if necessary, are permitted at the same facility. A gas cap emission check and on-board diagnostics check are also part of the test and will be added to the annual safety inspection performed in upstate counties.

[57] Specific provisions of New York's proposed I/M program were authorized by an amendment to Title I, the National Highway System Designation Act (NHSDA), passed in 1995.

Reformulated Gasoline

Similar to the enhanced I/M program, Title I requires reformulated gasoline (RFG) to be implemented year-round in the 10 worst ozone nonattainment areas throughout the nation, which includes the New York City metropolitan area.[58] RFG, implemented in 1995, is formulated to reduce automotive emissions of VOCs by more than 15%. A second phase of RFG, to be implemented in 2000, is targeted to reduce VOCs by 25-29% and NO_x by 5-7%. Use of RFG is also expected to result in reduced emissions of benzene and other air toxics.

New Motor Vehicle Emission Control Program

New York's "New Motor Vehicle Emission Control Program" consists of two parts: California Tier I standards and California Low Emission Vehicle (LEV) standards.[59] California Tier I standards, which affect late 1993 model-year and later passenger cars and light-duty trucks, constitute a traditional motor vehicle emissions control program (*i.e.*, one set of emission standards for all vehicles of a designated class). The California LEV standards portion, phased-in beginning with the 1995 model year, establishes four additional sets of increasingly stringent emission standards. The additional sets of standards are known as Transitional Low Emission Vehicle (TLEV), Low Emission Vehicle (LEV), Ultra-Low Emission Vehicle (ULEV), and Zero Emission Vehicle (ZEV).[60] Under the LEV program, manufacturers may certify a specific model to any one of the five sets of standards, as long as the average emission rate of cars sold meets a specified target level that becomes increasingly stringent in each subsequent year. Over time, manufacturers must sell an increasingly higher proportion of LEVs and ULEVs to achieve their emission-reduction responsibility. In 1999, New York's LEV program, coupled with the California Tier I standards, is expected to reduce downstate VOC emissions by

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[58] Dutchess County has also opted into the RFG program.

[59] The California Tier I standards were adopted by New York in November 1990 and the LEV standards were adopted in April 1992 (6 NYCRR Part 218). The California Tier I standards are very similar in stringency to the federal emission standards mandated under Title II of the 1990 CAA amendments, which were phased-in nationwide between the 1994 and 1996 model years.

[60] Implementation of the Zero Emission Vehicle (ZEV) sales mandate under New York's LEV program has been delayed as a result of a federal appeals court decision (U.S. Court of Appeals for the Second Circuit, August 11, 1998). The decision asserts that New York's ZEV sales mandate does not meet the 1990 CAA amendment stipulation (Section 177) that individual states may adopt vehicle emission standards more stringent than federal standards only if they are identical to those in California. New York's ZEV mandate would have required that electric vehicles, currently the only cars certifiable as ZEVs, comprise 2% of all cars for sale in the State in 1998, and increase to 5% in 2001 and 10% in 2003. The federal court decision was based on the fact that California opted to push back the start date of its ZEV sales mandate, initially proposed for 1998, until 2003.

30.9 tons per day, representing about 9 percent of the SIP reduction target.[61] Of this amount, the Tier I standards are expected to account for 24.4 tons per day, while the LEV standards are expected to account for an increment of 6.5 tons per day. The impact of the LEV program will increase in each subsequent year as vehicle turnover continues and new cars are required to meet more stringent standards. As a result, this program is expected to have major impact on achieving the NAAQS for ozone by the year 2007. However, at some point beyond 2007, growth in vehicle miles traveled (VMT) could begin to erode these benefits, thereby starting an upward trend in mobile source emissions. This issue will be addressed through the SIP process.

Other VOC Reductions

Other SIP emission-control measures for area sources include gasoline vapor controls;[62] small gasoline engine standards, including standards for lawnmowers, and recreational marine vessels; reformulation of various consumer products, surface cleaning solvents, and automotive refinishing coatings; and measures to reduce emissions of commercial bakeries, graphic arts facilities, hospital sterilizers, and municipal solid waste landfills. Also, various VOC-control technologies must be implemented on certain industry-specific large sources (*i.e.*, point sources) pursuant to the 1990 CAA amendments under either Title I (Nonattainment) or Title III (Air Toxics).

In addition to the above VOC controls, New York expects to meet at least 25% of its 1999 SIP target for VOC reduction by substituting reductions of NO_x emissions. Applicable sources of NO_x reductions include the New Motor Vehicle Control Program, the I/M Program, and emission controls at large fossil fuel-fired stationary sources implemented as a result of the OTR MOU.

1996 Clean Water/Clean Air Bond Act

Additional air quality benefits will be provided by special clean-fuel projects implemented under New York State's 1996 Clean Water/Clean Air Bond Act. The Bond Act allocates up to $55 million to acquire clean-fuel

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[61] In addition, NO_x emissions are expected to be reduced by 50.1 tons per day.

[62] Stage I gasoline vapor controls recover vapors that escape when gasoline is transferred from transporter tanks to storage tanks; Stage II controls recover vapor when gasoline is pumped into motor vehicles. Both have been required in the New York City metropolitan area since 1987 at stations that dispense more than 250,000 gallons per year. Regulations adopted in 1994, as required by the 1990 CAA amendments, extended Stage I controls to the entire State for stations that dispense more than 120,000 gallons per year. The 1994 revisions also required Stage II controls at all downstate stations that dispense more than 120,000 gallons per year.

vehicles, which include those powered by batteries, solar, hybrid electric, compressed natural gas, propane, methanol, ethanol, or hydrogen.[63] An additional $125 million is authorized for school projects, including the replacement of aging coal-fired heating systems with high-efficiency systems fueled by natural gas or oil.

ISSUES INVOLVING FURTHER ACTION

When the Clean Air Act amendments of 1990 were adopted, it was widely believed that control measures implemented throughout the OTR states would be sufficient to achieve the NAAQS for ozone in all of the region's nonattainment areas. However, continuing research indicates that air masses entering the boundaries of the OTR from Midwestern states often contain levels of ozone which are already close to or in excess of the ozone standard. As a result, further research on ozone has focused on long-range transport.

New York's 1994 SIP submittal to U.S. EPA documented that without lower "boundary conditions,"[64] the downstate severe nonattainment area cannot attain the ozone standard. Airshed modeling results indicated that even if all emission sources in New York were shut down, predicted ozone levels would exceed the standard. U.S. EPA, in response to New York's submittal and similar submittals from other OTR states, formed the Ozone Transport Assessment Group (OTAG), an organization of 37 states east of the Rocky Mountains.[65] OTAG's mission was to determine the extent to which long-range transport contributes to ozone nonattainment and how much individual states must reduce emissions to eliminate transport as an obstacle to attainment.

Action Indicated by Long-Range Ozone Transport Research

Research performed by OTAG, the Northeast States for Coordinated Air Use Management (NESCAUM), U.S. EPA, North American Research Strategy for Tropospheric Ozone-Northeast (NARSTO-NE) and the Center for

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[63] Clean-fuel vehicles will be acquired through two distinct projects. The State clean-fuel vehicle project authorizes the Office of General Services to purchase clean-fuel vehicles and develop the associated infrastructure for State agencies. NYSERDA's clean-fuel bus project provides financial assistance to municipalities, State agencies, or public authorities for up to 100% of the incremental cost of clean-fuel buses and related infrastructure.

[64] "Boundary conditions" refer to the concentration of ozone (in parts per million) in an air mass at the point where it enters a region via transport from a neighboring region.

[65] OTAG was formed under the auspices of the Environmental Council of States (ECOS). More than 300 technical and policy staff representing state air regulatory agencies, U.S. EPA, electric utility, industry, and environmental advocacy groups participated in the process. OTAG was a "voluntary" participatory process without regulatory authority to mandate any state or group of states to implement specific control measures. OTAG completed its final report and recommendations and was disbanded in mid-1997.

Clean Air Policy (CCAP) has consistently verified that emissions originating outside the OTR, particularly in the Midwest, are one of the major factors that influence the ability of New York and other northeastern states to meet the NAAQS for ozone.

Research methods have included ambient measurements at both ground-level monitors and from aircraft, computer airshed modeling of severe ozone episodes, and trajectory and correlation analysis of ozone measurements. From the analyses conducted, relatively consistent estimates of typical ozone transport distances have emerged. The range of ozone and precursor transport in the eastern U.S. is estimated at 150 to more than 500 miles, based on a minimum two-day survival of transported ozone.

While the results of research on long-range ozone transport should not be construed as absolute indicators of actual ozone levels, transport distances, or control strategies, the consistent magnitude and direction of the findings is clear. The research soundly establishes that substantial emission reductions are needed in regions outside the OTR for New York to be able to achieve the ozone NAAQS. (See Energy and the Environment Appendix for additional discussion of research results.) In its final recommendations, OTAG concluded that the range of utility NO_x emission reductions in the "fine-grid" areas[66] outside the OTR should fall between 45% and 85% from 1990 levels.[67]

Subsequent to the OTAG recommendations, U.S. EPA issued a "SIP Call" for 22 states[68] and Washington, D.C. that establishes an ozone season NO_x budget for each jurisdiction and timetable for the proposal, approval, and

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[66] "Fine-grid" areas are states or portions of states from which emissions have the greatest impact on air quality in nonattainment areas throughout the OTAG region. States that include fine-grid areas outside the boundaries of the OTR are Alabama, Georgia, Indiana, Illinois, Kentucky, Michigan, Missouri, North Carolina, Ohio, South Carolina, Tennessee, Virginia, West Virginia, and Wisconsin. The remainder of the non-OTR OTAG states are "coarse-grid" states that exert minimal impacts on nonattainment areas. OTAG recommended that these be exempt from additional NO_x control requirements, pending periodic reviews.

[67] The minimum reduction of 45% approximates the NO_x reduction requirement for utility units under Title IV (Acid Rain); OTAG's final recommendation further specifies that reductions should not be required to be more stringent than an emission rate limit of 0.15 lb/MMBtu, which is the maximum 1999 control level required under the OTR MOU. The recommendation does not prescribe specific reductions for individual states, nor does it prescribe the types of control technologies to be implemented.

[68] The 22 SIP Call states include 8 of the 11 OTR states (Maine, Vermont, and New Hampshire are excluded) plus the 14 "fine-grid" states outside the boundaries of the OTR as listed above.

implementation of control strategies.[69] NO_x limitations for the states outside the OTR, effective in 2003, are comparable in stringency to the NO_x limitations established for OTR states under the OTR MOU. The final rule does not mandate which sources must reduce pollution. Each state has the ability to meet its budget requirements by reducing emissions from the sources it chooses. U.S. EPA is currently engaged with states to develop a multi-state emissions trading program for allowances, similar to the sulfur dioxide allowance trading program established under Title IV of the CAA amendments for the purpose of reducing acid rain. Allowance trading allows facilities that reduce emissions early or in greater amounts than required to sell their emission reductions to other facilities that cannot reduce emissions as quickly or as cost-effectively. U.S. EPA has indicated that the multi-state allowance trading program will also provide for the trading of NO_x allowances created by the implementation of certain electric energy efficiency measures. As a result, emission reductions resulting from energy efficiency measures can be used to achieve a portion of the total emission reductions needed to achieve a state's NO_x budget. (See previous discussion of New York's pilot energy efficiency set-aside program, to be initiated in 1999 under its NO_x Budget, in "Planned Actions to Improve New York's Air Quality.")

Revision of NAAQS for Ozone and Particulates

The CAA amendments require periodic review of the NAAQS for each pollutant and, if appropriate, revision of the existing standard. U.S. EPA has recently finalized revisions to the existing NAAQS for both ozone and particulates.

U.S. EPA has tightened the primary ozone standard from 0.12 parts per million (ppm) to 0.08 ppm and, at the same time, changed the test for attainment from an average over one hour to an average over eight hours.[70] The rationale is to focus regulation on long-term "background" ozone concentrations rather than peak concentrations. Background ozone concentrations are much less sensitive to meteorological conditions and are therefore likely to provide more reliable measurement of the impact of control strategies. Under the new eight-hour standard, a substantial number of areas are likely to be reclassified as nonattainment, particularly in the Midwest. This change is likely to result in both improved air quality and lower compliance costs for New York

[69] Notice of Proposed Rulemaking was published in the *Federal Register* 40CFR Part 52, November 7, 1997. The proposed final rule was issued September 24, 1998.

[70] The new primary ozone standard will be met when the three-year average of the fourth highest daily maximum eight-hour average ozone concentration is less than or equal to 0.08 ppm.

and other OTR states, because it is likely to result in the implementation of more stringent emission controls in upwind areas.

U.S. EPA has also revised the NAAQS for particulate matter focusing on adopting more stringent standards for "fine particles" smaller than 2.5 microns in diameter, known as PM-2.5.[71] The revision responded to a growing body of scientific studies that associated serious health effects, including premature mortality and a range of respiratory morbidity effects, with particulates in this size range. The PM-2.5 standard was a highly contentious issue throughout the proposal process. Debate centered on the validity of the health studies and the fact that, because PM-2.5 cannot be measured by the existing air quality monitoring systems, it is not known which new areas will be designated as nonattainment under the revised standard. As a result, the need for compliance measures and the associated costs are highly uncertain, but could be substantial. Of particular concern are particulate emissions from diesel vehicles in the New York City metropolitan area. There is also great uncertainty with respect to electricity generating facilities, as emissions of SO_2 and NO_x are known to be precursors of PM-2.5.[72]

Implementation of the PM-2.5 standard will require an extensive new network of air quality monitors, which will be phased-in over a three-year period; a period of data analysis will follow, during which nonattainment areas will be designated and control strategy guidelines developed. While the revised standard could result in the need for additional SO_2 controls, such as scrubbers, the programs already required by the 1990 CAA amendments to reduce acid rain and ozone may make additional controls unnecessary in many cases.

Potential Environmental Outcomes of Electricity Restructuring

Increased competition due to restructuring of the electric utility industry could lead to a number of positive environmental outcomes. For example, greater fuel efficiency could translate into lower emissions, which could lower the total cost of environmental compliance. Increased consumer choice could provide additional opportunities for customers to select cleaner energy through green pricing or marketing programs. On the other hand, availability of lower-cost electricity from utilities in the Midwest might result in increased generation at high-emitting plants in that region. Additional NO_x and SO_2 emissions would then be transported to New York,

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[71] Prior to the revision, U.S. EPA regulated particulates only with a "PM-10 standard," which focused on particles with a diameter of 10 microns or less. The recent revision established new annual and 24-hour standards for PM-2.5, and modified the existing PM-10 standards. Prior to 1987, NAAQS for particulates were based on total suspended particles (TSP).

[72] PM-2.5 is comprised largely of sulfate particles, which comprise about half of PM-2.5. Sulfate particles are not emitted directly, but are formed in the atmosphere as a result of photochemical reaction with SO_2. Nitrate particles formed from NO_x emissions also contribute to PM-2.5.

resulting in increased ozone and acid deposition.[73] Competitive pressure could also accelerate the building of new transmission capacity, which could further increase the amount of electricity being generated in OTAG region states with less stringent pollution control requirements than the Northeast.

Competitive markets could also increase the incentive for electricity suppliers to continue operating older, higher-emitting generators, through repowering and other life-extension investments. Certain nuclear facilities might be uneconomic in a competitive market, causing generation to shift to fossil-fueled plants. Competitive pressures might encourage utility systems to lower reserve margins to make existing generating capacity available for additional sales.

A study prepared by the Center for Clean Air Policy, in cooperation with NYSERDA and other stakeholders, entitled *Air Quality and Electricity Restructuring: A Framework for Aligning Economic and Environmental Interests under Restructuring*[74] found that there were a number of possible changes under restructuring that could lead to adverse air quality impacts. However, one of the study's main conclusions was that it is possible to make the electricity industry more competitive if economic and environmental issues are addressed concurrently, so that the economic benefits that accrue from greater competition contribute to a cleaner environment.

Many electric utilities have reduced spending on energy efficiency and other demand-side management (DSM) programs that reduce air pollution, citing pressures to cut costs and maximize revenues. Furthermore, if competition achieves its promise of providing lower electricity prices, consumers might increase their overall consumption of electricity, which is likely to increase emissions from power generation.

The shortening of the planning horizon that accompanies the emergence of competitive markets has created a new barrier for renewable resources such as solar and wind energy. The benefits of long-term sustainability and fuel savings become less compelling in the marketplace because of the substantial initial investment required. The electricity industry's historical commitment to R&D is changing as competitive markets emerge.

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[73] Due to pressure exerted by governors of the northeastern states, including Governor Pataki, this concern has been elevated to the President's Office of Environmental Quality, and subsequently referred to U.S. EPA and the Federal Energy Regulatory Commission (FERC). FERC, which has enabled greater competition by facilitating open access to wholesale transmission services through Order 888, has committed to initiate further action, if necessary, to assist in resolving this concern.

[74] *Air Quality and Electricity Restructuring: A Framework for Aligning Economic and Environmental Interests under Restructuring*, Center for Clean Air Policy, March 1997.

Changes in priorities and investment horizons could affect the availability of funds to sponsor R&D on pollution controls, power plant efficiency, end-use efficiency, and renewable energy technologies.

In an effort to ensure that public benefit programs are continued during the transition to competition, the PSC required funding of such programs through a non-bypassable System Benefits Charge. This will enable the funding of pubic benefit energy efficiency, reseach and development, low-income and environmental protection programs through the transition to competition.

The potential adverse environmental impacts of electricity restructuring[75] are expected to be largely mitigated by the implementation of U.S. EPA's SIP Call, which establishes a statewide NO_x emission tonnage budget for each of the states throughout the eastern half of the U.S., whose emissions have been determined to affect air quality in other states.

Carbon Dioxide/Global Warming

Rising global atmospheric concentrations of carbon dioxide (CO_2) and other greenhouse gases (GHGs) have been an increasing scientific and policy concern for the past decade. Increasing atmospheric concentrations of these gases (largely due to fossil-fuel combustion) might cause significant long-term changes in global climate and weather by trapping more of the sun's heat within the atmosphere. The predicted increase in global temperatures over the next century might damage delicate ecosystems, disrupt agriculture, and cause the world's oceans to rise. Flooding of low-lying coastal regions might then displace millions of inhabitants and businesses, including large numbers in New York.

While CO_2 and other GHGs are currently unregulated, on-going developments at both the national and international levels raise the possibility that New York could be required to implement a GHG reduction program. Currently, efforts to limit emissions of GHGs are entirely voluntary.[76] Following negotiations at the United Nations Framework Convention on Climate Change in Kyoto, Japan, in December 1997, more than 150 nations, including the United States and 37 other industrialized nations, agreed to move toward legally binding objectives for GHG emission reductions. Under the Kyoto Protocol, the U.S. would be committed to achieve a

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[75] For additional discussion and analysis of the potential environmental impacts of restructuring, see the New York State Public Service Commission's *Generic Environmental Impact Statement*, Case 94-E-0952, In the Matter of Competitive Opportunities Regarding the Electric Utility Industry, May 3, 1996.

[76] The U.S. was one of more than 160 signatories of the 1992 "Framework Convention" in Rio de Janeiro. The objective of this treaty was to achieve stabilization of greenhouse gas concentrations at 1990 levels, based on the concept of voluntary commitments.

7% reduction in GHG emissions from 1990 levels by 2012.[77] Although it is uncertain whether the U.S. Senate will ratify the Protocol, the agreement provides an indicator that future U.S. environmental policy, and that of New York, could be increasingly influenced by the need to reduce emissions of CO_2 and other GHGs.

The adoption of binding GHG reductions, as proposed in the Kyoto Protocol, appears to hinge largely on the participation of developing nations, such as China and India. Ratification by the U.S. Senate is unlikely without the involvement of the developing markets because of the concerns about the potential negative impacts on U.S. competitiveness in world markets. Economic studies have indicated that the costs of achieving

GHG reductions of the magnitude proposed by the Kyoto Protocol are highly dependent on the manner of implementation and could be substantial.[78]

On the other hand, a national and international commitment to GHG reduction could represent economic opportunities for the U.S. and particularly for New York. Investing in and commercializing new technologies could add significantly to the State's economic activity, creating jobs and export opportunities for new technologies to reduce gas. Near-term reductions in economic growth that might result from investing in new technologies could be offset by increased economic activity brought about by manufacturing and exporting technologies that help to reduce GHG emission.

The New York State Department of Environmental Conservation, working in cooperation with the New York State Energy Research and Development Authority, and Departments of Public Service and Transportation, is preparing a State Action Plan for reducing GHG emissions in New York.[79] This Plan, being developed over a two-year period beginning in September 1998, seeks to identify cost-effective actions that can be taken by New York to reduce the emissions of the six GHGs addressed by the Kyoto Protocol. Because CO_2 comprises over 80% of GHG emissions and is primarily the direct result of fuel combustion (over 98%), the State Action Plan will focus largely on CO_2, evaluating emission reduction options across all sectors that produce and use energy.

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[77] The Kyoto Protocol addresses six GHGs: carbon dioxide (CO_2), nitrous oxide (N_2O), methane (CH_4), perfluorocarbons (PFCs), hydrofluorocarbons (HFCs), and sulfur hexafluoride (SF_6).

[78] Schaefer, Brett D., "How the Global Warming Treaty Will Harm the Economic Health of the States," Heritage Foundation, Backgrounder Update No. 288, November 21, 1997. This report cites five studies conducted by leading experts on climate change and economic activity, including WEFA, Inc., formerly Wharton Econometric Forecasting Associates, Inc., of Philadelphia, PA.

[79] In addition, coordinating agencies include Department of Agriculture and Markets, Department of State, and Empire State Development.

Emphasis will be placed on potential "no-regrets" measures that increase the State's economic competitiveness, both nationally and globally.[80] These measures include, but are not limited to, energy efficiency and productivity improvements, renewable resources, low-carbon alternative fuels, and advanced transportation technologies. In addition to technological measures, the State Action Plan will also address policy approaches to reducing GHG emissions, such as research and development, transportation planning, land-use planning, energy industry restructuring, efficiency codes and standards, public education, emissions trading, and tax incentives.

[80] In a "no regrets" strategy, the value of economic benefits over the life of the measures exceeds the measures' implementation cost, resulting in net monetary savings to the customer as well as collateral air emission reductions which have no incremental cost to society in general.

SECTION 2.5

ENERGY AND TRANSPORTATION

This issue paper draws on analyses performed for the Statewide transportation master plan, *The Next Generation...Transportation Choices for the 21st Century*, hereinafter referred to as the Transportation Plan. Accordingly, the SEP, State Implementation Plan (SIP), and the Transportation Plan are closely intertwined because of their energy use implications. The federal Intermodal Surface Transportation Efficiency Act of 1991 mandated that in developing statewide master transportation plans states should consider the relationship of federal, state, and local energy use goals, objectives, programs, and requirements. Energy, and its relationship to transportation, was one of the 12 themes identified during the initial outreach effort for the Transportation Plan.

This transportation issue report describes continuing and proposed programs and policies that State, regional, and local agencies are implementing to meet New York State's transportation needs while increasing energy efficiency, sustaining economic growth, and improving the quality of life. Transportation energy issues have several overarching themes:

- Mobility objectives (*e.g.,* moving people and goods in an effective and energy-efficient manner).
- Repair, renewal, and enhancement of New York State's transportation system.
- Increasing use of improved public transportation to maintain and enhance New York State's low per capita use of energy for transportation.
- Transportation energy policy issues.

This SEP emphasizes some of the needs identified in the Transportation Plan:

- Providing access to work and other daily activities for people who do not drive or own a motor vehicle.
- Increasing the occupancy of passenger transportation vehicles by encouraging alternatives to driving alone.
- Increasing commuter mass transit ridership by 20% Statewide by relieving overcrowding, improving convenience and safety, and adding new cost-effective services.
- Implementing a cooperative single electronic toll-collection system for the Northeastern states.
- Increasing biking and walking.

- Upgrading intercity rail passenger service in the Buffalo-Albany-New York City corridor.
- Providing seamless transfers between public transit systems.
- Implementing freeway incident management programs that detect and handle emergencies quickly and efficiently.
- Implementing intelligent transportation systems (ITS) in major metropolitan areas and at international border crossings that cover public transportation, commercial vehicles, and other users of State and local highways.
- Providing restricted-use lanes for buses and carpools on congested freeways where appropriate.
- Managing travel demand (*e.g.*, vanpools, telecommuting, rideshare matching programs, park-and-ride lots, and central city parking management).
- Managing facility operations (*e.g.*, coordinating traffic signals, installing variable message signs, preplanning detours to be used during emergency freeway closures, monitoring travel speeds by telemetry, rerouting traffic around congested areas).
- Managing arterial traffic and access (*e.g.*, accommodating pedestrian and bicycle traffic, assuring efficient transit operations, implementing shared driveways for multiple commercial properties, and implementing service roads to interconnect commercial sites).

The Transportation Plan identifies major State issues, including environmental and energy issues, and proposes strategies for addressing these issues within the context of the transportation sector. Many recommendations in the Transportation Plan relate to the transportation infrastructure and quality of service provided. This SEP complements the Transportation Plan by emphasizing energy-efficient travel.

The transportation elements of the State Implementation Plan (SIP), under the Clean Air Act amendments of 1990, also affect State energy requirements and transportation services as they relate to air quality emissions. Fuel-efficient and alternative-fuel vehicles are essential to keeping transportation-related energy demand under control and cut across all levels of government. Transportation SIP strategies to limit emissions focus on congestion relief and thus promote the delivery of effective transportation services. The member agencies of the Energy Planning Board can help promote these initiatives in a coordinated and proactive manner.

Transportation is the largest single energy end-user in New York State, consuming nearly 40% of the State's energy. Of this amount, passenger automobiles consume 46% of transportation's total energy use. Another 20% is used by trucks and commercial aircraft, and the remainder by other modes (including public transportation, rail, and marine transportation). Petroleum products provide more than 99% of the State's transportation energy supply.

MOBILITY OBJECTIVES

Overview

New York State's transportation energy use is forecast to grow 9% by 2015, with highway travel maintaining its dominance. Highway energy use is estimated by levels of vehicle use as expressed in vehicle miles of travel (VMT) and fuel economy expressed in miles per gallon (mpg). Figure 2-15 quantifies highway travel in the metropolitan areas of New York State. Travel on metropolitan highways is currently about 230 million vehicle miles daily. In 20 years, if current trends continue, daily travel in metropolitan areas will increase by 50%.

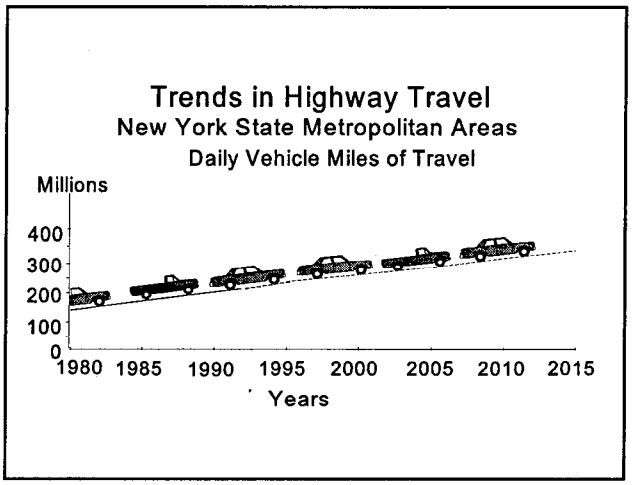

Figure 2-15

A key traffic congestion indicator is expressed as vehicle hours of delay (VHD). Although designing a system that never experiences VHD may not be cost-effective, high amounts of delay indicate the system is dysfunctional, with economic, environmental, and energy implications.

Fuel wasted by travel on congested State highways can be estimated (based on assumptions consistent with the Federal Highway Administration (FHWA) and the U.S. Department of Energy: one gallon per VHD delay, 260 work days, and a 40/60 recurring/nonrecurring congestion ratio).

The numbers reported in Table 2-7 show what would happen if nothing is done and does not take into account New York State Department of Transportation (NYSDOT) congestion-mitigation measures, as shown in Table 2-8. The 230 million gallons for 1992 indicates that 3.8% of total highway fuel consumption was wasted due to State highway congestion. By 1999, it is estimated that 409.9 million gallons of fuel will be wasted, a 78% increase above 1992 levels.

Potential Amount of Wasted Fuel on Congested State Highways	
Year	Estimated gallons wasted (in millions)
1992	230.0
1994	261.7
1997	352.2
1999	409.9
2004	594.5

Table 2-7

Led by NYSDOT's congestion reduction efforts, the State has limited the increase in VHD to 400,000 in 1998. Congestion-reduction efforts refer to a wide array of initiatives that includes promotion of car and van pools, increased use of mass transit, high-occupancy vehicle (HOV) lanes, and Intelligent Transportation System strategies such as E-Z Pass-type electronic toll collection, among others. Without this program, VHD would have increased to 563,000 by 1998.

As congestion decreases, energy usage and air pollutant emissions decline. Pursuing measures that mitigate traffic system congestion improves energy efficiency and air quality. Measures that reduce travel or the use of single-occupancy vehicles provide transportation alternatives, particularly to commuters, and reduce congestion experienced by the remaining motorists and shippers.

Transportation mobility plans, energy plans, and Clean Air Act compliance plans should all contain congestion-reducing programs. Instead of measuring benefits separately in three different areas, total congestion-reducing benefits should be measured against their costs. Public outreach programs then must be used to convince the public to use the new measures as they are implemented.

ENCOURAGING ENERGY-EFFICIENT MOVEMENT OF PEOPLE AND GOODS

New York State has many examples of projects and activities to achieve the energy-efficient movement of people and goods. These are accomplished by a balance of transit fare initiatives, transit capital projects, more attractive motor carrier and rail freight services, and highway capital construction projects.

Several major efforts are underway to encourage the use of more energy-efficient mass transportation services for personal travel through fare initiatives and other service improvements to make transit more convenient and less costly:

- The Metropolitan Transit Authority (MTA), the principal transportation provider for the New York City metropolitan area completed installation of its "Metro-Card"[81] fare system in the summer of 1997 in the New York City Transit (NYCT) system.
- NYCT's fare policy change eliminates the so-called "two-fare zones" in NYC and implements a free fare for the Staten Island Ferry. Typically, riders are allowed one intermodal free transfer within 2 hours of when they first enter the system. This will cut annual transit costs by $750 for the average commuter. An annualized ridership increase of 2% for the subway and about 12% on buses is expected.
- The nearly 1,000 privately franchised local and express buses that serve NYC also will convert to the Metro-Card system by the year 2000, eliminating two-fare zones affecting these routes.
- The MTA-Long Island Bus system that operates local and express bus service in Nassau County has begun accepting Metro-Cards and eliminated various transfer charges.
- NYCT has implemented 11 for 10 discounts. Under this initiative, commuters receive the value of 11 trips when purchasing 10 trips. This policy effectively establishes a 10% bonus on all Metro-Card purchases of $15 or more and should result in an annualized increase in ridership of about 0.5% systemwide.
- For commuter rail riders, a monthly ticket/Metro-Card bonus discount is in place.
- Effective in 1998, NYCT and New York City Department of Transportation (NYCDOT) express buses have cut their fare from $4.00 to $3.00.
- Effective in 1998, NYCT has implemented a daily, weekly, and monthly pass system. It is estimated that this will result in an annualized increase of ridership of close to 6%.
- In the Capital District, NYSDOT is leading a multi-agency task force to develop an alternative fuel vehicle courier and shuttle program.
- In Buffalo, the Niagara Frontier Transportation Authority is designing a new service program called "Hublink" which will provide van services to key points where major bus routes are located. The intent of this program is to expand the service area of transit to less dense areas in an efficient, yet convenient manner.
- The recently developed "Welfare to Work" program will further the development of efficient transit solutions to enable former welfare recipients to travel to jobs. The program will allow public transportation systems to increase opportunities for temporary assistance recipients to access

[81] The "Metro-Card" fare system is a pre-paid card with a magnetic strip used on subways and buses. Fares are deducted from the card when it is swiped through an electronic reader.

transportation services and activities designed to meet employment-related travel needs. The type of opportunities provided by this program will be determined by the local transportation system and the needs of the recipients.

- NYSDOT is leading efforts to enable commuters from the west side of the Hudson River to use Metro-North Commuter Railroad (MNCR) service into NYC by establishing new express bus service and new ferry service across the Hudson.

Major capital initiatives to expand the capacity and otherwise dramatically improve the attractiveness of the subway, bus, and commuter rail system include:

- The Long Island Rail Road's (LIRR) acquisition of "dual-mode" locomotives. These locomotives can operate with diesel fuel or on electrified tracks. When these locomotives are in revenue service, all peak-period LIRR users will be able to have a "one-seat" ride into Penn Station. The historic necessity for diesel territory passengers to transfer at Jamaica and other major stations to Penn Station-bound electric trains (thus requiring a "two-seat ride" for many) has been a decades-long impediment to LIRR increasing its ridership. About 45,000 daily LIRR users are served by diesel trains.

- NYCT's 63rd Street Tunnel Connector project and the progression of final design for the LIRR's Eastside Access project. LIRR's Eastside Access Project would construct a link that would allow LIRR trains to access Grand Central Terminal. It is estimated that a net increase of 108,961 in daily trips to Manhattan via LIRR (over a 50% increase from current trips) would result from this project. The 63rd Street Tunnel project is a $645 million project that will connect the Queens Boulevard subways lines to the subway lines in Manhattan via the 63rd Street Tunnel. Once completed, NYCT will be able to run 15 additional trains per hour into Manhattan.

- NYCT's purchase of 1,080 new subway cars for $1.45 billion. Production is underway and delivery is expected before the turn of the century. This purchase will dramatically improve subway car reliability.

- NYCT's purchase of an additional 540 buses, 190 of which will use compressed natural gas (CNG). These buses will be used to increase bus service. NYCT has allocated $5 million to purchase 10 hybrid diesel/electric buses. The Clean Water/Clean Air Bond Act of 1996 provides up to $55 million for the acquisition of clean-fueled buses that use new technologies, such as CNG and hybrid propulsion systems as an alternative to conventionally-fueled buses.

- Completion of the Farley Post Office Building project. This effort will renovate the under-used Farley Post Office Building to provide additional space for New Jersey Transit (NJT) and AMTRAK. This project will enhance passenger areas for both service providers, provide various passenger amenities, and increase the attractiveness of transit and inter-city rail service.

- Conversion of the Jackie Gleason Bus Depot into a facility that can be used to store and fuel CNG buses.

- MNCR's Dover Plains-Wassaic extension of the Harlem line. This extension will establish commuter rail service to NYC's Grand Central Terminal.

- NYSDOT's program to expand high speed passenger rail service to upstate communities by increasing speeds, upgrading equipment, and expanding train frequencies.

The movement of goods holds great promise for realizing energy savings. In the area of freight, energy efficiency correlates well with economic efficiency. Thus, part of NYSDOT's contribution to the State's economic development climate depends on exploiting energy efficient means of transportation. Major strategies in this area are more energy efficient motor carrier transportation, more attractive rail freight services, and more attractive inter-city passenger rail service. Efforts in this regard include:

- New York has entered into agreements to market LIRR facilities as a means of delivering freight, thereby providing an alternative to trucking on the congested Long Island Expressway.
- New York is supporting the Red Hook Barge effort. This is a Brooklyn-based trans-harbor service for the delivery of freight containers to rail terminals. This will remove trucks from NYC's clogged street system, improve air quality, and reduce energy consumption.

Roadway construction projects can enhance mobility, reduce traffic congestion, and decrease energy consumption if carefully considered and designed. In urban areas, highway and bridge construction projects can improve the operation of existing facilities and divert vehicles from local streets, thereby providing motorists a more direct route to their destinations. These projects can improve traffic conditions and travel speeds, when compared to not making any improvements to the existing infrastructure. Examples of highway projects that enhance mobility, reduce traffic congestion, and decrease energy consumption include:

- The Route 9A project to rebuild the former West Side Highway from Battery Place to 59th Street. This project is reconstructing the roadway to create an urban boulevard along the west side of Manhattan.
- The ongoing Long Island Expressway Capacity Improvement Project to construct High Occupancy Vehicle lanes in Nassau and Suffolk Counties. It is estimated that between 105,000 and 221,000 gallons of fuel per day will be saved compared to the no-action alternative.
- The Route 17 (Southern Tier Expressway) project to rebuild this roadway as an access-controlled four lane facility meeting Interstate standards (to be designated as I-86). This project will result in increased safety and enhanced economic development along the Southern Tier and Western New York.
- The recently completed Thruway Exit 26 Bridge project that constructed a new bridge over the Mohawk River. This project connected Exit 26 of the Thruway with Route 5 in Schenectady County and is reducing travel and delays for motorists and truckers.

REDUCING PERSON HOURS OF DELAY AND VEHICLE HOURS TRAVELED

New Yorkers pay a steep price for congestion. Annually, approximately $1.1 billion is lost in vehicle wear and tear, $5 billion worth of time is wasted due to delays, and $10 billion is spent in added delivery costs.

NYSDOT recently upgraded its network-level Congestion Management System (CMS) to estimate how much fuel is wasted as a result of excessive delay. The CMS estimates that about 60% of the fuel wasted is attributable to traffic incidents (*e.g.*, accidents, vehicle breakdowns, etc.), while 40% is a result of recurring congestion (*e.g.*, at chronic bottlenecks).

Analytical tools in the CMS can be used to estimate the effectiveness of proposed alternative strategies for reducing congestion, as well as direct economic and energy losses attributable to congestion. These factors are considered in developing efficient, effective, and balanced transportation plans, programs, and strategies that use energy savings as a critical component.

Some examples of State efforts to reduce delays include advanced electronic communication systems that inform motorists of delays ahead and suggest alternate routes (the INFORM system on Long Island), use of HOV lanes, and development of an automated screening device to select only the poorer safety performers for roadside truck inspections.[82] The State is also pursuing other ways to speed trucks through border crossings by automation of the customs and immigration process. A pilot effort is currently underway at the Peace Bridge in Buffalo. The E-Z Pass electronic toll collection system is also available to commercial vehicles to facilitate the movement of goods and reduce delays for these vehicles.

TRANSPORTATION SYSTEM MANAGEMENT AND TRANSPORTATION DEMAND MANAGEMENT MEASURES

Improving the existing transportation network's operating efficiency requires a focus on two types of measures: travel demand measures (TDM) and transportation system measures (TSM). TDMs focus on reducing the total vehicle miles of travel. One of the ways this is accomplished is by encouraging single occupant vehicle drivers

[82] The screening device is a hand-held communication unit connected to a computer that has instantaneous access to truck credential and safety records, as well as weight-in-motion devices. This device will enable carriers with better safety and credential ratings to bypass safety and size/weight roadside inspections. Effective use of this equipment would reduce costly delays (both in terms of energy use and productivity) experienced by these better-performing carriers.

to switch travel modes to carpools, vanpools, or transit, thus reducing the number of vehicles using the system. TSMs increase the existing transportation system's efficiency.

Several TSM measures being implemented in the State include: incident management; traffic signal improvements; advanced traffic management of expressways, including ramp metering (in effect on Long Island as part of the INFORM system) and real-time condition information for travelers; and the implementation of Intelligent Transportation System techniques. All of these TSMs have the potential to save substantial amounts of fuel. These energy savings are attributable to reduced VMT and travel times. Some of these efforts have been previously described.

For TDM measures to succeed, the public must understand the benefits they receive from these measures, which include environmental and energy benefits. As with any energy conservation measure, the public must endorse and implement these measures. For this to occur, public outreach should be continual, long-term, and broadly implemented.

Some of the TDM and TSM measures the State is pursuing include:

Walking/Bicycling

Walking and bicycling are viable forms of transportation. Approximately 7% of New York State commuters walk to work and one-quarter of 1% bicycle. Many others use one or both means as a link to public transportation and intermodal travel.

In the U.S. in 1991, bicycling and walking were estimated to be equivalent to between 7.6 and 28.1 billion motor vehicle miles, saving 370 to 1,340 million gallons of gasoline.[83] The FHWA estimates that by the year 2000, bicycling and walking together could save 750-5,100 million gallons of gasoline per year, or 0.7%-4.5% of the fuel projected to be consumed by U.S. passenger vehicles.[84]

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[83] *The National Bicycling and Walking Study*, U.S. Department of Transportation, FHWA, FHWA-PD-94-023 (1994).

[84] *The Environmental Benefits of Bicycling and Walking*, U.S. Department of Transportation, FHWA, Case Study #15 of the National Bicycling and Walking Study (1993).

The primary benefit of bicycling and walking is mobility, providing an alternative way to commute and thereby reducing VMT and congestion. Bicycling and walking reduce air pollution and energy consumption, and can improve personal health. The increased use of bicycling alone in the State could make an impact on energy use. For each 15% increase in the number of people using bicycles to travel to and from work, an estimated 634 gallons of gasoline could be saved daily.

Within the State, NYSDOT has erected signs for more than 1,000 miles of new on-road bicycle routes. These routes include State Bike Route 5 from Niagara Falls to the Capital Region, Bike Route 9 along the Hudson and Champlain Valleys from NYC to Montreal, and Bike Route 17 along the Southern Tier.

In view of the benefits derived from walking and bicycling, the State is committed to expanding and improving bicycle and pedestrian facilities throughout the State. An example of this commitment is the development in the NYC metropolitan region of 350 miles of new Greenway trails, 800 miles of new on-street bike lanes, and more than 100 pedestrian improvement projects. Another example is in Ithaca and Rochester where these cities have outfitted their entire bus fleets with bicycle racks. This cost-effective improvement has created additional transit access by bicycle, which reduces cold start emissions by automobiles and increases transit ridership.

Telecommuting

Employees in NYSDOT's Long Island, NYC, and Lower Hudson Valley regions participate in a pilot telecommuting program initiated in the fall of 1994. Selected employees telecommute from their homes an average of one day per work week. The program is designed to explore the feasibility and potential benefits of, as well as obstacles to, telecommuting. The program also addresses issues related to congestion, mobility, pollution, communication, and energy consumption. The telecommuting program has 105 participants from these NYSDOT regions. NYSDOT conducted a cost-benefit analysis of its telecommuting program in 1997. Based on its findings, NYSDOT determined that transportation-related energy and air quality impacts of the telecommuting pilot program are correlated to the degree that telecommuting is implemented.

While generally having positive impacts on traffic congestion, energy use, and air quality, the level of energy and air quality impacts of telecommuting may be difficult to determine. NYSDOT's cost-benefit evaluation revealed that approximately 24,000 commuting trips are eliminated annually, resulting in about 8,000 gallons of gasoline being saved. However, while vehicle miles traveled, vehicle trips and energy use are reduced by telecommuting, the 1997 cost-benefit study findings also revealed that there could be corresponding increases

in non-commute travel, household travel, and overall trips made due to a reduction in trip chaining or increases in the percentage of single-stop trips. NYSDOT, however, has determined that overall benefits of telecommuting outweigh potential costs of the program, especially if linked to other TDM strategies and is currently evaluating its pilot program with possible expansion to a maximum of 210 person days per week, with the expansion to take place in a yet to be determined upstate region and in a NYSDOT Main Office unit in Albany.

Nationally, a 1993 report from the U.S. Department of Transportation indicated that the number of telecommuters was expected to rise from 2.0 million in 1992 to 6.2 million by 1997, and 15 million in 2002.[85] Such increases would provide greater gasoline savings (current savings of 178 million gallons could rise as high as 1,679 million gallons by 2002).

Intelligent Transportation Systems

Intelligent Transportation Systems reduce congestion and promote the use of public transportation. ITS involves applying advanced technologies, such as information processing, communications, computer control, and electronics to address transportation system needs. These applications implement new management and control, and information systems that improve transportation safety, reduce congestion and VMT, and enhance mobility thereby minimizing adverse environmental impacts and promoting economic productivity and energy efficiency. One ITS program priority is to deploy systems that will improve the operating efficiency of the existing transportation network.

NYSDOT is advancing a Statewide ITS program called NY MOVES, as well as ITS Strategic Deployment Plans, for each of the major metropolitan areas of the State, in addition to small urban and rural areas. The program focuses on key elements that can be expected to have a significant impact on energy usage in the State, such as traffic management systems and traveler information systems. Additionally, NYSDOT has recently submitted an ITS Commercial Vehicle Operations (CVO) Business Plan to FHWA that outlines a series of ongoing and proposed actions to enhance CVO operations through the use of ITS technology.

Traffic management systems are a key component of an ITS program and include freeway management systems, incident management programs, and traffic signal systems. Traffic management systems deploy

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[85] *Transportation Implications of Telecommuting*, U.S. Department of Transportation, U.S.G.P.O.: 1993-343-120: 85869 (1993).

sensors and traffic control devices that quickly detect and respond to traffic incidents, and improve real-time traffic management on freeways and arterials. Examples of traffic management systems include systems that monitor and manage traffic on freeways, incident management patrols that assist motorists, and improved traffic signal timing and operations. Also included are automated systems that can expedite traffic flow at international border crossings. Additionally, deploying various ITS projects in the NYC, Long Island, and Lower Hudson Valley areas is expected to result in a reduction of about 25,000 daily VHD during congested conditions through the year 2002.

Other important aspects of ITS are public transportation and multimodal traveler information systems. These systems provide static and real-time information to motorists at home, enroute, and at work. A $20-million ITS model project in the metropolitan NYC area will deploy a public-private traveler information system designed to provide extensive multimodal traveler information to the public by a variety of convenient means. The improved information provided by the system could potentially shift passengers from automobiles to mass transit, thereby resulting in more efficient energy use. Estimates of the energy-related benefits of these types of projects are presented in Table 2-8:[86]

Energy-Related Benefits of ITS Projects[1]		
Type of System	**Reduced Delay/Travel Time**	**Reduced Fuel Consumption**
Freeway management systems	20-48% reduction in travel time	Up to 41% during congested periods
Incident management programs	Up to 12% during congested periods	Up to 12% during congested periods
Traffic signal systems	17-37%	6-12%
Multimodal traveler information systems	Up to 21% during capacity-reducing incidents	6-12%

Table 2-8

[86] Information obtained from the following sources: (1) *Intelligent Transportation Infrastructure Benefits: Expected and Experienced*, Federal Highway Administration (January 1996); (2) *HELP Program First Year Statistics*, NYSDOT (September 22, 1995); (3) *A Toolbox for Alleviating Traffic Congestion*, Institute of Transportation Engineers (1989); and (4) INFORM Evaluation, Federal Highway Administration (January 1992).

Congestion Pricing

Congestion pricing is a mechanism to shift travel from peak periods to periods with less traffic by differentiating the cost of travel between peak and non-peak periods. It is most easily and effectively carried out at toll facilities. The New York State Thruway Authority is currently conducting a Congestion Pricing Relief Study at the Tappan Zee Bridge. The study includes a survey of passenger and commercial vehicle use of the Bridge. The Final Report is due in January 1999.

NEW YORK'S TRANSPORTATION SYSTEM - REPAIR, RENEWAL, AND ENHANCEMENT

Highway Infrastructure

Inadequate infrastructure investment increases direct and indirect costs to businesses and consumers. A deteriorated highway and bridge network increases direct economic and energy-related costs, including fuel consumption, motor vehicle depreciation, labor costs, and accidents. Keeping transportation facilities in a state of good repair is essential.

Recognizing this, in 1995 Governor Pataki developed a 5-year program to address the infrastructure needs of the State's roads and bridges. The goal of the program, through capital construction and preventive maintenance work, is to stabilize the condition of the State's roads, improve the condition of the State's bridges, and facilitate continued economic expansion. With enhancements proposed in the 1998-1999 Executive Budget, the total value of the 5-year program, including local programs, is approximately $13 billion. The 5-year program represents the highest level of State spending on transportation in New York's history.

Vehicles traveling on high-quality paved roads use 8-12% less fuel than those operating on deteriorating roads. Each 1% improvement in fuel efficiency reduces nationwide gasoline consumption by approximately 1.15 billion gallons annually and produces savings of more than $1 billion each year.[87]

Energy-saving activities that reduce congestion include improved traffic signals and other intersection improvements. These activities improve traffic flow, reduce travel time, and increase mobility. Night-time construction on heavily traveled freeways is one way to make essential infrastructure repairs while still moving

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[87] *Bad Roads - The Hidden Cost of Neglect*, National Asphalt Pavement Association (1983).

people and goods in an effective and energy-efficient manner. Night-time replacement of some deteriorated bridge decks allows weekday commuter traffic to use all lanes of a bridge while its deck is being replaced.

Additionally, energy-efficient materials, products, and practices should be used in operating and maintaining the transportation infrastructure. A small but illustrative example is replacing incandescent bulbs in traffic signals and pedestrian 'Don't Walk' signs with Light Emitting Diodes (LEDs). LED modules consume only about 10% of the energy used by incandescent bulbs. In addition to the substantial energy savings, the longer life will greatly reduce the need for scheduled relamping.

Transit Infrastructure

Mass transit is the most energy-efficient mode of transportation in New York State. Each fully used passenger railcar keeps 75 to 125 cars off the road (the State's subway, commuter rail, and light rail car fleet, the largest in the nation, exceeds 7,750 cars). Each fully loaded bus keeps 40 cars off the road (the State has about 5,000 transit buses in operation, also the largest fleet in the nation). Approximately 95% of passenger railcars and transit buses are in the NYC metropolitan area. Each pair of railroad tracks has the ability to carry as many people in an hour as 16 lanes of highway. NYC's subway system is the only one in the world in which major sections use four tracks, often at or near capacity. Without public transit in the NYC metropolitan area, about 1.5 million more cars would enter Manhattan's central business district daily, which would equate to an increase of more than 1.33 billion gallons of gasoline annually.

Improving the rail and bus transit infrastructure has been a high State priority since 1982.
Since then, over $26 billion has been invested in MTA's transit and commuter rail systems. The initial concerns leading to the development of the funding programs that enabled this immense investment were the potential negative impacts on economic development that would occur to a region with such a long dependance on public transit if the systems were to continue to deteriorate.

As a result of this investment, the reliability (a major factor in attracting ridership) of the bus, subway, and commuter rail transit systems has increased dramatically. Subway car mechanical failures, for example, have decreased from an average of one for every 7,145 miles of travel to less than one for every 58,000 miles.

Improved reliability has led to on-time performance for the MTA's Metro-North Commuter rail system that is consistently at the 95% level, a dramatic increase over the 85% on-time level in 1981. Although overall State transit ridership declined between 1980 and 1997, Metro-North's annual ridership increased by over 12.1

million people (23%), from 51.7 million in 1986 to 63.8 million in 1997 and is at record levels. Subway ridership also increased to its highest levels in more than 25 years and LIRR's ridership continues to increase. As a result of the synergistic effects of this ongoing effort and the transit fare initiatives described previously, MTA estimates that ridership on the subway is expected to increase by 8.4%, ridership on the bus by 18.6%, and an overall system increase of 11%.

Outside the MTA service area, the major transit investment need is for buses, with the top priority being to keep the bus fleet in a state of good repair. Generally, the average age of a transit bus in the State (non-MTA service) is 6.5 years. New York's buses are relatively young and fuel-efficient.

PROVIDING INDUSTRY WITH FREIGHT ACCESS

A modal comparison of the freight transportation sector's energy usage indicates that one gallon of fuel can move one ton of freight 59 miles by truck, 202 miles by train, and 514 miles by water (typically barge). In terms of capacity, a 1,500-ton barge carries as much as fifteen 100-ton rail cars, or sixty 25-ton tractor-semitrailers.[88]

The North American Free Trade Agreement (NAFTA) and the General Agreement on Tariffs and Trade (GATT) signal continued expansion of international trade by eliminating and reducing trade barriers. New York State and the NYC metropolitan region play substantial roles in world trade. New York State's trade with Canada and Mexico is valued annually at nearly $22 billion and $2 billion, respectively. The Port Authority of New York and New Jersey's maritime ports annually handle cargo worth more than $56 billion and the Authority's airports process nearly $80 billion worth of air cargo annually.

A total of 328 million tons of freight is transported into, out of, and across the State annually. Generally, bulk commodities such as grain or coal are handled by barge or rail. These freight modes offer a low-cost, energy-efficient, high-volume transport system that is well-suited to cost-sensitive bulk commodities. Consumer goods and foods are largely moved by truck and, to a lesser extent, by rail intermodal transport (*i.e.*, rail and then truck, ship, or barge). These goods require timely delivery in a damage-free condition. Air cargo handles high-value and package express items that are extremely time-sensitive.

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[88] Maritime Regulatory Administration, United States Department of Transportation, 1993.

The trend toward high-value shipments and rapid delivery has increased. Dispersed locations have resulted in increased trucking and decreased use of rail. Improved intermodal transfer methods can support economic growth, while encouraging the most energy-efficient and cost-effective shipping method. Trucking connections to airports, marine ports, and rail intermodal terminals should be improved to encourage energy-efficient transportation services. In addition, improved intermodal transfers should encompass good access by all modes of transportation. Freight transportation network enhancements that permit the use of larger, more cost-effective vehicles are essential to maintaining economic growth. Access to efficient transportation systems will encourage major markets, businesses, and industry to locate in, or export from, the State.

Currently the most strategic changes for energy efficient goods movement in New York may lie in the Conrail acquisition. In it lies opportunities to restructure many problems that hinder the attractiveness of rail service in the State. On July 23, 1998, the Surface Transportation Board published its final decision approving Norfolk Southern/CSX's application to acquire control and divide the assets of Conrail. The Surface Transportation Board has imposed several conditions, as sought by New York State, that will strengthen rail freight competitiveness in both the upstate and downstate regions of New York. These include: a second carrier to provide rail freight service along the Hudson River's east side to NYC and Long Island; working with New York City to enhance cross-harbor railcar float service; participation in the planning of a proposed freight tunnel in the New York City area; monitoring of intermodal highway traffic originating from the New Jersey terminals using the Hudson River crossings; more attractive rail interchanging in the Buffalo area; more effective and fairer use of the State's short line railroads, and less expensive delivery of coal to power plants.

Overall, this rail strategy should provide significant rail competition and energy efficient rail service to New York State industry. This approach should result in the diversion of truck traffic, especially in the metropolitan areas, from congested highways and bridges to the more energy efficient rail mode of transport. The policy of coordination between motor carrier and rail systems improves the energy efficiency of the overall transportation of goods and fosters a favorable climate for economic development.

The State's Infrastructure Investment Program (formerly the Industrial Access Program) which funds access improvements to roadways in the State was created to improve connections to the transportation system. These projects improve the efficiency of a business' vehicle movements. By shortening the distance to a State highway, improving problem intersections, and creating acceleration and deceleration lanes so traffic flow is not adversely impacted, businesses are able to lower transportation costs. In addition to dollar savings, there are also energy savings. A more efficient transportation system allows more goods to be shipped for the same energy cost (if other improvements are not made). While businesses are the focus of this program, a secondary

and potentially larger benefit could be realized by the traveling public, who also benefits from the more efficient traffic patterns created.

DEVELOPMENT AND USE OF HIGH-SPEED RAIL

Intercity rail passenger service is the most fuel-efficient means of transportation. In addition, it is extremely safe and has relatively low emissions. AMTRAK's New York State passenger trains use slightly more than three million gallons of fuel to transport almost eight million people annually. The eight million intercity rail passengers in New York State represent 37% of AMTRAK's system-wide annual passenger volume. AMTRAK's rail passenger trains operate over the Empire Corridor, serving the region from NYC to Buffalo and Niagara Falls, with connections to Chicago, Boston, and Montreal. The Empire Corridor connects with AMTRAK's Northeast Corridor, which serves Washington, DC and Boston via Penn Station in NYC. The State has invested more than $200 million to create the only non-electrified high-speed (110 miles per hour) corridor in the country. This corridor runs from Penn Station to Hoffmann (between Amsterdam and Schenectady). As a result, AMTRAK's New York State passenger service ridership has more than doubled since 1977.

Additional investments are needed to enhance AMTRAK's New York State intercity service to attract additional passengers. Projects being advanced include raising passenger train speeds, eliminating or enhancing grade crossings, improving intermodal connections at stations, building or reconstructing passenger stations, and remanufacturing turbine-powered high-speed trainsets capable of 125 mph service. These actions are essential to improve intercity rail passenger service and divert riders from less efficient modes of transportation.

Another, and perhaps more critical, issue is the future of intercity passenger service. Many aspects of intercity rail passenger service in New York is a financial and operating partnership between AMTRAK and NYSDOT. Congress passed legislation requiring AMTRAK to financially and operationally restructure within two years or abandon its role in passenger transportation. The next few years will be critical in determining AMTRAK's future. New York's challenge is to assure that intercity passenger service continues and is enhanced.

TRANSPORTATION ENERGY POLICY ISSUES

Encouraging Energy-Efficient Actions by Transportation Providers

Although New York State is a major consumer of transportation-related energy, it is also the most energy-efficient State (on a per capita basis) in the nation because of the extensive use of public transportation in the NYC metropolitan area. However, opportunities to improve the transportation system's efficiency throughout the State exist.

Government agencies need to work with transportation providers to improve service, convenience, reliability, and security to ensure available programs meet customer needs and contribute to improving energy efficiency. All levels of government must work together cooperatively to implement energy-efficient operations. Education and outreach programs are critical components for public understanding of energy-efficient operations. A successful example of this is E-Z Pass, which is the electronic toll collection system on the New York State Thruway and other tolled bridges and roads in the NYC metropolitan area. This system, by reducing delay at tollbooths, improves air quality and reduces energy consumption. State and local governments worked together to implement a common system and approach that would benefit the State's motorists. State and local officials are working with their counterparts in other Northeastern states to extend the E-Z Pass system to other states in the region.

As other segments of the energy arena undergo deregulation and enhanced competition, federal, and state and local governments will continue to be the providers of transportation infrastructure by building roads, bridges, and other facilities. The transportation infrastructure is then used by the public and private transportation sectors. Government's role is to encourage efficient use of the transportation system by the private sector and the public through the mobility, intermodal, and other goals outlined above and in the Transportation Plan.

Pricing structures, taxing methods, subsidies, and State regulations can encourage or discourage energy efficiency. Legislation was recently passed that provides tax credits to encourage businesses to purchase energy-efficient equipment or alternative-fuel vehicles. Changes in taxes and fees paid by railroads and trucks could influence modal choice. Trade-offs between possible damage to roads caused by heavy trucks and the efficiencies of large shipments have to be assessed. NYSDOT's Divisible Load Weight Permit Program is an initial effort designed to encourage vehicle configurations that use more axles to reduce impacts on roads and reduce VMT by encouraging larger, and thus fewer shipments, also resulting in reduced energy consumption.

In addition, the pending acquisition of Conrail by Norfolk Southern and CSX Railroads has the potential to enhance the use of intermodal transportation of goods, further reducing energy consumption.

ENERGY ISSUES RELATED TO THE REAUTHORIZATION OF FEDERAL SURFACE TRANSPORTATION LEGISLATION

In 1991, Congress defined the federal transportation role for the post-interstate highway construction era. The Intermodal Surface Transportation Efficiency Act (ISTEA), with its intent to move people and goods in an energy-efficient manner, is a major change from previous federal surface transportation policies that guided our nation through the construction of the interstate highway system. Instead of the top-down federally defined system of building interstate highways, ISTEA returned decision-making authority to state and local governments in a way that provides local flexibility while maintaining a federal role in transportation decision-making.

Congress reauthorized ISTEA when it passed the Transportation Equity Act for the 21st Century (TEA-21) in May 1998.

TEA-21 retains ISTEA's program structure which, in turn, preserves many of ISTEA's energy efficiency features. The Congestion Mitigation and Air Quality Improvement (CMAQ) Program which provides funds to reduce air pollution and traffic congestions and enhance energy efficiency, was retained in TEA-21 and funded at increased levels. Energy-conserving alternatives such as TSM, TDM, and ITS remain eligible for federal surface transportation funding. TEA-21 also retained the federal transit program structure and increased funding for transit. New York has one-third of the Nation's transit ridership; adequate federal funding for transit is important for New York. The tax-free benefit, where employers can provide vouchers for transit service to employees in lieu of parking, will increase frm $65 per month to $100 per month in 2002.

TEA-21 includes new features that reduce energy consumption and improve the environment. TEA-21 adds a new clean fuel program within the federal transit program that will provide federal funds to purchase buses that use low-polluting alternative fuels such as compressed natural gas (CNG). A new Advanced Vehicle Program will provide funds to develop clean, fuel efficient trucks and other heavy vehicles. TEA-21 also establishes the Sustainable Communities Pilot Program to help state and local governments plan environmentally friendly development, where land use and transportation planning are more closely integrated. Also, TEA-21 further strengthens the importance of walking and bicycling as essential transportation modes by providing greater flexibility among funding categories, making non-motorized modes eligible for more safety monies, and

designating more research and demonstration resources. All of these features of TEA-21 will continue to help New York move goods and people in an energy-efficient manner.

However, TEA-21 makes some changes to ISTEA that reward energy inefficiency. TEA-21 modifies the formulas used to distribute highway funds to include factors that reward increased energy consumption. Diesel fuel consumption and Federal gas tax collections are now used to distribute funds in several categories. Overall highway funding is also adjusted to reflect the relative share of federal gas tax collected in each state. The TEA-21 highway formula rewards energy inefficiency because as more gasoline is consumed, more gasoline taxes are collected, therefore, states with high gasoline consumption are rewarded with more federal highway funds. New York will advocate that the highway funding distribution formulas be revised to reward energy efficiency when TEA-21 is reauthorized in 2003.

USE OF ALTERNATIVE TRANSPORTATION FUELS

The Clean Air Act amendments of 1990 and the Energy Policy Act of 1992 establish federal mandates for cleaner, more efficient vehicles. New York State has adopted standards that will require the sale of cleaner-fueled vehicles, including electric cars, by the turn of the century. (Refer to the Energy and Environment Issue Brief). Government is setting the example by providing central alternative fueling facilities for its own fleets and encouraging other large fleet owners to do the same. Government agencies at all levels must work cooperatively to remove institutional barriers to the use of centrally fueled, alternative-fuel vehicles. Accelerating the introduction of alternative fuels for vehicles operated in New York can have both economic and environmental benefits. In addition to improving the State's fuel diversity, use of alternative-fuel vehicles can spur new industry development and improve air quality.

Alternative fuels include methanol, ethanol, natural gas, propane, and electricity. Both federal and State programs provide funding for alternative-fuel vehicles. Major transit providers, such as NYCT, the Central New York Regional Transportation Authority, and Long-Island Bus, as well as NYSERDA, have been active in acquiring and developing alternative-fuel and hybrid bus technology. This activity will continue to be supported by the Clean Water/Clean Air Bond Act of 1996, which authorizes funding for the purchase of alternative-fuel vehicles by transit agencies, municipalities, school districts, and State agencies. TEA-21 provides funding sources that can be used to encourage the use of alternative-fuel transit vehicles. For example, a current CMAQ project, funded by ISTEA and led by NYSERDA in partnership with New York City, is aimed at adding 600 natural gas taxis to this energy-intensive fleet.

New York State offers tax incentives to help improve the cost-effectiveness of clean-fuel vehicles purchases, including electric vehicles, and installation of refueling and charging equipment. The State also offers sales tax exemption for the incremental cost of these vehicle and equipment purchases. These incentives will be available through 2003.

R&D and commercialization of new products and technologies is a vital component of the State's alternative-fuel efforts. The State provides assistance to businesses to improve vehicle efficiency and performance and to establish alternative-fuel related business operations in New York State.
For example:

- The Alternative Fuel Technology center supports manufacturers to establish alternative-fuel related businesses at the former Griffiss Air Force Base.
- The Energy Planning Board completed a study that looked at the viability and feasibility of liquefied natural gas as an alternative transportation fuel, especially for heavy-duty vehicles.
- NYSDOT has taken a leadership role in partnering with private industry to identify and develop appropriate alternative fuel technologies for mid-range and heavy-duty trucks as well as special use and construction equipment.

New York's efforts also include voluntary, grassroots programs such as the Clean Cities program, active in New York City and in many areas throughout the State, which encourages communities to develop and implement local plans for alternative-fuel vehicles. Stakeholders from public and private fleets, fuel and service providers, and others jointly work on projects to educate the community and develop infrastructure to support alternative-fuel vehicles.

SUMMARY

The transportation sector (government and private) can and should take steps to meet growing transportation demands while addressing the need to use energy efficiently and cleanly:

- Consider the role of energy usage in making transportation decisions. A technically sound analysis of energy impacts should be performed on major transportation actions. Decision makers should weigh energy impacts seriously in their selection of alternatives.
- Foster interagency cooperative efforts to provide seamless transportation, such as better coordinating service between modes; use of one electronic identification tag for all tolled highways, bridges, and tunnels; and improved incident management.

- At all levels of government, encourage or remove barriers to the use of more fuel-efficient vehicles and alternative fuels. This will assist in reducing the State's vulnerability to a petroleum supply disruption.

- At the State and local level, adopt transportation demand management measures, such as ridesharing, telecommuting, voluntary employee commute options, and construction of park-and-ride lots for commuters who carpool or wish to use mass transit. The State and localities may also use parking management techniques and, in more severely congested areas, flexible pricing to discourage single-occupant vehicles.

- At the State and local level, implement transportation system management measures, such as improvements in traffic signals and intersections, and other activities designed to improve traffic flow.

- At all levels of government, promote the use of fuel-efficient modes of transportation, such as mass transit, carpooling, bicycling, and walking, by making these modes safe and attractive alternatives to driving alone.

- At the local level, adopt land use and zoning policies designed to decrease congestion and increase efficiency of the existing transportation system (*i.e.*, policies that encourage higher-intensity development in areas where the existing transit and highway network is capable of handling the traffic generated by such development can result in improved energy use and reductions in congestion at less cost to taxpayers).

SECTION 2.6

ROLE OF GOVERNMENT

INTRODUCTION

Government's role in energy markets is changing, as competition increases in what were once highly regulated electricity and natural gas industries. Recognizing these changes, government is fostering competition by changing laws and streamlining regulations so they are fairer, across- the-board to market participants, and more relevant to and supportive of markets. Government is encouraging development of an electricity industry framework, similar to that developed for natural gas that supports: many buyers and sellers, including new entrants; greater customer choice; continued service reliability; and environmental and consumer protections.

Like the telecommunication, transportation, and natural gas industries, the electricity industry is being restructured. The forces driving competition, including technological changes in electricity production, pressures from consumers for greater choice, and unregulated energy suppliers seeking access to markets, are working to reduce energy costs. Energy consumers and producers are demanding changes to the highly regulated electricity industry that would allow greater flexibility in meeting customers needs at competitive market-determined prices.

Although government's role in electricity regulation is being reexamined as the industry moves to competition, regulatory and public policy goals remain the same. Regulation will continue to be used as an instrument of public policy to address issues of public concern, and to ensure equal access to necessary energy services. Its continuing role includes regulating prices of monopoly providers of transmission and distribution services. Furthermore, where regulation is necessary, it should be applied flexibly and fairly, in ways that encourage market innovation and efficiency.

Monopoly control of markets by vertically integrated utilities is being challenged, and some components of this once regulated business are being deregulated. Utility network or common carrier functions likely to continue in a restructured electricity market, such as transmission and distribution functions, will continue to be regulated. Other functions, including electricity generation, and some customer services are being deregulated.

Role of Government

In petroleum markets, exploration, pipeline, transportation and distribution functions serving end-use customers are competitive. Crude oil and petroleum products are traded in world markets with many buyers and sellers. Prices are determined by demand and supply, which in turn are determined by investment in technology and infrastructure, and product variety and quality. Both buyers and sellers of petroleum products have access to financial and contract instruments to allocate and transfer risk. Unlike electricity and natural gas, however, common carrier functions by pipeline, barge, and truck are highly competitive, due to the ability to move product to consumers by a variety of means. Currently the only way to distribute electricity is by wire, and natural gas by pipe. There are no existing competitive means for delivering these products to consumers.

To the extent oil and petroleum products are regulated, government focuses its efforts on collecting and reporting data and information to help ensure public health and safety, and meeting environmental standards. There are certain market characteristics, such as greater uncertainty and fluctuations in supplies and prices, that cause particular concern to energy consumers. While regulation, in most instances, should not interfere significantly with allocation and product pricing decisions in a competitive market, New York's Energy Planning Board believes that the State must support fairness, equity, and systems protection in areas of significant public need where markets do not or are unable to provide them.

ENERGY COMMODITIES IN A COMPETITIVE MARKET

Markets typically are more efficient in allocating resources among suppliers and consumers than regulation. Government's role is to protect consumers from fraudulent and abusive business practices and preserve the State's environment, while facilitating development and operation of a robust market for energy products and services. Energy product and service availability at competitive prices is essential to economic well-being, efficient transportation of people and goods, and protection of public health and safety. Energy provides heat and light for homes, makes possible the manufacture of consumer and industrial goods, and provides for transportation of people and goods to support a growing economy. Where competition can foster customer choice and economic efficiency, the State's responsibility is more appropriately to oversee the workings of markets to:

- Make certain consumers have access to safe, adequate, and reliable products and services, and that energy production and delivery systems are secure and reliable.
- Make certain consumers have access to accurate information regarding energy products and services, thereby enabling them to make informed energy decisions.

- Allow businesses to enter and exit markets freely, ensuring that all energy suppliers and consumers are afforded non-discriminatory access to energy transportation (transmission) and local distribution systems.

- Protect consumer and environmental interests, and guard against unfair business practices, discriminatory or predatory behavior, and arbitrary service shut-off.

In light of these assurances, New York continues to support public programs that serve the State's low-income consumers, so long as their needs are not adequately met by markets. Moreover, the State supports public benefit programs that improve energy efficiency, encourage technological innovations, support pollution prevention and reduction, ensure environmental compliance, enhance mobility, and foster economic development.

GOVERNMENT'S ROLE IN LOWERING ENERGY COSTS

Regulation of energy industries must be flexible and responsive to the needs of market participants, including energy producers, market suppliers, and consumers. In many instances, the State and its localities are uniquely situated to foster economic development and lower costs for energy consumers. Low interest, tax-exempt financing has been a traditional tool used in New York to develop resources, construct facilities, and lower costs for consumers (*e.g.*, Industrial Development Agencies, New York Power Authority, New York State Energy Research and Development Authority, among others).

Under Governor Pataki's leadership, the Long Island Power Authority (LIPA) will use its ability to access low-cost financing to bring immediate rate relief and increased competition to Long Island. LIPA will initiate both wholesale and retail competition on Long Island, now that it owns LILCO's electric operations, including transmission and distribution systems (T&D), the Shoreham regulatory asset, and LILCO's share of the Nine Mile Point 2 Nuclear Facility. Independent of this, LILCO and Brooklyn Union Gas Company have combined to form an energy services holding company, KeySpan, that is operating the T&D system. The holding company and its operating subsidiaries will be able to offer more comprehensive energy services to customers and allow new market opportunities and choices heretofore unavailable to either company without lengthy regulatory approval.

The New York Power Authority (NYPA), the nation's largest state-owned power organization, provides one-quarter of the State's electricity. NYPA supplies low-cost power to government, industrial and commercial customers, municipalities and rural electric corporations, investor-owned utilities, and government

organizations from hydroelectric, nuclear, and fossil-fuel-fired generation. It also provides energy efficiency services to government entities and businesses throughout the State.

NYPA's success in economic development, supplying low-cost power to more than 200 companies, is linked to more than 150,000 private sector jobs. With the State's Power for Jobs program, allocating an additional 450 megawatts (MW) of power for economic development, NYPA will play a larger role in promoting economic development within the State. Two hundred of the 450 MW total available for economic development will be provided by NYPA and the remainder will be competitively procured by NYPA. The Power for Jobs program also provides credit for the investor-owned utilities against the State's gross receipts tax on electricity revenues lost under this program. This reduction in taxes, when coupled with the additional 450 MW of low-cost power, will further reduce energy costs for industries looking to stay or expand within the State.

State government is also monitoring the transition to competition and, as with crude oil and petroleum products, will work to ensure that energy flows are uninterrupted during an energy supply emergency. New York State has the authority to declare an energy or fuel supply emergency, and implement a response based on the severity of the situation, under the State Energy Law. The Governor can declare an energy supply emergency in the event that public health and safety or the State's economy is threatened by an energy supply disruption. Additionally, NYSERDA's President has broad emergency responsibilities that can be exercised in response to the Governor's emergency declaration to set aside and allocate available energy supplies to those regions of New York that exhibit the greatest energy need.

Short of declaring an energy emergency, the State provides independent and objective data and information regarding the availability and prices of energy supplies to help market participants make informed decisions. By identifying potential sources of supplies, State government helps bring willing buyers and sellers together in emergency situations.

New York will assist in developing efficient and effective energy markets by working closely with industries to eliminate barriers to market entry and exit, remove or avoid unnecessary regulation, and provide for full disclosure of information about energy choices so consumers can make rational and informed decisions. These policies should work to remove unnecessary barriers to siting of new energy supply sources, and delivery systems (*e.g.*, investment in new pipeline or electricity generation, transmission, and distribution capacity that would enhance competition or provide necessary ancillary services). Additionally, by helping to create a more open and unfettered energy market, the possibility of a severe disruption in supplies is lessened.

For competitive markets to emerge and function, energy producers and suppliers must have fair and equal access to markets for supplying and delivering energy and related services to consumers. Transportation and distribution service terms and conditions should be transparent to all market participants as well as priced in a nondiscriminatory manner. A major role of government is to guard against any entity or group of energy resource or service providers wielding undue market power. State government must also ensure that threats to consumers posed by monopolistic practices are alleviated through regulation where warranted.

Improving Environmental Quality in a Competitive Market

Relying on market-based approaches to improve environmental quality will allow compliance with more stringent environmental requirements to be met in the most cost-effective manner. Government's role in enforcing regulations is based on allowing flexibility and a full array of possible market responses to comply with any environmental requirement while not artificially imposing additional costs on energy producers or suppliers than those necessary to meet environmental objectives.

The State, through its research and development activities is exploring a wide range of initiatives, including developing markets for cleaner fuels and more efficient uses of energy as an economic development tool and as a means to meet environmental goals. State government is increasing the array of market responses to consumers and energy suppliers for meeting the State's energy needs, consistent with its stated purpose of assisting market development, and offering greater choices at competitive prices to New Yorkers.

Furthermore, where investors choose to build new energy supply facilities to meet a perceived market need, whether for electricity generation or alternative fuel vehicle use, government should not hinder such efforts so long as public health and safety are not jeopardized and environmental requirements are met. Risk to consumers becomes a concern when supplies are disrupted or prices rise to levels that deny products and services to those who can least afford them. In these instances of severe market disruptions or energy emergencies, New York State will act decisively and intervene to protect the public's interest.

Public Benefits

Government will continue to take the initiative to develop programs that provide the State's low-income consumers with energy efficiency and weatherization assistance, help with paying energy bills, and ensure continued access to service. Encouraging a strong efficiency component in energy markets would reduce energy use and costs, as well as pollutants that can cause environmental damage and human health problems.

Role of Government

The State continues to encourage market-driven investments in cost-effective and efficient uses of energy. For example, the 1996 Clean Water/Clean Air Bond Act, among other things, will enable New York to replace 100 year-old coal-fired boilers in New York City public schools with cleaner-burning natural gas boilers, support development and demonstration of clean-fuel bus technology, and to address air quality concerns. New York also enacted several tax incentives for alternative fuel vehicle purchases and infrastructure investments. Clean fuels included in this five-year program include natural gas, liquefied petroleum gas, hydrogen, electricity, and other fuels containing at least 85 percent methanol or ethanol. This program is designed to help develop a market for alternative fuel vehicles in New York.

The State's Weatherization Assistance Program, operated by the Division of Housing and Community Renewal (DHCR), weatherizes low-income households, particularly those occupied by the elderly, handicapped, and families with young children, to help them reduce energy consumption and costs. The Weatherization Assistance Program also provides emergency assistance to consumers for heating system repair and replacement, to ensure that low-income households have access to services to deal with system malfunctions and outages. New York is also responding to emerging competition in electric and natural gas industries, by reallocating funding within the Home Energy Assistance Program (HEAP) to allow weatherization subgrantees to assist low-income consumers in becoming more energy self-sufficient.

New York State has also enacted a System Benefits Charge (SBC) to fund certain energy efficiency, energy research and development, environmental protection, and low-income pilot programs during the transition to competition. The majority of the three-year $234 million SBC program is being administered by NYSERDA, as the **New York Energy $mart**[SM] program, and offers a myriad of programs intended to provide benefits to those customers least likely to benefit from the transition to competition. The PSC has deferred to a future decision whether SBC-funded programs should continue beyond the initial 3 years.

CONCLUSION

Under Governor Pataki's leadership, New York State is supporting energy policies to reduce regulatory burdens, and develop new markets that will create jobs and provide opportunities for new investment in the State. Specifically, New York State is:

- Encouraging competition in the delivery of energy products and services, while working to prevent fraud and monopolistic practices in markets.

- Assisting businesses and industry in becoming more competitive by lowering costs and fostering greater economic development and job retention.

- Improving energy efficiency and pollution prevention in its own buildings and facilities and assisting industry in doing the same.

- Helping to ensure an adequate and continuous supply of safe, dependable, and competitively priced energy for all New Yorkers consistent with public health and safety, and environmental protection needs.

- Improving the transportation system to provide rapid and efficient travel, and safe access to markets for all New Yorkers.

Section 3

ENERGY RESOURCE ASSESSMENTS

SECTION 3.0

FORECAST SUMMARY

OVERVIEW

Long-range energy demand and price forecasts were developed for electricity, natural gas, petroleum, and coal covering a 20-year period from 1997 to 2016. Actual 1996 data were used for the base year and with 1997 serving as the first forecast year. Since future energy use and prices are uncertain, forecasts are presented as a range of possible values: an outlook case bounded by high and low cases. Natural gas and electric industry restructuring compounds the uncertainties of New York's future energy picture, particularly for fuels used in electricity generation. Forecasting methodologies and more detailed forecast information are provided in the respective Energy Supply Assessments and Forecasting Appendix.

NEW YORK STATE ENERGY DEMAND

Table 3-1 contains a summary of Statewide demand forecasts. Forecasts for electricity peak demand, residential natural gas and petroleum demand, and transportation petroleum demand are also highlighted.

Demand	1996 Actual	2001 Low	2001 Outlook	2001 High	2016 Low	2016 Outlook	2016 High	Average Annual Growth Outlook Case 1996-2001	2001-2016	1996-2016
Electricity, Gwh	144,195	152,166	155,203	158,241	166,207	181,827	197,448	1.5%	1.1%	1.2%
Peak, MW	25,587	28,280	28,860	29,450	30,560	33,530	36,490	2.4%	1.0%	1.4%
Natural Gas, mmdt	1,088	1,326	1,354	1,386	1,538	1,626	2,193	4.5%	1.2%	2.0%
Residential Sector	409	416	425	435	494	522	569	0.8%	1.4%	1.2%
Petroleum, tBtu	1,626	1,645	1,662	1,664	1,595	1,710	2,199	0.4%	2.0%	0.3%
Residential Sector	206	188	189	191	160	163	168	-1.7%	-1.0%	-1.2%
Transportation Sector	1,096	1,165	1,176	1,186	1,200	1,294	1,383	1.4%	0.6%	0.8%
Coal, tBu	360	354	363	337	315	354	410	0.2%	-0.2%	-0.1%

Table 3-1

- Electricity - The demand forecast represents the electricity requirements generated from all sources for retail customers in the franchise territories of the State's seven investor-owned utilities and the New York Power Authority (NYPA). An average annual growth rate of 1.2% is projected over the forecast period for the outlook case, with low and high forecast rates ranging from 0.7-1.6% per year.

- Natural Gas - Total natural gas demand is expected to increase at an average annual rate of 2.0% for the outlook case. The low and high case average annual growth rates are 1.7% and 3.6%, respectively. All sectors (electric generation, residential, and commercial/industrial) show increased demand for natural gas. Downstate growth is projected to be slightly greater than that for upstate, particularly for the residential sector. The increase in demand for the high case is largely attributable to projected electricity generation demand for natural gas.

- Petroleum - Total consumption in the outlook case is projected to exhibit a slight 0.3% annual average increase over the forecast period. Petroleum demand is projected to increase in the high case, at an average growth of 1.5%, while the low case is projected to decline at an average annual rate of 0.1%. The transportation sector demand increases in all cases, with most of the growth forecast to occur in the first ten years. For the low case, the demand decrease is largely due to declining use of petroleum for electric generation. In this scenario, oil-fired generation decreases by roughly 50% from 2001 to 2016.

- Coal - Average annual decreases of 0.1% and 0.7% are projected for the outlook and low cases. These cases project increases in electric generation coal demand in the first two years of the forecast, followed by 18-year demand decreases. The high case, with an average annual rate of growth of 0.7%, projects increased electricity generation coal demand over the forecast period.

NEW YORK STATE ENERGY PRICES

Projected Statewide weighted average real energy prices are shown in Table 3-2. Additional details regarding fuel prices for the various consuming sectors are provided in their respective appendices.

- Electricity - The average Statewide end-use electricity price (including the New York Power Authority) is projected to decrease at an average annual rate of 1.7%. The respective low and high price forecast average annual growth rates are -2.6% and -1.0%, respectively.

- Natural Gas - The Statewide average end-use natural gas price for all sectors is projected to decrease at an average annual rate of 0.6% from 1996 to 2016 in the outlook case. In the low case, the average price is projected to decrease at an average annual rate of 1.4%, while in the high case, an average annual price increase of 0.1% is projected.

- Petroleum - The weighted Statewide annual average end-use petroleum price for all consuming sectors is projected to range from a 0.1% decline to a 0.4% increase for the forecast period.

- Coal - The Statewide coal price is projected to decline at an average annual rate of 1.6-1.8%.

Prices in 1996 Dollars	1996 Actual	2001 Low	2001 Outlook	2001 High	2016 Low	2016 Outlook	2016 High	Average Annual Growth Outlook Case 1996-2001	2001-2016	1996-2016
Electricity, cents/kWh	11.05	9.15	9.15	9.15	6.51	7.78	9.04	-3.7%	-1.1%	-1.7%
Natural Gas End-Use, $/dt	7.64	6.97	7.29	7.57	5.74	6.78	7.83	-0.9%	-0.5%	-0.6%
Residential Sector, $/dt	8.68	8.09	8.43	8.77	6.50	7.77	9.06	-0.6%	-0.5%	-0.6%
Petroleum										
End-Use, cents/composite gal*	124.0	119.3	121.0	121.3	122.3	130.7	133.7	-0.5%	0.5%	0.3%
Home Heating Oil, cents/gal	113.3	115.4	116.5	117.1	118.3	123.2	125.4	0.6%	0.4%	0.4%
Gasoline, cents/gal	136.0	131.7	133.2	134.8	137.3	146.8	151.8	-0.4%	0.7%	0.4%
Electric generation, $/bbl	24.46	21.06	21.38	21.50	22.32	23.14	23.95	-2.7%	0.5%	-0.3%
Coal, $/short ton	37.88	26.52	26.35	25.99	26.43	26.18	27.53	-7.0%	0.0%	-1.8%

* Composite oil gallon represents the average energy content of a gallon of distillate oil, residential oil, gasoline, and jet fuel.

Table 3-2

SECTION 3.1

ELECTRICITY RESOURCE ASSESSMENT

INTRODUCTION

The introduction of competitive forces has had a profound impact on the electric utility industry over the past 10 years. Greater competition and consumer choice will have even more dramatic impacts over the next decade. Federal laws and State actions have fostered the move toward competition by mandating open access to the electric transmission system, requiring unbundling of rates and allowing independent service companies to provide electricity and energy services historically provided by utilities.

The Federal Energy Regulatory Commission (FERC) set the stage for a competitive wholesale electricity market by developing a framework for open access to the electric transmission system similar to the one it established for open access to the natural gas pipeline system. At the State level, the Public Service Commission (PSC) complemented this effort by establishing a proceeding to investigate Competitive Opportunities for Electric Service, which has resulted in agreements by the electric utilities to restructure their businesses to allow for both wholesale and retail competition.

This move to competition is critical because New York's consumers have been faced with excessively high electricity prices compared to the national average, as shown in Figure 3-1.

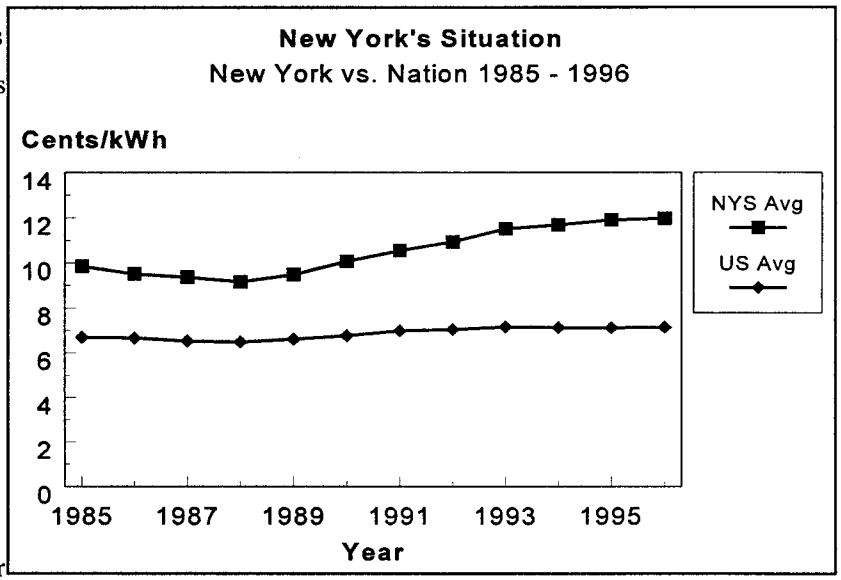

Figure 3-1

These high prices, in turn, have had a negative impact on the State's economic growth. New York's higher

electricity prices stem from a variety of factors, including both past utility practices and decision making, and State and federal policies and directives.[1] While it can be argued that most of the past utility, State, and federal activities were intended to promote economic efficiency, these efforts did not achieve the intended results. Today, the electricity industry is presented with the difficult task of adjusting to a changing world. For example, nuclear power in the 1960s and 1970s, independent power producers (IPPs), and demand-side management (DSM) activities in the 1980s were encouraged by both federal and State policies and actions. Additionally, the investor-owned utilities (IOUs) were directed to assume significant responsibilities for addressing social and environmental issues and collecting tax revenues for the State. Today, these initiatives, in conjunction with utility decisions, are seen by many as contributing to the high cost of electricity. These and other factors, and the Pataki Administration's plans for addressing high electricity rates are discussed in further detail in the issue paper, "The Effects of Competition on New York".

In previous SEPs, the Electricity Resource Assessment sections focused on the electric system infrastructure and the expected impacts that might occur over the forecast period from various assumed or mandated changes in the infrastructure or in the way the system was to be operated. This Electricity Resource Assessment must take into account the changes occurring in the industry's structure. The first section of this assessment, "The Electric System," describes the current status of the physical electric system and attempts to anticipate how it might change as the industry is restructured. The second section, "Load and Capability Analysis," forecasts the range of years over which new generation might be required in New York State to ensure reliable electric service to New York's consumers. This section also illustrates the many uncertainties involved when attempting to forecast generation requirements and concludes that flexibility must be the key element in future legislative and regulatory actions. This plan espouses policies that allow market forces to control most decisions regarding energy investments, purchases, and use.

The third section of this assessment, "Price Trends and Load Growth," estimates the range of prices customers may be expected to pay in the forthcoming competitive electric market, and the range of customer load growth that might be experienced within the State by 2016.

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[1] For a detailed account of how New York's electricity price compares to other states and regions, see Factors That Affect Energy Prices, Section 2.1 of this SEP.

THE ELECTRIC SYSTEM

Transmission

The 1998 Section 6-106 "Report of the Member Electric Systems of the New York Power Pool" (NYPP) indicates there are 10,800 circuit miles of transmission facilities in New York State. These facilities are generally adequate to ensure reliable transmission service for the foreseeable future. While some limitations exist *(e.g.*, limited transmission capability for transfer to or from New York State, from western New York State to eastern and southeastern New York State, and from upstate to Long Island, although only wholesale economic transactions are sometimes restricted), the reliability of New York's electricity system is currently adequate. New York's existing transmission system facilities, delineated by voltage class and circuit miles, are shown in Table 3-3.

Tabulation of Circuit Miles
of Existing Transmission Facilities in Kilovolts (kV)

Voltage	115 kV	138 kV	230 kV	345 kV	500 kV	765 kV
Miles	6018	711	1090	2660	5	314

Table 3-3

Only 26 circuit miles of new transmission facilities are being planned by members of the NYPP.[2] None of this new transmission, however, is intended to support the bulk Statewide transmission system. This relatively small amount of planned additions is not surprising, given the uncertainties that currently exist regarding the timing and location of the siting of new generation in a competitive environment and the excess generation reserves that currently exist within the State. Other unknown factors include the source of future financing for such facilities, the amount of excess generation capacity that will exist in the future

[2]Some reconductoring or other work may also be undertaken as a consequence of new generation facilities under consideration by non-members of the NYPP.

within New York State, and the potential for new generation capacity to be built closer to load centers in a competitive environment.[3]

In the forthcoming restructured utility environment, it is likely that transmission facilities will continue to be owned by regulated utilities. However, it is also likely that transmission planning and control will be a responsibility of the independent system operator (ISO), governed by system reliability considerations and the needs of the marketplace as perceived by risk-taking market participants, rather than by traditional long-term projections of electric demand needs.

Generation

Approximately 35,000 megawatts (MW) of generation are available within New York State to supply electric capacity needs, with another 436 MW under contract to New York's utilities to supply only energy without any firm capacity associated with the transaction[4]. Additionally, four municipal utility systems in New York own about 135 MW of generation. Under current conditions, this electricity capacity is more than adequate to meet the State's electricity needs now and for some period into the future. The "Load and Capability Analysis" section presented later in this Electricity Resource Assessment indicates that additional electric capacity may initially be needed at some point

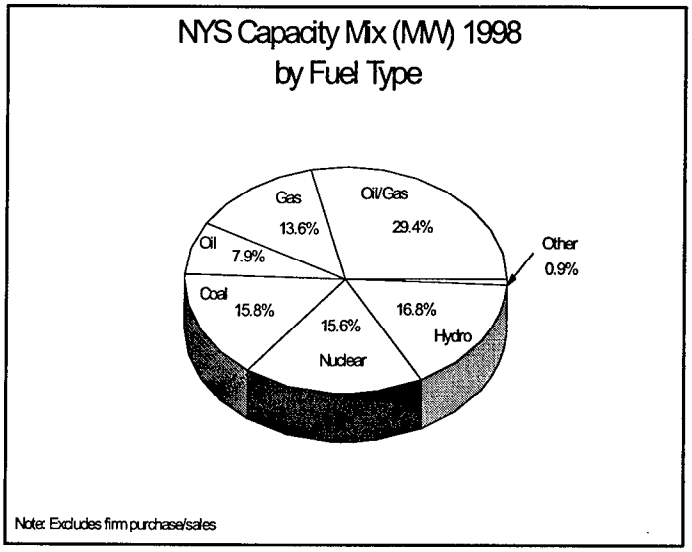

Figure 3-2

[3] In many instances it may be less expensive to construct gas-fired combined-cycle generation stations near the load centers than to build new transmission capacity.

[4] See the 1998 *Report of the Member Electric Systems of the New York Power Pool Load and Capacity Data* filed pursuant to Section 6-106 of State Energy Law. Additionally, there are many small generation units throughout the State that are not interconnected with the electric system. The capacity available from such generation is not significant enough at this time to be considered here, as competition unfolds, however, such generation could affect future generation requirements.

between 2001 and 2005 under current reliability criteria, or by 2010 or later, if the reliability criteria are modified.

The existing generation capacity mix, by fuel type, available in the New York State system is shown in Figure 3-3. As indicated, New York's existing capacity is dominated by oil and gas fired capability, with nearly equal shares of hydroelectric, nuclear, and coal fired electric generating capacity.

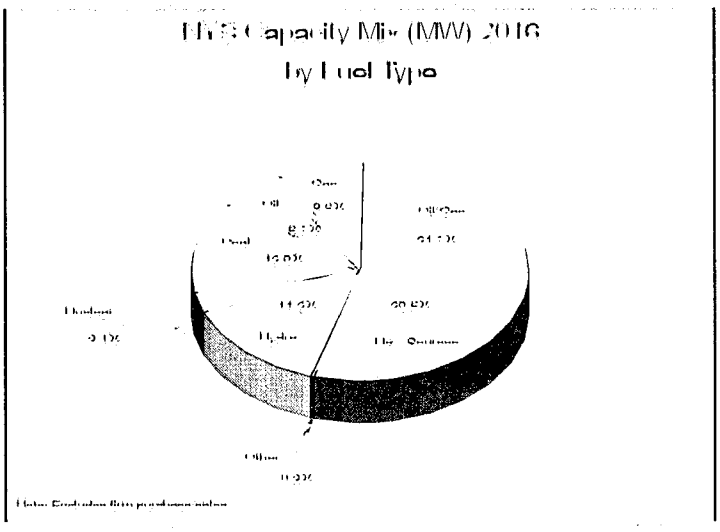

Figure 3-3

Similar information projected for 2016 is shown in Figure 3-3. In this illustrative analysis, it was assumed that all new capacity resources needed to meet future electricity demand (including maintenance of the existing 18% reserve margin criteria) are met by highly efficient combined cycle natural gas facilities. However, this Electricity Resource Assessment recognizes that future capacity requirements will actually be met by a yet undefined combination of resources and fuel types, including among others increased energy efficiency, renewable resources, distributed generation, electricity imports, and other new technologies.

Table 3-4 illustrates one potential scenario for how the State's generation might operate through 2016, based on the forecast described in the Electric Sales Forecast section.[2] This projection assumes that all existing NYPP generating facilities continue to operate, with the exception of those that New York's utilities have identified will retire over the forecast period. They also assume that IPP facilities will continue to operate after current contracts with utilities expire. The projections assume that new, but unspecified supply sources are acquired to meet demand growth and reserve requirements (as currently

[2] Table 3-4 results from an extrapolation of the computer modeling of the electrical system used for the Draft State Energy Plan

defined by the MVPP as discussed previously).[6]

Participants in a properly functioning market, with adequate information, should be able to determine when and where additional generation resources are needed to meet customer needs. Government should help to ensure that electricity supply, demand, and price information are available for market participants so that they are able to respond, in a timely manner, to maintain the reliability of the electric system. Planned generating facilities greater than 80 MW will continue to be subject to Article X of the Public Service Law (at least until the law sunsets in 2002). As in the case of transmission line certification, power plant certifications will require findings that the public interest can be served and environmental impacts are acceptable. To the extent that new generation facilities will promote or contribute to competition in electric markets, including the reduction of market power conditions, they will be consistent with the long range plan for expansion of the electric power system in New York State envisioned by this SEP, and the public interest will likely be served so long as environmental and other impacts are also found to be within acceptable ranges or can be mitigated.

The previous discussion in this section focused on the amount and types of generation that may be available in the future. The reliability of that capacity, however, must also be ensured if electric system reliability is to be maintained at appropriate levels. Currently, New York State utilities own and control about 85% of the State's installed generating capacity with the remainder owned by IPPs. A significant percentage of the IOU generation, however, is in the process of being divested, or structurally separated from the T&D utility, and ultimately owned by autonomous operators. As New York's electricity system moves from having a regulated generation system to a competitive generation market, the oversight of generation performance will move from the PSC to market driven performance standards. The PSC will be responsible for designing and operating a system that will offer appropriate economic incentives sufficient to maintain generation system reliability.

IPP facilities have operated reliably compared to other existing electricity generation because these newer facilities use the latest technology available and have contractual provisions that provide for purchase of

[6] The subsequent "Load and Capacity Analysis" indicates that new capacity resources will be needed during the planning period to ensure reliable service. Because of transmission system constraints, siting new capacity in specific load areas to avoid construction of electric transmission systems could be beneficial.

their electricity output when (and usually only when) they operate. These facilities make a significant contribution toward meeting overall system reliability. As long as economic incentives continue to be available, IPP facilities would continue to perform well.

Nuclear facilities provide a significant portion of New York's generation. They generate over one-fifth of the electricity consumed in the State. While these facilities may be considered simply as contributors to the State's generation supply, they must also be viewed in light of their unique characteristics, which include extremely large initial capital investments, high fixed operating costs, large decommissioning and spent fuel storage costs, low short-term variable costs, and significant nuclear safety requirements whose oversight is regulated by the federal Nuclear Regulatory Commission. Although nuclear power plant performance has improved over the past decade, and might continue to improve over time, the high cost of nuclear power and safety issues call into question whether nuclear power will be able to compete successfully in the future. Decommissioning a significant block of nuclear generation capability before the expiration of licenses, however, could alter the generation mix in the State. Later, in the "Load and Capability Analysis" section of this Electricity Resource Assessment, the impact of early retirement of two representative nuclear units is considered. The date when new resources might otherwise be required advances by four years in the most extreme case studied (*i.e.*, to 2001 instead of 2005).

PROJECTION OF ELECTRICAL ENERGY REQUIREMENTS BY SUPPLY SOURCE
(GWH)

		ACTUAL	<---------- ESTIMATED ---------->					
GENERATION SOURCE	**1996**	**1998**	**1999**	**2000**	**2003**	**2007**	**2011**	**2016**
NEW ENERGY SUPPLIES	N/A	0	0	0	4,779	19,941	38,407	65,163
RESIDUAL OIL	8,847	5,956	7,329	9,624	9,345	8,013	7,181	5,393
DISTILLATE OIL	409	38	38	44	87	64	60	31
COAL	26,585	31,338	30,326	28,897	28,894	28,846	28,782	28,911
NATURAL GAS	13,361	16,119	18,779	18,984	21,579	20,291	19,135	17,054
NUCLEAR	35,224	34,243	32,102	32,310	32,206	31,860	24,415	11,114
IPPS	33,120	34,839	35,217	36,479	36,267	35,692	35,408	35,242
CONVENTIONAL HYDRO	26,971	24,374	24,374	24,635	24,635	24,635	24,635	24,636
PUMP STORAGE LOAD	-2,506	-1,838	-1,492	-1,463	-1,126	-940	-765	-757
PUMP STORAGE OUTPUT	1,681	1,288	1,045	1,015	792	662	527	521
PURCHASES	13,875	8,162	8,922	8,250	6,330	2,040	793	589
SALES	-9,069	-4,729	-4,705	-4,753	-4,144	-3,951	-3,847	-3,714
TOTALS	148,498	149,791	151,935	154,023	159,643	167,153	174,732	184,182

Table 3-4

Emissions[7]

The estimated annual air emissions for the energy supply resource mix previously identified in Table 3-4 are presented in Table 3-5. The upper portion of the table provides emission estimates related to the existing NYPP system over the forecast period, assuming no additional facilities are added. The lower portion of Table 3-5 provides estimates of total electricity generating sector emissions assuming, for illustrative purposes, that the new electricity resources suggested in Table 3-4 are provided solely from highly efficient, in-State generation facilities using natural gas as a primary fuel source. Under this scenario, New York's annual sulfur dioxide emissions would not exceed, and would be well below, the Statewide cap on SO_2 emissions established pursuant to Title IV of the Clean Air amendments of 1990.

PROJECTION OF ANNUAL IN-STATE EMISSIONS FROM ELECTRICITY GENERATION

	1998	1999	2000	2003	2007	2011	2016
EXISTING SYSTEM							
SO2 (Thousand Tons)	254.747	242.858	231.859	230.887	225.308	218.844	213.473
NOX (Thousand Tons)	86.752	87.427	85.440	88.173	85.976	84.394	80.660
CO2 (Million Tons)	56.681	58.731	59.903	60.956	58.776	57.129	54.665
EXISTING SYSTEM PLUS NEW ENERGY SOURCES IF SUPPLIED BY NATURAL GAS							
SO2 (Thousand Tons)	254.747	242.858	231.859	230.897	225.351	218.926	213.610
NOX (Thousand Tons)	86.752	87.427	85.440	88.505	87.365	87.079	85.250
CO2 (Million Tons)	56.681	58.731	59.903	62.895	66.908	72.850	81.510

Table 3-5

Table 3-6 shows the estimated NO_x emissions, by selected control areas established by the Ozone Transport Commission (OTC), related to electricity generation for the five-month summer ozone season (May through September). As in Table 3-5, the top part of Table 3-6 assumes no additional facilities are added to the existing system, while the bottom portion incorporates the new natural gas facilities. The differences

[7]As noted previously, the computer simulations of the electrical system used for the SEP have been adopted for use in this analysis.

between the two parts of the table are the emissions that result from the added generation. The NO_x emission rates assumed for this analysis are based on Phase I of CAA amendments of 1990 Title I, which requires use of Reasonably Available Control Technology (RACT) to meet air emission reduction requirements. This analysis, however, does not account for any additional NO_x emission reductions that may be needed to meet the OTC's Phase II (1999) and III (2003) Memorandum of Understanding power plant emission limits as described in the Energy and Environment Issue Report Section 2.4. The analysis finds that New York will likely be able to meet the OTC's summer powerplant emission limits through 2002. Additional reductions, however, are likely to be required to meet the OTC's 2003 Phase III emission cap of 30,846 tons.[8]

PROJECTION OF OZONE SEASON IN-STATE EMISSIONS FROM ELECTRICITY GENERATION

FIVE MONTH NOX - EXISTING SYSTEM

	1998	*1999*	*2000*	*2003*	*2007*	*2011*	*2016*
INNER ZONE (Thousand Tons)	16.731	18.191	19.739	21.275	20.226	19.777	17.411
OUTER ZONE (Thousand Tons)	21.180	18.637	17.529	17.535	17.649	17.860	18.011
NORTH ZONE (Thousand Tons)	0.249	0.235	0.231	0.186	0.172	0.158	0.152
TOTAL ALL ZONES (Thousand Tons)	38.160	37.062	37.499	38.997	38.047	37.795	35.574

FIVE MONTH NOX - EXISTING SYSTEM PLUS NEW ENERGY SOURCES IF SUPPLIED BY NATURAL GAS

	1998	1999	2000	2003	2007	2011	2016
INNER ZONE (Thousand Tons)	16.731	18.191	19.739	21.413	20.704	20.522	18.671
OUTER ZONE (Thousand Tons)	21.180	18.637	17.529	17.535	17.719	18.180	18.645
NORTH ZONE (Thousand Tons)	0.249	0.235	0.231	0.186	0.172	0.158	0.152
TOTAL ALL ZONES (Thousand Tons)	38.160	37.062	37.499	39.134	38.595	38.860	37.469

Table 3-6

Reliability

New York's bulk power system is currently under the control of the NYPP and its eight members (the seven investor-owned utilities and NYPA). The NYPP was established in 1966 to ensure reliable operation

[8] Emission limit based on U.S. EPA, *1990 NO_x Baseline Emission Inventory*, EPA-454/R-95-013, July 1995.

of the bulk system and to provide a mechanism for economic dispatch of the members' generation facilities for the benefit of the State as a whole.

There are two major components to the reliability issue for the electric industry in New York: the bulk power system, which generally consists of the generating stations and the high-voltage (230 kV and above) transmission system; and the remaining transmission and distribution system that ultimately delivers the power to the customers. Bulk power reliability is influenced by generation availability, transmission system design, and the operation of the bulk power system by the system operator. Similarly, the reliability of the transmission and distribution delivery system is influenced by facility maintenance, system design, and system operation.

Currently, responsibility for the reliability of the bulk power system rests with the NYPP, and responsibility for the reliability of local transmission and distribution systems rests with the individual utilities. The regulated utilities are held accountable for reliability through a financial (penalty) mechanism for meeting service reliability, including goals for minimum interruptions and minimum duration of outages. Little change is envisioned for monitoring this aspect of transmission and distribution reliability because it is assumed that the local transmission and distribution systems will remain regulated.

To manage the highly competitive aspects of competition at the bulk power level, establishment of an ISO will be necessary with safeguards to ensure that the system operator does not favor the generating assets of any one entity or entities over another. Although the ISO is being established under the authority of the FERC, it will follow established national and unique State reliability criteria.

LOAD AND CAPABILITY ANALYSIS

This section of the Electricity Resource Assessment addresses total NYPP load and capability relationships under a range of assumptions. The date when new firm generating capability will first be needed to ensure reliable operation of the New York bulk electric system[9] ranges from 2001 to 2005 (or later if the reserve margin criterion is changed), depending on a number of assumptions that are described below. Certain

[9] Some initial deficiencies, however, may not be severe; significant deficiencies might not occur for several years thereafter (this assumes that new resources would not be added before that occurs or that other events do not occur to reduce the imbalances).

areas of New York State, however, might need new generation for local reliability reasons or to overcome situations in which one or more generators in a region could wield market power; these needs are not included in this forecast. Furthermore, this analysis does not include or address the costs or benefits of new, more economical generation that could be built to replace existing generation over the forecast period.

Customer peak-load requirements and available supply capability are related to each other by means of "reserve margins," expressed in percentages or megawatts, which represent the amount of capacity in excess of system peak demand. The current reserve margin standard used by the NYPP to ensure reliability for the State as a whole is 22%, although 18% reserve margins are specified for each individual integrated utility on a non-coincident basis so that the 22% Statewide level is achieved. As the industry evolves under the control of an ISO (instead of the NYPP), reserve margin requirements may also change. System operators will consider factors in setting future reserve margin requirements, such as unique regional circumstances that might not have been a concern in the previous integrated structure, differences in reliability for distant versus local generation, appropriate risks to be assigned to contract capacity, and transmission capability.

Three assumed levels of system requirements (projected low-, mid-, and high-range peak summer loads plus 22% for reserves) compared to a "reference" NYPP capability supply outlook are shown in Figure 3-4. The three levels for system requirements (low, mid, high) were derived from the revised high and low summer peak-load forecasts presented later in this Electricity Resource Assessment and from a forecast using the mid-point between the high and low forecasts; all three were increased by 22% to account for reserve margin requirements. The reference NYPP capability supply outlook was derived from the 1998 Section 6-106 Report of the NYPP which reflects the NYPP's view of the current configuration of capability within the NYPP, known out-of-state firm purchases and sales, and expected capacity additions and decreases from utility and IPP generation facilities, including an assumption that IPP facilities may not be available for system needs when their current contracts expire.[10] The NYPP did not assume that any new capacity would be added to New York's electric generating mix over the twenty-year forecast period.

As shown in Figure 3-4, system capability is currently well above system requirements. Initial system-

[10] The assumption of IPP unit retirements will be reversed in the "Alternative Supply Scenario" section.

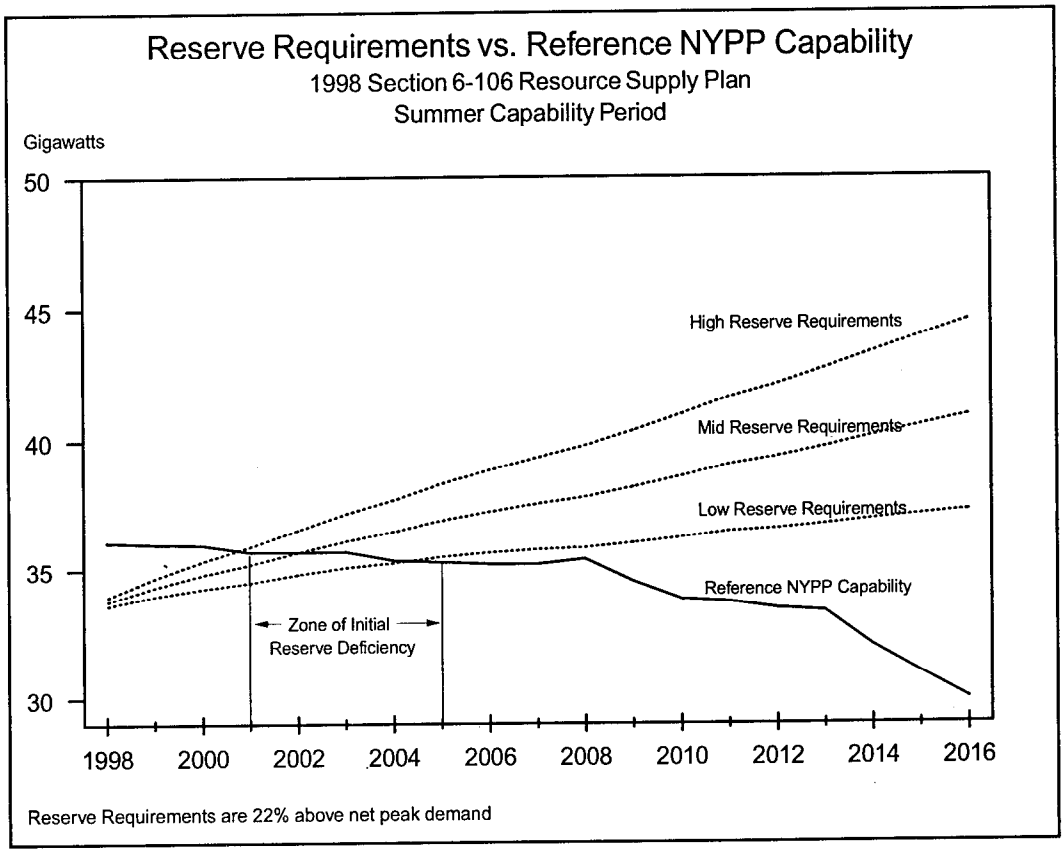

Figure 3-4

wide reserve deficiencies (*i.e.*, insufficient generation capability to provide a 22% reserve margin above projected Statewide summer peak loads) might be expected in the 2001-2005 time frame, depending on the load forecast considered and based on the capability assumptions used. Significant system-wide deficiencies *(i.e.*, deficiencies greater than 1,000 MW) commence at some point between 2003 and 2009. By 2016, the system-wide reserve deficiencies could range from about 7,000 MW to as much as 14,500 MW, unless renegotiation of IPP contracts and construction of new generation occurs.

Alternative Supply Scenarios

As noted in the previous section, the analysis for Figure 3-4 was based on the NYPP's current generation capability supply outlook. The NYPP's outlook, however, represents only one of a number of possible supply scenarios. Electric generating companies will face considerable and frequently changing economic pressures in a more competitive market. New supply sources could be attracted to New York's markets, or

existing sources could be retired, or the output could be sold elsewhere. To address the two latter possibilities, five variations to the reference capability supply outlook were examined, and then those variations were modified further to consider the possibility that IPP facilities will continue to be available after their contracts with utilities expire. The reference capability and five basic capability outlook variations are defined as:

Capability Outlook 1	Capability Outlook 1 developed by the HVPP for the 1998 Section 6.106 Report (see Figure 3.4)
Capability Outlook 2	Same as Outlook 1, except two representative nuclear units are assumed unavailable earlier than projected for Outlook 1
Capability Outlook 3	Same as Outlook 1, except assumes all fossil steam units become unavailable after 60 years of commercial operation
Capability Outlook 4	Same as Outlook 3, except assumes an additional 1,600 MW of capacity will become unavailable before 2000
Capability Outlook 5	Same as Outlook 3, except assumes an additional 3,200 MW of capacity will become unavailable before 2000 (twice the unavailability as assumed for Outlook 4)
Capability Outlook 6	Same as Outlook 1, except two representative nuclear units are assumed unavailable earlier than projected for Outlook 1 and all fossil steam units become unavailable after 60 years of commercial operation (Outlooks 2 and 3 combined)

Data for each of the five alternative capability outlooks were developed to illustrate the dates when the initial reserve deficiencies occur and the total deficiencies that could exist by 2016. Table 3.7 summarizes the results for the six outlooks described above, assuming continuation of the 22% reserve criterion and the assumption that IPP facilities will not be available after their contracts expire.

Table 3.7 illustrates that even with the additional unit unavailabilities assumed (Capability Outlooks 2 - 6), the range of years when new capability might begin to be needed to ensure Statewide reliability is generally within the range for the reference outlook (Outlook 1), years 2001 to 2003. Capability outlooks characterized by accelerated retirement levels of 1,000 MW or more above the pattern of capability Outlook 1 could advance the need date for new capacity to the year 2000. The primary differences are that the amounts of capability needed during the earlier years of the range and the total deficits by 2016 are generally greater.

NYPP SYSTEM RESERVE CAPACITY DEFICIENCY
SUMMER CAPABILITY PERIOD
22% SYSTEM RESERVE MARGIN

	LOW FORECAST			MID FORECAST			HIGH FORECAST		
Capability Outlooks	Yr Of Initial Deficit	Amount of Deficit (MW)	Deficit in 2015 (MW)	Yr of Initial Deficit	Amount of Deficit (MW)	Deficit in 2015 (MW)	Yr Of Initial Deficit	Amount of Deficit (MW)	Deficit in 2015 (MW)
1	2003	233	1,324	2003	422	10,948	2001	220	14,339
2	2001	342	1,324	2000	371	10,948	2000	907	14,339
3	2004	41	9,802	2003	314	13,431	2000	220	17,042
4	2000	129	11,440	2000	678	13,064	2000	1,213	18,675
5	2000	2,114	13,063	2000	2,663	16,616	2000	3,200	20,238
6	2001	342	9,802	2000	371	13,431	2000	907	17,042

Table 3.7

The results presented in Table 3.7 (and in Figure 3.4), however, do not account for the potential benefits of IPP capability remaining available after their contracts expire.[14] If current IPP capability were included in the analysis, six additional capability outlooks could be considered using the same assumptions used to develop Table 3.7.[15] Continuation of IPP supply capability at existing levels, however, does not have a significant impact on the results outlined previously. At most, it extends the onset of reserve deficiency by one year for two of the supply outlook cases, and then only under the low forecast scenario. It does, however, decrease the overall capacity deficiency in 2015 by approximately 2,000 MW. Continuation of IPP supply and a lowering of the Statewide reserve margin criterion from 22% to 18% delays the need for new capacity further. Under this scenario, the period when new resources might first be needed moves to the range 2000 to 2009.

[14] Nor does it address the potential for unspecified new capability to be developed, such as merchant plants, but that potential is not forecast by this analysis.

[15] The analysis performed here does not incorporate the results of the recent negotiations between Niagara Mohawk Power Corporation and its IPPs.

Load and Capacity Analysis Conclusions

The load and capacity analysis presented in this section of the Electricity Resource Assessment presents a wide-range of scenarios that attempt to cover most of the conditions that could occur through 2015. Assuming that new market-based additional capability is not installed, the analysis here shows that, for Statewide reliability purposes, additional generation capability could be required as soon as 1999 through 2004 under current criteria, or as late as 2009 if the reserve margin criterion is lowered to 18%, and even further out in time if reserve margins lower than 18% are deemed appropriate. As the electricity market becomes more competitive, the decision to build new electricity generating capacity will be driven principally by economic considerations that reflect multiple factors, including reliability and environmental needs.

PRICE TRENDS AND LOAD GROWTH

Electric Price Forecasting

Between 1989 and 1996, the average IOU nominal price of electricity (excluding NYPA retail customers) increased from about 9.5 cents per kWh to nearly 12 cents per kWh for an average annual percentage increase of 3.3%. This escalation in electric prices as depicted in Figure 3-5 exceeds the average annual rate of inflation of 2.9% during this period.

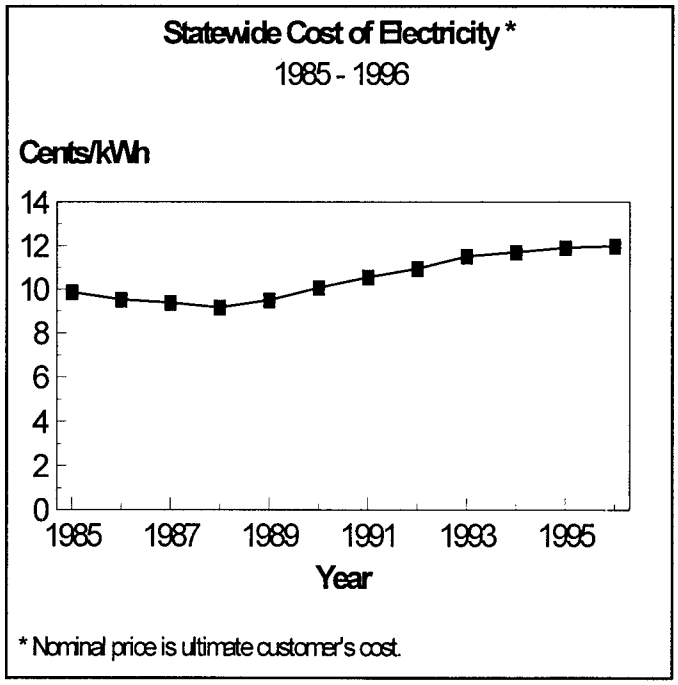

Figure 3-5

New York's high electric prices relative to the national average have been driven by a combination of higher capital costs, operation and maintenance (O&M) costs, wages and

benefits, fuel and purchased power costs, and State and local taxes. However, considering that no New York electric IOU has received a rate increase since 1995, electric rates have stabilized and, in fact, are beginning to decline.

Near-Term Price Projections

In the near-term (through 2002), IOU nominal average electric prices are expected to decrease by about 9.7%, as shown in Figure 3-6.

The price reductions shown in Figure 3-6 are based on estimates of the expected results of PSC proceedings on electric competition.[13] Six of the seven major electric companies have filed settlement agreements with the PSC in these proceedings. Estimates on the expected price reductions for the Long Island Power Authority (LIPA) were based on available public information. The expected settlement results were combined to produce a single averaged combined IOU and LIPA electricity price projection. The anticipated results of these settlements through the year 2002 indicate that Statewide nominal average prices will decrease by as much as 9.7%.

Included in the near-term electric price projections in Figure 3-6 is the price reduction that will occur as a result of recently enacted legislation to reduce the Gross Receipts Tax (GRT) on electric revenues starting in 1998. Cumulatively, Statewide electric revenues will be reduced by over $4.6 billion through the year 2002, as a result of PSC proceedings, the GRT reductions, and the takeover by the Long Island Power Authority of certain of LILCO's assets.[14] Of these rate reductions, roughly 15% of the total will go to industrial customers, and 85% to customers in the residential/commercial classes.

In addition to the rate reductions identified above, there were various revenue concessions, cost reductions, and foregone rate increases that the utilities agreed to and which are not directly reflected as rate reductions to the customers. These revenue concessions increase customer savings by another $2.1 billion. The

[13] For more information on the Competitive Opportunities proceeding, see Section 2.3, "The Impact of Competition on New York's Energy Industries."

[14] For a further discussion of the LIPA/LILCO transaction, see Section 2.3, "The Impact of Competition on New York's Energy Industries."

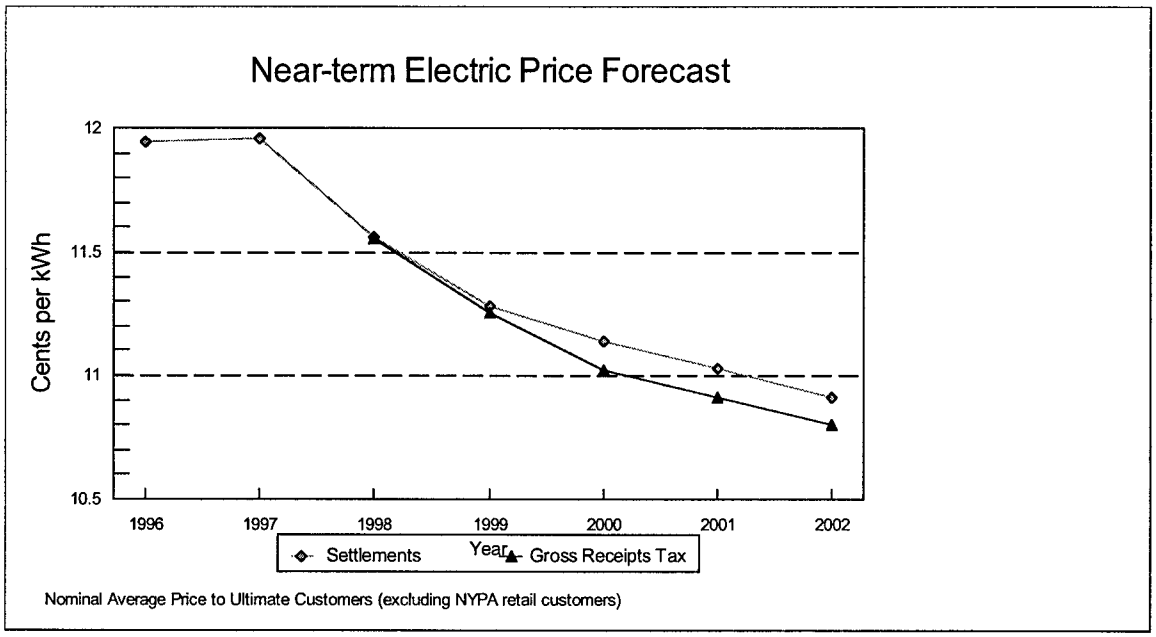

Figure 3-6

revenue concessions take the form of IPP buy-out costs, funding for retail access programs, funding for environmental programs, and funding for power for jobs programs. The foregone rate increases represent rates that would have otherwise been in effect. Some of the rate decreases were initiated prior to the final settlement agreements and thus pre-date the settlement agreements by as much as two years.

The total Statewide rate relief and revenue concessions represent a $6.7 billion savings during the period from 1995 to 2002. By the final year of the settlement agreements, New York State electricity consumers will, on average, experience a 10% revenue reduction as a result of PSC and LIPA negotiations. It should be noted that as the settlement agreements unfold and begin to take effect, many customers are anticipated to opt for retail access. For these customers, savings may be greater than indicated in the settlement agreements.

Long-Term Electric Price Forecasts

With the advent of greater consumer choice and retail access, the ability to forecast future electricity prices ultimately paid by consumers is increasingly more difficult because market forces will control prices rather than regulation. However, the development of a more national market for electricity sales will help assure

that New York's electricity prices become more competitive with electric prices in other states and regions. The methodology used to forecast long-term electric prices in this SEP required several major simplifications, with the results stated in a price band. A key component driving future electricity prices is the long-term equilibrium price of electricity generation in a competitive market. In the near term, however, future electricity prices will generally be determined by the settlement agreements reached among the IOUs, various parties, and Department of Public Service staff in the PSC's competitive opportunities case as discussed previously. As shown in Figures 3-6 and 3-7, electricity prices in the initial years (1998-2002) of the forecast period during the transition to competition are expected to decline in both real and nominal terms.

Developing a long-term forecast for electric prices first requires a forecast of the long-term equilibrium price of generation in a competitive environment. The long-term forecast assumes an equilibrium in competitive generation markets by the year 2006. The generation price estimate for 2006 is drawn from estimates of the total cost of constructing and operating state-of-the-art new generating units at that time. It was further assumed, as a simplification, that there would be no remaining ratepayer charges for generation-related strandable costs as of 2006 (except for the LIPA Shoreham regulatory asset and NYPA sales-for-resale benefits). However, because there is a reasonable probability that stranded cost charges might remain in rates at that time, the 2006 price could be considered somewhat understated.

To develop the 2006 cost estimate for generation, the 1997 capital cost of a new combined-cycle gas turbine generation unit was estimated and then inflated over time. A range of cost estimates was developed for 2006, with the high end based on an escalation rate equal to inflation and the low end assuming no escalation at all (except for gas prices). The low end reflects the potential that technological improvements would fully offset inflationary pressures. Two sets of gas prices, a high case and a low case, were used. Additional factors were applied to reflect line losses, the need for reserves, and the fact that not all generators will be base loaded. Generation costs were estimated to range from 6.0 cents per kWh for the high range and 5.2 cents for the low range in 2006 dollars.

A component to reflect transmission and distribution (T&D) charges was calculated to complete the long-term total electric price forecast. T&D was assumed to remain regulated, with costs comparable to current costs. For the high-range forecast, current T&D costs were assumed to increase at the rate of inflation (forecast to be about 2.5% annually), reaching 6.0 cents per kWh. For the low-range forecast, T&D costs

were assumed to remain constant in nominal terms at current levels, averaging 5.0 cents per kWh. These include LIPA's Shoreham-related costs and NYPA's sales-for-resale benefits, which are assumed to be the only stranded costs and benefits remaining in 2006.

For the early years of the long-term forecast, the price reductions set forth in Figure 3-6 as agreed to in rate settlements are assumed to occur. The settlement rate reduction impacts were assumed to begin phasing out in 2002 and expire in 2006, when electric prices would begin to experience the full effects of retail competition. From 2002 to 2006, overall rates (the sum of generation, T&D, and stranded costs) were assumed to move at a constant annual rate from the settlement values to the 2006 forecasts, decreasing slightly over time in the low case and increasing in the high case. Post-2006, the high-range forecast reflects an escalation rate of T&D costs equal to inflation, along with a "high" forecast of gas prices. The low-range forecast reflects constant T&D costs and fixed production costs with "low" gas prices (which increase at approximately the projected rate of inflation).

The long term forecasts were converted to constant 1996 dollars to provide forecasts of real electricity prices. The "high" forecast of real electricity prices increases at an average annual rate of 0.01 cents per kWh (0.1%) from 2002 to 2016. The "low" forecast of real electricity prices declines at an average annual rate of 0.2 cents per kWh (-2.4%) from 2002 to 2016. Figure 3-7 provides the "high" and "low" long-term

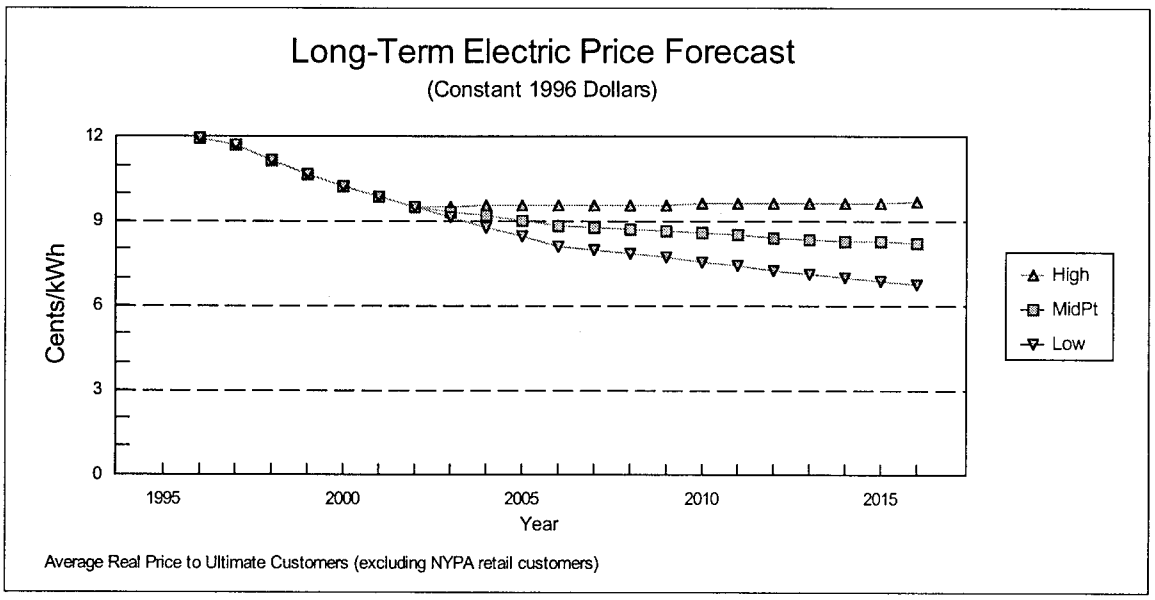

Figure 3-7

forecasts for real electricity prices during the planning period. The prices are Statewide average electricity prices to ultimate customers, excluding NYPA retail customers, expressed in constant 1996 dollars. Future electric generation prices should move closer to the national average since, over time competition will likely eliminate most market distortions, leaving only regional anomalies for state-to-state price differences. Thus, changes in generation prices should have no more impact on New York's competitive position than comparable changes in other states.

Electric Sales Forecast

Sales forecasts of total delivered electricity were prepared by the Department of Public Service staff for the service territories of the seven IOUs in New York State for the period 1996-2016. The sales forecast of the New York Power Authority, as it was reported by the NYPP in its 1998 Load and Capacity Data report, was added to the forecasts of the IOUs to derive a Statewide sales forecast over the planning period. Over this period, the electric utility industry will be undergoing major changes that will affect sales. Many of these changes, such as the price decreases forecast in Figures 3-6 and 3-7, and enhanced marketing activities, could increase sales. Other changes, such as enhanced load-management practices, may moderate sales, although economic conditions are and will be a major determining factor influencing the demand for electricity. The forecasts are presented in Figure 3-8 as a range between the high and low graphs shown.

The forecast reflects the uncertainties surrounding actual price levels for electricity in the future, the effect of price changes on sales, actual economic conditions and their impacts on sales, and other effects of competition. Estimates of the annual sales growth rates prepared by New York's seven IOUs and the NYPA fall into the middle of this range.

The midpoint annual sendout growth rates over the forecast period is 1.2%, with the high forecast showing a 1.6% average annual growth rate and the low forecast of sendout being 0.7%. From the early-to-late 1980s, the annual average growth rate for sendout in New York State was 2.3%, which by 1996 had dampened to 0.6%. At the same time, the nominal price of electricity had increased from approximately 9.5 cents per kWh in 1989 to 11.96 cents per kWh in 1996, a 3.3% average annual growth rate. This increase in electric prices affected demand for electricity and, ultimately, the economy of the State. The

competitive policies espoused in this plan could produce significant price reductions in the cost of electricity which, in turn, could stimulate growth in the State's economy.

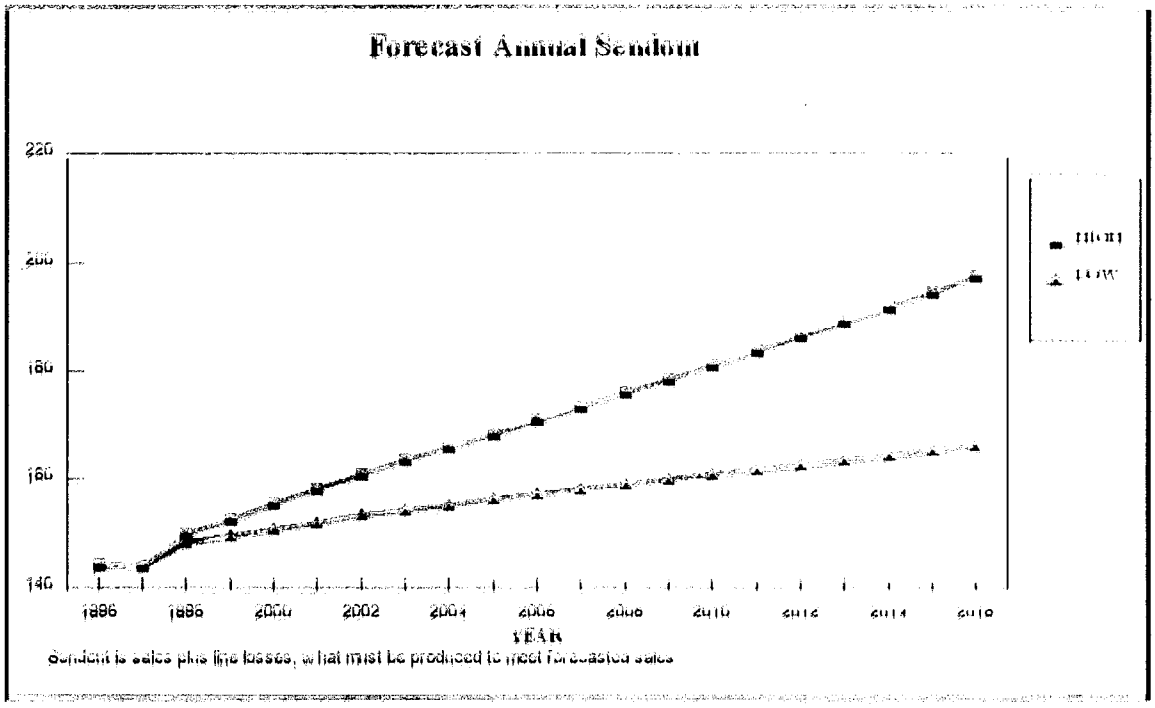

Figure 3-8

The midpoint average annual growth rate (outlook) for generation capacity requirements over the forecast period is 1.1%, and the high and low forecast growth rates are 1.5% and 0.6% respectively.

SECTION 3.2

NATURAL GAS RESOURCE ASSESSMENT

INTRODUCTION

Competitive forces have changed the gas industry dramatically. Natural gas wellhead prices have been deregulated, and a Federal Energy Regulatory Commission (FERC) ruling eliminated the merchant role of regulated interstate pipeline companies and transferred responsibility for gas supply acquisitions to local gas distribution companies (LDCs).[14] In New York State, the Public Service Commission (PSC) has required LDCs to unbundle services and provide all customers with the ability to choose gas suppliers through small customer aggregation programs. Emerging forces will continue to have dramatic impacts during the next five years.

New York State currently uses approximately 1200 million dekatherms (MMDT) of natural gas annually, making it the fourth largest natural gas consuming state in the nation.[15] Approximately 4.1 million Statewide retail natural gas customers are served by 11 LDCs that depend on major pipeline systems for access to domestic and Canadian gas supplies.[16] Domestic gas, primarily from the Gulf Coast area,[17] accounts for approximately 72% of the total gas consumed in New York with the remainder from the Western Canadian Sedimentary Basin.

[14] FERC Order 636. FERC regulates interstate pipeline companies. Interstate pipeline companies now simply transport customer owned gas and their marketing affiliates compete with producers and other marketers to sell gas. LDCs distribute gas to retail customers and are regulated by the Public Service Commission.

[15] The breakdown of the New York gas market by sector is: residential 32%, power generation 36%, commercial/industrial 28%, and other 4%.

[16] These major pipelines are: Algonquin Gas Transmission Co., Columbia Gas Transmission Corp., CNG Transmission Corp., Empire State Pipeline Co., Iroquois Gas Transmission System, National Fuel Gas Supply Corp., Tennessee Gas Pipeline Co., Texas Eastern Pipeline Co., Transcontinental Gas Pipe Line Corp., and Trans Canada Pipelines, Ltd.

[17] Approximately 20 MMDT of natural gas is produced annually in New York State.

MAJOR FORCES AFFECTING THE GAS INDUSTRY

The major forces that will shape the gas industry in the future are regulatory actions, customer interests, electric restructuring, mergers/acquisitions/new market entrants, and technology advances.

Regulatory Actions

Regulatory actions to promote a more competitive environment have reshaped the gas industry dramatically and will be pivotal to how the industry will evolve. FERC is addressing several issues that will influence the desirability of acquiring and holding pipeline capacity, including capacity release rules and rate issues.

The PSC required New York LDCs to implement unbundled small customer aggregation programs in mid-1996,[19] to give all customers, including residential customers, the ability to choose among gas suppliers. Storage services have been unbundled and work is underway to resolve rate and administrative issues, remove barriers to market entry for gas merchants, eliminate barriers to a reduced merchant role for LDCs, and better inform customers. In addition, as discussed below, the PSC recently adopted a vision for the future of the gas industry in New York in an increasingly competitive market. (See the Natural Gas Appendix for a more detailed discussion of recent federal and State regulatory actions.)

Customer Interests

From the customer's perspective, unbundled services and increased competition are not goals in themselves, but vehicles to reduce costs and increase service options. Customer interest in unbundling will be determined by how well those needs are met, and whether the effort involved in changing suppliers is worth the potential outcome. Customer participation in the emerging competitive natural gas market will likely be influenced by:

- Potential cost savings, which may be uneven across customer sectors or groups.

[19] LDCs in New York have provided interruptible transportation service for larger commercial and industrial customers since the mid-1980's; such transporatation now accounts for approximately 32% of LDC deliveries (excluding those to utility powerplants) on a Statewide basis.

- Service reliability and continued service availability.
- Customer confidence, including the degree of customer interest in combination services and the need for innovative aggregation service offerings for small customers.

Electric Restructuring

Electric industry restructuring is expected to influence the gas industry significantly. Electric generation competition may result in uneconomic or inefficient plants being retired and increase the need for new, efficient, gas-fired, combined-cycle generation facilities, thereby increasing gas demand. In addition, major marketers may show more interest in retail natural gas markets as electric restructuring is implemented. (See the Electricity Resource Assessment for a discussion of the range of natural gas use that could be expected in New York if all future electricity generating capacity is fueled by high-efficiency natural gas combined-cycle facilities.)

Mergers, Acquisitions, and New Market Entrants

Companies are seeking to eliminate duplication, reduce overall costs, diversify into new products and markets, and establish market share and name recognition through mergers, acquisitions, and new alliances. For example, in New York, the Brooklyn Union Gas Company and the Long Island Lighting Company have merged with expected savings of $1 billion over 10 years. Also, a merger between Consolidated Edison of New York, Inc. and Orange and Rockland Utilities has been proposed.

Across the nation, numerous mergers have been completed or proposed that will result in a significant increase in the concentration of natural gas marketing. Major marketers are focusing on wholesale markets, while smaller companies are focusing on retail markets. (See the Natural Gas Appendix for more information on recently completed and proposed mergers.)

New market entrants, or energy service companies (ESCOs), are expected to market all energy supplies and services, including fuel management, equipment services, efficiency improvements, and, according to some observers, consumer services such as home security systems, cable television service, and a host of consumer products. This will increase the ability to substitute fuels to meet consumer needs in a more flexible and cost-efficient manner.

Technology Improvements

New exploration and drilling technologies are expected to improve the economics and efficiency of finding and producing gas, increasing gas supplies, and lowering prices. Over the long term, advances in end-use equipment will increase the flexibility to use gas or other fuels in combination to meet customer demands in a least-cost manner. This should increase competition at the point of use and provide additional opportunities to use natural gas. Furthermore, improvements in metering and information technology will increase system efficiency and load control, and expand the number of available pricing options.

FUTURE OUTLOOK

North American Gas Supply Developments

Production/Reserves

U.S. gas production capacity increased slightly in 1996 (latest year for which data is available) , reversing the gradual decline in productive capacity that began in the mid-1980s. Drilling activity for 1996 was up due to higher prices, and the share of drilling rigs being used for gas drilling hit a record 60%. In 1996, natural gas reserves increased for the third year in a row, the first sustained upturn since 1967. Reserve additions of 20.3 TCF were sufficient to replace 107% of production, so that by the end of 1996 remaining proved reserves in the lower 48 states totaled 166 TCF. Potential reserves are estimated to be in the 1,100 to 1,400 TCF range compared to total U.S. annual gas consumption of approximately 22 TCF.

Imports

Canadian gas imports have increased substantially in recent years from 1.7 TCF in 1991 to 2.9 TCF in 1997. In 1997, Canadian gas imports accounted for 13% of U.S. gas supplies. Canadian proved gas reserves are estimated at 75 TCF, with remaining potential reserves in the 250 to 350 TCF range as compared to total Canadian annual gas demand (domestic and export) of approximately 5.5 TCF.

Pipeline and Storage Capacity Expansion Projects

Interest in expansion of the North American natural gas interstate pipeline system continues to grow stronger. Four pipeline projects have been proposed to increase gas delivery capacity into the Chicago market area,[20] which combined, would significantly increase gas delivery capacity to that area and affect gas markets throughout the country, including New York State. Seven interstate pipeline projects have been announced to build outlets to the Northeast for these gas supplies.[21] In addition, four projects have been proposed to increase gas deliveries to the Northeast.[22] (See the Natural Gas Appendix for a more detailed discussion of proposed interstate pipeline projects.)

Storage provides essential flexibility for LDCs to meet variations in customer requirements economically, especially in markets such as New York with significant weather-sensitive demand. Customer access to storage is essential for a robust competitive environment.[23] Storage will become more important to the natural gas industry's efficient operation due to the current rate design used for interstate pipelines and the increasingly competitive environment.

Projects to develop 21 new and expand 37 existing storage sites have been proposed nationwide for completion over the next five to seven years. These projects would increase U.S. available gas storage capacity by 14%. High-deliverability salt cavern storage facilities account for approximately 60% of the proposed new capacity; the remainder are conventional storage.

New York State has 23 storage facilities with a total available gas capacity of approximately 92 MMDT, with a combined delivery capability of 16.2 MMDT/day. New York State Electric and Gas Corporation (NYSEG) completed its Seneca Storage Project, a high-deliverability salt cavern, and recently expanded

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[20] These four projects are: the TransCanada system expansion; the Alliance Project; the Northern Border Pipeline extension; and the Natural Gas Pipeline System extension.

[21] These seven projects are: Independence Pipeline; MarketLink Project; Millennium Pipeline; Spectrum Project; Cross-Bay Pipeline; the Lighthouse Pipeline Project; and Eastern Express.

[22] These four projects are: Maritimes & Northeast Pipeline; Portland Natural Gas Transmission System; Niagara Import Expansion project; and expansion of the Iroquois Gas Transmission System.

[23] The PSC has addressed this issue and approved unbundled storage tariffs for most LDCs.

its capacity to provide storage service for others.

Outlook for Natural Gas Supply, Demand, and Price

Future natural gas demand and prices for New York State (see the Natural Gas Resource Assessment Appendix) are especially difficult to project due to the uncertainties associated with the transition in both the gas and electric industries. Consequently, the forecasts presented below are shown as a range of possibilities. On a Statewide basis, the projected range of annual natural gas demand growth is from 1.3% to 3.2%, with the outlook case at 1.5%, as shown in Figure 3-9. In the high case, all new electricity

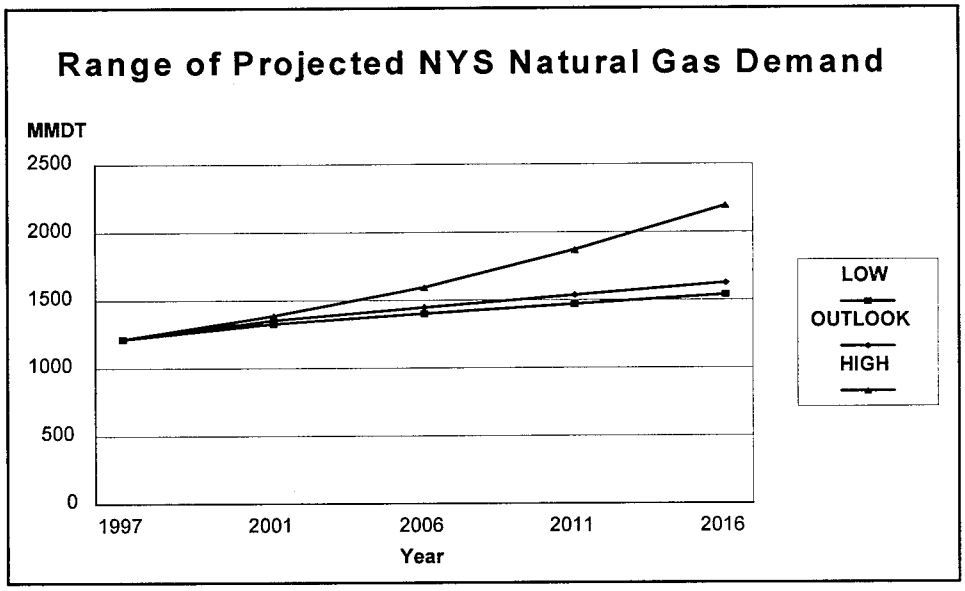

Figure 3-9

generation capacity needs are assumed to be met through new natural gas-fired generation units located within the State. Natural gas supplies are expected to be adequate to meet this range of demand, assuming that the market will support the full cost of constructing the new pipeline capacity that will be required. The analysis also shows that additional peak day capacity might be needed within the next few years to meet projected growth in annual demand. However, this approach to analyzing the future need for additional capacity does not reflect potential changes in the way capacity could be used in the future as new market entrants employ different approaches to use upstream pipeline and storage capacity assets more efficiently.

Retail natural gas prices are expected to decline in real terms at an average annual rate of about 0.7% for residential customers and 0.5% for commercial/industrial customers over the planning period. However, prices are likely to remain volatile and may vary significantly from this long-term trend on a year-to-year basis. The expected range of natural gas retail prices is shown in Figure 3-10 for residential customers and commercial/industrial customers.

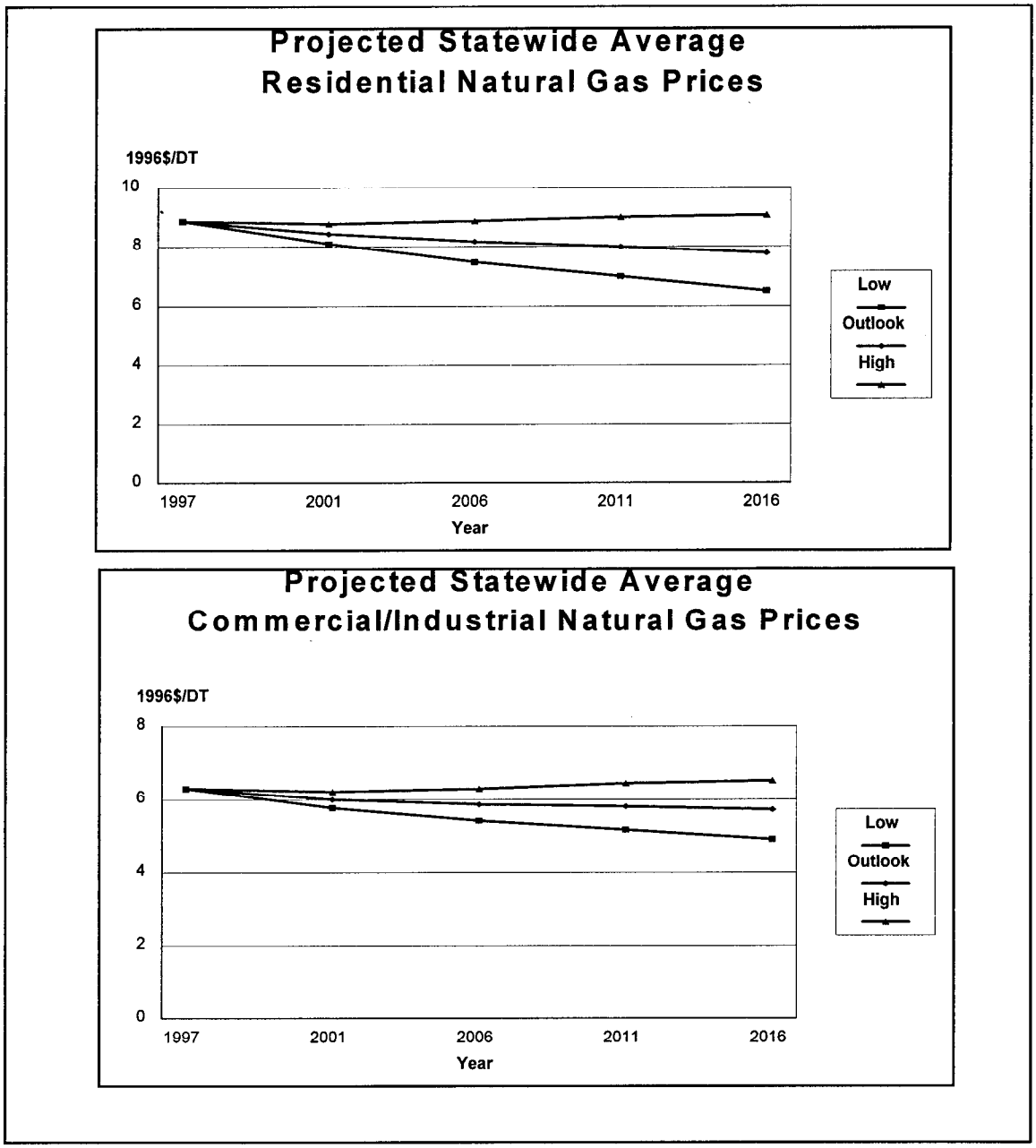

Figure 3-10

Vision for the Future

The PSC has established a vision for the future of the gas industry in New York in an increasingly competitive market[1], which includes these goals:

- Effective competition in the gas supply market at the city gate;
- Downward pressure on customer gas prices;
- Increased customer choice of suppliers and service options;
- A provider of last resort (POLR);
- Continuation of reliable service and maintenance of operations procedures that treat all participants fairly;
- Sufficient and accurate information for customers to use in making informed decisions;
- The availability of information that permits adequate oversight of the market to ensure its fair operation;
- Coordination between federal and State policies affecting gas supply and distribution in New York State.

To achieve each of these goals the PSC concluded that the most effective way to establish a robust, competitive market in gas supply is to separate the merchant and distribution functions. To move in this direction, LDCs should no longer assign capacity to customers migrating to marketers after March 31, 1999, and should hold new capacity acquisitions to a minimum.

Customers who have already migrated to alternative suppliers are generally enjoying cost savings. Actions which increase the portion of the market served by alternative suppliers is expected to extend these savings to more customers. Further, expanding the competitive market will exert downward pressure on all elements of utility service that can be provided on a competitive basis. This will also increase customer choice and expand the service options available to customers.

LDCs should continue to be the POLR, at least for the short term, while other options are more fully explored and resolved in collaboration with the electric restructuring proceedings.

[1] PSC Case 97-G-1380, October 1, 1998.

No compromise in system reliability will be permitted. LDCs will be allowed to hold assets needed for system operations. A collaborative process should be established to examine and address future system operation and reliability issues.

Enhanced customer education is needed to facilitate the transition to a competitive market. Customers need information on the changes in the industry and marketers offering service, as well as guidance on how to evaluate service offers.

Market power issues are being currently addressed for electricity. Similar issues will arise for natural gas, but some of the particular circumstances are different for gas and must be carefully monitored and addressed as the transition to a competitive environment proceeds. State unbundling efforts cannot succeed without supportive federal policies. This requires continuous monitoring of FERC rules and policies, collaboration with FERC as appropriate, and active intervention in FERC proceedings.

To implement these goals, the PSC envisions negotiations with individual LDC's on a staggered basis rather than simultaneous negotiations with all LDCs. The intent is to concentrate first on LDCs without rate agreements, with expiring rate agreements and with earlier expiring capacity contracts. Generic issues, such as developing a mechanism to eliminate capacity assignment, examining and addressing operation and reliability issues, market power issues and POLR will be addressed through collaborative processes, and coordinated with the electric restructuring proceedings as appropriate.

CONCLUSIONS

The gas industry is in a state of transition toward a more competitive market. Dramatic changes experienced as a result of efforts to expand competition are expected to continue. These changes make it especially difficult to project gas supply, demand, and price accurately. However, despite these uncertainities, New York is expected to have adequate gas supplies to meet the range of projected demand. Natural gas prices are expected to decline in real terms over the planning period. Pipeline and storage capacity are expected to expand as needed. The State will continue its efforts to create a more competitive environment, expand customer choice, and reduce prices.

SECTION 3.3

PETROLEUM RESOURCE ASSESSMENT

INTRODUCTION

Petroleum businesses are competitive enterprises relying on market forces to produce adequate supplies that will satisfy demand.[25] New York is the fourth largest petroleum fuel demand market in the U. S., exceeded only by Texas, California, and Florida. More than 50 multi-national, national, and independent companies supply refined petroleum fuels to the State. These suppliers range from integrated firms with investments in all segments of the petroleum industry, to domestic companies selling a limited range of fuels, to importers that depend exclusively on foreign supplies. Independently-owned local businesses, numbering in the hundreds, distribute oil to end-users from terminals in the Mid-Atlantic states. Major oil companies increasingly rely on these local businesses to make the final product deliveries, particularly for non-gasoline fuels outside the metropolitan New York City area.

New York's extensive, integrated distribution network relies on pipeline systems, barge and coastal tankers, and highway vehicles to move petroleum fuels into and throughout the State. This infrastructure allows local distributors to aggregate their individual fuel requirements, securing product from suppliers in a timely manner on favorable contract terms to satisfy consumer demand readily under all but the most extreme market conditions.

RECENT DEVELOPMENTS AND EMERGING TRENDS

Global Oil Supplies

Despite the finite conventional crude oil resource base, worldwide proven reserves have increased

[25] U. S. and state government regulations on this industry are essentially confined to taxes, safety (such as pipeline operations), and the environment *(i.e.*, oil spill, fuel quality, and air emissions control).

steadily.[26] Additionally, the international oil market, with few exceptions, has responded with adequate supplies to satisfy the 5.0% average annual increase in U. S. net imports from 1984 through 1996. These trends have strengthened consumer confidence that petroleum fuels will be available to satisfy future demand.

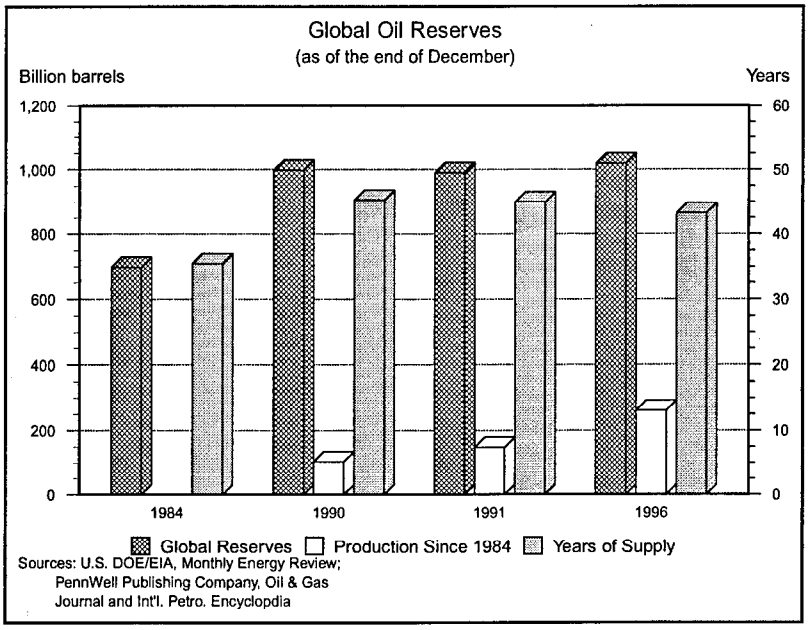

Figure 3-11

As shown in Figure 3-11, global reserves expanded 46% from 1984 to 1996, indicating that companies succeeded in finding and developing more oil than they produced during this same period. Also, despite a 17% rise in world oil demand over the last 12 years, the present proven resource base, assuming no additional discoveries, represents a 44-year supply, compared to the 35-year supply that existed in 1984.[27] Nearly 57% of current reserves have been discovered since 1984, with 17% since 1990. Further details on global oil reserves are provided in the Petroleum Resource Assessment Appendix.

Petroleum Product Prices

The international industry's success in expanding global oil production has allowed supply to keep pace with demand, a factor that underlies the consumer real-price declines of the past 15 years. These changes in the real prices New York consumers pay for petroleum products closely track movements in domestic

[26] Technology advances that result in a better understanding of oil-bearing formations and unconventional sources, such as oil sands and natural gas conversions to liquid fuels, will further expand traditional proven oil reserves.

[27] While oil-recovery rates vary worldwide and by project, current technology is unable to recover 100% of every oil deposit. Current reserves equate to a 14- to 16-year actual global supply, assuming current prices; a 33 to 38% recovery rate, typical of most projects; and assumes no new discoveries. This range is consistent with historical estimates.

refiner acquisition crude oil costs (see Figure 3-12). Worldwide and domestic oil prices, which nearly tripled during the 1973-74 Arab oil embargo, peaked in 1981 as the Iranian revolution significantly disrupted international petroleum markets. These high costs resulted in private-sector and government-inflated oil price forecasts, which renewed consumer perceptions that future petroleum fuel shortfalls could arise. Since 1981, average annual crude oil and petroleum product prices have declined, despite the temporary price escalation during the Persian Gulf War, helping to restore the market's perception of oil as a stable energy resource.

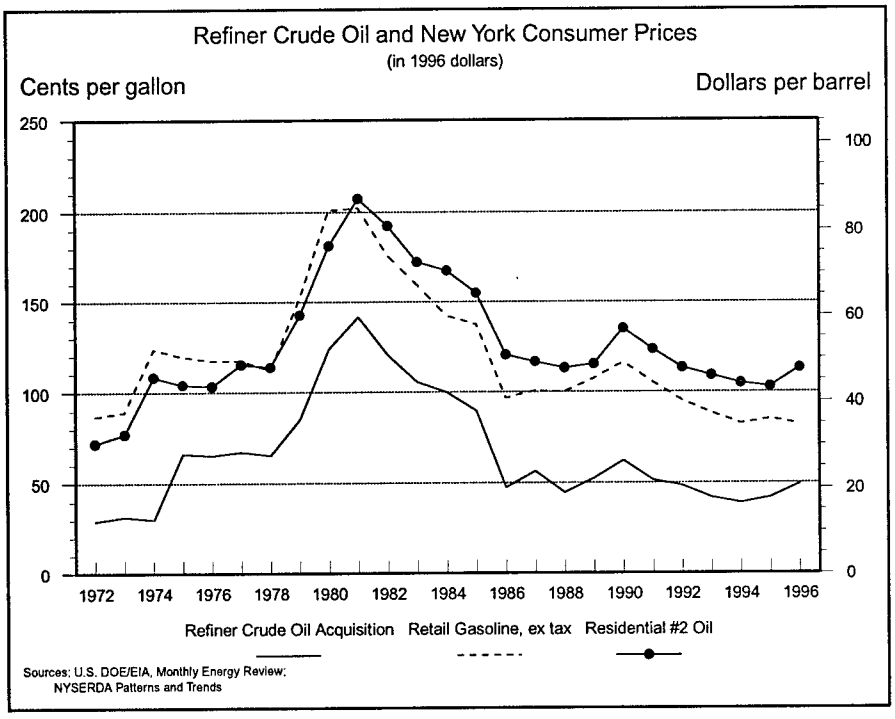

Figure 3-12

In the six years after the 1990 Persian Gulf conflict, average annual real prices for crude oil declined 3.8%, while New York consumer oil prices fell in the 2.7 to 4.7% range, depending on the petroleum product. Statewide, these decreases amounted to a 0.1 to 2.1% reduction in nominal prices, except for diesel fuel, which rose 0.3% over this period (see the Petroleum Resource Assessment Appendix for more detail). Nominal oil price declines, combined with non-petroleum fuel substitution, reduced the State's actual petroleum fuel expenditure by 3.0%, from $13.3 billion in 1990 to $12.9 billion in 1996.[28]

Taxes affect New York consumer petroleum product prices. Although petroleum taxes are controversial, Figure 3-13 demonstrates that consumer price impacts of taxes over time vary by fuel type and the period

[28] From 1990 through 1996, the volume of petroleum products consumed Statewide decreased 12.3%.

examined. While the inflation-adjusted retail price of gasoline has fluctuated, its 1996 level is about 4 ¢/gallon less than in 1972, on both a taxed and an untaxed basis.[29] In 1972 and 1996, taxes accounted for 35.7% and 37.0% of the real retail price, respectively. Over the 1990-96 period, real pump prices declined at an annual average rate of 2.7%, but the retail price's tax portion rose steadily from 24.7% to 37.0%. Prior to 1983, taxes accounted for 7.0% of commercial oil prices. Subsequently, the petroleum business tax increased the tax portion of commercial #2 oil real prices to 16.3% by 1996.[30] Additional examples of the role taxes play in setting consumer petroleum prices by fuel and sector are shown in the Petroleum Resource Assessment Appendix, and are discussed in the Factors that Affect Energy Prices Issue Report.

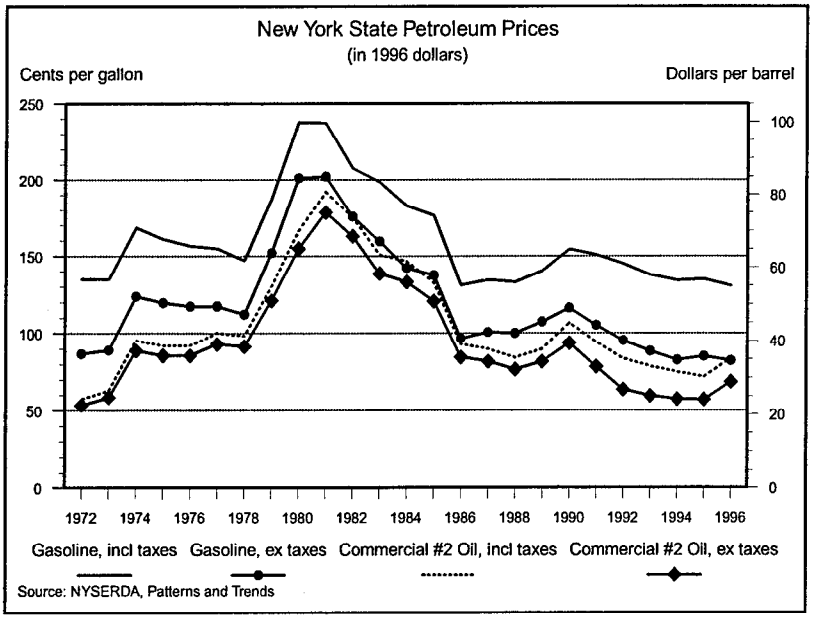

Figure 3-13

Despite the long-term downward price trend since 1981, repeated instances of sudden, short, but steep price spikes have posed risks to businesses and consumers. Local suppliers and businesses consuming large volumes of petroleum recognize that high oil prices adversely influence their ability to retain customers or hold down energy costs. Increasingly, these companies are using various risk-management alternatives to protect against volatile petroleum prices, a practice commonly known as hedging.[31]

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[29] Includes federal, State, and local sales, and State excise and petroleum business taxes, but excludes charges such as the oil spill fee.

[30] Amendments to the petroleum business tax revised the average net commercial #2 oil rate from 10.52¢/gallon in 1995 to 7.79¢/gallon, effective March 1997, and to 7.6¢/gallon, effective June 1997.

[31] Businesses uncomfortable with oil price uncertainty can use New York Mercantile Exchange (NYMEX) traded futures and options contracts and various banking, insurance, or other financial derivatives to shift this unwanted risk onto other firms that seek such risks. These practices offer consumers fixed, ceiling, capped, or other alternatives to traditional market-driven prices.

Although risk-management strategies are most common among private companies, government agencies are beginning to assess these strategies' potential for possible public benefit. In New York, the Office of General Services (OGS) in the summer of 1997 successfully bid a passive on-road diesel hedge contract, where the supplier assumed the actual hedging responsibility, covering on-road diesel requirements for three State agencies and 24 political subdivisions in the five-county Capital District.

Petroleum's Role in the State's Energy Mix

Petroleum products are critical to the State's economy and are the single largest source of energy consumed in New York. However, petroleum products' share of total state energy use has declined by nearly one-seventh from 47.4% in 1991 to 41.0% in 1996. Nearly 39% of all consumer and business energy expenditures are for petroleum fuels, which in the current decade have accounted for an average 2.7% of Gross State Product. Petroleum fuels provide energy for all of the State's economic sectors, as illustrated in Figure 3-14. The transportation sector's nearly total dependence on these fuels drives New York's high reliance on petroleum compared to other energy resources. In the residential sector, oil consumption typically is weather-sensitive and heating oil remains competitive with natural gas, while attracting space-heating conversions from electricity. Commercial sector petroleum consumption leveled off from 1991 to 1996, although it lost market share to natural gas. Industrial use of petroleum fuels increased nearly 6.0% over this five-year period, but natural

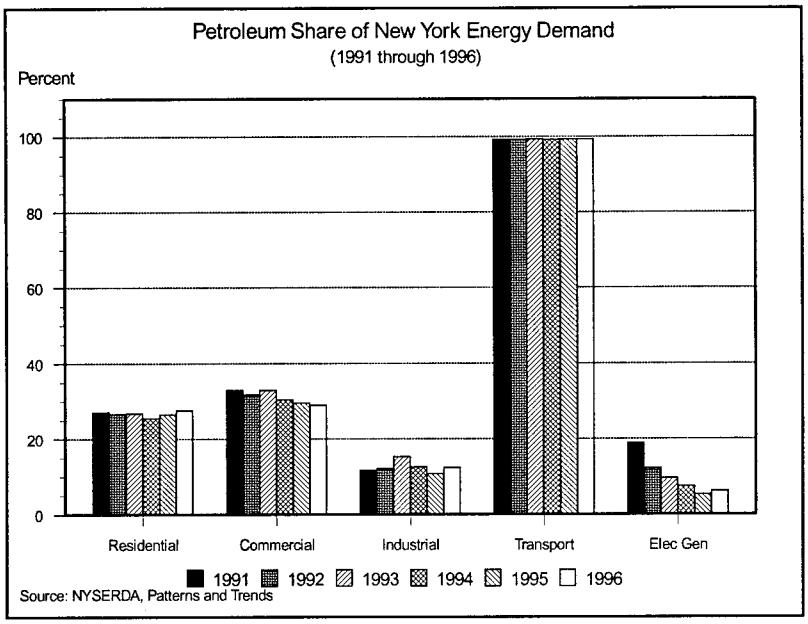

Figure 3-14

These substitute pricing mechanisms might not achieve the lowest prices because they are designed to protect consumers against sudden and disruptive price spikes by locking their costs in over a longer time period.

gas and, to a lesser extent coal, still dominate this sector's energy requirements.[32] Since 1991, the electricity sector has increasingly turned to natural gas and relied less on petroleum for its generation fuel needs. The electricity generation sector is less dependent on petroleum than any other economic sector in New York.

Sources of Supply

While indigenous crude oil production affects the economies of several counties in the State, such activities have little influence on petroleum fuel availability or New York consumer prices.[33] Despite moderate increases in the past two years, estimated oil production in 1996 was 309,000 barrels (less than one-half day's Statewide oil requirement). This oil is shipped to Pennsylvania and refined primarily into lubricating oils. Therefore, New York consumers rely entirely on sources beyond the State's borders for their petroleum fuel requirements.

New York's changing petroleum demand patterns and recent industry-wide revised operating practices have altered the sources of petroleum consumed Statewide. From 1991 to 1996, use of residual oil, a fuel typically secured from foreign refiners, declined 45.1%. Also, gasoline and heating oil distributors have become more reliant on domestic refinery shipments than on offshore sources. As shown in Figure 3-15, these trends lowered the State's reliance on foreign refined fuels to just over 20% of Statewide demand, while increasing reliance on nearby East Coast refinery output and deliveries from Gulf Coast suppliers.[34]

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[32] Annual industrial oil demand fluctuates significantly as evidenced by the 18% decline and 14% increase in usage during 1994 and 1996, respectively.

[33] Virtually all New York crude oil wells are stripper wells, producing an average of less than 0.1 barrel per day, concentrated in the Cattaraugus, Chautauqua, and Allegany area, with additional activities in Steuben and Erie counties.

[34] The 1997 re-opening of the Marcus Hook, Pennsylvania refinery that Tosco acquired from BP, should continue this trend well into the next decade.

Similar data for each petroleum fuel category is provided in the Petroleum Resource Assessment Appendix. The shift to East Coast refineries did not affect the State's dependence on foreign crude oil because these facilities are isolated from domestic crude oil production and operate exclusively on foreign oil supplies. Consequently, domestically-refined foreign crude oil, combined with direct petroleum product imports, increased to 77.8% of New York's 1996 petroleum market, compared with 75.2% in 1990.

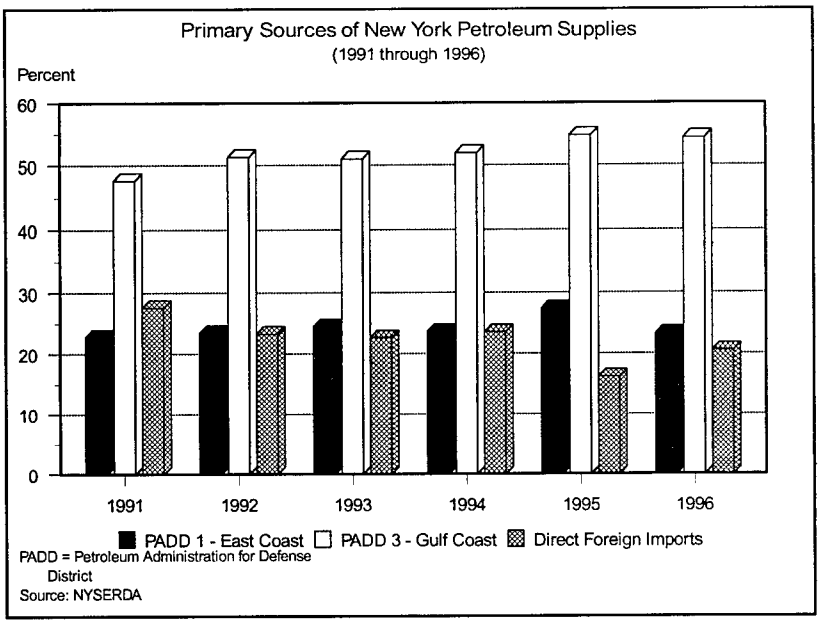

Figure 3-15

The State's increased dependence on imports is reflected in Gulf Coast refineries using additional foreign crude oil because of the 15% decline in the domestic resource base, from 26.3 billion barrels in 1990 to 22.4 billion barrels in 1995. However, new technologies and greater exploration and production spending in the U. S. could serve to slow this downward trend.[35] In 1995, exploratory oil well completions increased to 734, the largest level since 1988, up from 628 in 1990. New oil discoveries per well approximated 1.3 million barrels, the second largest volume since 1977. Also in 1995, reserve replacements climbed to 95% of annual production and the 106 million-barrel reserve decrease was the smallest since 1987.

[35] The July 20, 1998, *Oil & Gas Journal* indicated that an Arthur Andersen survey of 131 large petroleum companies showed that 1997 exploration and development (E&P) in the U. S. rose to $28.8 billion. This marked a two-year 82.3% gain from $15.8 billion in 1995. The increased 1997 E&P investment is largely attributable to greater Gulf Coast deepwater spending, an area expected to experience 25% average annual oil production gains over the next five years.

Refining Trends

A viable domestic oil refining industry is essential to New York consumer and business needs. While current domestic operating refinery capacity is significantly less than in 1981 and 1990, greater volumes of crude oil are processed to satisfy increasing national petroleum demand, as shown in Figure 3-16. Oil price declines in the 1980s caused domestic refiners to close their least efficient facilities and consolidate with competitors to eliminate surplus capacity and preserve their economic viability. Operating domestic refineries declined from 315 to 194 between 1981 and 1990 as crude oil distillation capacity fell 2.5 mmb/d below the 18.1 mmb/d 1980 level. In the next six years, refiners shifted from closing plants to upgrading capacity to comply with federal and state environmental mandates. This upgrade philosophy resulted in a small expansion of existing distillation capacity and significantly raised refinery utilization rates, to over 93% by 1996.[36] Operating refineries at these higher rates of production, however, restricts the industry's flexibility to complete routine facility maintenance and respond to unexpected plant failures or atypical seasonal demand surges, which creates marketplace supply uncertainty and contributes to greater short-term price volatility.

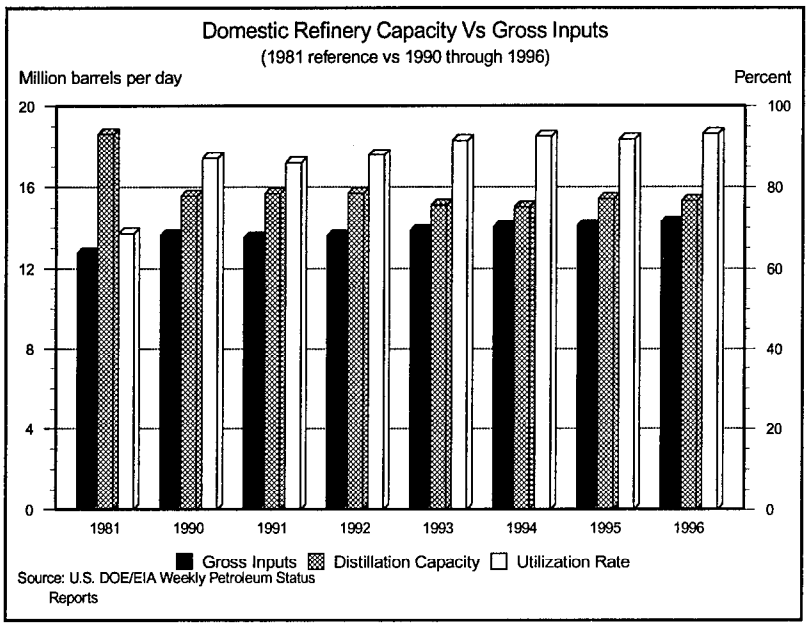

Figure 3-16

[36] The Energy and the Environment Issue Report reviews environmental programs, such as Reid Vapor Pressure limitations, reformulated gasoline, and Stage II emissions recovery, affecting petroleum use in New York.

Storage Patterns

Petroleum inventories supplement refinery production and imports, and are a critical element of the comprehensive delivery infrastructure, providing short-term buffer supplies to offset unexpected distribution disruptions. In recent years, refiners, importers, pipeline operators, and major independent terminals have chosen to operate with lower stocks, as shown in Figure 3-17, and rely on timely pipeline or water-vessel deliveries to resupply their local distributors and large consumers (see the Petroleum Resource Assessment Appendix).

As a result, the inventory "buffer function" has moved down the delivery chain to regional and local suppliers. These local businesses' success in expanding storage has varied depending on the individual company's financial resources and siting regulations that vary by locality and are enforced inconsistently across the State.

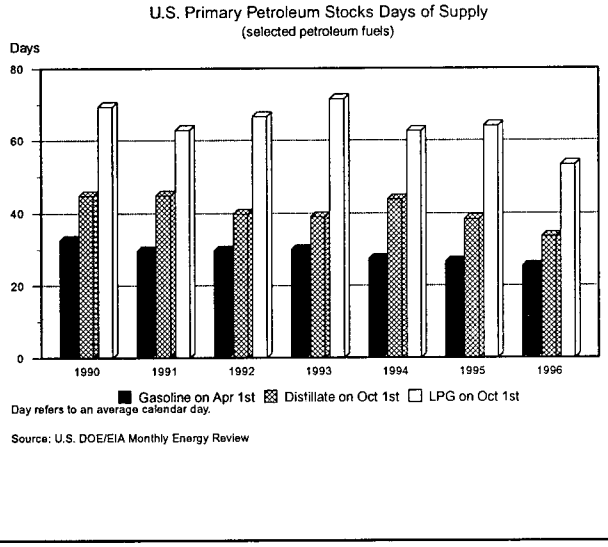

Figure 3-17

Consequently, there has been a decline in dealer access to regional stocks to supplement routine seasonal deliveries, increasing consumer exposure to price spikes and temporary regional supply dislocations.

FUTURE OUTLOOK

Projected New York Petroleum Prices

Variables, such as crude oil costs, competing fuel prices, and local market conditions are likely to influence

future petroleum fuel prices. The U.S. DOE Energy Information Administration (EIA) *Annual Energy Outlook 1998* extensively examined such factors in forecasting national and regional oil product prices through 2016, including the New York, New Jersey, and Pennsylvania Mid-Atlantic area. New York petroleum fuel prices were based on the historical relationship between similar New York and Mid-Atlantic region prices.

Projected New York Petroleum Fuel Prices
(in 1996 dollars)

	1996 c/gal	1996-2016 Ann Av % Change
Home Heating Oil	113.3	+0.22 to 0.51
Commercial Distillate	84.0	+0.27 to 0.65
Industrial Distillate	82.8	-0.32 to +0.13
Gasoline	130.6	+0.25 to 0.76
Utility Residual Oil	58.2	-0.46 to -0.11

Table 3-8

New York petroleum prices by economic sector were forecast for three scenarios.[37] Table 3-8 presents these forecasts for selected products and indicates that future real petroleum fuel prices are expected to rise modestly. The Petroleum and Coal Demand and Price Forecasts Appendix includes a discussion of the methodology and detailed annual data for each of the 10 petroleum price categories projected.

New York Petroleum Demand Forecast

Future use of petroleum fuels will depend on many variables, including their prices and those of substitute energy resources, demographic conditions, and economic activity. Statewide petroleum consumption through 2016 was projected based on EIA's Mid-Atlantic oil demand forecasts developed in the U.S.DOE *Annual Energy Outlook 1998* analysis. Historical New York to Mid-Atlantic Region end-use sector-specific demand relationships were constructed, using 1970-1996 data, and applied to the EIA regional oil demand forecast. This methodology is explained in the Petroleum and Coal Demand and Price Forecasts Appendix.

The average annual growth rate of New York's total oil demand over the forecast period is projected to be within a narrow -0.1% to 1.5% band (see Figure 3-18). Expanded Statewide economic activity, and

[37] The EIA reference, low, economic and high economic scenarios underlie the New York residential heating oil, commercial distillate, residual oil, gasoline, diesel, jet fuel, electric utility distillate, and residual oil price projections.

estimated growth in electricity demand and the uncertainty regarding future petroleum use in electricity generation, underpin this forecast. In the outlook case, petroleum use in electricity generation in 2016 (as shown in the Electricity Resource Assessment) approximates half the 1995 level of use while declines are forecast in the industrial, residential, and commercial sectors. Petroleum use is expected to grow in the transportation sector.

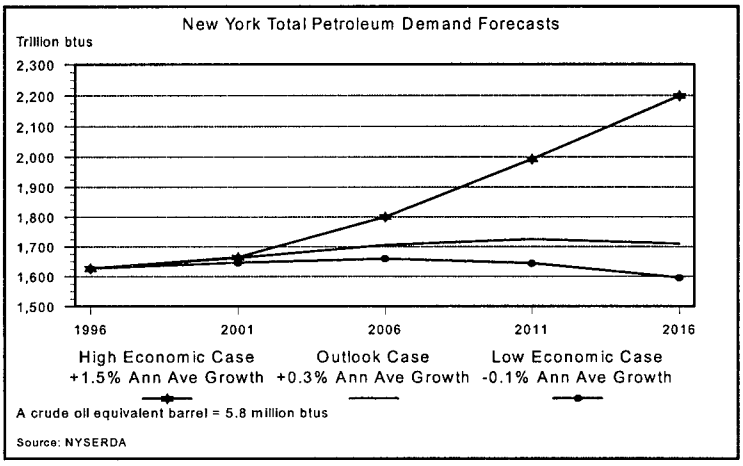

Figure 3-18

Projected Sources of New York Supply

The existing infrastructure and future global oil production patterns will influence the sources of oil supplies consumed in New York over the forecast period.[38] As shown in Table 3-9, refined petroleum fuels delivered to the State are projected to gradually shift from domestic to imported supplies, resulting in a rise in foreign oil dependency by 2016 (see the Petroleum Resource Assessment Appendix for more detail).[39]

Projected New York Oil Supply Sources
(in percent)

	1996	2016
Domestic Crude Oil	21.2	15.2 - 18.8
Imported Refined Products	20.6	43.9 - 27.5
Imported Crude Oil	58.2	40.9 - 53.7
Total Supply	100.0	100.0
OPEC Imports	40.9	72.2 - 69.7

Table 3-9

[38] Indigenous oil producers are working with NYSERDA to apply state-of-the-art tertiary recovery and advanced technologies, such as horizontal drilling, to producing fields in western New York. These projects, while transferring the latest technologies to New York producers, are unlikely to reduce the State's nearly total reliance on oil from outside New York.

[39] EIA's *Annual Energy Outlook 1998* oil supply and disposition forecasts for the reference, low-, and high-economic scenarios underlie the projections of New York's dependence on domestic and foreign crude oil supplies.

Furthermore, significant changes in the sources of these imports could accompany the State's rising foreign oil reliance. Imported crude oil dependence is likely to decline steadily through 2016 and foreign refined product demand is anticipated to more than double its 20.6% 1996 share. Dependence on OPEC crude oil and refined products could approach 70% in 2016. The State trend toward greater use of foreign refined product is less than the EIA-projected two-fold rise in national consumption of imported petroleum products. Under a mid-range scenario, where imported products represent 35% of Statewide oil demand, New York would represent 6.5% of national refined petroleum imports, compared with 8.0% in 1996.

The global oil industry increased exploration and production spending by nearly 30% in 1997.[40] Oil demand and supply will be in balance worldwide throughout the forecast period as new refineries are built in Central America, the Middle East, and the Pacific Rim. International crude oil-producing trends will vary by region. The *Annual Energy Outlook 1998* reference oil forecast concludes that worldwide supply will expand at an annual average 2.0% rate from 1995 to 2020, exceeding the comparable 0.8% growth of the past 20 years. The Center for Global Energy Studies projects that non-OPEC crude oil production over the next five years could increase by 4.5 to 5.0 million barrels a day, nearly tripling similar OPEC gains.[41] After 2005, EIA projects OPEC will dominate the global supply market as its market share is expected to surpass 50% in 2010 and approach 55% by 2016, matching its previous peak level in 1973.

Widespread application of innovative technologies, recent favorable changes in federal oil- recovery regulations, and rising wellhead oil prices, which in 1996 were at their highest level since 1990, are prompting increased domestic petroleum exploration, development, and production activities (see the Petroleum Resource Assessment Appendix). Alaska and the Gulf of Mexico are expected to hold immense undiscovered oil reserves and the largest remaining domestic oil fields. EIA's *Annual Energy Outlook 1998* reference assessment projects a 20-year 1.1% annual average decline in domestic production through 2016. This estimate indicates less decline than its 1995 outlook, which projected a 1.4% downturn through 2010, and is significantly below the actual 3.0% average annual decrease between 1988 (when Alaskan output peaked), and 1995. Additionally, the recent heightened interest in converting natural gas at remote

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[40] The July 20, 1998 *Oil and Gas Journal* supra note 36, at 156, U. S. and non-U.S. exploration and development by large upstream companies rose 30% in 1997 to more than $91 billion. Combined with the actual 15.2% 1996 increase, this equals more than a 45% two-year growth in investment, the largest such advance since these surveys began 16 years ago.

[41] As reported in the April 15, 1996, *Oil & Gas Journal*, page 25.

fields into petroleum fuels could further slow the decline in domestic liquid fuel production.[42] Despite these positive activities, domestic crude oil's contribution in satisfying New York demand satisfied is projected to decline 30%.

In the future, uncertainty will affect domestic refiners more than crude oil producers. New platinum- and nickel-based catalysts are allowing refiners to comply with the January 1998 reformulated gasoline (RFG) complex model requirements, will assist them in satisfying 2000 Stage II standards, and will improve clean motor fuel yields while removing greater amounts of sulfur from petroleum products. However, in the future, refiners will be affected by: State Implementation Plans (SIPs) to ensure compliance with National Ambient Air Quality Standards; local government decisions to opt-in to the RFG program to prevent future air quality degradation; likely regional requirements to address ozone nonattainment issues; and the possibility that these or other government mandates will force the delivery of "boutique" fuels, products with special compositions, to specific regions scattered nationwide. The consequences of such variables will be known to refiners only when the requirements are finalized.

Future Petroleum Supply Reliability

Over the next 20 years, it is unlikely that U. S. crude oil production can increase to satisfy future domestic oil demand fully. Similarly, it is unreasonable to expect that national oil consumption will decline to a level in balance with domestic production.[43] The only plausible outlook is that consumers in New York and nationally will continue to rely on imported crude oil and petroleum products through 2016, with a greater share of these supplies originating in OPEC nations.[44]

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[42] U.S. DOE has initiated an eight-year development project to convert natural gas to a liquid for transport through conventional oil pipelines. If successful, this technology could enhance Alaska North Slope oil production by an estimated one billion barrels, or more than 10% of cumulative Prudhoe Bay output through 1996.

[43] An EIA analysis contained in the December 1996 General Accounting Office (GAO) report *Evaluating U. S. Vulnerability To Oil Supply Disruptions And Options For Mitigating Their Effects* concluded that reducing oil imports by 4.7 million barrels a day in 2015, or nearly 75% of the foreign oil included in the EIA reference scenario, would increase domestic oil sector activity $16 billion a year, but the resulting higher energy costs would decrease employment in non-energy sectors, lowering net gross domestic product approximately $100 billion annually.

[44] *Ibid.*, The GAO report found that consumption of foreign oil saves consumers and businesses hundreds of billions of dollars each year by avoiding purchases of costlier energy. Furthermore, GAO found these benefits accrue without substantially affecting the nation's long-term trade deficit or harming overall domestic employment, although they may impose military and diplomatic costs that are hard to measure.

The 1973 Arab Oil Embargo prompted government leaders and alternative energy resource advocates to expound the view that OPEC oil supplies, especially Persian Gulf exports, are a serious threat to national security, exposing domestic businesses to periods of disruptive petroleum product shortages. Although the future cannot be forecast with absolute certainty, changes in the global oil industry over the past two decades, together with increasingly sophisticated world oil markets, should prevent any single producer group from purposefully restricting petroleum supplies over an extended time period for political gain.

OPEC is a formidable force in the global oil market, but today it differs from its predecessor organization of 20 years ago. Persian Gulf nations typically have incurred large budget deficits since 1986, forcing them to liquidate overseas assets and borrow from the international community. This trend is not expected to change in the near term. OPEC members, including many from the Persian Gulf, increasingly realize their respective economic futures depend on petroleum trade with consuming nations. Several members, such as Saudi Arabia, Iran, and Venezuela, have entered into joint producing, refining, and marketing ventures with companies in the consuming nations. Others, lacking the financing, technology, and skilled labor to extract maximum value from their resources independently, are now striving to implement structural political changes that will attract exploration and production technologies from western nations and expand prospective oil exports. Cooperation among producer and consumer nations will increase world oil supplies, lowering the potential for a global petroleum disruption. U. S. DOE recently found Saudi Arabia to be a reliable and important oil source for western nations, exemplifying this emerging OPEC community and consuming nation co-dependency.[45]

Today, global oil inventories are at levels that deter OPEC or any group of oil producers from disrupting global oil flows. With the exception of France, all major industrialized countries are members of the International Energy Program Agreement (IEA), which creates an oil-sharing system to ensure its participants do not suffer unduly from a targeted oil export embargo.[46] In response to this agreement, the Organization for Economic Cooperation and Development (OECD) nations increased oil inventories nearly 40% between 1973 and 1995 and global stocks now represent a 90-day supply, compared to the pre-IEA

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[45] McGraw Hill, *Inside Energy/with Federal Lands* (March 3, 1997), p. 6.

[46] The IEA was established in November 1974 in reaction to the Arab Embargo against the U. S., Israel, and the Netherlands, but was signed by only 16 of the 24 members of the Organization for Economic Cooperation and Development.

65-day level. The U. S. Strategic Petroleum Reserve Program, with its three-month 3.2 mmb/d drawdown capacity, exemplifies the present ability of consuming countries to rely on expanded inventories to deter deliberate disruptions to global oil supplies.

Other events are occurring in the global oil market that, taken cumulatively, will protect consumers against an OPEC-orchestrated attempt to constrain supply and artificially raise prices. Oil extraction technology continues to improve and these advances expand both non-OPEC and OPEC proven crude oil reserves. For example, the Canadian Hibernia field that came on line in late 1997 and production from other North Atlantic field developments could bring in excess of one billion barrels of high-quality crude oil to future markets. The seven-year former Soviet Union oil-production downturn ended in 1996. The Azerbaijan and Kazakhstan ratification of production-sharing agreements and joint development projects with foreign companies demonstrate that once Russia and other republics of the former Soviet Union resolve their legal and fiscal impediments, international resources will be attracted to finance and develop their petroleum projects. The Caspian Sea region, estimated to hold recoverable reserves approaching 200 billion barrels, is one such area that will benefit from international joint ventures. Future production from the former Soviet Union region, including the newly independent states, and from other developing nations, while unlikely to reverse OPEC's future rising market share, will slow this trend. Also, such production will influence marginal supply availability and encourage Persian Gulf exporters to maintain their market-based strategies for selling oil.

The Future of the Oil Industry in New York

Further industry consolidations and restructuring of the Statewide electricity and natural gas industries will significantly affect businesses supplying petroleum fuels to New York consumers. Major and independent oil suppliers will likely continue to consolidate segments of their industry, such as regional distribution, retailing, or refinery businesses, to improve operating efficiencies by sharing management systems, processing capacities, and support functions. These actions should improve revenues and access to capital markets, allowing the surviving companies to expand their respective core petroleum businesses where their market shares are strongest.

Future major and independent supplier changes will necessitate that local petroleum dealers assume greater responsibility for maintaining the adequate, affordable petroleum supplies their customers require. The

penetration of advanced technologies, such as fan atomization burners will become more common, improving residential and small commercial equipment efficiency and reducing heating oil demand among the core customers of many local retailers. Also, alternatives to conventional gasoline and diesel oil will become more acceptable in the transportation fuel market. At the same time, deregulated natural gas and electricity markets will create new product opportunities for local petroleum companies.[47] Clear distinctions between petroleum fuel marketers and natural gas or electricity suppliers, as well as customer base distinctions, will disappear as energy companies compete to satisfy customers' entire energy profile. Initially these emerging trends could shrink sales volumes and increase the cost of doing business for local petroleum marketers. Cash flows may decline while capital outlays could expand for these oil marketers, as they offer creative price-protection programs to preserve their customer bases; invest in non-petroleum fuel-dispensing facilities to provide for the full energy needs of motorists, and industrial and residential accounts; and secure needed resources to compete in natural gas and electricity markets effectively.

The companies that emerge will, in all likelihood, have the necessary financial and technical resources to compete as energy companies, marketing a full line of energy resources, selling state-of-the-art space-conditioning equipment, and providing a wide range of fuels and energy services to satisfy their customers' energy needs efficiently. In fact, some petroleum companies are already exploring these types of arrangements and are establishing strategic alliances with other energy providers to meet the challenges of a more competitive marketplace in New York.

[47] A limited number of heating oil dealers currently perform non-petroleum heating system maintenance and repairs, and some are beginning to explore opportunities to market natural gas.

SECTION 3.4

ENERGY EFFICIENCY RESOURCE ASSESSMENT

INTRODUCTION

New York State is a leader in sustainable energy development. New York has long recognized that improving energy efficiency increases competitiveness and productivity, saves consumers money, and provides for an improved environment. Since 1982, New York's energy consumption per unit of gross state product (GSP) has improved by 16%.[48] Energy efficiency efforts have helped keep New York's total energy use relatively stable since 1980, while New York's GSP increased nearly 34%.

Pursuing cost-effective energy efficiency is important to achieving the State's energy security, economic competitiveness, environmental quality, and health and safety goals. However, the evolving federal and State regulatory environment and emerging competitive market forces, particularly in the electricity industry, are rapidly changing how energy efficiency services are delivered. Traditional utility demand-side management (DSM) programs are being replaced by public benefit programs, market-transformation activities, and private-sector delivery of "value-added" efficiency services by energy service companies. At the same time, concerns about economic competitiveness and environmental quality, particularly in terms of global climate change, highlight the role that cost-effective energy efficiency can play in providing solutions to reduce energy costs and meet environmental goals.

Although the DSM energy savings achieved by New York's utilities over the first half of this decade have been significant, increased pressure to cut utility rates has led to reducing and refocusing utility efforts on efficiency and DSM programs that provide the most cost-effective options for their customers. Nonetheless, studies performed by the utilities, as well by others, have shown that many significant opportunities exist to improve the efficiency of electricity use in New York.[49]

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[48] *Patterns and Trends, New York State Energy Profiles: 1982-1996*, NYSERDA (1998).

[49] In 1992, New York's utilities, in their DSM plans submitted to the Public Service Commission, estimated an energy efficiency economic reduction potential of 19.7% and an achievable potential of 9.2% in the year 2000. Using a different methodology from that used by other studies of potential, a 1997 study, *Energy Efficiency and Economic Development in New York, New Jersey and Pennsylvania*, ACEEE (February 1997), claims that cost-effective investments in energy-efficient technologies could

Recognizing the important role that public benefit programs play in the energy arena, the Public Service Commission (PSC) established a system for funding such programs with a non-bypassable System Benefits Charge (SBC). These programs, some of which were previously undertaken by regulated utilities, are in the areas of energy efficiency, research and development, low-income services and environmental protection. Additionally, the PSC designated NYSERDA as the Statewide administrator for public benefit programs funded by the SBC. A total of $234 million is available in New York to fund SBC programs over a three-year period, beginning in 1998, $174.5 million of which will be administered through NYSERDA's **New York Energy $mart℠** Program. Following a comment period and public meeting, NYSERDA developed a plan for SBC-funded public benefit programs covering the initial three-year program period beginning July 1, 1998. This plan has been approved by the PSC and is now being implemented.[50]

THE CURRENT STATE OF EFFICIENCY

Energy Intensity of New York State

New York is the most energy-efficient state in the continental U. S. on an energy use per capita basis, despite being the fourth largest energy-consuming state.[51] New York's energy intensity, measured as primary energy consumption per unit of GSP, was 38% less than the national average in 1996. New York's primary energy use represents 5% of the nation's total energy consumption, although New York accounts for 7% of the nation's population. Total primary energy consumption in 1996 was 4,094 trillion British thermal units (TBtu), the energy equivalent of 706 million barrels of crude oil or 3,979 billion cubic feet of natural gas, 16% above the 1982 consumption figure of 3,528 TBtu. New York State primary energy consumption per unit of GSP and trends in both primary energy consumption and GSP from 1982-1996 are shown in Figures 3-19 and 3-20.

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reduce New York's energy use by 27% by 2010, including a 34% reduction in electricity use.

[50]The PSC approved the SBC Plan with modifications in Case 94-E-0952, Order issued and effective 2 July 1998. Funding for program areas under NYSERDA's **New York Energy $mart℠** Program is as follows: energy efficiency - $143 million; R&D - $22.1 million and low-income - $9.4 million.

[51] *Patterns and Trends, New York State Energy Profiles: 1982-1996*, NYSERDA (1998).

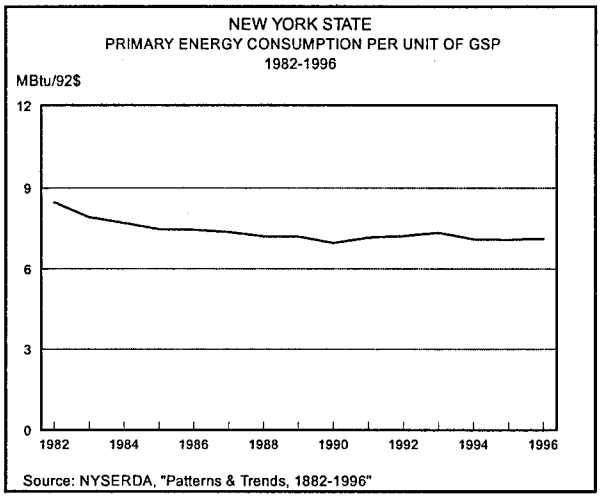

Figure 3-19

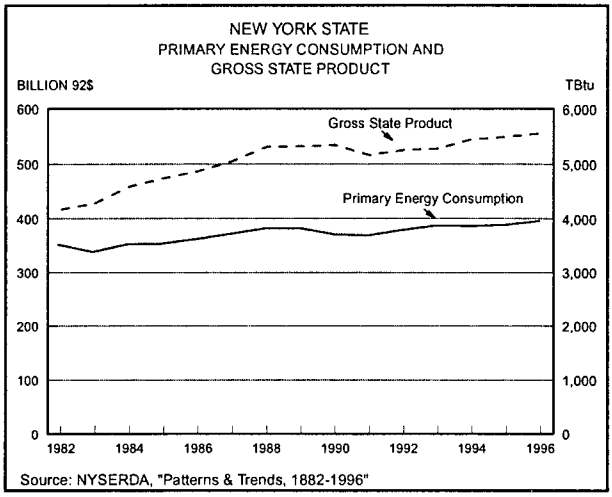

Figure 3-20

Energy Efficiency by End-Use Sector

New York State's energy use profile differs from the nation's, and significant changes have occurred in the State's energy consumption over the past 15 years. For instance, New York uses considerably less energy in the industrial sector than the nation as a whole, as a percentage of total primary energy use, as shown in Figure 3-21. This is largely a result of New York's shift from a manufacturing economy to a service-oriented economy. Although New York's energy use in the transportation sector is comparable to that of the U.S., New York uses considerably more energy, as a share of total primary energy use, in its residential and commercial sectors. Changes in New York's end-use energy consumption over the 15-year period 1982-96 for each of these sectors are shown in Table 3-10.

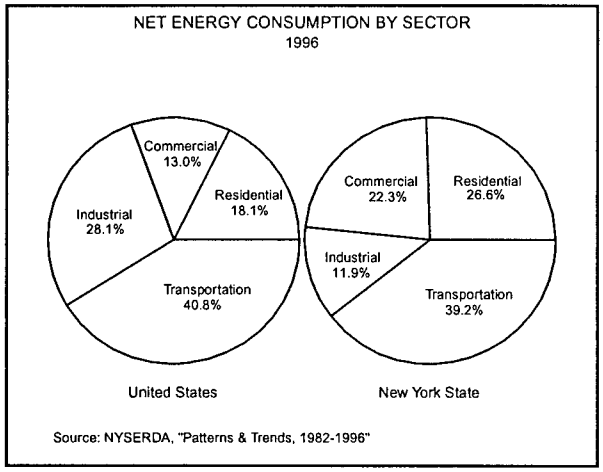

Figure 3-21

NYS AVERAGE ENERGY CONSUMPTION BY SECTOR: 1982 and 1996		
Sector	**1982**	**1996**
Residential (Million Btu per household)	103.95 MMBtu	111.11 MMBtu
Commercial (Million Btu per capita nonmanufacturing employment)	86.56 MMBtu	89.79 MMBtu
Industrial (Thousand Btu per total GSP)	1.02 MBtu	0.60 MBtu
Transportation (Btu per VMT)	12,458 Btu	9,299 Btu

Table 3-10

Commercial and Industrial Sector

It is estimated that over $3 billion in new commercial construction activity and $4 billion in energy-related substantial renovation and upgrading occurs annually in New York State. Increased competition has forced companies to reduce production expenses, including energy costs. Technological change and innovation are driven by the need to increase profits by reducing capital and production costs, mitigating negative environmental effects, and adjusting to meet changing customer needs. Generally, technologies that increase energy efficiency also reduce operating costs. Although, on a square footage basis, total energy costs represent 2% of a commercial building's total costs, energy costs still represent the largest variable cost to businesses and industries.[52] (For further discussion on this issue, refer to the Energy and Economic Development issue report.) Examples of the most prevalent energy efficiency improvements in the commercial and industrial sectors that also improve productivity and reduce pollution, include new boilers and furnaces; the installation of electrotechnologies that reduce energy use, and the use of new materials and sensors.

New York's strategy is designed to identify energy efficiency opportunities, the need for technical assistance and financing of improvements, and the promotion of new and advanced technologies. New

[52] *Greening the Building and the Bottom Line,* Rocky Mountain Institute, p.3.

York is a national leader in these areas. For example, since 1995, NYSERDA's Flexible Technical Assistance (FlexTech) Program, which includes feasibility studies, commissionings, and performance contracting assistance, has provided more than 400 customers with engineering assistance. FlexTech customers, on average, invest $17 in energy efficiency projects and save $5 in annual operating costs for each program dollar spent on a FlexTech project.

Furthermore, with utility industry restructuring, new companies such as energy service companies (ESCOs) are beginning to provide some of the energy efficiency services and opportunities previously provided by regulated utilities. ESCOs are attracting customers with their own incentives and a wide range of new products, services, and approaches to deliver efficiency improvements. One such product is advanced metering technology that provides customers with the ability to disaggregate energy consumption information and improve their facilities' operating and equipment efficiencies by better understanding their energy use profiles. Facility managers can use daily, weekly, monthly, or seasonal load profiles to allocate energy costs in advance, based on expected use. This information is also useful for evaluating proposals from different energy suppliers as retail competition is introduced. Accurate energy use and load profile information allows customers to make intelligent decisions about energy management systems and to sculpt loads to take advantage of real-time or time-of-use rates. NYSERDA recently conducted a survey of ESCOs doing business in New York State and found that, of the $153 million in contracts undertaken during 1997, the majority of that work (over 88%) is being conducted in the institutional sector, primarily K-12 schools.

The symbiosis between energy efficiency and pollution prevention is becoming more evident as companies change their focus from meeting environmental regulations to developing systems that improve production efficiency and resource management, and reduce pollution. Companies throughout the State are considering opportunities to improve manufacturing process energy efficiency as a means to achieve waste reduction, pollution prevention, and resource minimization. Many New York State companies are developing expertise in energy efficiency and pollution prevention technology and are also exploring export markets for these technologies.

The U.S. Department of Energy's Office of Industrial Technologies (DOE/OIT) recognized this emerging opportunity by facilitating the development of an "Industries of the Future" program for each of the major

energy consuming sectors.[53] Each industry outlined the interrelationships among resources, production, and environmental management, with strategies incorporating an integrated approach to achieving a long-range vision of efficiency.[54] For example, the metal-casting industry vision cites among its objectives developing advanced manufacturing technologies to increase productivity by 15%, reducing lead times by 50%, reducing energy consumption by 3-5%, and developing environmental technologies that will achieve 100% pre- and post-consumer recycling. Similar goals have been established for each of the other major energy consuming sectors. NYSERDA is actively working to expand the collaboration with DOE/OIT to increase participation by New York industries in these programs, and accelerate energy productivity gains by industry in New York State.

Buildings and Equipment

It is estimated that over $3 billion in new residential construction involving 25,000 homes and $4 billion in energy-related substantial renovation and upgrading occurs annually in New York State. Opportunities to implement permanent improvements in the building envelope and heating, ventilation, and air conditioning (HVAC) systems at the time of construction or renovation are often lost due to the lack of information, higher perceived risks, higher front-end costs and a shortage of capital. Once constructed, opportunities to cost-effectively improve these systems may not exist for a decade or more.

Current building practices, for example, are introducing new efficient technologies, such as "low E" windows that reduce energy consumption by more than 35% compared to the double-glazed windows that were standard building practice less than 10 years ago. New York's ability to reflect improved energy-efficient building practices in its building codes will further boost the use of efficiency to meet a portion of the State's future energy needs. In addition, the U.S. Environmental Protection Agency's (EPA) Green Buildings Program offers an opportunity to maximize energy efficiency and minimize environmental impacts of institutional, commercial, and industrial construction projects. To meet EPA's Green Buildings goals and objectives, NYSERDA offers design and planning services to architects and engineers for capital improvement projects. FlexTech engineers assist in identifying the most cost-effective and energy-

[53] The major energy-consuming sectors included forest products, glass, aluminum, steel, and chemicals.

[54] Office of Industrial Technologies, *Enhancing the Competitiveness, Efficiency and Environmental Quality of American Industry Through Technology Partnership* (1997).

efficient lighting, HVAC systems, waste management procedures, and energy management and control systems. FlexTech also provides guidance on indoor air quality, construction materials and furnishings selection, and alternative-fuel vehicle acquisition.

Under the **New York Energy $mart℠** Program, NYSERDA is implementing a New Construction Program that will accelerate the incorporation of energy efficiency in the design, construction and operation of commercial, institutional, multi-family buildings and single-family homes through technical assistance and targeted financial incentives. The goal of the program is to produce a permanent improvement in "standard" design practice among building designers and owners that will continue beyond this program without the need for financial incentives.

Improved enforcement and more stringent energy efficiency construction building codes would increase new building operating efficiency, lower operating costs and achieve significant environmental emission reductions. Although New York's energy code had minor clarifications in 1991, there has been no systematic review or updating of the energy code since then. In response to interest in having New York move toward the adoption of a national building code, the New York State Department of State is in the process of preparing a report to the Legislature and the Secretary of State containing a comprehensive comparison of the New York State Uniform Fire Prevention and Building Code (which includes the Energy Code by reference) with the current national Building Officials and Code Administrators (BOCA) code. This report contains a line-by-line comparison with the BOCA code, which incorporates by reference the 1995 Model Energy Code (MEC). In addition, NYSERDA is providing to the Department of State a cost-effectiveness comparison, as required by Article 11 of the New York Energy Law.

In December 1998, New York is required to certify to the DOE as to whether its code meets the minimum national energy standards of the American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE 90.1) and Council of American Building Officials (CABO). In addition to considering an update of the Code, compliance training for designers, builders, and local code officials is essential for meeting efficiency standards. Efforts are currently underway by NYSERDA and the Department of State to secure funding for these activities that are crucial for meeting code changes.

Energy use labeling and appliance efficiency standards also improve the efficient use of electricity. By setting an efficiency guideline, minimum performance standards eliminate inefficient models from the

market while improving the efficiency of all available models, including those with the lowest initial cost. To assist in creating a viable infrastructure for the availability and delivery of energy-efficient lighting and appliances to New York's residential customers, NYSERDA is undertaking an initiative through **New York Energy $mart**SM to overcome market barriers for these products through market assessment, targeted incentives and assistance, and strategic marketing. The sale of household appliances and lighting products that meet the ENERGY STAR® guidelines for energy efficiency will be promoted.

Transportation Sector

The transportation sector, which is almost totally dependent on petroleum, accounts for 30% of New York's primary energy consumption.[55] Efficient, cost-effective, and high quality transportation is a necessity for a growing economy. Significant opportunities exist for improving New York's transportation efficiency with available technologies and practices. One study suggests that the automobile industry could achieve a 65% improvement in new vehicle fuel economy for cars and light trucks by improving engines, transmissions, aerodynamics, and reducing mass and rolling resistance.[56] Intelligent Transportation Systems, advanced communications, and electronic control systems are also measures that can improve the efficiency of transportation. (For additional information, see the Energy and Transportation issue report.) In October 1998, NYSERDA sponsored a Transportation Scoping Session that attracted over 100 interested parties to discuss new and emerging transportation technologies that address New York's transportation sector and industry needs for the future. The results of this session will help shape NYSERDA's Transportation R&D Program, with particular emphasis on meeting market needs.

Additional energy efficiency and air quality benefits will be provided by clean-fuel projects implemented under the 1996 Clean Water/Clean Air Bond Act. The Bond Act allocates up to $55 million to acquire clean-fuel vehicles, and an additional $125 million for school projects, including the replacement of coal-fired heating systems with systems fueled by natural gas or fuel oil. As a first step in the vehicle program, the State recently awarded approximately $3 million to municipalities, State agencies and departments, and public authorities to purchase 39 clean-fuel buses. Ten of the buses will be powered by hybrid-electric

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[55] *Patterns and Trends: New York State Energy Profiles: 1981-1995*, NYSERDA (1996), p. 8.

[56] *An Updated Assessment of the Near-Term Potential for Improving Automotive Fuel Economy,* J.M. DeCicco and M. Ross, ACEEE, Washington, DC (1993).

diesel drive trains, the first of their kind in the State.

In 1997, Orion Bus of Oneida County began the nation's first commercial production run of hybrid-electric buses, in this case, a low-floor city transit bus. The bus uses a hybrid-electric drive supplied by Lockheed Martin of Broome County. The vehicle is an outgrowth of the nation's first hybrid-electric transit bus, developed by NYSERDA. Benefits of hybrid-electric vehicles include improved fuel economy, reduced emissions, and lower maintenance costs than conventionally-fueled vehicles. Lockheed Martin is also working with Navistar on a NYSERDA project to demonstrate hybrid-electric trucks.

Efficiency Providers

Government Activities

New York State offers innovative opportunities to improve energy efficiency in State facilities, industries, institutions, municipalities, and transportation. In addition to reducing the State government's and consumers' energy bills, these programs leverage limited federal funds with private capital to improve energy efficiency and reduce consumer energy costs further. Several major State-sponsored energy efficiency programs are listed in Table 3-11. In addition to programs specifically designed to achieve energy efficiency, New York offers others designed to achieve environmental or fuel-diversity goals that also deliver important energy efficiency gains. Examples of such programs include investments in clean technologies through the 1996 Clean Water/Clean Air Bond Act, Department of Transportation's congestion mitigation program, NYSERDA's alternative-fuel programs, and Department of Environmental Conservation's vehicle inspection and maintenance program. The New York Power Authority increased its DSM spending in 1997 almost 27% from 1996, to $104.9 million (projected). The corresponding reductions for NYPA in 1997 are projected to be 114.1 GWH, with a summer peak reduction of 27 MW. The trend in NYPA DSM achievements and expenditures for 1990-1996 are shown in Table 3-12.

NEW YORK STATE ENERGY EFFICIENCY PROGRAMS	
NEW YORK STATE ENERGY RESEARCH AND DEVELOPMENT AUTHORITY	
PROGRAM	**DESCRIPTION**
Flexible Technical Assistance (Flex Tech) Program	A network of engineering firms provides businesses and building owners with detailed on-site engineering studies, technical and economic analyses, assessments of industrial process improvements, design assistance, and equipment/system engineering. Each engineering dollar spent by the FlexTech program leverages $17 in capital improvements, $5 in reduced annual energy bills, and additional productivity improvements.
State Energy Investment (State EnVest) Program	Uses a pool of private-sector energy performance contractors to design and install energy efficiency capital improvements in State facilities. Without any up-front costs to the State and with guaranteed energy cost savings, the program is capitalized with $65 million in private funds structured as a tax-exempt municipal lease.
Financial Packaging (FinPak) Services for Schools	Facilitates the development of energy performance contracts between school districts and energy service contractors. Assistance provided to 84 school districts with energy capital improvements totaling more than $154 million.
Residential Energy Affordability Program (REAP)	Helps to improve both energy efficiency and affordability for New Yorkers, especially those with low incomes. REAP will promote the use of proven strategies to do so, including those developed by NYSERDA for the State's Weatherization Assistance Program. Because of the State's high energy costs and cold climate, low-income New Yorkers pay 25-30% of their income for energy, compared to more affluent residents whose energy costs amount to 3-8% of their income. In addition, public expenditures for low-income household energy needs total $500 million to $1 billion per year.
Energy-Efficient Procurement Collaborative, Inc.	A not-for-profit corporation that provides purchasing professionals, particularly those in State and local governments, with energy efficiency information, products, and services to help them make informed decisions. More than 950 participants provide input and support to the Collaborative.
NEW YORK POWER AUTHORITY	
PROGRAM	**DESCRIPTION**
High-Efficiency Lighting Program (HELP)	Since its inception in 1990, HELP has installed energy-saving products (lighting, motors and energy management systems) at about 440 local, county, and State government facilities; public schools; and community colleges, saving taxpayers $30 million annually and improving air quality.
Site-Specific Assistance	Includes engineering solutions, equipment procurement, installation services, and project financing. Since 1990, nearly 1,000 projects have been implemented using improved technologies for lighting, motors, chillers, energy management systems, and other end-uses. Projects target new construction, non-electric end-use and electro-technology applications.
Energy Services Program for NYS Government Facilities	This program has targeted all government facilities within the State since 1991 and includes lighting, motors, energy management systems, boilers, chillers, etc. To date, participants have benefited from over $150 million in energy efficiency investments that, when completed will generate over $24 million annually in bill savings.
Public Housing Apartment Super-Efficient Refrigeration Program	In coordination with the NewYork City Housing Authority (NYCHA), NYPA has delivered and installed over 40,000 high-efficiency refrigerators in residential apartments. These refrigerator replacements will result in energy savings in excess of 50% based on currently installed models.
NEW YORK STATE DEPARTMENT OF HOUSING AND COMMUNITY RENEWAL	
PROGRAM	**DESCRIPTION**
New York State Energy Conservation Construction Code	A Statewide mandatory minimum that provides uniform regulations for the design of building envelopes and equipment selection to ensure adequate thermal, electrical, and mechanical system performance. Affects more than 28,000 new single-family residences and $3 billion in new commercial construction annually.
Weatherization Assistance Program	Weatherizes the homes of low-income residents to reduce energy consumption and minimize the impact of higher fuel costs on low-income families. Services provided are determined by an on-site energy audit that includes life-saving health and safety tests and an analysis of fuel consumption and lifestyle. Based on an average annual funding level of approximately $35 million, 15,000 dwelling units are weatherized annually.

Table 3-11

New York Power Authority DSM Spending and Achievements, 1990-1997			
Year	Spending (in Millions)	Achievements GWhs	Achievements Summer MWs[1]
1990	$2	1	0
1991	$12	14	1
1992	$22	52	7
1993	$50	103	16
1994	$38	107	22
1995	$54	77	18
1996	$77	92	20
1997	na	na	na
Total	$255	446	84

[1] These figures are exclusive of curtailable and interruptible programs.
na: not available
Source: NYS Department of Public Service

Table 3-12

The future of many efficiency programs in New York, as well as throughout the country, is tied to decisions on how the electric and natural gas industries are restructured. The Public Service Commission, in Opinion Order 98-3, instituted a System Benefits Charge (SBC) and designated NYSERDA as the third party administrator to fund energy efficiency, low-income, research and development, and environmental protection programs during the transition to competition.

In addition to these programs, the Long Island Power Authority (LIPA) is providing $32 million annually for energy efficiency and renewable energy programs. The LIPA program plan is being developed by LIPA's Clean Energy Advisory Panel, with approval anticipated in December 1998, and implementation to begin in 1999. NYSERDA is working to coordinate the **New York Energy $mart**SM Program with LIPA's efforts, toward the goal of increasing program efficiencies through economies of scale and elimination of duplication.

Electric and Gas Utilities

In response to industry restructuring, utilities are redirecting their focus from providing DSM programs directly to sponsoring low-cost market-transformation activities. These activities include policies, programs, and collaborative actions to change permanently the energy efficiency of commercially available equipment and technologies that result in consumer products such as energy-efficient office equipment, super-efficient refrigerators, and more efficient lighting equipment.

New York is redirecting its regulatory focus from direct utility sponsorship of DSM programs to allowing a competitive market to provide efficiency services. Energy efficiency services delivered through mechanisms tailored to competitive energy markets will provide greater choices to customers for meeting their energy efficiency needs. For example, energy performance contracting and cost-shared technical assistance are proving to be effective in the competitive marketplace compared to more traditional rebate programs. Although there has been a reduction in spending on DSM programs by investor-owned utilities, this is being offset, to some extent, by an increase in NYPA spending. The investor-owned utilities' DSM spending in 1997 was approximately $48 million. For NYPA, DSM spending will increase almost 27% from 1996, to $104.9 million in 1997 (projected). The corresponding energy reductions for NYPA in 1997 are projected to be 114.1 GWH, with a summer peak reduction of 27 MW. The trend in investor-owned utility DSM achievements and expenditures for 1990-1997 is shown in Table 3-13.

Investor - Owned Utility DSM Spending and Achievements, 1990-1997			
Year	Spending (in Millions)	Achievements GWhs	Achievements Summer MWs[1]
1990	$99	325	85
1991	$198	757	179
1992	$286	1,207	273
1993	$280	1,331	316
1994	$188	1,012	252
1995	$106	717	164
1996	$73	447	108
1997	$48	na	na
Total	$1,277	5,796	1,377

[1] These figures are exclusive of curtailable and interruptible programs.

Notes: These figures include payments to bid winners, information programs, evaluation and development and support. These figures do not include HIECA, ULIEEP or TOU rate programs. Amounts are actuals, as reported by the companies and not necessarily accepted by the DPS Staff or the Public Service Commission.

na: not available
Source: NYS Department of Public Service

Table 3-13

In 1993, the State's investor-owned combination electric and gas utilities, along with Brooklyn Union Gas Company (Brooklyn Union) and National Fuel Gas Distribution Company, voluntarily filed natural gas DSM program plans. Most of the programs proposed, consisting mainly of research and pilot programs, were deferred with the onset of restructuring and Federal Energy Regulatory Commission Order 636. The most aggressive programs, sponsored by Brooklyn Union, are continuing throughout 1997, with much of the emphasis on fuel-switching activities.

Private-Sector Efficiency Providers

A competitive energy services industry has developed in New York over the past several years, led by approximately 50 ESCOs and supported by hundreds of small- to medium-sized contractors, consulting firms, and local manufacturers. ESCOs are privately-owned providers of energy services. They can take the form of energy efficiency equipment suppliers, distributors and manufacturers; financial institutions; and engineering and design companies. This industry has emerged in response to a number of market factors, including the high cost of energy, the deregulation of the electric and gas industries, the opportunity to profit from goods and services not previously offered to customers, and the potential for growth of this industry.

ESCOs, through performance contracting and third-party financing, have become an integral element of the energy efficiency industry in New York State, and are involved in constructing, owning, financing, and managing energy efficiency, DSM, and small alternative energy projects. However, at this point in time, most ESCOs offer only energy efficiency services and not energy commodity services. Long-term energy efficiency services are provided to end-users independently, or through contracts with utilities to deliver energy savings that are measured, verified, and maintained over time. Providing incentives to manufacturers and distributors to produce and distribute energy-efficient products and information to customers on energy-efficient technologies may leverage utility program dollars more effectively than providing rebates to those customers. The effect of utility competition on the ESCO industry is uncertain. However, in the deregulated natural gas and petroleum industries, ESCOs have effectively provided energy audits, equipment maintenance, and a host of energy efficiency services to customers.

FUTURE OUTLOOK

As air quality issues and climate change concerns take on greater importance, pursuing energy efficiency as a prudent course of action will further influence the pace and delivery of energy efficiency services in New York. Factoring in energy efficiency on the front-end of building design, industrial processes, and cost-containment strategies will lead to even more opportunities to make efficient use of energy a tool for improving environmental quality.

In 1994, New York signed a Memorandum of Understanding (MOU), adopted by the Ozone Transport Region (OTR) states, setting a schedule for summertime NO_x reductions. New York's NO_x Emission Budget and Allowance Program, developed pursuant to the OTR NO_x Budget, includes a pilot energy efficiency set-aside program, which allocates 115 tons of allowances to qualified electric energy end-use efficiency measures. The set-aside program, administered by NYSERDA, recognizes that emission reductions necessary to bring ozone nonattainment areas into attainment can be achieved, in part, by implementing energy efficiency measures, as well as by emission controls.[57]

In the future, efficiency services will likely be delivered by a wide range of organizations, including ESCOs, equipment vendors, government agencies, and load-serving electric and natural gas providers. The ingenuity of the marketplace is expected to result in more innovation and greater savings than could have been imagined only a few years ago. This innovation will help NewYork to cost-effectively meet its economic development, environmental quality, and health and safety goals by providing incentives to install efficiency measures, using market-based approaches that provide consumers with more choices.

[57] The express terms of New York's NO_x Emissions Budget and Allowance Program are contained in proposed 6 NYCRR Subpart 227-3 (issued 4 September 1998).

SECTION 3.5

RENEWABLE ENERGY RESOURCE ASSESSMENT

INTRODUCTION

Renewable energy resources,most notably hydroelectric generation and wood combustion, provided approximately 12% of New York State's primary energy supply in 1996.[58] Although recent technology advances have resulted in declining costs of wind and photovoltaic systems, most of their potential remains unrealized due to their high initial cost relative to more conventional energy systems, and institutional barriers that inhibit their development. Developing a renewable energy industry in New York has the potential to create jobs, diversify New York's energy resource use, and help improve environmental quality, particularly air quality.

A competitive electricity market promises to create opportunities for greater customer choice and potentially lower energy costs. In the near term, if lower-cost energy is the primary result of competition, renewable resource technologies, absent technological and cost breakthroughs, might have difficulty competing in the marketplace. However, if the market responds with innovative "green" marketing efforts and new alliances with private industries, restructuring the electric industry might remove many of the existing market barriers to pave the way to renewable energy technologies.

CURRENT STATE OF RENEWABLE ENERGY

There are currently many cost-effective renewable opportunities available, particularly in niche applications. Some applications, such as photovoltaic (PV) outdoor lighting and road signs, solar water and pool heaters, and other consumer applications (solar-powered calculators), are cost-effective today. Additional energy savings and economic development opportunities exist for New York State and its renewable industries, provided that research and development (R&D) activities continue, and reliable

[58] Renewable resources are defined as non-fossil-fuel-based energy that is largely sustainable or reclaimable from natural resources. Renewable technologies with the most potential for New York State include wind, solar, biomass, and fuel cells. Hydroelectricity provides the majority of New York's installed renewable energy, although its future development is constrained by environmental and other barriers.

information is made available to increase consumer acceptance of renewable energy resources.

Several New York State entities are involved in Statewide, regional, and national efforts to develop renewable energy resources. The New York State Energy Research and Development Authority (NYSERDA), the New York Power Authority (NYPA), New York's investor-owned utilities, the Empire State Electric Energy Research Corporation (ESEERCO), and the Electric Power Research Institute (EPRI), are engaged in collaborative activities to design, develop, and demonstrate renewable energy technologies.[59] Expenditures for renewable energy R&D over the 1995-1997 period for New York State's investor-owned utilities, NYPA, ESEERCO, and NYSERDA have totaled over $5.4 million. Some of New York's renewable resource activities include:

- NYSERDA's renewable energy resource programs are designed to expand New York's energy resources and focus on the energy, economic, and environmental benefits of renewable resources such as biomass, wind, and solar. Passive solar, daylighting, and solar water-heating technologies have been supported by NYSERDA.
- NYPA's renewable energy programs reflect the belief that low costs alone will not be enough to meet society's needs and assure success in the emerging competitive electricity marketplace. In 1996, NYPA inaugurated one of the nation's largest roof-mounted PV facilities, one of seven such systems NYPA has supplied to its customers. NYPA is an industry leader, with more than 500 kilowatts of rooftop PV systems.
- ESEERCO's renewable research activities are designed to improve operations at hydroelectric generating facilities, foster the development of combustible renewable resources, and explore advanced generation technologies that may be capable of economically producing power in a cleaner, more efficient manner.

The key to accelerating the use of renewable resources is to develop additional cost-effective products to serve existing markets, and to continue to promote research and development of technologies that have the most potential for niche applications in the short term and to compete with fossil fuel applications over the longer term. Developing and supporting innovative technologies and manufacturing methods are designed to create viable components, systems, and products industries within the State. These technologies could be used both to serve near-term end-use energy needs for the State's commercial, industrial, and residential consumers and to create export markets for New York products and services.

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[59] ESEERCO will cease operations as of December 31, 1998. NYSERDA will be administering a portion of the contracts still in existence on that date, with the investor-owned utilities administering remaining contracts.

For example, increased New York State manufacturing activity is bringing innovative photovoltaic technologies to the marketplace. Recognizing that many renewable technologies are currently not cost-effective in New York, NYSERDA is working with seven New York-based companies to participate in the growing worldwide market for renewable energy technologies which, according to forecasts by Royal Dutch Shell Corporation, could exceed $100 billion by the year 2030.[60] NYSERDA's seven corporate program participants represent a wide-range of PV products and technologies.[61]

As an example of this effort, one firm is developing a New York manufacturing facility to make large-area PV modules for the building-integrated PV market. Several other NYSERDA projects are also promoting business growth, technical understanding, and market penetration of renewable technologies in New York, with increasing near-term applicability in foreign markets.

There are many benefits to developing and implementing renewable energy resources. Benefits include the potential for improving environmental quality, economic development, job creation, resource diversity, and greater choice for customers. However, there are also several barriers to increasing the use of renewable resources. These include: lack of information about available renewable technologies and their use; lack of experience with commercial-sized projects; uncertainty about the benefits and risks associated with investing in renewables; and lack of access to reasonable-cost capital.

New York State legislation enacted in 1997 allows customers to reduce their electric bills by allowing customers to offset their electricity consumption with small-scale PVgeneration over an entire billing period without considering when the power is consumed or generated. The New York "net metering" legislation requires electric utilities to interconnect their systems with residential solar electric generating equipment (up to 0.1% of the utility's electric demand) and to bill residential customers only for electricity supplied by the utility. It would also provide homeowners an income tax credit for a portion of the cost of their solar electric generating equipment (up to 25% of qualified solar electricity generation equipment expenditures). Net metering should encourage additional investments in PV technologies. The New York State Public Service Commission will continue to monitor the implementation of the net metering law and

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[60] Joseph J. Romm and Charles B. Curtis, "Mideast Oil Forever", *The Atlantic Monthly* (April 1996), p. 64.

[61] NYSERDA's photovoltaic program participants include: Conserval Systems, Inc.; Direct Global Power, Inc.; Evergreen Solar, Inc.; Kiss + Cathcart Architects; Power Technologies, Inc.; PowerLight Corporation; and SunWize Technologies, Inc.

a collaborative process will be implemented to investigate other opportunities for interconnection of PV and other distributed technologies.

TECHNOLOGY-SPECIFIC ISSUES

Wind

Wind is one of the most promising and cost-effective alternatives to conventional fossil fuel-fired power plants. The U. S. is the world leader in wind energy production, with more than 1,731 MWs of installed capacity as of 1995, although the largest potential markets are in overseas countries with rapidly expanding energy markets. Developing markets in these countries are bypassing use of fossil fuels and the associated carbon cycle with the installation of cleaner, noncombustion renewable resources. Although wind energy is an emission-free, renewable source of energy, it is site-specific and has several barriers. These barriers include: visual impact of the turbines; unacceptable noise levels for people living near the plant; danger to birds in certain locations; lack of suitable wind resources; and the lack of dispatchability.[62] Although New York generally has moderate wind regimes, there are several locations with favorable wind resources, including the near-shore plain of eastern Lake Ontario, the northern portion of the Tug Hill Plateau east of Lake Ontario, the hilltops and ridges of eastern New York and the Southern Tier, and the Long Island shoreline.[63] New York State's wind regimes are mapped in Figure 3-22. Currently, about 200 small wind turbines, with a combined capacity of about 1 MW, have been installed in New York State.

NYSERDA is currently involved in a project to develop a small-scale (20 KW) variable-speed wind turbine for use in New York, as well as national and foreign markets. This wind turbine technology is

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[62] Dispatchability refers to the variability of the resource and the ability to depend on it to meet electric load at the time it is needed.

[63] In 1991, NYSERDA conducted a *Wind Technology Assessment* to appraise the current status and economic and technical potential of wind in New York. The *Assessment* found that up to 10,000 MW of electric capacity could be produced from wind energy sites in New York. The *Assessment* projected that technological improvements could enable 50 to 500 MW of electric capacity to be developed at competitive costs by 2010. Power density is a wind resource measurement and wind power class is determined by wind speed (in mph) and power density at 100 feet above ground. This assessment estimated New York State land availability for wind development as follows: Class 5: 5 square miles; Class 4: 45 square miles; Class 3: 950 square miles. For this estimate, land was excluded based on such limiting factors as terrain, park lands, and large urban areas, with 75% of all remaining land arbitrarily excluded to account for other factors. The 10,000 MW total capacity potential was estimated using a power rating of 10-20 MW per square mile.

expected to be manufactured in New York State. It is also expected to be more reliable and produce lower-cost energy than other variable-speed wind generators due to the lack of wire windings on the rotor and fewer electronic parts. This lower-cost, small-scale wind system could make wind power more feasible for

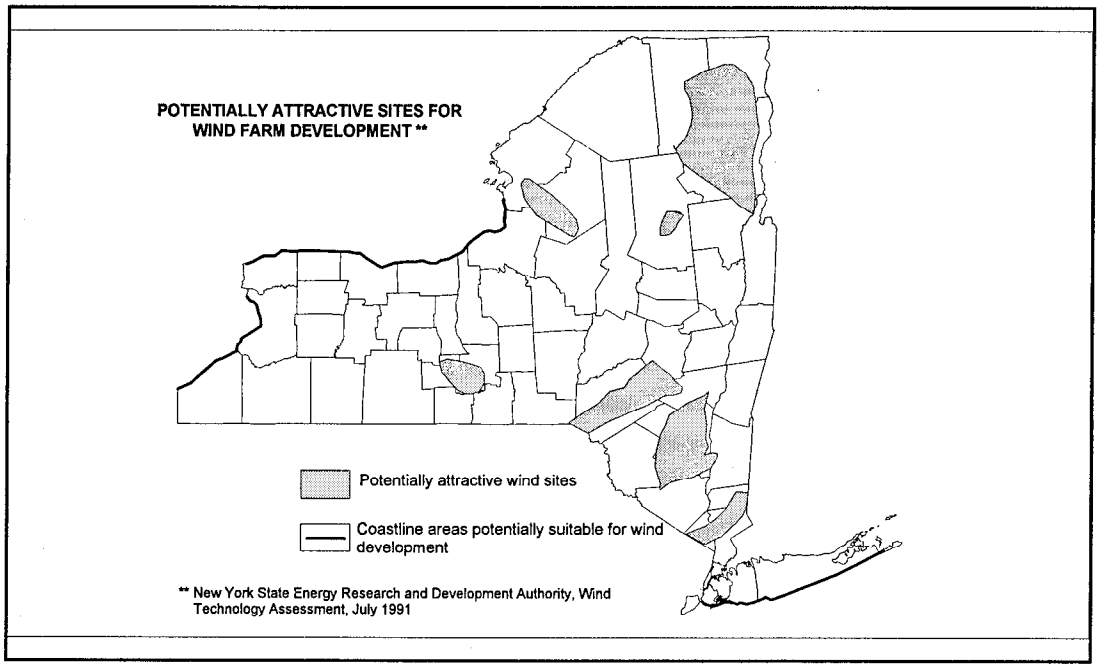

Figure 3-22

New York end-use customers. Testing wind turbines in New York's severe climate is the next step toward commercializing these renewable resources. Over the next decade, the installed capacity for wind in New York could range from 200 to 500 MW if expected technical and cost improvements are achieved. To alleviate some of the barriers to wind energy use, the federal Energy Policy Act of 1992 (EPAct) established a tax incentive for wind energy. A 10-year production tax credit of 1.5 cents per kilowatt-hour is available for privately-owned projects brought on-line between 1994 and 1999. For publicly-owned entities, a production incentive payment of 1.5 cents per kilowatt-hour is provided.

NYSERDA anticipates funding additional wind energy projects through the implementation of the **New York Energy $mart**[SM] Program. Under this program, both utility-scale wholesale electricity production and smaller-scale wind energy projects are being considered, as both will maximize the production of reliable renewable power in New York State. Through a Request for Proposals, NYSERDA announced partial funding to install, demonstrate and operate a utility-scale wind power plant. The objective is to gain

and document experience installing and operating a wind power plant in New York by installing either one (4 MW) or two (2 MW) power plants in New York that will operate over a long period of time. In addition, Niagara Mohawk Power Corporation, as part of its PowerChoice Restructuring Agreement, agreed to develop 3 MW of wind energy projects, to be installed in 1999 at the Niagara Mohawk site in western New York.

Solar Energy Technologies

In certain situations, solar technologies, such as passive solar designs and remote photovoltaic systems, are cost-effective today. Many of today's passive solar techniques have been thoroughly field-tested by the approximately 300,000 passive solar buildings designed and constructed in the U. S. The same basic passive solar design concepts developed for houses are now being applied to low-rise commercial buildings. Ideal building types for passive solar designs include schools, libraries, offices, and residential buildings. While applications are more complex, savings and performance results remain equally impressive. To supplement the effect of energy building codes, as a way to introduce these technologies into mainstream building design and construction, software tools have been developed for designers, engineers, and architects that integrate solar technologies, perform simulation and performance analysis, and bring energy issues into all phases of the design process. In addition, the use of improved building products, such as low-emissivity (low-E) windows, has rapidly become standard practice in new construction.[64]

Technological improvements and economies of mass production have dramatically reduced the costs of photovoltaics in the past 20 years. Experimental cells in research laboratories have demonstrated efficiencies as high as 34%.[65] In the last seven years, photovoltaic sales have nearly tripled. More than 84 MW of modules were manufactured worldwide in 1995. According to the U.S. DOE Energy Information Administration, total shipments of photovoltaic cells and modules in the United States reached 31 peak megawatts in 1995, a 19% increase from 1994. The value of photovoltaic cell and module shipments grew

[64] Low-emittance (low-E) glazing improves the thermal performance of a window by reducing energy transfer. Argon and krypton gas are used in lieu of air in the gap between panes in combination with low-E glazing to further reduce energy transfer. Tinted and reflective glazing are often used to reduce solar heat gain. *1997 ASHRAE Handbook Fundamentals*, Chapter 29: Fenestration, page 29.1.

[65] *Electric Utilities Embrace Photovoltaic Solar Energy,* Utility Photovoltaic Group (February 1996).

by 12% in 1995 to $118 million, although prices for modules stabilized and prices for cells fell by 17%.[66]

New York State has been active in researching the potential for solar power use in various applications. A PV array installed at the Center for Environmental Sciences and Technology Management at the State University of New York (SUNY) in Albany has a peak nominal rating of 17 kilowatts, and is believed to be the largest alternating-current module PV array in the United States.[67] NYSERDA is engaged in a number of projects involving photovoltaic-hybrid systems: field-testing the hybrids in different but replicable applications and geographic locations, developing and testing a PV/generator hybrid control system designed to improve system efficiency by 20% or more, and packaging a PV-hybrid system with an ice-maker to expand the international markets for PV-hybrid systems. The results of these projects should identify new high-value applications for PV, increase the technical understanding of PV-hybrid systems, and increase the economic feasibility and the market for the end-product. In addition, NYPA has one of the nation's largest roof-mounted PV systems at New York City Transit's Gun Hill Bus Depot in the Bronx. One of seven PV systems that NYPA has supplied to its customers, the 300 KW project will meet about half of the depot's electricity needs.

For remote PV applications, storage systems are often necessary to accommodate the intermittent nature of solar generation. Significant R&D efforts are under way nationally to develop more efficient batteries and other electricity storage methods that will help resolve the storage and intermittency problems of this technology.

A large portion of utility capital investment is typically spent on electric transmission and distribution system upgrades. In situations where large loads are well-correlated with solar resources, using PV systems in either a stand-alone or utility-connected configuration may reduce the need for upgrades to existing distribution circuits and substations. However, currently available solar equipment lacks the performance standards required for this application. To address this problem, a system is being developed and manufactured in New York to provide high-reliability, utility-grade PV inverters (equipment that converts direct current to alternating current) with battery storage for enhancing reliability of utility lines

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[66] *Renewable Energy Annual 1996*, Energy Information Administration (March 1997).

[67] *The Solar Letter* (29 August 1997), p. 328.

and for utility customers with critical loads. A demonstration project of this technology is sited in the Town of New Scotland, Albany County in cooperation with a local utility company.

NYSERDA is anticipating funding various photovoltaic projects through the **New York Energy $mart℠** Program. Coinciding with recent PV industry developments, projects in the areas of building-integrated, residential and high-value applications are being considered. Interest in building-integrated PV applications has grown, and within the past two years, two companies have started manufacturing building-integrated PV systems in New York. The passage of the Solar Choice Act (the Net Energy Metering Law), fosters the installation of PV systems on residences connected to the utility grid system. High-value PV applications may provide the best option for those areas in New York where electric power is needed, but to which the transmission and distribution (T&D) grid does not extend.

To alleviate some of the barriers to solar energy, federal and State investment tax incentives have been adopted to further promote the use of solar energy. The federal Energy Policy Act of 1992 (EPAct) provides an extension of the energy investment tax credit for solar equipment retroactive to June 30, 1992. Investors in, or purchasers of, qualified solar energy equipment can take an investment tax credit for up to 10% of the purchase price and installation costs. The legislation also provides for an electricity production incentive of 1.5 cents per kilowatt-hour for solar energy generation by municipal electric utilities, rural cooperative utilities, and other public agencies. New York State has also passed legislation, the Solar Choice Act, that will give homeowners an income tax credit for a portion of the cost of solar electric generating equipment beginning in 1998 of up to 25% of the qualifying costs of such systems for up to a maximum of $3,750 per residence.[68]

Hydroelectric Power

Hydroelectric technology is one of the most efficient means of producing electricity. The ability to produce electricity at a hydropower facility is site-specific and depends on the efficiency of the generating process, the amount of water available for generation, and the difference between water elevation at the source of the supply and water elevation at the point of discharge after passing through the generating

[68] Chapter 399 of the Laws of 1997.

station.[69] In 1995, nearly 9% of primary energy consumption in New York State originated from hydroelectricity, compared to approximately 4% for the U. S. Approximately 5,443 MW are produced from water resources in New York State: 5,055 MW from utility-owned facilities and 388 MW, or 7% of the total, from independent power producers (IPPs).

NYPA supplied 21.7 billion kWh of hydropower in 1996, which accounted for 62% of NYPA's total output, the majority of which was generated at NYPA's 800 MW St. Lawrence-Franklin D. Roosevelt Power Project and the 2,400 MW Niagara Power Project. In 1996, NYPA also began its cooperative effort to relicense the St. Lawrence-Franklin D. Roosevelt Power Project in Massena, since the project's federal licence expires in 2003. The Niagara Power Project is scheduled for relicensing in 2006. Additionally, approximately 180 MW of investor-owned utility hydroelectric projects are due for relicensing over the next several years. The State's utility-owned hydroelectric plants, including the NYPA plants, are shown in Figure 3-23.

Hydropower facilities have minimal operation and maintenance costs, no air emissions, high reliability, and long lives. However, they do have some adverse environmental effects, including fish impingement and entrainment, disturbance of the riparian environment, and potentially reducing the dissolved oxygen content of water.

In 1978, the Polytechnic Institute of New York conducted a study for NYSERDA that estimated a technical potential of 3,000 MW of small hydropower sites in New York. However, barriers to hydropower development continue to exist and will inhibit full development of this potential. Most economically attractive sites on rivers in the Catskill and Adirondack regions have already been developed. Many of the nearly 1,700 MW of undeveloped sites are constrained by economic and environmental considerations.

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[69] Two pumped-storage hydroelectric facilities, both owned by NYPA, are used to balance load in New York State, accounting for 1,280 MW, or 23% of the State's hydroelectric capacity. The largest of these facilities is the Blenheim-Gilboa Pumped Storage Power Project in Schoharie County. Several proposals have been made over the past decade to develop pumped-storage facilities. However, the ability to develop such a facility depends on several factors, including environmental concerns, and the need for peaking capacity in a more competitive electricity market. Refer to the Renewable Energy Appendix for a more complete definition of this technology. One of the two facilities, the Lewiston pumped-storage generating station, is part of the Niagara Falls facility.

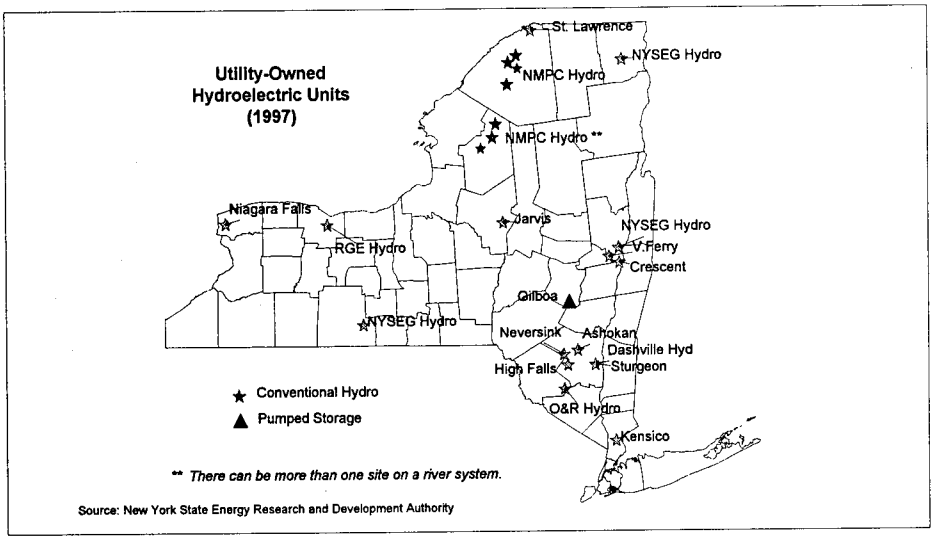

Figure 3-23

Biomass/Waste

Biomass commonly refers to plant matter. Biomass resources are significant in New York, as more than 60% of the State's land is forested and more than 1.8 million tons of waste wood are generated annually across the State.[70] Developing New York's biomass resources depends on several factors, including costs, energy-saving potential, economic development impact, and the environmental benefit of turning waste into value-added products and chemicals.

Biomass energy development is providing new business opportunities in New York by spurring the use of advanced technologies for fuel-handling and boilers, gas turbines, and other conversion processes such as liquid fuel and chemical manufacturing. Wood by-products, such as waste paper and paper mill sludge, can be used to produce marketable commodities such as levulinic acid.[71] A small, prototype plant that converts waste paper sludge to levulinic acid was recently constructed in Saratoga County. Waste-to-energy involves the production of electricity from the combustion of waste generated from households, commercial buildings and industrial operations. Energy recovery from waste is a component of the New York State Solid Waste Management Plan. New York currently has 12 waste-to-energy generating

[70] Alerich, Carol L. And David A. Drake, *Forest Statistics for New York 1980 and 1993*, U.S. Department of Agriculture (August 1995).

[71] Levulinic acid is a specialty chemical and valuable chemical intermediate that is used to produce a wide range of products.

facilities totalling 224 MW in operation.

NYSERDA and the utility industry have been supporting research at the State University of New York College of Environmental Science and Forestry to develop a woody crop system modeled after research conducted in Sweden. Willows are grown on three-year rotations, then harvested and burned with coal at a utility boiler. The willow system offers rapid growth (seven dry tons per acre annually), an alternative cash crop for the agricultural sector, and has the potential to act as a biofilter to protect streams from an infusion of nutrients.

Fuel Cells

Fuel cell generators produce electricity, heat, and water electrochemically, without moving parts, noise, or certain air pollutants. Other fuel cell attributes include modular applications and efficiency. Today's fuel cells range in size from 20 KW to about 2 MW and can be more efficient than conventional generating technology. Although many fuel cell technologies use hydrogen derived from fossil fuels, some (such as proton-exchange membrane cells) rely on the hydrogen-rich gas produced from renewable biomass resources. NYPA and NYSERDA successfully installed and demonstrated the application of a 200 KW anaerobic digester fuel cell at a wastewater treatment plant that provides electricity as well as thermal energy to the facility. This type of fuel cell has potential for the electric vehicle industry and for stationary distributed power applications.[72]

NYSERDA is assisting the development of new materials that will offer cost-effective options for proton-exchange-membrane (PEM) fuel cell materials. The demonstration of these lower-cost materials and the development of manufacturing processes should facilitate more widespread use of fuel cell technologies. For example, NYSERDA is supporting two projects to develop proton-exchange membrane fuel cells: one with Plug Power, Inc., which is working on a 50-kilowatt fuel cell for Ford Motor Company. If the program is successful, vehicles powered by hydrogen will achieve a very high fuel efficiency and emit only water vapor from the vehicle when operating. The other project, with DAIS Corporation, involves the development of a low-cost fuel cell.

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[72] Taylor Moore, *Market Potential for Fuel Cells, EPRI Journal* (May/June 1997).

FUTURE OUTLOOK AND EMERGING TRENDS

Future renewable energy activities will be largely influenced by the world-wide development of the renewable technology marketplace and government support of these technologies. Utility industry restructuring presents a challenge to the manner in which renewable R&D will be funded. As part of New York State's Competitive Opportunities proceeding, the New York State Public Service Commission (PSC) recognized the need to provide funding for vital public interest programs, including public benefit R&D projects related to renewable energy.[73] The PSC also ordered a separate generic proceeding to address issues related to a system benefits charge (for environmental and other public policy programs that would not otherwise be recovered in a competitive market) as a means to ensure continuation of these programs during the transition to greater competition.

Environmental disclosure and green pricing are being widely viewed by some states and regions of the country as mechanisms for helping to promote renewable technologies by providing consumers with information to make informed energy choices.[74] Some disclosure certification practices are already in place for products, such as energy-efficient office equipment, paints, household cleaners and food products. Disclosure by energy providers would allow consumers to make informed choices regarding their energy supplies, particularly as retail access becomes more prevalent.

The PSC has approved an environmental disclosure plan for implementation in 1999. This plan will require retail electricity suppliers under the jurisdiction of the PSC to provide a standardized label containing the fuel mix and emission characteristics (for SO_2, NO_x and CO_2) for the electricity provided. Up to $3 million has been allocated under the System Benefits Charge for the implementation of this environmental disclosure mechanism.

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[73] Cases 94-E-0952, et al., *In the Matter of Competitive Opportunities Regarding Electric Service*, Opinion No. 96-12 (issued 20 May 1996).

[74] Environmental disclosure provides consumers with information on bills and in marketing materials that reveals the fuel mix and emissions characteristics of an electricity retailer's energy supply. The underlying premise is that providing ample and accurate information to consumers will help them make informed decisions, an essential component to effective operation of the competitive retail electricity market. The premise of green pricing is that there exists a significant customer segment willing to pay somewhat higher prices for "green-based" electricity based on environmental or other motives that are unrelated to the quality or other attributes of the delivered power. A customer elects to pay a premium, perhaps 5-10% of a normal bill, to buy "clean" power. In return, the utility uses the funds to offset the incremental difference between the renewable resource and the fossil fuel alternative.

As the electric utility industry evolves, distributed utility generation may also become an integral part of the energy system. Distributed generation represents a change from the central station electricity generation system to a system with small, integrated, on-site electricity generation equipment as a supplement to electricity provided by central station generation and distributed through the extensive electricity transmission and distribution infrastructure or as a stand-alone application meeting all the on-site electricity needs. Distributed generation can be used to manage or serve local distribution peaks to minimize or avoid transmission and distribution and the construction or expansion of larger central station generation facilities. However, there are still barriers, such as the need to develop consistent and appropriate interconnection standards, auxiliary power rates, and buy-back rates. As more customers choose to invest in small-scale renewable generation, utilities and regulators will need to consider different metering and interconnection requirements.[75]

[75] *Net Metering: New Opportunities for Home Power*, Renewable Energy Policy Project, University of Maryland (September 1996), No. 2, p.2.

SECTION 3.6

COAL RESOURCE ASSESSMENT

INTRODUCTION

Coal is one of the primary energy sources powering the nation's economy. The coal industry is the largest energy-producing industry in the nation, accounting for one-third of all U.S. energy production. It also represents one-quarter of all energy consumed nationally, equaling natural gas. More than one-half of the nation's electricity is generated by coal.

At the production level, coal is the least costly fossil fuel on a British thermal unit (Btu) basis: one-third as expensive as crude oil and one-half the cost of natural gas. Transportation costs from mine to final consumer result in a delivered price closer to these fuels, but still lower on average. The real cost of coal has declined steadily, due to productivity increases in extraction technology and the shift from eastern U.S. underground mining to less expensive western surface mining.

Coal transportation is a mainstay of the U.S. rail industry. Coal accounts for 40% of rail cargo tonnage and 21% of rail revenues. Similarly, in the shipping industry coal makes up 23% by volume of total water-borne cargo.

As a result of coal prices dropping by about 50% since the mid-1970s, coal use nationwide has increased sharply to a record use of 1,028 million short tons in 1997. The electric utility sector accounts for 90% of total consumption, while exports represent the second largest category of end-use. Coal is the only domestic energy resource that accounts for more exports than imports.

Coal use for electricity generation in the U.S. increased steadily between 1981 and 1997, from 1,203 billion to 1,789 billion kilowatt hours, a 48.7% rise. This level represented 50.6% of all electric generation in 1997, compared to 52.4% in 1981.

New York State relies on petroleum and natural gas more than the nation as a whole, with coal comprising 9% of total Statewide primary energy consumption. Coal accounts for 18.5% of electric generation in New

York, compared to over 50% in the U.S. as a whole. In fact, coal's use as an electric-generating fuel in New York has declined steadily since 1992, replaced by natural gas.

Stringent restrictions on sulfur dioxide (SO_2) emissions have resulted in some shifting of domestic coal production from higher-sulfur coal in the Appalachian region to lower-sulfur surface mines in the western part of the U.S. These western deposits generally have a lower Btu content, requiring that more coal be used to generate the same amount of electricity. At certain generating plants, use of higher-sulfur coal has increased, following the installation of SO_2 emission-control technologies. Restrictions on emissions of nitrogen oxides (NO_x) and particulates (ash and by-products) have led to other process and combustion improvements.

As coal is the most carbon-intensive fossil fuel, future regulatory efforts to address global warming could have a significant effect on coal use, both domestically and internationally. However, coal's lower cost compared to other fossil fuels might continue to foster its use, in a restructured electricity industry and developing countries.

MARKET FUNDAMENTALS

National Overview

The coal industry has experienced significant structural changes over the past several decades. Petroleum and natural gas displaced coal for both end-use and electric generation in the postwar period. In the 1960s and 1970s, however, coal made steady inroads into the electric-generation market, primarily due to oil and gas supply disruptions and attempts to address them through regulatory policies.

Production and Consumption

Overall coal production increased 32.1% between 1981 and 1997, setting a new record of 1,089 million short tons in 1997. Consumption rose 40.3% over the same time period. The difference between production and consumption shown in Figure 3-24 is accounted for by net exports and stock changes. Coal production has shifted from labor-intensive underground mines to less expensive surface mines over the past quarter century. The changing economics of the industry have favored mines in the western U.S.,

primarily at the expense of older, underground Appalachian mines.

The market for coal as an electricity-generating fuel has grown steadily over the past decade, as shown in Figure 3-25. Consumption in this sector has more than doubled since 1975. A sharp decline in the use of coal for coking in the steel industry, down 45.9% between 1981 and 1995,[76] has been offset by increased use in industrial processes and products.

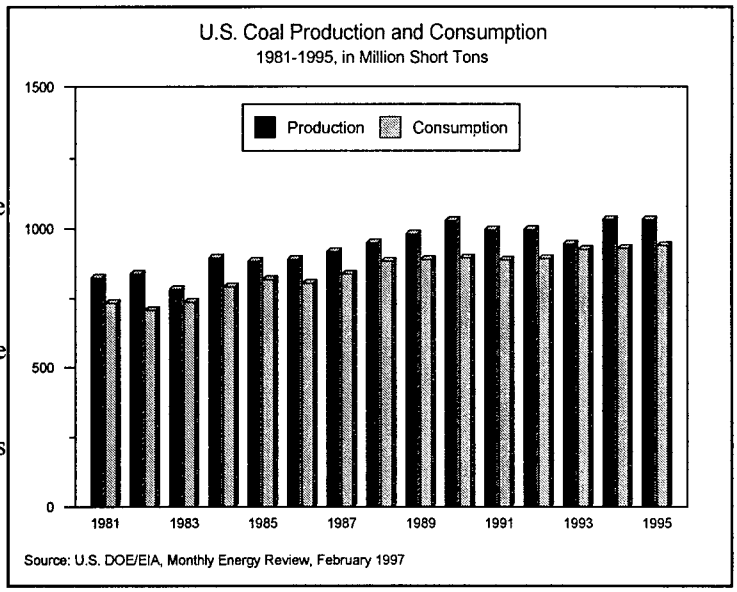

Figure 3-24

Resource Base

Coal is an abundant domestic energy resource, with a demonstrated reserve base (DRB)[77] exceeding 400 billion short tons, compared to current levels of production of slightly more than one billion short tons annually. The amount of coal that can actually be extracted from the DRB ranges from 40% at some underground mines, due to engineering constraints imposed to maintain structural integrity in underground extraction, to more than 90% at many surface mines. Approximately 265 billion short tons are estimated to be recoverable from the DRB.

The amount of coal that could be recovered from existing coal mines (recoverable reserves) in 1996 totaled 19.4 billion short tons. Recoverable reserves east of the Mississippi River contained 6.2 billion short tons, while states west of the Mississippi accounted for 13.2 billion short tons. While surface-minable reserves are nearly one and one-half times as large as the underground recoverable reserves, the sulfur levels of both reserves are fairly evenly split among high, medium, and low categories. Low-sulfur reserves account for

[76] U.S. DOE/EIA: *Coal Data: A Reference*, 2/95, and *Coal Industry Annual 1995*.

[77] A quantification of measured and indicated resources considered technically and commercially mineable.

37% of total U.S. reserves.[78]

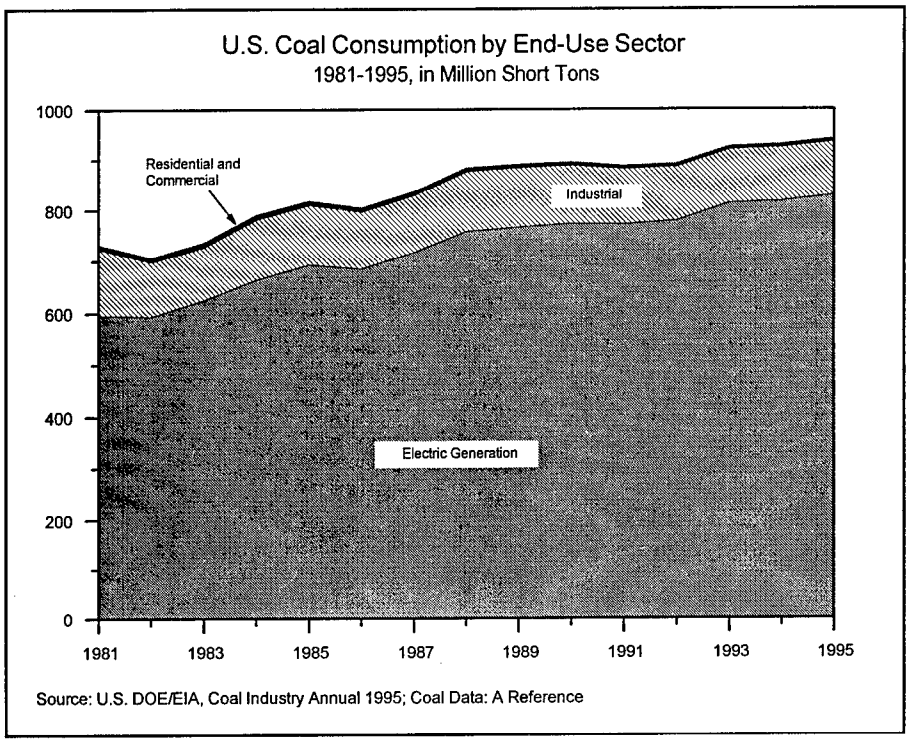

Figure 3-25

Price

The mine price of coal varies by location, mine type, heating content, and sulfur level. Underground-mined coal is more costly than more easily-removed surface-mined coal, and higher-Btu coal is more expensive than lower-Btu varieties. Low-sulfur coal commands a premium over competing grades.

The average nominal U.S. mine price of coal declined for the 14th straight year in 1996, to $18.50 per short ton. The price of coal from mines west of the Mississippi River was $10.40 per short ton, while eastern coal averaged $25.70 per short ton. The average prices of coal delivered to the electric utility and industrial sectors were $26.45 and $32.32 per short ton, respectively. Utilities in New York paid an average of $37.15 per short ton for coal during 1996.

The final delivered cost of coal to the consumer is heavily influenced by transportation cost. Coal is shipped predominantly by rail within the U.S., accounting for 57.7% of coal distribution in 1996. Rail shipments are configured mixed-freight trains made up of individual railcars (flat-bottom gondolas that are dumped or sloped hoppers that are emptied by opening the bottom) or in unit trains, which are made up of

[78] U.S. DOE defines sulfur levels as follows: low = <.61 pounds per million Btu (mmBtu), medium = .61-1.67 pounds per mmBtu, high = >1.67 pounds per mmBtu.

dedicated equipment going directly from a production facility to an end-user. Unit trains account for more than one-half of U.S. coal shipments. Coal is also transported by barges, ships, and trucks, where economical. Some electricity-generating facilities are located near coal mines and receive their coal directly by conveyor or coal-slurry pipeline.

New York State Overview

Consumption

While total primary energy consumption in New York State increased by 13% between 1981 and 1995, coal use declined by 4% over that period. Over the same period, petroleum use declined by 14%, nuclear-powered electricity increased by 51%, and natural gas sales rose 71%.

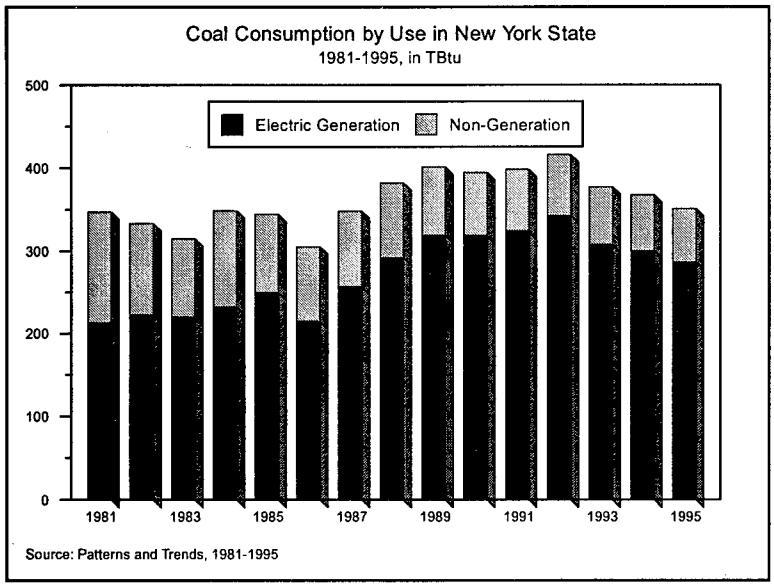

Figure 3-26

Coal consumption has fluctuated over the past 15 years in New York, driven by economic conditions and interfuel competition with oil, natural gas, nuclear, and hydropower, as shown in Figure 3-26. New York's total coal use peaked in 1992 at nearly 16.3 million short tons, representing about 1.8% of total U.S. coal use. Coal has expanded as a burner fuel for electric generation, while declining in importance for industrial and other uses. In 1981, 61.2% of all coal use was attributed to electric generation. By 1995, electric generation accounted for 81.5% of coal use, a slight decline from the peak of 82.2% in 1992.

Over time, coal's use as an electric-generation fuel has remained relatively stable as shown in Figure 3-27. Coal accounted for 18.6% of the electricity generated in the State in 1995, compared to 16.6% in 1981.

In 1995, the industrial sector accounted for 17.6% of total coal consumption in the State, while residential and commercial use combined was about 1.6%.

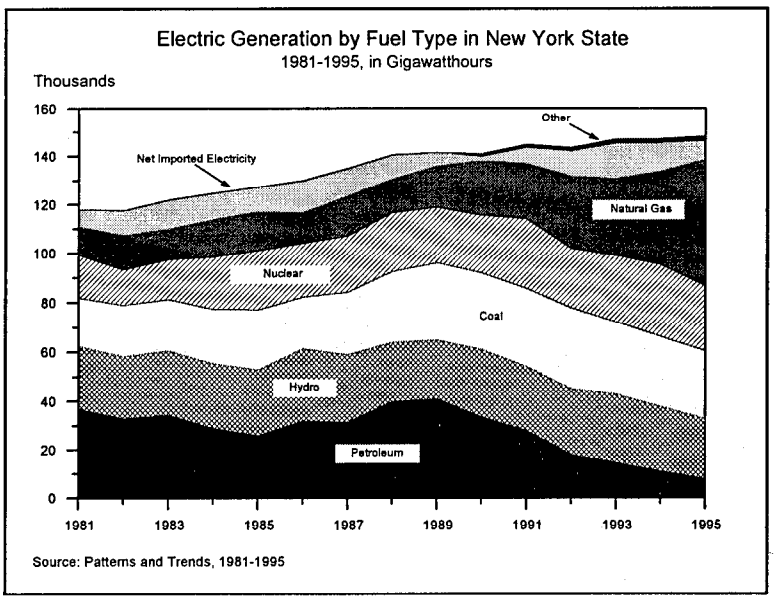

Figure 3-27

In 1981, industrial coal use was more than double that of today, as shown in Figure 3-28.

Sources of Coal

Coal shipments into New York originate almost entirely from eastern or midwestern mines, as listed in Table 3-14, with no significant deliveries to the State of western coal. West Virginia accounted for 51.4% of New York's coal supply in 1995. Almost 90% of New York's coal deliveries arrive by train, compared to the U.S. average of about 60%.

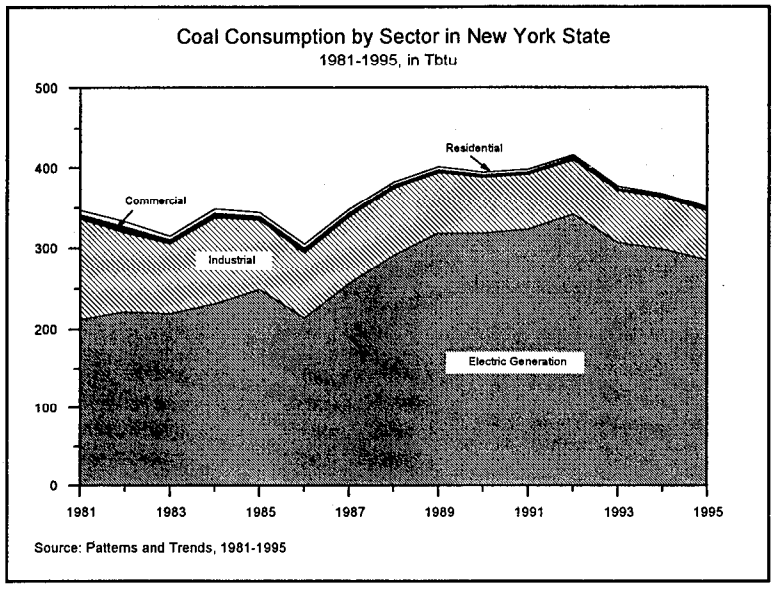

Figure 3-28

Sources and Prices of New York Coal
1995 Nominal Dollars

Source	Short Tons	Mine Price/Short Ton
West Virginia (Northern)	4,040,000	$24.91
West Virginia (Southern)	1,466,000	$28.07
Pennsylvania (Bituminous)	3,675,000	$25.77
Pennsylvania (Anthracite)	140,000	$39.78
Kentucky	996,000	$24.79
Virginia	362,000	$28.47
Ohio	25,000	$25.97
Weighted Average Price:		$25.94
Weighted Average U.S. Price:		$18.83

Source: U.S. DOE/EIA, Coal Industry Annual 1995

Table 3-14

Prices

Coal prices in New York are comparable to those in the nation as a whole for the commercial, industrial, and residential sectors. In the electricity-generating sector, however, New York's delivered cost is 36.5% higher than the national average, as seen in Figure 3-29 and discussed previously. This price spread can be attributed to differences in extraction, transportation, and labor costs for New York utilities' coal supplies. Additionally, the physical configurations of installed coal-burning units determine the qualities of coal that can be used in them, absent significant capital investment. New York's plants were designed for the types of coal found in eastern mines, therefore,

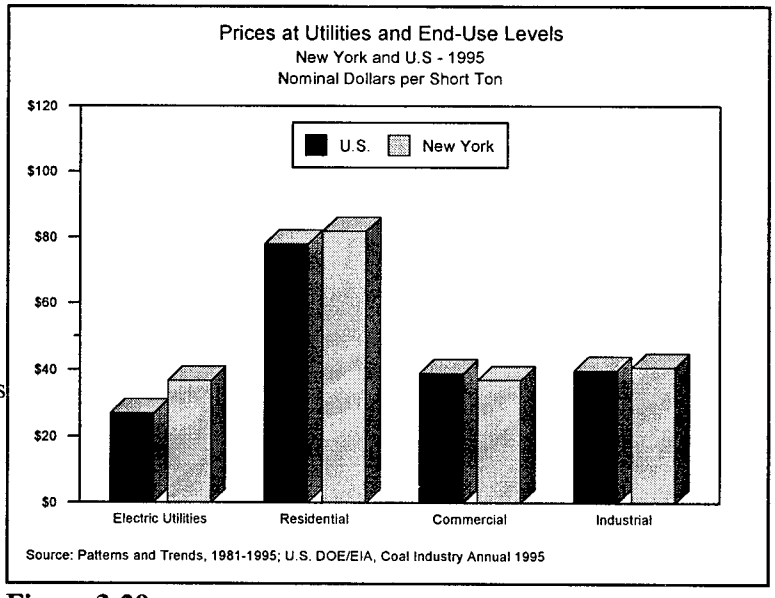

Figure 3-29

these plants are generally constrained to using these sources of supply.

The average sulfur content of coal delivered to New York utilities in 1995 was 1.79% by weight, compared to the U.S. average of 1.08%. Ash content was lower, at 7.9% by weight, compared to 9.23% at the national level. New York utility coal Btu content is much higher than the U.S. as a whole, 13,051 Btu per pound on average, compared to 10,248 Btu per pound nationally. The higher sulfur and Btu content coal used in New York is a result of the State's reliance on eastern coal.

Coal-Fired Generating Units

New York has 36 coal-fired electric-generation units, located at the sites shown in Figure 3-30. Of these, 32 are operated by investor-owned utilities and four facilities are owned and operated by independent power producers. New York State Electric and Gas Corporation (NYSEG) and Pennsylvania Electric Company

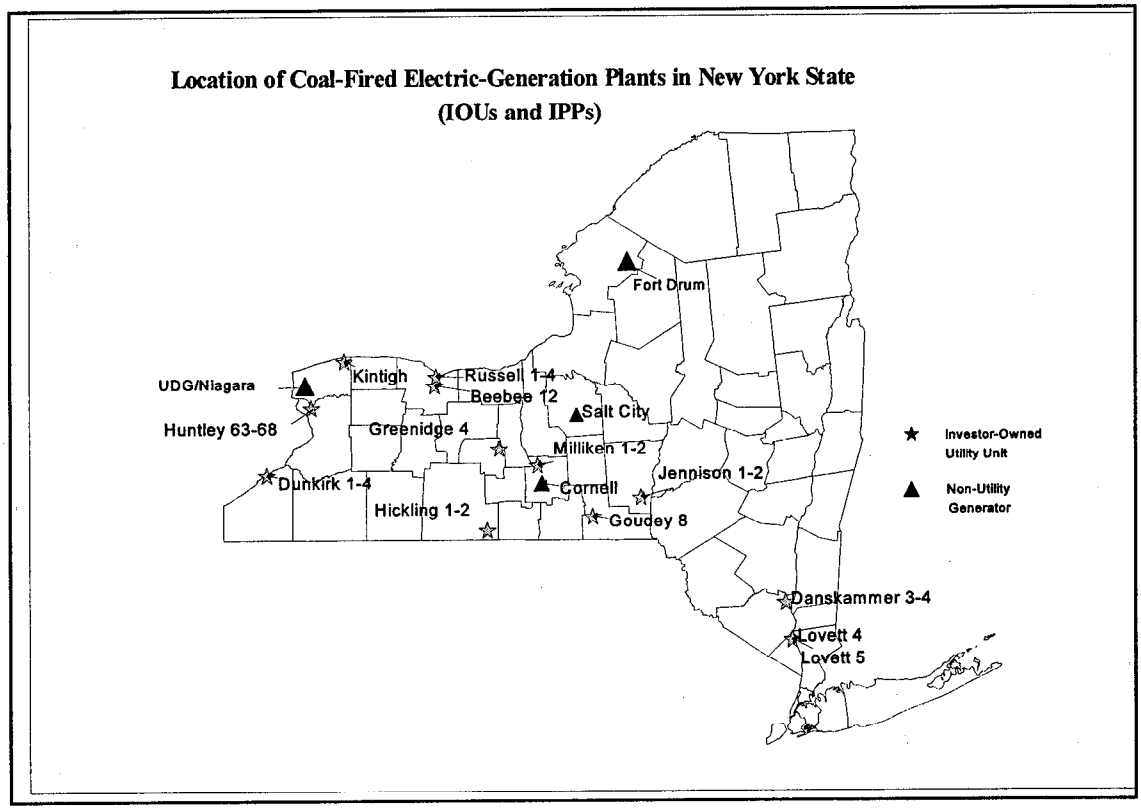

Figure 3-30

co-own Homer City Units 1, 2, and 3 in Center, Pennsylvania, with NYSEG entitled to up to 50% of the output. In 1995, coal represented almost 60% of NYSEG's generation-capacity mix; making it New York's largest coal-burning utility.

DEVELOPMENTS AND TRENDS

The U.S. coal industry continues to evolve to meet marketplace demands for a low-cost, dependable fuel that can meet increasingly stringent environmental requirements that apply to energy sources during extraction, transportation, combustion, and waste disposal.

Environmental Factors

Coal mining necessarily entails impacts on land and water resources. Soil subsidence and erosion, long-standing problems with underground and surface mining, were addressed by the Surface Mining Control and Reclamation Act of 1977 and the Abandoned Mine Reclamation Act of 1990. Water resources are affected greatly by mining and coal preparation. The Federal Water Pollution Control Act of 1972 and the Clean Water Act of 1977 both contain provisions to limit water pollution and run-off from coal extraction and processing. Coal wastes from mining, preparation, and combustion are regulated by the Resource Conservation and Recovery Act of 1976, as amended. Much of this waste is used as fill for mine land-reclamation projects.

Coal combustion presents air quality and other environmental concerns due to the release of SO_2, NO_x, particulates, and carbon dioxide (CO_2) into the atmosphere. SO_2, NO_x, and particulate emissions are associated with health problems and acidification of water resources (acid rain), while CO_2 emissions are believed to contribute to global warming.

In-State emissions of SO_2 have been reduced significantly as a result of New York's State Acid Deposition and Control Act (SADCA) and Title IV of the federal Clean Air Act (CAA) Amendments of 1990. NO_x emissions, which combine with volatile organic compounds (VOCs) in the presence of sunlight to form ozone (or smog), are being addressed by Title I of the CAA amendments. Issues associated with utility sector air emissions are discussed in more detail in the "Energy and the Environment" issue report in the SEP.

New Technologies

Industry and government are working together to address coal-related environmental issues through development and use of new technology, instead of relying on regulation alone. Improvements are aimed at increasing efficiency, to make coal as cost-competitive as possible in the evolving, deregulated electric-generation markets. Some of these technologies include:

- Conversion technologies - Heat and pressure, often combined with steam, are used to change coal into a gas. Three coal-gasification plants that use this process are operating in the U.S. The gas produced also holds potential for use in fuel cells. Underground gasification tests have also been performed.

- Pre-combustion improvements - Special techniques to clean coal more thoroughly, removing up to 90% of the sulfur and ash, and drying treatments to reduce moisture levels by up to 30% are being demonstrated. Solvents can be used to dissolve high-sulfur or high-ash grades and reduce levels of these impurities. In the future, microwave, microbial agents, and enzymes may be used to clean coal more completely. Very fine-ground coal can even be mixed with oil and used as a substitute for fuel oil in some oil-burning facilities.

- Combustion innovations - The best-known technology for burning high-sulfur, low-quality coals, fluidized-bed combustion, has been used for 70 years. Crushed coal is burned on a "bed" of limestone or dolomite that absorbs the SO_2 being produced by the combustion process. Pressurized systems that will operate at higher temperatures, and thus higher efficiencies, are being developed. Clean coal technology reduce the amounts of both SO_2 and NO_x that are produced during the combustion process.

NYSERDA has participated in several projects with electric utilities and industrial burner and technology manufacturers in New York to introduce new techniques to reduce emissions at coal-fired burners. Currently, two projects are under way to demonstrate the potential for advanced natural gas and micronized coal-reburn systems to reduce NO_x emissions. Another project is testing two energy-efficient flue-gas desulfurization processes using products manufactured in New York at a central New York electricity-generating plant. A fourth project is examining the adaptation of a commercially-proven filtration technology to remove fly-ash particulate and control SO_2 nd NO_x emissions at a coal-fired utility boiler.

COAL OUTLOOK

The coal industry plans to continue developing innovative processes to provide a low-cost, high-energy

product that can continue to compete, while meeting increasingly stringent environmental requirements. Coal could be a strong competitor in the soon-to-be-deregulated energy marketplace.

The U.S. Department of Energy (U.S. DOE) projects national coal demand will decrease by 0.2% in 1997 and return to a growth rate of 1.6% in 1998, led by increased coal use for electricity generation. Coal production and exports are expected to continue growing strongly in 1997 and 1998. Annual production is anticipated to be around 1,072 million short tons by 1998, a 3.8% increase over 1995 levels. Exports are projected to be up 3.3% from 1995 levels, at 91.9 million short tons.

Anthracite coal use in New York State is expected to decrease even further from its modest level of 105,000 short tons per year (in the commercial and residential sectors) from 1996 to 2015. This is primarily due to the conversion of public schools in the New York City and Buffalo regions to dual-fuel (oil and natural gas) boiler capability under a program administered by the New York Power Authority with U.S. DOE Petroleum Overcharge Recovery funds and New York State Clean Air/Clean Water Bond Act proceeds. This program is intended to modernize outdated heating systems, reduce air emissions and waste, and implement high-efficiency lighting and domestic hot water improvements. The New York City Board of Education purchased approximately 94,000 tons of anthracite coal in fiscal year 1996 for space heating and hot water, accounting for roughly 90% of total New York State anthracite coal use in the commercial and residential sectors. This entire amount is likely to be displaced by other fuels over the life of the program.

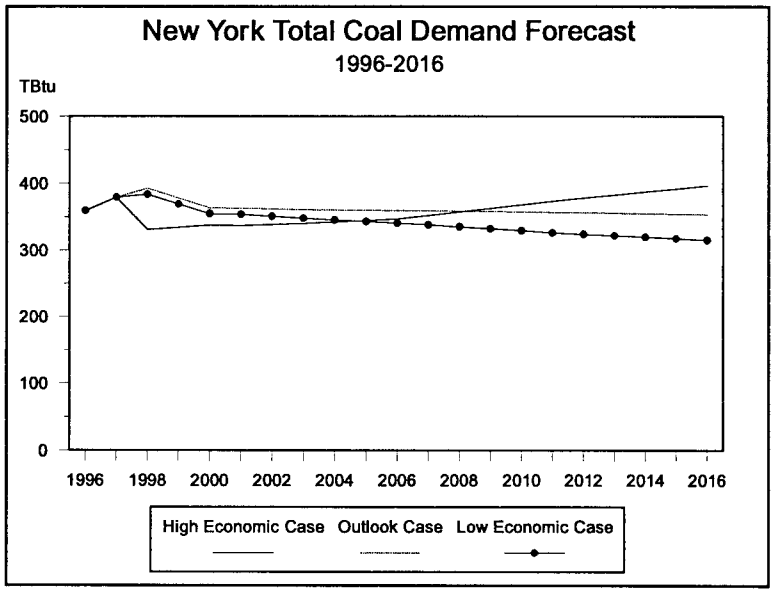

Figure 3-31

FORECAST SUMMARY

The SEP outlook case forecast projects coal demand will decrease slightly over the 1996-2016 forecast period at an annual average rate of 0.1%, as shown in Figure 3-31, as the electric-generation sector grows by 0.1% and

the commercial sector declines by 0.9% annually.

The upper and lower sensitivity cases project an average annual 0.5% increase and 0.7% decrease in total demand, respectively.

Prices in the outlook case show an average decline over the forecast period of 1.3% per year in the electric generation sector. The high economic sensitivity case reflects a higher price trend, declining by 1.2% annually, on average, while a softer economy will result in a lower generation coal price, falling an average of 1.4% annually through the forecast period, as shown in Figure 3-32. Energy demand and price forecasts, including those for coal, are included in the Coal Resource Assessment Appendix.

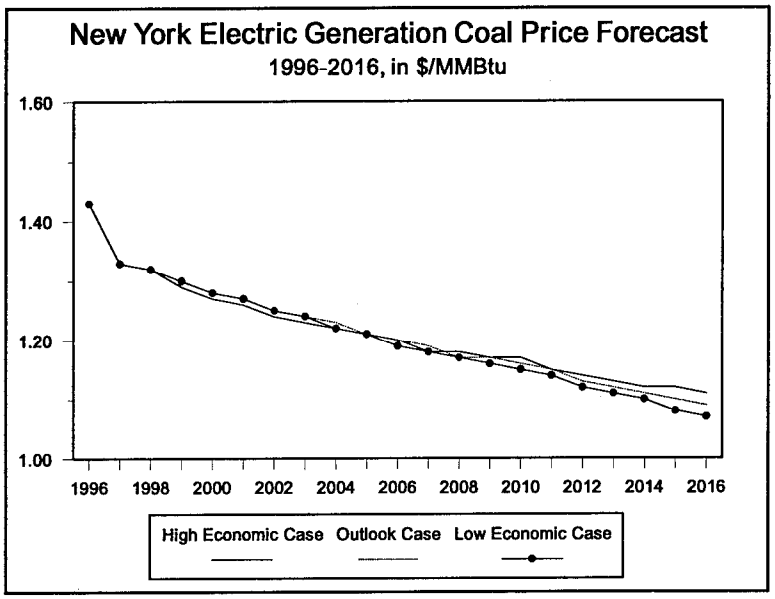

Figure 3-32

Section 4

COMPLIANCE WITH THE STATE ENVIRONMENTAL QUALITY REVIEW ACT

SECTION 4.0

COMPLIANCE WITH THE STATE ENVIRONMENTAL QUALITY REVIEW ACT

Notice of a positive declaration under the State Environmental Quality Review Act (SEQRA), indicating that implementation of the New York State Energy Plan (SEP) may have a significant effect on the environment, was published in the Environmental Notice Bulletin on March 19, 1997.

The broad energy policy objectives and strategies set forth in the SEP do not commit any agency to a definite course of future decisions. Accordingly, each action of an agency which implements the SEP is independently subject to applicable environmental review requirements, such as SEQRA. Additionally, in determining whether to establish a competitive market for electric energy in New York State, the Department of Public Service (DPS) undertook a full environmental review under SEQRA. That environmental review is set forth in the *Final Generic Impact Statement in Public Service Commission Case No. 94-E-0952, In the Matter of Competitive Opportunities Regarding Electric Service*, May 3, 1996, and is incorporated by reference herein as permitted by 6 NYCRR §617.9(b)(7). The applicable findings of the DPS Final Environmental Impact Statement (FEIS) are summarized in the SEP (Section 2.3, Effects of Competition on New York).

The Draft New York State Energy Plan and Draft Environmental Impact Statement was issued for public comment in May 1998. Comments were received in written and oral form at five public comment hearings held in June and July 1998. The Energy Planning Board has carefully reviewed and weighed the comments received and, where appropriate, has revised the SEP to reflect those comments and observations.

The policy objectives and strategies set forth in the SEP promote enhanced environmental quality. Encouraging improvements in energy efficiency, greater use of clean fuels, and investments in renewable energy resources will reduce air emissions that result from use of fossil fuels to meet New York's energy needs. Strategies to improve mobility through infrastructure improvements and intelligent transportation systems enhance air quality by eliminating traffic congestion and associated vehicle emissions.

Besides promoting enhanced environmental quality, the SEP advances economic growth and social well-being. For example, encouraging energy efficiency and competition in the delivery of energy products and services will result in lower energy bills, increased business productivity, and additional economic activity

and employment in the State. Improved mobility provides both fuel and energy bill savings and increased productivity for businesses, while increasing time available for New Yorker's to pursue other interests. Furthermore, the policy objectives and strategies set forth in the SEP are designed to ensure safe and reliable sources of energy services and products at competitive market prices, while promoting economic development and a clean environment.

The potential adverse air quality impacts from competition in electric generating markets (resulting from increased use of lower-cost coal-fired generating units) are addressed through the imposition of emission controls on such units and other mitigation means. (See PSC Opinion No. 96-12 in Cases 94-E-0952, *et al. In the Matter of Competitive Opportunities Regarding Electric Service,* May 20, 1996, at pp. 76-81.)

The SEP considers the environmental impacts of its energy policy objectives and strategies, including social, economic, and other essential considerations. The policy objectives and strategies set forth do not appear to have adverse environmental impacts (other than the electric competition issue already addressed by DPS). The SEP, in and of itself, complies with the specific requirements for an Environmental Impact Statement (EIS) as specified in §8-0109 of SEQRA (ECL, §8-0109), as shown below:

I. Description of Proposed Action and Environmental Setting

SEP Section Number	SEP Section/ Subsection Heading	SEP Page(s)
1.1	Executive Summary	1-1 to 1-10
1.2	Energy Policy and Long-Range Planning Objectives and Strategies	1-11 to 1-18
2.1	Factors that Affect Energy Prices - Introduction	2-1
2.2	Energy and Economic Development - Introduction	2-18
2.3	Effects of Competition on New York - Introduction - Environmental Impacts of Restructuring	2-31 2-37 to 2-39
2.4	Energy and the Environment	2-54 to 2-72

SEP Section Number	SEP Section/ Subsection Heading	SEP Page(s)
2.5	Energy and Transportation	
	- Introduction	2-73 to 2-74
	- Mobility Objectives	2-75 to 2-76
	- Summary	2-93 to 2-94
2.6	Role of Government	
	- Introduction	2-95 to 2-96
	- Conclusion	2-100 to 2-101
3.0	Forecast Summary	3-1 to 3-3
3.1	Electricity Resource Assessment	
	- Introduction	3-4 to 3-5
3.2	Natural Gas Resource Assessment	
	- Introduction	3-25
3.3	Petroleum Resource Assessment	
	- Introduction	3-34
3.4	Energy Efficiency Resource Assessment	
	- Introduction	3-50 to 3-51
3.5	Renewable Energy Resource Assessment	
	- Introduction	3-65
3.6	Coal Resource Assessment	
	- Introduction	3-78 to 3-79

II. Environmental Impact, Including Short-Term and Long-Term Effects

SEP Section Number	SEP Section/ Subsection Heading	SEP Page(s)
2.3	Effects of Competition on New York	
	- Electricity Developments and Trends - State	2-43
	- Environmental Impacts of Restructuring	2-37 to 2-39
2.4	Energy and the Environment	
	- Introduction	2-54
	- Background: Impacts of Current Environmental Regulations	2-54 to 2-59
	- Non-Air Impacts Associated with Energy Production and Distribution	2-58 to 2-59
	- Planned Actions to Improve Air Quality	2-59 to 2-65

SEP Section Number	SEP Section/ Subsection Heading	SEP Page(s)
	- NO_x Reduction	2-59 to 2-61
	- VOC Reduction	2-61 to 2-62
	- Enhanced Vehicle Inspection and Maintenance Program	2-62 to 2-63
	- Reformulated Gasoline	2-63
	- New Motor Vehicle Emission Control Program	2-63 to 2-64
	- Other VOC Reductions	2-64
	- 1996 Clean Water/Clean Air Bond Act	2-64 to 2-65
	- Actions Indicated by Long-Range Ozone Transport Research	2-65 to 2-67
	- Potential Environmental Outcomes of Electricity Restructuring	2-68 to 2-70
	- Carbon Dioxide/Global Warming	2-70 to 2-72
3.4	Energy Efficiency Resource Assessment	3-50 to 3-64
3.5	Renewable Energy Resource Assessment	3-65 to 3-77
3.6	Coal Resource Assessment	3-78 to 3-89

III. Adverse Environmental Impacts

SEP Section Number	SEP Section/ Subsection Heading	SEP Page(s)
2.3	Effects of Competition on New York	
	- Environmental Impacts of Restructuring	2-37 to 2-39
2.4	Energy and the Environment	
	- Acid Deposition	2-57 to 2-58
	- Non-Air Impacts Associated with Energy Production and Distribution	2-58 to 2-59
	- Potential Environmental Outcomes of Electricity Restructuring	2-68 to 2-70
	- Actions Indicated by Long-Range Ozone Transport Research	2-65 to 2-67
	- Carbon Dioxide/Global Warming	2-70 to 2-72
	- NO_x Reduction	2-59 to 2-61
	- VOC Reduction	2-61 to 2-62
	- Enhanced Vehicle Inspection and Maintenance Program	2-62 to 2-63
	- Reformulated Gasoline	2-63
3.6	Coal Resource Assessment	
	- Environmental Factors	3-86

IV. Alternatives to the Proposed Action

SEP Section Number	SEP Section/ Subsection Heading	SEP Page(s)
2.3	Effects of Competition on New York	
	- Major Forces for Change	2-32 to 2-34
	- Competition Plans and Progress	2-40 to 2-51
	-- Natural Gas Developments and Trends	2-40 to 2-42
	-- Electricity Developments and Trends	2-42 to 2-49
2.6	Role of Government	
	- Introduction	2-95 to 2-96
	- Energy Commodities in a Competitive Market	2-96 to 2-97

V. Irreversible and Irretrievable Commitments of Resources

SEP Section Number	SEP Section/ Subsection Heading	SEP Page(s)
3.0	Forecast Summary	3-1 to 3-3
3.2	Natural Gas Resource Assessment	
	- Future Outlook	3-28 to 3-33
3.3	Petroleum Resource Assessment	
	- Future Outlook	3-42 to 3-49
	- Projected Sources of New York's Supply	3-44 to 3-46
3.4	Energy Efficiency Resource Assessment	
	- Current State of Efficiency	3-51 to 3-63
3.6	Coal Resource Assessment	
	- Market Fundamentals	3-79 to 3-86
	- Environmental Factors	3-86

VI. Mitigation Measures Proposed to Minimize Environmental Impacts

SEP Section Number	SEP Section/ Subsection Heading	SEP Page(s)
2.2	Energy and Economic Development	
	- Emission Reduction Credits	2-25 to 2-26
2.3	Effects of Competition on New York	
	- Environmental Impacts of Restructuring	2-37 to 2-39

SEP Section Number	SEP Section/ Subsection Heading	SEP Page(s)
2.4	Energy and the Environment	
	- Planned Actions to Improve Air Quality	2-59 to 2-65
	- NO_x Reduction	2-59 to 2-61
	- VOC Reduction	2-61 to 2-62
	- Enhanced Vehicle Inspection and Maintenance Program	2-62 to 2-63
	- Reformulated Gasoline	2-63
	- New Motor Vehicle Emission Control Program	2-63 to 2-64
	- Other VOC Reductions	2-64
	- 1996 Clean Water/Clean Air Bond Act	2-64 to 2-65
	- Issues Involving Further Action	2-65 to 2-72
	- Action Indicated by Long-Range Ozone Transport Research	2-65 to 2-67
	- Revision of NAAQS for Ozone and Particulates	2-67 to 2-68
	- Potential Environmental Outcomes of Electricity Restructuring	2-68 to 2-70
	- Carbon Dioxide/Global Warming	2-70 to 2-72
3.4	Energy Efficiency Resource Assessment	
	- Future Outlook	3-63 to 3-64
3.5	Renewable Energy Resource Assessment	
	- Future Outlook and Emerging Trends	3-76 to 3-77
3.6	Coal ResourceAssessment	
	- New Technologies	3-87
	- Coal Outlook	3-87 to 3-88

VII. Growth Inducing Aspects

SEP Section Number	SEP Section/ Subsection Heading	SEP Page(s)
1.2	Energy Policy and Long-Range Planning	
	- Objectives and Strategies	1-11 to 1-18
2.2	Energy and Economic Development	
	- Introduction	2-18
	- Role of Energy Prices in Location and Expansion Decisions	2-18 to 2-19
	- Natural Gas and Economic Development	2-19 to 2-20
	- Low-Cost Energy Programs to Promote Economic Development	2-21 to 2-24
	- Economic Development Potential of Reducing Energy Costs	2-26 to 2-28
	- Employment Impacts of Energy Efficiency Improvements	2-28 to 2-30

VIII. Effects on Use and Conservation of Resources

SEP Section Number	SEP Section/ Subsection Heading	SEP Page(s)
1.2	Energy Policy and Long-Range Planning Objectives and Strategies	1-11 to 1-18
2.2	Energy and Economic Development - Employment Impacts of Energy Efficiency Improvements	2-28 to 2-30
2.4	Energy and the Environment - Potential Environmental Outcomes of Electricity Restructuring	2-68 to 2-70
	- Carbon Dioxide/Global Warming	2-70 to 2-72
2.6	Role of Government - Introduction	2-95 to 2-96
	- Conclusion	2-100 to 2-101
2.5	Energy and Transportation - Encouraging Energy Efficient Movement of People and Goods	2-76 to 2-79
3.4	Energy Efficiency Resource Assesment	3-50 to 3-64
3.5	Renewable Energy Resource Assessment	3-65 to 3-77

IX. Effect on Waste Management

Not applicable.

X. Consistency with Special Groundwater Protection Programs

Not applicable.

Section 5

RESPONSE TO COMMENTS

SECTION 5.1

RESPONSE TO COMMENTS

INTRODUCTION

This section summarizes and responds to the comments received on the Draft SEP by the Energy Planning Board. It explains how the SEP findings and recommendations were changed or modified because of the information provided by interested parties in the review of the Draft SEP.

The Energy Planning Board released the Draft SEP for public review and comment on May 12, 1998. Staff from the Energy Planning Board agencies held a public briefing on the analyzes underlying the development of the Draft SEP in Albany on June 10, 1998. Five hearings were held in Albany, Buffalo, Mineola, New York City, and Syracuse during June and July 1998 to receive public comments on the SEP. Written comments were received through July 27, 1998. A total of 340 comments were received from 46 individuals and organizations on the Draft SEP.

The members of the Energy Planning Board appreciate the time and effort of the individuals and organizations who appeared at the public comment hearings or submitted comments on the Draft SEP. The Energy Planning Board has carefully reviewed and weighed the comments received on the Draft SEP and, where appropriate, revised the SEP to reflect those comments and observations. Persons and organizations that commented on the Draft SEP are listed below.

STATE ENERGY PLAN COMMENTS

Name	Organization	Comments
Alan Adamson	New York Power Pool (NYPP)	Written
Deborah A. Baxter		Written
Jeffrey Beller		Oral (all hearings)

Name	Organization	Comments
Joan Bozer		Oral (Buffalo)
Aaron Breidenbaugh	Independent Power Producers of New York (IPPNY)	Written
Barbara S. Brenner	Multiple Intervenors (MI)	Written
Ruben Brown	National Association of Energy Service Companies (NAESCO)	Oral (Albany) and Written
Ruben Brown	Joint Supporters (Jt. Supporters)	Oral (Albany) and Written
Ruben Brown	ESCO-Net	Oral (Albany)
Sue Montgomery-Corey	New York State Community Action Association/New York State Weatherization Directors' Association (NYSCA/NYSWDA)	Written
John M. Daniels		Written
Maureen Dolan		Written
Elizabeth Donati	New York Energy Efficiency Council (NYEEC)	Oral (Albany) and Written
Mike Doyle	New York State Petroleum Council (NYSPC)	Written
Ken Dufty	Rensselaer County Environmental Management Council (RCEMC)	Written
Dave Fountaine	Village of Hamburg, Village Administrator	Oral (Buffalo)
James T. Gladziszewski	Onondaga County Energy Group (OCEG)	Written
Nathanael Greene	Natural Resources Defense Council (NRDC)	Written

Name	Organization	Comments
Ashok Gupta	Natural Resources Defense Council (NRDC)	Oral (New York City)
Joseph Hipius	Niagara Mohawk Power Corporation (NMPC)	Oral (Syracuse) and Written
Bill Holmberg/ Jeffrey Beller	Global Biorefinaries, Inc.	Written
Andrew L. Jacob	Consolidated Edison	Written
William Jaynes	Cross Lakes Center River Association	Oral (Syracuse)
Richard M. Johnson	Chautaugua County Department of Public Works	Written
Aaron Lercher	Western Sustainable Energy Association	Oral (Buffalo)
Ken Pakorski	Village of Sloan, Mayor	Oral (Buffalo)
Emilio Petroccione	Empire State Petroleum Association, Inc. (ESPA)	Written
Arthur W. Quade	Somerset Energy Services	Oral (New York City)
Betty Quick	Sierra Club (Atlantic Chapter)	Oral (Mineola)
Gordian Raacke	Citizens' Advisory Panel (CAP)	Written
John Schnebly	Decotex 2000	Oral (Albany) and Written
Howard Shapiro	The Energy Association of New York State (EANYS)	Oral (Albany) and Written
Walter Simpson	Sierra Club (Niagara Group)	Oral (Buffalo) and Written
Donald Straetz	New York Gas Group (NYGAS)	Oral (New York City) and Written
Paul Tonko	New York State Assembly, 105th District	Written

Name	Organization	Comments
Cory Traub	Environmental Advocates	Written
David Vandor	Vandor + Vandor	Written
Steven M. Weber/ Winifred Armstrong	Regional Plan Association (RPA)	Written
Venlue Williams	Venlue's Impact Empowerment Services	Oral (Albany)
David Wooley	Pace Energy Project	Oral (Albany)
James W. Wright	New York State Senate, 46th District	Written

COMMENT SUMMARY AND RESPONSE

1.2 ENERGY POLICY AND LONG-RANGE PLANNING OBJECTIVES AND STRATEGIES

Comment:

The Energy Association of New York State (EANYS) suggests that the State Energy Plan (SEP) clearly state that New York is committed to a leaner, less invasive role in energy markets and that this is the last SEP. EANYS supports the State's, and particularly, NYSERDA's role in collecting and reporting of objective data that is useful to energy market participants that would not otherwise be available, except through the planning process.

Response:

The SEP's Energy Policy and Long-Range Planning Objectives and Strategies and Role of Government Issue Report clearly state that New York is committed to less regulation and more reliance on competitive markets to meet the State's energy needs. The energy planning legislation sunsets on January 1, 2003; therefore, an updated SEP will be released by 2002. One of NYSERDA's roles is to collect, analyze, and report energy data regularly. Some of this data is filed with the State Energy Planning Board (EPB or

Board) under the New York Energy Law, and to the extent that this information is required by statute, NYSERDA and the other member agencies of the Board will continue to use this data to analyze New York's energy situation.

Comment:

EANYS suggests that the SEP is vague regarding the future role of government as the energy industry is restructured. EANYS argues that attempting to manage competition can only serve to deny the full benefits of competition to the State's consumers and to the economy as a whole.

Response:

The SEP addresses the State's intention "to make sure that the transition to greater choice is orderly and that the benefits of competition are available to all customers, regardless of their size or economic influence" rather than government managing competition or managing the transition to competition. The New York State Public Service Commission (PSC) has various activities underway to ensure that competition unfolds smoothly and that utility divestiture, energy service company aggregation, new merchant plant generation, and related activities occur without undue government interference.

Specifically, the PSC established public benefit programs funded by a system benefits charge to address, among other things, the energy needs of low-income and smaller customers who lack market influence and may not realize the benefits of competition quickly. State government also recognizes its responsibility to "protect consumer and environmental interests, guard against discriminatory or predatory behavior, and arbitrary service shut-off," as discussed in the Role of Government Issue Report.

Comment:

Multiple Intervenors (MI) suggest that the SEP require investor-owned utilities to mitigate stranded costs to the maximum extent possible, in order to lower energy prices, as a strategy to promote competition. MI also suggests that the SEP be modified to reflect the more limited scope of the low-income programs that will be funded by the system benefits charge (SBC).

Response:

The PSC is working with investor-owned utilities in their respective restructuring proceedings to mitigate stranded costs. The amount of potential stranded costs will be determined and mitigated through the competitive auction of investor-owned utility electricity generating assets. The PSC is working with New York's investor-owned utilities to reduce "potentially" stranded costs by imposing price cap and performance regulation that will reduce these costs prior to auctioning. The SEP endorses the policy that stranded costs need to be mitigated to the extent possible. The Energy Policy Strategies and Long-Range Planning Objectives and Strategies section is revised to state this policy more clearly.

The PSC has approved SBC-funded public benefit programs, including low-income pilot components. The SEP's Energy Efficiency Resource Assessment acknowledges the reduced amount of funding for energy efficiency services, including low-income programs, and stresses that pursuing market-based approaches to delivering energy efficiency services will leverage private sector capital and help make these services available to customers lacking market influence.

Comment:

The Rensselaer County Environmental Management Council (RCEMC) suggests that the SEP should better define policy and planning priorities. RCEMC stated that New York's energy strategies and policies should emphasize conservation, efficiency, demand-side management, public transportation improvements, and incentive-based programs to encourage business and industry to become more competitive. RCEMC suggests the SEP espouse policies that:

- Encourage and invest in public outreach and education programs designed to inspire energy users to reduce, conserve, and maximize the efficiency of their end-use habits;
- Offer incentives to businesses and homeowners to implement and adopt energy conservation and efficiency programs that will reduce costs, improve the environment, and help New York businesses become more competitive;
- Strive to reduce the tax on utility bills and encourage measures to increase competition among energy providers;
- Continue to ensure that the construction of new power plants is encouraged only when there is a determined need for new power by the New York Power Pool (NYPP) and the individual utilities; and

- Implement and adopt measures to reduce air pollution and congestion in the transportation sector by investing in incentives to encourage ridesharing, use of mass transit, park-and-ride facilities, telecommuting, and flexible pricing to discourage single-occupant vehicles.

Response:

Many of the proposed modifications suggested by RCEMC are restatements of the energy policies and strategies identified in the SEP. The SEP supports the general thrust of the policy proposals set forth by RCEMC, particularly with regard to SBC-funded programs that will assist New Yorkers to improve the efficiency of energy usage during the transition to competition. In addition, the New York State Department of Transportation's plan, *The Next Generation: Transportation Choices for the 21st Century*, supports ridesharing, use of mass transit, park-and-ride facilities, telecommuting, and flexible pricing to discourage single-occupant vehicles as means to reduce air pollution and congestion in transportation. Moreover, the SEP is explicit in outlining how future procurement and construction of new generating facilities will be determined.

Comment:

The Niagara Mohawk Power Corporation (NMPC) refers to page 15 of the Draft SEP, stating, "The seventh bullet highlights the role of the New York Power Authority (NYPA), and includes reference to providing low-cost power to municipalities. This is appropriate to the extent that NYPA is fulfilling its legal mandate to direct a portion of its hydroelectric production to municipal electric systems. However, this could also be interpreted to mean that NYPA should use its tax-exempt financing abilities to construct new generation in competition with other non-tax-exempt market participants seeking to serve municipal loads. This would clash with the premise of the section, as it undermines rather than promotes competition. The statement should be clarified."

Response:

The discussion about NYPA conveys how NYPA will continue to contribute to the State's restructuring efforts and the SEP language does not lend itself to the above interpretation.

ISSUE REPORTS

2.1 FACTORS THAT AFFECT ENERGY PRICES

Comment:

MI stated, while properly reflecting the importance of lower energy prices on the State's economy, the SEP does not reflect the important contributions that NYPA makes to economic development in the state. However, the Sierra Club (Atlantic Chapter) states,"The emphasis on lower rates to boost the economy is misplaced," and inexpensive NYPA power only subsidized industry profits while employment decreased.

Response:

NYPA's various economic development power programs are currently linked to job commitments protecting 300,000 private sector jobs across the State. That number will continue to grow as the "Power for Jobs" program continues into its second and third years. NYPA would welcome the opportunity to elaborate on the impact of such programs in the SEP.

The legislative intent of economic development power laws contradicts the Sierra Club's comments. The legislative findings and declarations section of the "Power for Jobs" statute specifically states: "The Legislature finds that the costs of electricity has a significant effect on economic development... the Legislature further finds that the economic development programs managed by the power authority of the State of New York and the investor-owned utilities in the State have assisted numerous businesses to stay and expand in New York..." In addition, NYPA enforcement of job commitments includes regular audits of the employment levels of companies receiving allocations. In the past three years, fourteen industries that failed to meet job commitments have had their allocations reduced or revoked. These actions permitted recapture and re-allocation of 4,990 kW of replacement power, expansion power and economic development power.

Comment:

NMPC states that the major reasons for high electric prices in New York are independent power producer (IPP) costs and taxes on utilities and that factors have limited discussion in the SEP or are not mentioned at all. The NYPP suggests that the impact of independent power producers (IPPs) on energy prices should be addressed in the issue report on energy prices.

Response:

The PSC recognized that IPP costs were a contributing factor to the higher costs of electricity in New York, compared to other states and regions of the nation. In rate settlement agreements with the investor-owned utilities, incentives were adopted for utilities to renegotiate IPP contracts. In addition, many of the costliest contracts were addressed in NMPC's Master Restructuring Agreement that resulted in reduction and, in some instances, cancellation of long-term contracts between the utility and the IPP. A discussion of the impacts on utility costs resulting from IPP contracts is included in the SEP Appendix entitled "Effects of Competition on New York."

Regarding State taxes, the gross receipts tax has been reduced by one-third over the past year. The SEP clearly endorses further reductions in energy taxes as a means to lower energy costs and to promote economic development to the extent practicable.

Comment:

The Consolidated Edison Company of New York (Consolidated Edison) asserts that there are inequities in the New York Tax Law such that there are advantageous tax results for cross border sales, and "unintended" tax increases due to an antiquated tax system that has not kept pace with the rapidly changing electric utility industry in New York. Consolidated Edison, in conjunction with other interested parties, has drafted four tax bills that purport to address these tax irregularities and suggests that the SEP should support passage of these bills. However, on the other hand, ESCO-Net argues that tax inequities should remain during the transition to competition so that the fledgling energy services company industry can grow and be able to compete with the more firmly established local utilities.

Response:

The Pataki Administration is currently examining the implications of electric and gas industry restructuring on all taxes. In SEP Appendix titled "Effects of Competition on New York," the effect on utility costs resulting from IPP contracts is discussed. With regard to taxes, the gross receipts tax has been the center of much legislative activity in the past year, with the tax being reduced by one-third. Future cuts are possible. While taxes are a legislative prerogative, the SEP clearly endorses reductions in energy taxes as a means to lower energy costs and to promote economic development.

Comment:

State Senator James Wright (46th District) states that the property valuations on energy facilities across New York have been historically high, and with the advent of competition, property tax mitigation should occur. He further states that the failure to reduce property tax burdens poses two extremely large problems for many local governments across the state. First, with extremely high taxes, plants will not be competitive and will not be purchased by bidders, resulting in closed facilities and employees leaving or losing their jobs. Second, plants that will no longer be operating will be torn down, leaving communities with lower tax revenues and skyrocketing property taxes. Senator Wright points out that higher unemployment and property taxes are certainly not the goals of competition, but in some instances could be the result.

Senator Wright stated that he has testified on this topic before the Public Service Commission (PSC) in the past and has drafted proposed legislation for the State to provide aid for those communities that have lost tax revenue.

Senator Wright stated that the "PSC has seen the value in this approach by specifically citing it, and calling for its use in their *Final Generic Environmental Impact Statement, issued relative to Niagara Mohawk's Master Restructuring Agreement".*

Response:

The PSC recognized Senator Wright's recommendations. The PSC has encouraged generation owner(s) and affected communities to negotiate gradual changes in property assessments in order to mitigate any property tax impacts that may occur from increasing competition in the electric industry and the divestiture of generation assets. Additionally, the PSC has offered its services in the form of a voluntary mediation program facilitated by Department of Public Service staff to assist in negotiations. The PSC's mediation efforts were instrumental in reaching a tax agreement for the Oswego Steam Station. The agreement between Niagara Mohawk Power Corporation and the City, County, and School District of Oswego lowers property taxes over a five- to seven-year period. The agreement will be the responsibility of the new owner of the station once the plant is auctioned.

2.2 ENERGY AND ECONOMIC DEVELOPMENT

Role of Energy Prices in Location and Expansion Decisions

Comment:

EANYS states that the SEP repeatedly suggests, incorrectly, that electricity costs are a primary deterrent to economic growth. In fact, the data cited by the SEP directly contradicts its own statement that ". . . energy prices are a major factor in business location and expansion decisions" (SEP p. 34).

The New York Power Pool (NYPP) points out that on pp. 34-35, the Draft SEP states, " . . . energy prices are a major factor in business location and expansion decisions." However, according to the NYPP, this statement is unsupported by the research described in the SEP, and therefore, the SEP should be revised to reflect these research results more accurately.

NMPC states that the SEP's discussion of the role of energy prices tends to overstate the importance of energy prices compared with the other factors adversely affecting the New York State economy.

The New York Gas Group (NYGAS) questions the conclusion from the survey of national manufacturing executives that energy factors are the driving factor in retaining or increasing New York State manufacturing.

Response:

The SEP's finding that energy prices are a major factor in business location and expansion decisions is borne out by a national survey that found that from 60% to 70% of respondents (depending on how the multiple choice answers are interpreted) indicated that energy costs have been a factor in their companies' site selection decisions. This same survey ranked energy cost and availability as the fourth most significant factor out of 23 site selection factors that influence site selection decisions. This factor was chosen ahead of other factors such as availability of skilled labor, environmental regulations, tax exemptions, cost of land, nearness to major markets, nearness to suppliers, and accessibility to a major airport. The SEP refers to an update of the Area Development, Sites and Facility Planning Survey, which shows 81 percent of respondents consider energy cost and availability to be either an important or very important site selection factor.

The SEP finds that energy prices are a major factor in business location and expansion decisions rather than that energy prices are the single determining factor in most cases.

Economic Development Potential of Reducing Energy Costs

Comment:

Deborah A. Baxter states that "New York is dying, people are leaving." Ms. Baxter also stated that real rate relief is needed, not just 1 or 2 percent reduction.

Response:

The SEP projects a 10% reduction Statewide in electricity revenues through 2002. Furthermore, actions taken by the Public Service Commission (PSC) are directed at transforming New York's electric industry from a highly regulated industry into a competitive industry, as rate settlements go into effect and

generation assets are auctioned. The transformation to a fully competitive market for electricity should lead to lower prices and the availability of more services.

Comment:

The NYPP states that based on the numbers provided in the first paragraph of SEP the cost of generating jobs in New York State through electric rate reductions is extremely high, about $91,000 per job. This is particularly high when compared to the average $7,054 spent by New York through economic development incentives. It is far less costly to generate jobs through State incentives than through energy price reductions.

Response:

Targeted business incentives, whether offered by public utilities or government agencies, will often attract and retain more jobs than broader cost reduction measures, such as overall decreases in taxes or energy rates. For this reason, targeted incentives are important economic development tools.

Typically, when a company considers where to locate a facility, it will first consider information about various costs of doing business, available from published sources or business location consultants, to pare down the number of sites under consideration. Only then will companies consider and negotiate incentives. In summary, both targeted incentives and broad cost reduction measures are important to New York's economic development efforts.

Comment:

The New York State Community Action Association and the New York State Weatherization Directors' Association (NYSCAA/NYSWDA) state that the SEP should have a section on how the changing energy market will affect small businesses, communities and families, especially low-income families. All customers should receive the benefits of the competitive environment.

Response:

While an in-depth analysis of each customer sector is beyond the scope of the SEP, special attention is focused on low-income households to ensure that all New Yorkers benefit from competitive energy markets. The "Public Benefits" portion of Section 2.6 focuses on the development of programs to assist low-income consumers with weatherization programs, energy efficiency strategies, help paying energy bills, and assurances of continued access to service. These goals are being met by, among other things, SBC-funded low-income assistance programs including pilot programs which will examine the efficiency of new approaches to energy affordability in an era of energy deregulation and welfare reform.

All New Yorkers, including small businesses, communities, and families will share in the economic development benefits competitive energy rates will bring to the State. As the SEP points out in the "Economic Development Potential of Reducing Energy Costs" portion of Section 2.2, New York will be better able to attract new businesses, and to retain and expand existing businesses. Moreover, lower energy costs will increase business profitability and consumer purchasing power which will stimulate business investment and consumer spending, and contribute to continued job growth. The SEP recognizes that unbundled services and increased competition are not goals in themselves, but vehicles to reduce costs and increase service options (SEP at "Customer Perspective on Industry Restructuring", Section 2.2). All New Yorkers stand to gain from a competitive energy market.

Securitization

Comment:

The NYPP recommends implementing securitization legislation in New York State that is modeled after legislation adopted in other states. NMPC also recommends that securitization be implemented. Consolidated Edison recommends that SEP should encourage the New York State Senate and Assembly to reach agreement on securitization legislation. However, MI asserts that securitization legislation should be limited and the financial benefits be passed on to all consumers. MI also recommends that the language in SEP on securitization is too broad and should be changed to include statements that securitization be limited to intangible assets only, and the benefit should go to all customers.

Response:

The SEP continues to support the adoption of securitization as one of the ways New York can address lowering of utility rates.

Utility Flexible Rates and Fixed Discount Programs

Comment:

The NYPP points out that on the Draft SEP p. 38, the SEP discusses use of flexible rates and discount programs by New York State's electric and gas utilities. The first sentence indicates that flexible rates have been available since 1983, while the NYPP states that flexible rates were first offered in 1993.

Response:

Generally, utility discount rates have been available to commercial and industrial customers since the mid-1980s. The SEP's reference to flexible rates reflects the long-standing practice of New York's utilities to offer certain rate discounts to certain industrial and commercial customers as an economic development tool.

Comment:

The NYSCAA/NYSWDA states that the SEP mentions that businesses and nonprofit organizations have had the opportunity for low-cost power through NYPA's "Power for Jobs Program." NYSCAA/NYSWDA questions how available it has been for nonprofit organizations and urges that the SEP include goals for strengthening nonprofit access to the program.

Response:

The "Power for Jobs" law, as enacted in 1997 and amended in 1998, makes available 450,000 kW of low-cost electricity over the next three years. The law provides that 100,000 kW of the program be allocated to not-for-profit corporations and small businesses. To date, not-for-profit corporations have submitted

eighty applications. Sixty-one have been approved for allocations. Allocations approved to date within the 100,000 kW set-aside are 58,794 kW (42,185 for not-for-profits/16,599 for small businesses). Outreach to prospective applicants has included establishment of a toll-free number for inquiries (1-888-JOBS-NYPA), print and broadcast advertising, and regional presentations to community groups.

Comment:

Jeffrey Beller points out the relationship between New York's energy use and the lack of indigenous energy resources with the State. Mr. Beller argues that New York is exporting dollars to pay for energy imports, and that State government should promote renewable energy industries in New York as an economic development strategy to create and retain jobs within the State. Mr. Beller also suggests that State government educate the public about energy use and where its energy dollars are being spent because the majority of these dollars leave the State.

Response:

The SEP recognizes that New York should develop indigenous and renewable energy resources as an economic development tool and means to promote job development. Moreover, the SEP encourages the use of environmental disclosure mechanisms as a market-based approach to encourage the use of renewable resources. New York continues to promote development and use of renewable energy resources through an active R&D program. NYSERDA alone devotes over $1.8 million annually to renewable energy projects. In addition to managing the State's large hydroelectric resources, the New York Power Authority (NYPA) also promotes the use of renewable resources. For example, in 1997 NYPA, in cooperation with NYSERDA, installed a fuel-cell power plant, the first of its kind in the world, to generate electricity without combustion at the Westchester County Wastewater Treatment Plant, where it also operates a 100-kW solar photovoltaic project. Moreover, the public benefits programs funded by the system benefits charge specifically targets programs designed to promote the development of renewable resource technologies during the transition to greater competition in the electric industry.

Comment:

Venlue's Impact Empowerment Services discussed New York's large energy bill and the fact that most of the energy used in New York is imported. It was stated that if only 30% of New York's energy bill is retained or spent in New York, that monies could support nearly 200,000 jobs.

Response:

The SEP's Energy and Economic Development Issue Report, estimates that 58 job years are created for every $1.0 million invested in energy efficiency. The SEP recognizes that savings resulting from cost-effective energy efficiency improvements can be used to foster additional business and consumer investment, as well as to create additional new jobs in the State.

Comment:

The New York Energy Efficiency Council (NYEEC) supports the SEP's recognition of the economic development benefits that a competitive energy efficiency marketplace brings to New York, but cautions decision makers to avoid policies that encourage public entities, such as State authorities, to compete directly with the private sector in providing energy services in New York. NYEEC is particularly concerned with SEP references to NYPA's activities and role in providing energy services to customers. NYEEC argues that NYPA should not be competing directly with private sector providers in the delivery of energy efficiency services.

Response:

Energy efficiency is an established public policy goal of the State and federal government. NYPA energy services programs are directed to specific sectors, primarily government and schools, in conformance with statutory requirements, such as Petroleum Overcharge Recovery authorizations. These energy efficiency programs are designed to improve the working and learning environments of public facilities and schools, lower energy consumption, and provide taxpayer relief by reducing energy costs incurred by public buildings. As a public entity, NYPA should provide these sorts of direct benefits to its owners, the

taxpayers of the State of New York. It should also be noted that the energy services programs provided by NYPA in energy efficiency, electrotechnology, and electric transportation are either undertaken in partnership with the private sector or involve tasks the private sector is unwilling or unable to perform.

Emission Reduction Credits

Comment:

The National Association of Energy Service Companies (NAESCO) suggests that the SEP adopt the principle that measured energy savings attributable to efficiency gains can be converted to emission reduction credits (ERCs) that accrue to owners of the facilities where efficiency improvements are realized, rather than to State funding agencies.

Response:

Both private businesses and state agencies are able to create ERCs by adopting energy efficiency measures through the Department of Environmental Conservation's (DEC's) regulatory program outlined in NYCRR Parts 231-2.12 and 231-2.13, covering stationary and mobile sources, respectively. ERCs created by State agencies may be offered by Empire State Development as part of a financial incentive package to private businesses moving to or expanding operations in New York State. Private businesses that create ERCs may sell them or bank them for future use.

2.3 EFFECTS OF COMPETITION ON NEW YORK

Comment:

Maureen Dolan states that the plan does not identify, as far as can be determined, the actual objective for the case of electric utility deregulation. Competition is clearly cited as a goal, but competition should be seen as a process--rather than an objective. Ms. Dolan asks, "Is the overall objective for deregulation/competition, minimization of cost (of production)? Minimization of market price (to all users or just certain users)? Minimization of total energy costs (including societal costs)? Maximization of

energy efficiency? Maximization of supply from all energy sources? Maximization of profits (to energy producers)?"

Ms. Dolan also states that the SEP should more fully examine and articulate the objectives underlined in the planned deregulation, particularly since many of the objectives that could be identified are actually competing objectives. Ms. Dolan further states that the SEP seems to be overly optimistic in assuming that competitive energy markets will necessarily result in increased energy efficiency.

Response:

As articulated in the SEP, New York's energy policy is based on the principle that increased economic activity, improved environmental quality, and greater energy efficiency can be achieved by promoting competition and relying more on markets to deliver energy services to consumers.

This plan endorses the results of the PSC Case 94-E-0952 - *In the Matter of Competitive Opportunities and Bypass Regarding Electric Service (COB).* This case is a continuation of an investigation instituted by the PSC in 1993 to seek ways the electric industry could be restructured, taking into account the need to lower rates for all consumers, in order to spur economic development in the State while assuring safe and reliable service. The numerous objectives identified in this comment were all considered in the overall COB proceeding or in further depth and detail in the individual utility restructuring proceedings. The PSC has evaluated the risks, costs, and benefits associated with each of the restructuring proposals and performed numerous studies and analyses, collaborated on a number of studies with the parties, and conducted public involvement discussion meetings throughout the State to determine the perspectives and concerns of consumers. Based on these efforts, the PSC has issued broad policy guidelines and approved individual utility restructuring plans whose objectives are to create competition in the generation and energy service sectors of the electric industry with a goal of potentially reducing rates over the long term, increasing customer choices, and improving economic development in the State. This policy was weighed against the importance of maintaining system reliability, the potential for strandable cost and mitigation measures to reduce these costs, a broad range of environmental and public policy issues, the necessity to separate generation and energy service functions from the transmission and distribution systems, and the obligation to serve and customer protections needed in a competitive environment. This SEP has endorsed the results

of that process and set forth additional goals, objectives, and strategies to help implement the restructuring of the electric industry.

The restructuring of the electric industry has taken on a multi-faceted approach. While it is true that the interest of the generator owners is to sell as much as possible, the institution of a deregulated energy service company (ESCO) industry should provide a proper balance to serve the interest of the consumer and provide energy efficiency measures, products, and services, and provide environmental options not before available to the consumer. Such ESCOs and gas marketers will need to offer energy management services to distinguish themselves in the marketplace. The profit incentive for such services is likely to be greater than that associated with commodity sales, and this should provide a proper balance to the interests of the generation owners.

Comment:

Maureen Dolan states that complex market forces at work, under a deregulated electric utility industry, have the potential to be counterproductive in achieving energy efficiency in power generation.

Response:

Since the restructuring of the electric industry will create a deregulated generation market, which requires generators to bid their power sources on a daily basis, or in the alternative under long-term contract, the interest of the electric generators will be to minimize cost, and at the same time ensure that their plants are available on a daily basis; otherwise they will incur substantial lost revenue. Currently, all proposed new generating stations are combined-cycle, natural gas-driven facilities with efficiencies of 40-50%. Electricity generator manufacturers are projecting that over the next decade new combined- cycle units may be able to achieve a 60% efficiency rating compared to the current average generating station which operates at an efficiency of 30-35%. Additionally, the promise of a competitive generation market has produced significant new opportunities in private investments and research and development in photovoltaics and a multitude of other distributed generation products, such as fuel-cells and micro-turbines. This plan endorses those efforts and believes that the competitive market will increase the efficiency of the generating sector of the electric industry.

Comment:

The NYPP comments that the second paragraph on the Draft SEP, p. 59 which discusses municipalization should be expanded to discuss the effects of stranded cost explicitly. The Niagara Mohawk Power Corporation (NMPC) suggests eliminating the SEP's discussion on municipalization, stating that it does not fit in with utility restructuring, and the discussion is incomplete. If it is to be included, NMPC suggests two changes: (1) change the word "many" communities to "some"; and (2) add a discussion on the reason for the differences between the rates of the utilities and the existing municipalities that get less expensive NYPA power.

Response:

SEP has been revised to reflect NYPP's and NMPC's comments.

Comment:

Dave Fountaine, Administrator for the Village of Hamburg, feels that the SEP does not "really address" municipalization. He feels that there are benefits to reduce energy costs through municipalization.

Response:

The Effects of Competition on New York Issue Report discusses municipalization activities and also states that the potential benefits will have to be weighed against the uncertainty of the costs involved. Since the implementation of municipalization depends on site-specific economic analysis, it is inappropriate to develop a policy that can uniformly support or reject municipalization. The starting point for determining whether it is in Hamburg's interest to municipalize is a feasibility study that includes all the pertinent economic factors. It is important to note that low-cost NYPA hydropower that existing electric municipalities have access to would be unavailable to the Village of Hamburg since all of this low-cost hydropower energy is allocated to existing customers under long-term contracts. Additionally, the issue of stranded costs has to be addressed in the feasibility study. Stranded cost recovery is permitted under the

Open Access FERC Ruling 888A and could also be part of the acquisition process for condemnation and take-over of the utility's distribution system.

Retail Access

Comment:

The National Association of Energy Service Companies (NAESCO) suggests that customers who switch electricity suppliers should not be required to repay demand-side management (DSM) costs.

Response:

This argument is akin to exit fees on customers leaving the utility service when the fees are designed to recover approved stranded costs. The PSC, in approving the utilities' 1997 DSM plans, prohibited any tying arrangements that would prevent customers receiving DSM incentives from leaving the utility system. The PSC, however, also allowed utilities to recover DSM costs from customers who switched to another electricity supplier, as long as the repayment schedule was not unreasonably short.

Comment:

Maureen Dolan states that the assumption that [deregulated] energy markets can better allocate energy resources is questionable.

Response:

The SEP recognizes that markets are typically more efficient in allocating resources, likening the restructuring of the electricity industry and its goals, to the competitive markets that exist currently in the petroleum industry and in the telecommunications , transportation, and natural gas industries which have been largely deregulated. All of these industries have been restructured and consumers and suppliers have benefitted from increased technological innovation, increased product and service choices, and generally lower prices. Resource allocation decisions are price based and market-determined. The SEP policies are

premised on the belief that restructuring the electricity industry will bring consumers some of the same benefits that consumers in these other formally regulated industries have enjoyed. However, during the transition to greater competition, government must continue to protect consumers from fraudulent and abusive business practices and preserve the State's environment.

Comment:

Maureen Dolan states that there is a clear need to measure overall stakeholder "satisfaction" with the outcomes of the SEP, that is, to identify and describe a "utility function" that measures energy users' satisfaction with deregulation. Ms. Dolan further states that the SEP seems to assume that this "utility" is congruent with "dollars spent," but the true measure of "utility" in the case of electric power may actually be a more complex set of values; and that measures of reliability, power quality, safety, convenience (from consumer's perspective), environmental impact, etc., could readily be seen as constituting a multi-attribute utility function.

Response:

The Department of Public Service (DPS) developed an evaluation plan, as part of the overall deregulation strategy, that includes surveys of customer satisfaction, market penetration, the effectiveness of value-added services, environmental disclosure, and the effectiveness of consumer protection mechanisms.

Current standards, established by the Public Service Commission (PSC) in Case 90-E-1119, and continued measurement of reliability, power quality, and safety remain the responsibility of the transmission and distribution companies with oversight by the PSC and the Long Island Power Authority (LIPA). No diminution of these standards will be allowed as greater choice and increased competition are introduced into the electricity industry.

Comment:

Maureen Dolan states that, although it makes reference to the need for revisions to energy demand and price forecasts, neither the urgency and importance of revised forecasting models nor the closely related issue of volatility, appear to be adequately addressed in the SEP.

Response:

The SEP energy demand and price forecasts address the issues of uncertainty and risk by examining different energy demand and price scenarios. The SEP high and low range price and demand forecasts provide a plausible range of expected future energy outcomes. By using a "band-width" approach to forecasting energy and price outcomes, decision makers are able to weigh the effects of policy decisions on the future demand for energy. Moreover, the SEP envisions that price volatility will be addressed by ESCOs, which will act as intermediaries between customers and suppliers. ESCOs are expected to anticipate this volatility and adopt market-based hedging strategies. For example, an ESCO could contract with generating, and transmission and distribution companies to purchase power and delivery services, which could then be repackaged on the spot market and use electricity futures contracts to help electricity buyers and sellers manage the business risk.

Comment:

Maureen Dolan states that, with its focus on competition and market-driven solutions, the SEP does not adequately address the ways in which electricity is a commodity unlike any other. Ms. Dolan points out that electricity is unique, as demand is instantaneous, shortages and back orders are not allowed, distribution is dependent upon laws of physics, and "defective output" is not merely a question of quality, but of potential catastrophic failure.

Response:

The PSC articulated that the maintenance of a reliable electric system is one of the goals for the transition to a competitive environment. In fact, the establishment of the New York State Reliability Council

(NYSRC) in conjunction with the independent system operator (ISO) is designed to ensure that electric system reliability in the competitive environment is uncompromised. The ISO and the NYSRC will ensure standards of voltage and frequency are continually upheld for the delivery of electric power. The PSC will continue to supervise the reliability and quality of power delivered to customers by the transmission and distribution systems and will intervene if reliability or power quality deteriorates as competition unfolds.

Comment:

John M. Daniels questions the value of deregulation, and believes that the telephone deregulation has not proved to be beneficial.

Response:

Prior experience in restructuring highly regulated industries has demonstrated overall benefits such as lower prices, increased customer choice, and product innovation. Providing consumers with greater access and choice from energy suppliers will lead to greater competition. The SEP states that, in a fully competitive market, customers should be able to choose the combinations of price, service, reliability, and environmental characteristics that suit them best. Competition in the electricity industry will also assist the State's efforts to stimulate economic development.

Comment:

The Natural Resources Defense Council (NRDC) states that the market can work better if tax incentives, and codes and standards are used as a floor. NRDC feels that the focus should be on optimizing total energy use, rather than separately addressing different elements of energy use. The Rensselaer County Environmental Management Council (RCEMC) states that energy consumption has decreased in the past eight years, but is still too high and should "stimulate regulators and decision-makers to provide incentives to reduce energy appetites, while encouraging measures to lower energy costs."

Response:

One goal of the SEP is to perform a comprehensive evaluation of energy use and how it affects New York's citizens, economy, and environment. While tax incentives and industry codes and standards require executive and legislative action, the SEP provides broad policy direction rather than a host of specifics. The SEP outlines the goals, strategies, and objectives that are designed to provide New Yorkers with greater choice.

Comment:

The NYPP states that the SEP focuses on the "single seller" model for electricity service and that the SEP should be expanded to other possibilities. NMPC states that the discussion on the Draft SEP p. 51, about future unbundled service that ESCOs may provide includes only one of the two models, and should include both of the models. Specifically, the SEP states that "in the long run, unregulated energy service companies (ESCO's) might be the primary interface with the customers..." NMPC states that the discussion

should also include the current model where the delivery services are sold directly by the utility to the retail customer, and energy supply provided separately by ESCOs.

Response:

The SEP's focus on what the commentor terms the "single seller" model is, as stated, the long-term vision of how the electric industry is expected to operate in New York. In fact, Rochester Gas & Electric Company (RG&E), is moving directly to the "single seller" model for retail access. In the meantime, all investor-owned utilities will remain the provider of last resort (POLR) and serve customers under regulated bundled rates who do not choose to pursue retail access immediately. The SEP has been amended to clarify that other models of delivery services to customers, such as the model currently employed by New York's utilities, could also occur as competition unfolds in New York's electricity industry.

Independent System Operator

Comment:

NAESCO recommends that the SEP encourage comparability of the demand reducing resources and supply resources by the independent system operator (ISO) and market operations. NAESCO states that software programs that will allow this function are being developed.

Response:

This SEP strongly encouraged energy efficiency as an alternative to supply options. The viability of offering energy efficiency as a resource to the ISO and the application of the software to account for efficiency improvements are issues that are being considered by the ISO.

Comment:

ESCO-Net states that the ISO needs to make available real-time incremental cost and load data. ESCOs need this information for balancing and scheduling of electricity.

Response:

The SEP supports the prompt availability of data that will further the competitive market. While this is an implementation issue that should be raised in the ISO process, there do not appear to be any reasons why total hourly load and system incremental cost cannot be posted once the ISO is operational, which is expected to occur in early 1999. Until then, it would be impractical to require individual utilities to provide that information. It appears, however, that the comment seeks to have customer specific load information available in real-time so that hourly scheduling can be fine tuned. Prohibitively expensive and extensive new telemetering would be required to obtain this data. As ESCOs gain experience in forecasting their loads under various weather conditions, their ability to anticipate aggregated load levels accurately will increase and their balancing needs will decrease.

Comment:

ESCO-Net recommends certain operational guidelines be established for the ISO, such as design of load following and balancing capabilities and transmission control and procedures to mitigate anti-competitive behavior. Joint Supporters states that ISO guidelines should be established to mitigate any anti-competitive behavior in information sharing by the utilities with regard to facilities still under their control. Pace Energy Project asserts that it is essential that the New York ISO should be independent, that there be a free flow of information, and that certain sectors of the industry do not have preferential access to information.

Response:

The PSC, as a member of the EPB, and the Department of Public Service (DPS) staff are participants in deciding how the New York ISO will operate. These measures are being considered in the ISO proceeding before the Federal Energy Regulatory Commission (FERC), and will be incorporated into the ISO procedures when it becomes operational in 1999.

Comment:

The NYPP recommends that the SEP be revised to include more up-to-date information on the membership of the Reliability Council and the reduced emphasis of power exchanges.

Response:

The NYPP's comments have been addressed in the SEP Appendix entitled the "Effects of Competition on New York."

Comment:

NMPC requests that the SEP reflect the current status of the ISO filing.

Response:

The SEP has been modified to reflect NMPC's comments.

Comment:

Niagara Mohawk Power Corporation (NMPC) states that the discussion of "ensuring fairness, equity, and system reliability" in the SEP does not mention the functioning of the ISO.

Response:

The SEP discussion of the New York ISO reaffirms that energy fairness, equity, and system reliability are cornerstones of New York's oversight of the competitive electricity market. The language of the SEP has been modified to reflect NMPC's comments.

Utility Affiliate Practices

Comment:

The Empire State Petroleum Association (ESPA) states that the PSC guidelines from Case 93-G-0804 with respect to the appliance, service, and repair practices of utilities should be expanded and adopted for all marketing practices of all energy utility affiliates so that a level playing field for marketers will be established.

Response:

In Case 93-G-0804 the PSC required "...that appliance repair services only be performed through separate, unregulated subsidiaries with a complete separation of functions..." Subsequently, in the electric restructuring proceedings, generic requirements governing affiliate transactions, consistent with and expanding on those adopted in the appliance case, were adopted. Thus, ESPA's principal suggestion has

been implemented. As the market develops, affiliate transactions issues will be monitored and the guidelines revised if needed.

Provider of Last Resort

Comment:

The Consolidated Edison of New York (Consolidated Edison) states that the SEP should acknowledge that the regulated utility must be allowed to rely on the competitive electric market to satisfy its provider of last resort (POLR) customers' need for capacity, energy, and ancillary services. Joint Supporters suggests that alternatives to the utility as POLR should also be established; it should be a competitive business opportunity by the time 100% of customers have retail access available, and earlier if possible, as it is hard for independent marketers to get a foothold in this hybrid environment. The New York Gas Group (NYGAS) states that it is difficult for the utilities to plan as providers of last resort due to the transition and the future uncertainties in the competitive market. ESPA suggests that, in order to maximize the benefit of utility deregulation, regulated utilities need to entirely exit from the merchant function as soon as possible.

The Joint Supporters state that more competition will result in lower prices in bills. Despite the emphasis on competition in the energy sector and reductions in the GRT taxes, the State should move further and faster toward a competitive market especially after utility-owned generating plants are auctioned. The pace of shifting the gas LDC and electric T&D companies for merchant functions should be accelerated.

Response:

The issues of POLR regulation and who will be eligible to serve POLR customers is a retail access implementation issue that is a subject of the PSC's competitive opportunities proceeding (Case 94-E-0952). These comments are properly addressed in that venue.

In Case 94-E-0952, *Opinion and Order Establishing Regulatory Policies for the Provision of Retail Energy Services*, Opinion No. 97-5 (issued May 19, 1997), pp. 15-16 (footnotes omitted), the Commission stated: "...while as a matter of policy, it remains our long-term preference to introduce competition to the Provider

of Last Resort function, it is not appropriate to decide this issue now. Due to lack of agreement among parties on the approaches that should be tried, the current limited experience with ESCOs providing electric service, and the lack of reliable estimates of POLR costs, it does not appear useful to further develop alterative approaches at this time. We will consider this issue after we have more experience with the competitive market."

As part of its effort to analyze these issues further, the PSC issued a notice in October 1998, soliciting comments on experimenting with POLR approaches in the Orange and Rockland Utilities, Inc. service territory. It is anticipated that this process will be concluded in the first half of 1999 and will provide the PSC with the results of a pilot program that will better define the issues, costs, and possible approaches to ESCOs providing some or all of the POLR services.

The SEP endorses an aggressive program for deregulating both the electric and gas industries, consistent with an orderly transition plan to provide consumers, ESCOs, and the utilities sufficient time to adjust to market-based opportunities to purchase and sell natural gas and electricity. The SEP also calls for a timely schedule to implement the structural changes that are necessary to operate a market-based utility industry, such as the ISO. In fact, the implementation date for 100% retail access for Orange and Rockland Utilities, Inc. is May 1999, and August 1999 for New York State Electric and Gas Corporation, which meet the aggressive schedule articulated by the Joint Supporters.

Siting

Comment:

The Independent Power Producers of New York (IPPNY) state that the SEP describes the ruling from the PSC declaring that "competition in the electricity generation market is an electric capacity procurement process that is reasonably consistent with the 1994 SEP" (Draft SEP, p. 64). In its ruling, the PSC stated that, "A determination that a proposed major electric generating facility was selected pursuant to an approved procurement process is within the jurisdiction of the New York State Board on Electric Generation Siting and the Environment, pursuant to PSL §168(2)(a)(ii), not the PSC. Such finding must be based on a statement by the applicant, under PSL §164(1)(e)(ii), that its proposed facility was selected

pursuant to an approved procurement process." (Ruling, p. 7) The acknowledgment in the SEP of the PSC's Ruling should completely and accurately reflect the PSC Ruling's determinations, stated above.

Response:

The following new sentence has been added to the discussion on siting in the Effects of Competition on New York issue report, "The Commission also stated that it is in the Board's jurisdiction to find that a particular generating facility was selected pursuant to an approved procurement process based on a statement in an Article X application."

Comment:

IPPNY states that, following the reference to the PSC's April 16, 1998 Ruling that addresses plants selected pursuant to an approved procurement process, the SEP describes the finding that could be made by a Siting Board presented with an application for a facility that has not been selected pursuant to an approved procurement process, *i.e.*, consistency with the SEP must be demonstrated (See New York Public Service Law Section 168.2(a)(i)). (Draft SEP p. 4 contains a similar statement). This paragraph and other references in the SEP (pp. 4, 7) should be clarified to make this distinction between the two findings. The PSC Ruling should be described fully, so as not to create confusion (and unnecessary disincentives) concerning the requirements for a plant selected pursuant to an approved procurement process. Considering that the SEP reinforces the accuracy and vitality of the PSC Ruling by stating that this SEP "...emphasizes competition as a procurement strategy in the electric generation market to a much greater extent than did the 1994 SEP," (p. 64), the SEP should be clarified to avoid any confusion.

Response:

The SEP has been amended and clarifying language on siting of electric generating facilities has been added to the Effects of Competition in New York Issue Report.

Comment:

NAESCO believes that the regulatory structure for siting new generation plants should be flexible since restructuring may cause many existing plants to close. NMPC supports the interpretation of Article X (siting legislation) by the SEP and State agencies that the electric procurement process in the competitive electric industry satisfies the demonstration of public need.

Response:

These comments are consistent with the SEP.

Comment:

RCEMC asserts that competition should not be used as a surrogate for the Article X proceeding. Further, RCEMC provides a general discussion on the value of energy conservation and the need to promote demand-side management (DSM) and other energy efficiency programs.

Response:

The Article X process for siting new electric generating facilities continues to govern how generating facilities will be reviewed in the future. Furthermore, the SEP emphasizes that energy efficiency is a key ingredient to successfully meeting New York's future energy requests.

Comment:

RCEMC asserts that new power plants are not likely to significantly reduce energy costs, and the "build them as fast as you can" approach will be detrimental to air quality and lowering rates. RCEMC expresses concerns about the impact of new power plant construction proposed to the west of Rensselaer County.

Response:

The SEP does not advocate a "build them as fast as you can" approach. The SEP promotes competition in the electric generation procurement process, and current laws will adequately ensure that only those facilities that are environmentally compatible and meet the requirements of Article X will be built. The competitive generation market will provide the necessary economic signals for power plant construction and proposed new facilities will be required to meet all applicable standards, including new source performance standards. New facilities will promote efficiency goals, and will likely replace older, higher-emitting facilities.

2.4 ENERGY AND THE ENVIRONMENT

Comment:

The Sierra Club (Atlantic Chapter) believes that competitive markets will not address environmental concerns.

Response:

After a thorough environmental review of this matter, the PSC recognized the possibility of adverse environmental impacts from restructuring (Opinion 96-12), and put the System Benefits Charge (SBC) in place to fund environmental monitoring, protection, and mitigation during the transition to competition as well as other public benefit programs, including energy efficiency, research and development in renewables, and energy efficiency and low-income pilot programs. There is also evidence that ESCOs will be anxious to distinguish themselves in the market, through "green" product offerings and value-added services, such as energy efficiency. Surveys conducted of the Dairylea retail pilot program indicate that customers are interested in such offerings as a means to increase energy efficiency.

Air Quality

Comment:

Vandor + Vandor notes that diesel powered medium-duty and heavy-duty trucks and buses contribute to exceedences of ambient air quality standards.

Response:

The SEP, as well as the New York State Department of Transportation Plan, recognize that medium and heavy-duty trucks contribute to exceedences of ambient air quality standards for hydrocarbons, NO_x, particulates, and toxic emissions. Governor Pataki signed the "Heavy Duty Vehicle Emissions Reductions Act" authorizing the Departments of Environmental Conservation, Transportation, and Motor Vehicles to implement a system of heavy-duty diesel powered vehicle inspection and maintenance (I/M) no later than June 1, 1999. The I/M program covers vehicles having a gross weight of more than 8500 pounds and authorizes the removal from commercial service of any of these vehicles that violate applicable emission standards.

Comment:

NYGAS expresses concerns over the State Implementation Plan (SIP), in light of:

- the requirements of volatile organic compound (VOC) and nitrogen oxide (NO_x) reductions;
- the role of mobile emissions;
- changes to the ozone and particulate matter standards; and
- changes that have occurred with the SIP.

NYGAS contends that the projected 1999 VOC reductions are neither realistic nor achievable and that incentives, such as those available for alternative fuel vehicles (AFV), offer a better chance of success.

Response:

The SIP estimates are based on the most current information and modeling procedures at the time the SIP was developed. While the SEP recognizes the various control programs and strategies that are components of the overall State Implementation Planning Process, developing the SIP is a dynamic process and it must respond to changes as they occur. One such significant occurrence is the culmination of the Ozone Transport Advisory Group (OTAG) process and the implementation of regional NO_x controls in 22 of the 36 OTAG states, (including the District of Columbia), which is scheduled to be finalized by the end of 1998. When combined with the recent revisions to the Ambient Air Quality Standards covering ozone and particulate matter, this will require the SIP to reflect the changes that will occur. The SEP clearly reflects the continued support of alternatively fueled vehicles and their promotion, as a means to meet New York's air quality objectives. While the EPA fleet requirements for alternative fuels continue, the light- and heavy-duty clean fuel fleets requirements of the Clean Air Act have been substituted by the low-emission vehicle (LEV) program within the SIP. The use of alternative fuels, such as natural gas, and the promotion of clean fuels through the free market system will be a component of the State's SIP process as it moves forward.

Comment:

The New York Power Pool (NYPP) points out that the new ambient standard for ozone is responsible for an increase in the number of ozone exceedences beginning in 1998. It is suggested that 1998 data be added.

Response:

The characteristics of the new, revised ozone standards are discussed in the SEP. It may be misleading to include the exceedences in SEP compared to prior year exceedences, because the historical data is based on a one-hour standard, while 1998 and future years data will be based on an eight-hour standard. However, the text has been modified to acknowledge that the number of exceedences is likely to increase under the revised standards.

Comment:

The NYPP seeks clarification of the last sentence of paragraph 2 on the Draft SEP p. 78, suggesting that an explanation of how compliance costs for New York State sources will be lower as Midwestern sources add controls to meet attainment in the Midwest.

Response:

The adoption of the new ozone standard will require ozone precursor emissions in the Midwest to be reduced, thereby reducing the transport of these emissions to New York State. This is expected to improve New York's air quality and will serve to lower compliance measures needed in New York, and thus compliance costs.

Comment:

The NYPP suggests that a summary of the Environmental Protection Agency's (EPA) proposed Supplemental Rule for Reducing Required Transport of Ground Level Ozone (April 28, 1998) be described in the SEP.

Response:

The SEP has been modified to reflect EPA's recent actions. However, the actions under the Ozone Transport Commission (OTC) Memorandum of Understanding (MOU) and EPA's 22-state SIP call are separate and distinct actions, although both will likely be implemented.

Comment:

The NYPP recommends revising the carbon dioxide (CO_2) strategy on the Draft SEP p.16 to read: "Encourage the federal government to develop appropriate cost-effective national and international strategies to address stationary and mobile source CO_2 emissions and global warming in cooperation with states, industries, and other stakeholders."

Response:

The SEP does not distinguish CO_2 emissions by source types, and reductions will likely consider all source types, including stationary and mobile sources, as well as sequestration of CO_2. The current control program under negotiation is international in scope and is centered on market-based strategies that are cost-effective. No change to the SEP strategy on CO_2 is needed at this time.

Comment:

IPPNY notes that the existing emission offset policy tends to improve air quality, and that new plants will improve efficiency.

Response:

This comment supports and is consistent with SEP objectives.

Comment:

Environmental Advocates believes that many of New York's power plants are as polluting as the Midwest plants and that all plants should meet the same strict emission standards.

Response:

Competitive markets work if the playing field is level for all participants. Current emission standards for older power plants are based on the need for meeting the ambient air quality standards and hence are not equal for all plants. New York has requested that the U.S. Environmental Protection Agency (EPA) enforce stricter emission standards on Midwest power plants, which are allowed to discharge far greater emissions than most New York plants. In response, the EPA has prepared new emission standards that will level the playing field. These standards are likely to require additional emission reductions from New York State power plants, although substantially greater emission reductions will be required from power plants in the Midwest.

Comment:

Joan Bozer and the Sierra Club (Niagara Chapter), stated that ambient air quality monitoring for acid deposition and other parameters is important.

Response:

New York State government shares the concern of the commentor for continued support for monitoring acidic deposition and its impacts. In response to this concern, New York has sought continued support for the related work of the Adirondack Lakes Survey Corporation (ALSC) and the long term monitoring of 52 of the affected water bodies in the Adirondacks. Part of the support for this work has been from the Empire State Electric Energy Research Organization (ESEERCO). ESEERCO will be dissolved by the end of 1998. The State seeks to assure continuation of this and similar environmental monitoring efforts under funding provided by the SBC. Furthermore, Department of Environmental Conservation Commissioner Cahill is seeking additional support for the efforts of the ALSC from the EPA. The State recognizes the need for continued monitoring and the timely reporting of the information concerning acidic deposition. Reductions called for under the Clean Air Act Amendments of 1990 were effective in 1995 and will continue through 2010. EPA has identified the need for an additional 40-50% reduction in acidic deposition precursor emissions beyond those identified in the Clean Air Act Amendments of 1990. It is essential that monitoring of acidic deposition and its impacts continue and that the data acquired be reported in a timely fashion. These data will be complimented by new sampling efforts for fine particulates (less than 2.5 microns) that are accompanying the EPA's newly enacted air quality standards. Statewide sampling for fine particulates is scheduled to begin in late 1998.

Environmental Externalities

Comment:

Global Biorefineries, Inc. states that the SEP needs to address external costs more fully. The Regional Plan Association suggests that the public agencies of New York take account of environmental costs and benefits.

Response:

The transition to a competitive market is expected to help internalize costs of energy, including electricity. Environmental costs and benefits will continue to be addressed through applicable federal and State air and water quality standards.

Low-emission Vehicles

Comment:

Jeffrey Beller suggests that if the State adopts a low-emission vehicle program it should look into flexible-fuel vehicles which are already available. Mr. Beller argues that the State should look at low-emission vehicles, but strive for a zero emission vehicle.

Response:

New York State is encouraging the development of all types of alternative fuel vehicles, including electric vehicles. The SEP does not identify any particular fuel or vehicle type to be developed, but stresses the importance of public agencies and the private sector coordinating their efforts in developing and supporting energy efficient vehicles, including flexible fuel vehicles and hybrid-electric vehicles.

The State has adopted the low-emission vehicle (LEV) program under Department of Environmental Conservation Regulations Part 218. Vehicles may be certified to meet the emission standards of Tier I, transitional low-emission vehicle (TLEV), low-emission vehicle (LEV), ultra-low emission vehicle (ULEV), and zero emission vehicle (ZEV) and participate in the program.

NYSERDA's Clean-Fuel Bus Program will place 10 hybrid-electric diesel and 29 compressed natural gas buses on New York's streets and highways this year. Over their lives, these buses will reduce nitrogen oxide emissions by approximately 216 tons and particulate matter emissions by 10 tons, and displace more than 4.8 million gallons of petroleum fuel. In addition, NYSERDA has assisted in placing nearly 160

compressed natural gas taxis in use in New York City, five of which are ultra-low-emission vehicles, the first of their kind in a U.S. taxi fleet.

The U.S. Department of Energy's Clean Cities Challenge Program, in cooperation with NYSERDA, helps communities purchase alternative-fuel vehicles and fueling stations. So far, NYSERDA's Clean Cities efforts have resulted in emission reductions of 65,000 pounds of carbon monoxide, 900 pounds of non-methane hydrocarbons, and 4,300 pounds of nitrogen oxides. On Long Island, one of the State's largest areas that fails to meet air quality standards, two towns have upgraded their fueling facilities and added 20 alternative-fuel vehicles to their fleets by participating in the Clean Cities Challenge Program.

Climate Change Issues

Comment:

The Pace Energy Project recommends that the State assume a leadership role in influencing national and international decision making with regard to global climate change issues. The New York State Petroleum Council (NYSPC) supports the SEP's approach with regard to global climate change. NRDC urges that New York take a leadership role on global climate change and in cooperation with the federal government on climate change and efficiency issues. The Regional Plan Association addresses climate change with regard to implementing the Kyoto Protocol. The Sierra Club urges more leadership regarding global climate change. NRDC states that the SEP should endorse a clean energy agenda as part of national restructuring legislation, suggesting uniform emissions standards for all power plants and a national system benefits charge program.

Response:

DEC, in cooperation with NYSERDA, the Department of Transportation (DOT), DPS and other State agencies recently received a grant from the EPA to develop a State Action Plan to reduce greenhouse gas emissions in New York. The initial work on updating New York's greenhouse gas emissions inventory is underway. A series of public forums will be held in mid-1999 to gather public input on the strategies that

New York could pursue to reduce emissions of greenhouse gases. A final report will be submitted to EPA in early 2000.

2.5 ENERGY AND TRANSPORTATION

Comment:

Decotex 2000 suggests that natural gas will be the fuel of choice for all stationary demand while oil will continue as the fuel of choice for the mobile demands of transportation for the foreseeable future. Decotex 2000 believes, with the deregulation of fossil fuels during the 1980s, the global oil and gas industry has been able to use its considerable capital and technological base to find more fossil fuel, get more out of existing finds, and lower the price of these commodities.

Response:

The SEP stresses the importance of encouraging the development of alternative fuels, although Decotex 2000's comment that oil will continue to be the fuel of choice for the transportation sector may prove to be correct. A self-sustaining alternative fuel market will reduce the State's reliance on imported petroleum as well as offer consumers diversity and choice in meeting their transportation energy needs.

Comment:

EANYS indicates that the SEP appropriately recognizes the important contributions that alternative fuel vehicles, particularly natural gas and electric vehicles, have made and with proper encouragement, can continue to make to the State's economy, energy independence, and environmental goals.

Response:

The comment related to contributions of alternative fuel vehicles is duly noted. The support for the alternative fuel vehicle goals in the SEP is acknowledged.

Comment:

Vandor + Vandor suggests that diesel powered medium- and heavy-duty trucks and buses contribute to the occasional exceedence of federal air quality standards in New York City and the surrounding counties, and believes that the second bullet under Energy and Environment of the SEP speaks to this issue.

Response:

As the comment discusses, diesel powered vehicles contribute to non-attainment problems. It is important to note, however, that all vehicles that emit air pollutants contribute to the problem. It is the amount of pollution per vehicle and the number of vehicle miles traveled for any particular vehicle type that determines the significance of its contribution to the overall air quality problem and cost-effectiveness of particular emission control strategies.

Comment:

Vandor + Vandor suggests that the State needs to implement a comprehensive set of incentives to induce alternative fuel vehicles (AFVs). Vandor + Vandor argues that emphasis should be placed on the heaviest vehicles, which tend to use the most fuel, in targeting incentives. It is further argued that the incentives must yield a reasonable return on a fleet operator's AFV investment, over the life of each vehicle, otherwise the incentives will not be used.

Response:

New York does have incentives in place to encourage the use of AFVs and additional incentives are being developed. The incentives are comprehensive and designed to achieve benefits from as many classes of vehicles and fuels as possible.

Comment:

Vandor + Vandor suggests that the cost of liquefied natural gas (LNG) depends on the liquefaction method and the cost of the source natural gas. Vandor + Vandor argues that the most serious impediment to LNG is the federal excise tax. They suggest that the best solution is the adoption of a federal alternative fuel tax credit, and the second best solution is for each state to adopt alternative fuel tax credits. Vandor + Vandor also discusses the approximate extra cost of a LNG engine and a 100-gallon LNG fuel tank. Furthermore, Vandor + Vandor discusses the incremental cost of LNG buses and argues that multiple orders could reduce the figures.

Response:

The SEP does not identify any alternative fuel as being more beneficial than another and, therefore, deserving of support. Instead the SEP encourages development of all fuels so that they may compete fairly in the marketplace. The marketplace will identify those fuels that are most energy efficient and produce less air pollution. In this way, the SEP is "fuel neutral."

Comment:

Vandor + Vandor suggests that the State should lead the rest of the nation in augmenting the Alternative Fuel Vehicle Act of 1997 by enacting a tax credit of $0.50 per "gallon equivalent" of "alternative fuel" as defined by federal statutes.

Response:

The use of tax credits to promote alternative fuels may be a good way to develop the alternative fuel market. Before implementation, however, the potential loss of revenues must be evaluated to determine the impact of that loss on other affected programs. This information is needed to help determine what can be progressed and what may have unacceptable impacts. In addition, the environmental impacts of the deferred programs should be considered in the evaluation of potential tax credits.

Comment:

Vandor + Vandor suggests establishing "green curbs" in urban areas to encourage AFV use. Vandor + Vandor argues that for fleets routinely delivering to congested urban areas, the annual value of green curbs (exclusive AFV parking) could offset the "after tax credit" cost of AFVs. Vandor + Vandor believes this policy would not cost anything and that if the exclusivity of green curbs is rigorously enforced, they will generate local revenue.

Response:

The comment suggests an interesting incentive to encourage AFVs by localities. It should be fully evaluated prior to any recommendation for implementation by local authorities.

Comment:

Vandor + Vandor suggests replacing registration fees for alternative fuel vehicles (AFVs) with a nominal fee for an AFV license plate. Vandor + Vandor argues that these plates would aid the State in evaluating the success of its incentive program.

Response:

The comment suggests an interesting incentive to encourage AFVs. It should be fully evaluated prior to any recommendation for implementation. The fiscal impacts to New York State program areas must be considered.

Comment:

Vandor + Vandor suggests eliminating or rebating the sales tax on alternative fuels used by AFVs heavier than 14,000 lbs. Vandor + Vandor argue that medium- and heavy-duty AFVs tend not to be as fuel efficient as their diesel counterparts. They believe that a sales tax waiver would allow some price parity between diesel and alternative fuels on a per mile traveled basis. Furthermore, a sales tax waiver or rebate

would be "revenue neutral" because it would be offset by the remaining taxes collected on up to 25% more compressed natural gas, needed for these vehicles to travel the same distance.

Response:

The comment suggests elimination or a rebate of sales tax for some medium- and heavy-duty AFVs as necessary to achieve parity with diesel vehicles. It is not clear why a subsidy for fuel inefficiency is an appropriate mechanism. More information is needed to evaluate this proposal fully.

Comment:

Vandor + Vandor suggests discounting New York State Thruway E-Z rates for all alternative fuel vehicles (AFVs). Vandor + Vandor argues that this is not a legislative matter because agencies that operate toll roads and bridges are independent authorities with revenue mandates related to the bonds they issue.

Vandor + Vandor believes that reduced tolls would help AFV fleet owners and that most of these fleets would be centrally fueled and would travel in areas near a home base.

Vandor + Vandor suggests that the elimination of the gross receipt and Metropolitan Transit Authority (MTA) tax on compressed natural gas (CNG) and electricity used in alternative fuel vehicles be accelerated. Vandor + Vandor argue that unlike gasoline or diesel fuels, CNG is taxed twice -- through the Petroleum Business Tax and the Gross Receipts Tax (GRT). Furthermore, the economics of electric vehicles (EVs) would be enhanced if electricity used in EVs were also not subject to GRT.

Vandor + Vandor suggests incorporating alternative fuel vehicle (AFV) incentives in school bus contract reviews. Vandor + Vandor argue that New York City's (NYC) Local Law 6 of 1991 provides a basis for establishing an AFV incentive program for buses in NYC. Furthermore, Local Law 6 could be a model for legislation in other jurisdictions.

Response:

The comment suggests an interesting incentive to encourage AFVs. It should be fully evaluated prior to any recommendation for implementation. The fiscal implications for New York State must be considered.

Comment:

Vandor + Vandor suggests that the State establish alternative fuel vehicle (AFV) purchase goals that go beyond federal mandates. Vandor + Vandor argues that the State's purchasing power could significantly enhance the availability of AFV products, reducing costs for both public and private fleets.

Response:

New York State is already making progress on initiatives to purchase and use more AFVs in the State fleet.

Comment:

Vandor + Vandor suggests that a protocol for private market "mobile source" ERC trading be established. Vandor + Vandor argues that the Northeastern states, New York's Attorney General, EPA, and engine manufacturers should establish protocols for quantifying the emission reduction benefits of AFVs. They believe a "free market" ERC program would not have cost implications to the states and that the annual value of ERCs for each medium- and heavy-duty AFV could be as high as $1,000.

Response:

Such a program could be initiated as an incentive to develop AFVs, as long as it is consistent with Sections 231.12 and 231.13 of Part 231 of 6 NYCRR. The difficulty to date in creating mobile source ERCs has been how to satisfy the requirements that ERCs must be quantifiable, enforceable, permanent, and surplus. While EPA guidance on meeting these requirements has been promised, none has been given to date. Once such guidance is available, the incentive to create mobile source ERCs may be pursued. Also, recently enacted tax legislation affecting electric vehicles, clean-fuel vehicle property, and clean-fuel vehicle

refueling property, may promote AFVs even more than the development of ERCs.[1] The legislation provides a clear financial incentive for businesses that add AFVs to their fleet. This program was effective on January 1, 1998 and continues through February 28, 2003. In addition to New York State incentives, taxpayers can also take advantage of existing federal tax incentives. This includes a federal tax credit for purchase of qualified electric and hybrid electric vehicles and for businesses or people who purchase clean-fuel vehicles (other than electric vehicles) and certain refueling property.[2]

In addition, under the 1996 Clean Air/Clean Water Bond Act, significant funding was established for local government to purchase clean fueled buses and for State fleet purchases of clean-fueled vehicles. These programs have resulted in several million dollars being spent on natural gas vehicles and associated infrastructure.

Comment:

Vandor + Vandor suggests that viability of a "clean corridor" that links Canada and New York with a network of alternative fuel dispensing stations, should be evaluated. Vandor + Vandor argues that this policy would not only allow for a continuous network of dispensing stations, encouraging longer haul AFVs, but it could also have positive benefits related to the North American Free Trade Agreement (NAFTA) and the price of alternative fuels.

Response:

The comment suggests an interesting incentive to encourage AFVs. It should be fully evaluated prior to any recommendation for implementation. The fiscal implications for New York State must be considered.

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[1]See laws of 1997, chapter 389, §§ 127-132, enacting new tax legislation, §§ 187b (covers corporation taxpayers such as utility companies), 210 (24) (covers franchise taxpayers such as most business corporations and their affiliates) and 606(p) (covers personal income taxpayers such as individuals, S corporations and LLCs).

[2]See Internal Revenue Code § 30 enacted by Public Law 102-486, Title XIX, and Internal Revenue Code § 179A enacted by Public Law 102-489, Title XIX.

Comment:

Vandor + Vandor suggests the establishment of a marketing program that advertises the availability of the various incentives and the location of fueling facilities and AFV sales and service centers. Vandor + Vandor believe that the 1997 AFV Act has not been widely publicized. Vandor + Vandor also feels that as incentives are added and as the economics of AFVs become more attractive, marketing becomes the final step in inducing AFV purchases.

Response:

The comment suggests an interesting incentive to encourage AFVs. It should be fully evaluated prior to any recommendation for implementation. The fiscal implications for New York State must be considered.

Comment:

Vandor + Vandor suggests establishing an AFV reporting requirement to the Governor and Legislature. Vandor + Vandor suggests that the following groups should do the reporting: DOT could report on the number of AFV license plates in service; the Department of Taxation and Finance could report on the use of AFV tax credits; NYSERDA could report on which alternative fuels replaced standard fuels; the toll collecting authorities could report on the extent to which AFVs used their facilities; the PSC could report on the pricing of alternative fuels; and a single agency, perhaps NYSERDA, could collect and analyze the data.

Response:

New York currently has an Alternative Fuels Vehicle Business Task Force, composed of businesses, public fleet owners, environmental groups, and State agencies that identify opportunities to promote the use of AFVs. Furthermore, the New York State Office of General Services (OGS) currently maintains data on the use of AFVs in State agency fleets. Finally, as a point of clarification, DOT does not report on license plates because this is a function of the Department of Motor Vehicles.

Comment:

NYGAS suggests that while the majority of the SEP focuses on electricity prices, natural gas can play a significant role as a fuel for natural gas vehicles (NGVs). NYGAS points out that the SEP recognizes the important contributions which AFVs, particularly NGVs and EVs have made and can continue to make to the State's economy, energy independence, and environmental goals. NYGAS argues that there seems to be a disconnect between various State government agencies on strategy in this area, and between stated policy and implementation, and the SEP has not, to date, proven effective as a blueprint for State action in mobile emissions reductions.

Response:

The comment that the SEP recognizes the important contribution which AFVs have made and continue to make to the State's economy, energy independence, and environmental goals is acknowledged. The SEP stresses that government agencies should work together to develop the alternative fuel market.

Comment:

NYGAS expresses concerns regarding the discussion of the State Implementation Plan (SIP) under the Energy and the Environment section of the SEP and the implementation of that plan on mobile emissions reductions. NYGAS argues that if the DEC approach to SIP implementation remains limited to the calculation of emissions reductions and various mandates perform as projected (should they actually be put in place on schedule) then the SIP is unlikely to produce the results projected. Furthermore, utilities expressed concerns to DEC much earlier that the failure to meet mobile emission reduction goals might trigger further emission reduction requirements on stationary sources. This would have a negative effect on electric prices and keeping and attracting businesses to New York State.

Response:

New York State recognizes the importance of meeting the National Ambient Air Quality Standards and has devised various SIPs to attain the standards. The SIPs prescribe a balanced set of strategies to meet

necessary emission reduction targets from mobile, stationary, and area sources. New York State has evaluated the emission reduction strategies available and has selected those that are most effective in reducing emissions at reasonable costs to the impacted sources. New York State will constantly monitor the progress in meeting required milestones for achieving clean air and take appropriate steps to ensure that all sources are meeting emission reduction targets.

Comment:

The Sierra Club (Atlantic Chapter) suggests that a reduction in the movement of goods by truck, decreased reliance of personal vehicles, and decreased vehicle miles traveled (VMT) will result in more efficient transportation of people and goods, cleaner air, and a healthier economy. Numerous aspects are discussed which would reduce VMT.

Response:

The comment addresses many aspects of initiatives to reduce the growth in VMT and the use of single-occupant vehicles that are described in the Energy and Transportation Issue Report. Many of the actions listed in the comment are already described in the Transportation Issue Report or are under study by the appropriate transportation agency or transit operator. The benefits of these types of actions in terms of energy use, air quality, economic development, quality of life, etc. are generally well recognized, as the Sierra Club indicates. Still, not all solutions will work everywhere and local conditions must be taken into account to devise the most cost-effective and workable strategies.

Comment:

The Sierra Club (Atlantic Chapter) suggests that New York State needs to formally adopt a land use plan to retain jobs, protect the environment, and promote energy efficiency. The Sierra Club argues that the SEP ignores the role of land use planning. It is further indicated that without intelligent land use planning, suburban sprawl develops, resulting in increased car dependence, more vehicle miles traveled, higher costs for commuters, poor air quality, farmland loss, and the abandonment of investments in older communities.

Response:

The issue of suburban sprawl and land use planning is complex. If not approached in a careful and sensitive manner, this issue can easily become a matter of competing interests among local, regional and State concerns.

The Sierra Club identifies several land use policies found in various laws. In New York State "home rule" (*i.e.* local control) governs. To implement a formal land use plan, such as in Oregon or Maryland, would require legislation.

At the State level, land use issues fall under the purview of several agencies. The SEP can help in this regard by providing policy guidance for energy-related decisions made in the public and private sectors and by coordinating State government's energy-related activities.

Comment:

The Sierra Club (Niagara Chapter) suggests the State recommend that the federal government increase the corporate average fuel economy standards for cars and apply these standards to light trucks, mini-vans, and sport utility vehicles.

Response:

Corporate Average Fuel Economy (CAFE) standards have not been updated for a number of years. Increasing CAFE standards is a complex issue. It involves concerns related to energy efficiency as well as concerns regarding air quality, safety, and economic competitiveness. The regulation of fuel economy standards is governed by federal legislation and the federal government is the appropriate place to address increasing CAFE standards.

Comment:

The Sierra Club (Niagara Group) states that if the SEP is serious about encouraging energy-efficient movement of goods, it fails to address the problem of the North American Free Trade Agreement (NAFTA) stimulating over-reliance on diesel trucks for international trade with Canada and resulting air pollution from these trucks. The Sierra Club also suggests that the Route 219 highway project between Springville and Salamanca will produce vast amounts of additional energy consumption and waste.

Response:

The SEP acknowledges the interrelationship between energy use and transportation decision making. It urges decision makers to rely on technically sound analyses of energy impacts and to weigh any impacts seriously in the selection of alternatives for major transportation actions. NAFTA is a matter of federal law and comments on it should be addressed to the federal government. Comments related to specific transportation projects should be made as part of the public review and environmental process for individual projects.

Comment:

NMPC suggests that it is unclear in the SEP whether the second bullet on the Draft SEP p. 5, which refers to AFVs, includes electric vehicles.

Response:

The term "alternative fuel vehicle" is meant to describe the broad array of existing and potential fuels and vehicles including electric vehicles.

Comment:

The Cross Lakes Center River Association indicates that the SEP does not address the economic and energy-saving benefits of the State Canal System and suggests that there are benefits of using this facility by commercial vessels.

Response:

The comment correctly points out that water-borne movement of goods is energy efficient. As such, this type of goods movement should generally be encouraged. The use of the Erie Canal for this purpose may be feasible, especially for non-time sensitive goods. Activities necessary to accommodate this type of use need to be determined and evaluated in the context of needed versus available resources and alternative scenarios.

Comment:

RCEMC suggests that the State implement and adopt measures to reduce air pollution and congestion in the transportation sector by investing in incentives to encourage ridesharing, use of mass transit, park-and-ride facilities, telecommuting, and flexible pricing to discourage single-occupant vehicles. RCEMC also suggests that the SEP put more emphasis on mass transit and encourage energy-sensible approaches.

Response:

The SEP, as well as the Statewide Master Transportation Plan, *The Next Generation...Transportation Choices for the 21st Century*, discusses the importance of mobility and the need to enhance mobility. Mobility is defined as moving people and goods in a safe, effective, and energy-efficient manner. Most, if not all of the recommendations suggested by RCEMC are discussed in the Energy and Transportation Issue Report; regularly evaluated by DOT and other transportation agencies; and adopted and implemented when demonstrated to be a cost-effective and energy efficient strategy that meets basic transportation needs.

Transportation energy concerns are identified and discussed as priority strategies and policies recommended by New York State. The SEP lists these transportation energy policies and the language

encompasses the actions and strategies described in the Energy and Transportation Issue Report and the recommendations contained in the comment.

Comment:

The New York State Petroleum Council (NYSPC) is concerned that the SEP supports open competition for a number of energy resources, but does not apply the same standard to motor fuels. NYSPC opposes the use of State tax dollars as an incentive for alternative fuel use. NYSPC argues that if less regulated electric and natural gas industries are good for New Yorkers, so too is a motor fuel industry which has fewer government intrusions and encumbrances.

The Empire State Petroleum Association (ESPA) suggests that the alternative fuels market be permitted to develop without artificial government stimuli and that the recommendations contained in the SEP adopt a more conservative approach while remaining consistent with federal statutory mandates. ESPA states that it does not oppose the development of an alternative fuels market as long as equal access to the market is guaranteed, no special preference is conferred on any particular energy source to the disadvantage of another, and the competitive marketplace provides a level playing field to all participants.

Response:

The contributions of the petroleum industry to advancements in fuels to improve air quality and meet federal environmental requirements are acknowledged. The 1998 SEP adopts a balanced approach with regard to fuels used by the transportation sector. It does not discourage the use of petroleum or favor one type of alternative fuel over another. The energy and air quality costs and benefits of all transportation fuels should be carefully and thoroughly evaluated.

The SEP is consistent with the comments that the alternative fuel market should provide a level playing field to all participants and that the alternative fuel market be developed. At the present time, the playing field between petroleum products and alternative fuels is not level and government has a role in attempting to achieve parity. As the SEP indicates, government can work to accomplish this by example and by incentive with a minimum of regulation (*e.g.* that which is required by federal mandate). Moreover,

alternative fuels provide environmental and fuel diversity benefits that are also important State energy policy objectives.

Comment:

NYSCAA/ NYSWDA suggests that the SEP have a more substantial discussion of the "Welfare to Work" program.

Response:

By its nature, the SEP can only briefly describe the various initiatives undertaken to use energy more efficiently in providing transportation services. Text has been added to the SEP to better describe the "Welfare to Work" program.

Comment:

Environmental Advocates (EA) suggest that there should be a greater focus on designing communities around public transportation stations, as well as a greater focus on requiring new residential developments to contain a mix of uses to reduce dependence on automobiles. EA argues that the State should take a more active role in shaping local development to ensure it occurs in the most energy efficient manner and with attention to public transportation opportunities. EA also suggests that in light of the recent EPA Tier Two study, which indicated that current emissions programs will not be sufficient to achieve healthy air in the future, the State should be taking a strong stand on strengthening Tier Two standards. EA argues that this involves ensuring that polluting sport utility vehicles meet the same emission standards as cars, decreasing the content of sulfur in gasoline, and increasing dependence on alternative fuels.

Response:

The comment supporting the SEP's objectives for transportation and energy is acknowledged. The Transportation and Energy Issue Report presents examples of activities to encourage the use of public transportation from around the State. Examples listed for the upstate area include the "Hublink" in the

Buffalo area, Dover Plains - Wassaic extension of the Harlem line, expansion of the high speed passenger rail service, and the "Welfare to Work" program which is a Statewide effort. Clearly, these are not the only initiatives in the upstate area but are listed to present a sample of ongoing activities. An additional example of an initiative in the Capital District has been added.

The role of State government in shaping local development and zoning decisions is an issue that must be handled with care and sensitivity. The SEP offers the opportunity for State agencies that have an interest in this issue to coordinate their activities and address this issue in a consistent manner.

The SEP speaks to the need to develop the alternative fuel market to encourage the use of AFVs. The other initiatives suggested in the comment are being pursued by New York State at the regional (sulfur content of gasoline) and federal levels (emission standards for sport utility vehicles).

Comment:

NRDC suggests that the conversion of diesel buses in New York City should be a high priority. Also, NRDC supports electric and hybrid vehicles and is in favor of zero emission vehicles. Furthermore, NRDC suggests a strategy be developed for the retirement of older, polluting vehicles.

Response:

The SEP stresses the importance of developing the alternative fuel market. The SEP also serves as a mechanism for public agencies to coordinate and guide their efforts in this arena. Programs that provide for the retirement of older vehicles have had mixed success, depending on the limits of the individual programs. New York State has chosen to pursue emission control strategies that are generally regarded as being more cost-effective, than retiring older vehicles.

Comment:

NRDC suggests that, although difficult, a strategy for the issue of urban sprawl be developed.

Response:

The comment correctly points out that the issue of urban sprawl is a difficult one. It involves agencies, both public and private, at all levels of government. The SEP can serve as a coordination mechanism to address this issue from a transportation/energy efficiency perspective. Local concerns and needs must be considered and balanced with regional and State concerns related to energy expenditure and basic transportation needs.

Comment:

Jeffrey Beller suggests that the State and NYSERDA look into the potential for the production of light-weight hybrid automobiles in New York State.

Response:

NYSERDA supports New York firms in developing and producing advanced vehicle technologies for national and international markets. NYSERDA's Transportation R&D program addresses improved vehicle performance by: developing advanced drive systems, such as fuel cells and electric and hybrid-electric drives; more efficient vehicle subsystems; and reductions in vehicle mass. NYSERDA's research focuses on moving these ultra-clean, super-efficient vehicle technologies out of the laboratory and into real-world demonstrations.

Comment:

The Regional Planning Association (RPA) suggests that the SEP could establish a better implementation program with measurable targets for meeting its goals. RPA argues that specific performance criteria or measures of effectiveness would help to establish and monitor the State's progress in meeting the goals and objectives laid out in the SEP. RPA argues that similar standards could be established for many transportation-related initiatives, including vehicle miles traveled, vehicle hours of delay, and transit mode-share.

Response:

The Energy and Transportation Issue Report provides strategic direction and policy guidance to coordinate State activities related to energy concerns. It is not intended to mandate specific governmental requirements or quantify specific goals and targets. Nevertheless, many of the issues identified in the comment are addressed in the Energy and Transportation Issue Report and reflect activities in of the transportation sector.

The Energy and Transportation Issue Report draws on the Statewide Master Transportation Plan, *The Next Generation...Transportation Choices for the 21st Century.* The New York State Department of Transportation (DOT) is currently implementing the goals and action steps in the transportation plan and identifying additional steps to enhance the energy efficiency of the transportation system. Further information and details of this effort are available through the Energy Planning Board or from DOT.

2.6 ROLE OF GOVERNMENT

Comment:

MI suggests that language be added in the Role of Government Issue Report (Draft SEP, p. 106) to clarify that "... during the transition to a fully competitive market, New York State must ensure that consumers experience reduced prices as the result of the multi-year plans and that incumbent utilities do not engage in anti-competitive behavior." MI makes reference to a Public Service Commission (PSC) Order of July 3, 1998, in New York Electric and Gas Company's (NYSEG) Case 96-E-0891 which prescribes remedies for such behavior.

Response:

The PSC has the oversight responsibility to ensure compliance with the settlement agreements with the utilities, as the SEP acknowledges.

Comment:

EANYS asserts that the costs associated with future activities affecting energy and social and policy objectives should be paid for by the State's General Fund. EANYS adds that, absent the appropriate use of taxpayer funds, such costs must be borne fairly by all market participants and not merely by the State's utilities and their customers, and the SEP should recommend phasing out those environmental burdens on the electric and gas industry which are not borne by other energy providers.

Response:

The PSC established a non-bypassable System Benefits Charge (SBC), during the transition to competition, to fund programs of the nature discussed above. The PSC has determined that it will review this policy in three years to determine if the marketplace has developed sufficiently to assume these costs. With regard to costs "not borne by others," other fuels/energy providers are subject to environmental standards which the electric and gas industry do not shoulder such as the lead and sulfate content of petroleum products, etc. It is essential for a clean and healthy environment that all sectors of New York's economy take the necessary steps to ensure clean air, water, and land.

Comment:

NYGAS states that deregulation is a defining principle of the transition to competition and that reducing government's role to an absolute minimum is a prerequisite to allowing markets to function properly and efficiently.

Jeffrey Beller prefers to see competition, but with regulatory protections provided by government. He feels that a function of government should be to protect the layperson from large corporations, referencing the Petroleum Overcharge Restitutionary funds.

Response:

As stated in the Role of Government Issue Report, New York is encouraging the development of an electricity industry framework, similar to that developed for natural gas that supports: many buyers and sellers, including new entrants; greater customer choice; continued service reliability; and, environmental and consumer protections. The SEP further states that where regulation is necessary, it should be applied flexibly and fairly, in ways that encourage market innovation and efficiency. The SEP recognizes that government's role in energy markets is changing but that its responsibility to protect consumers from fraudulent and discriminatory business practices must continue.

Comment:

NYPP states that the role of government agencies should be carefully evaluated as deregulation of the electricity industry progresses. NYPP suggests, as part of the re-examination of government's role in electricity regulation, the SEP recommend that a public forum be convened to receive input from various interested parties on the role of government in a deregulated electricity market. This subject needs further exploration beyond that which can be discussed in the SEP.

Response:

The public meeting and comments used to develop the SEP afforded ample opportunity for input and participation by the public and interested parties to comment on the SEP and its strategies and policies, and in particular, on the role of government in energy markets. Moreover, the PSC, in its *Competitive Opportunities for the Electric Industry* and related cases provided multiple forums for participation in specific investor-owned utility settlement proceedings. This includes generic proceedings on the SBC, metering, billing and information services, utility reporting requirements, the Dairylea Cooperative retail access pilot program, and other issues germane to the deregulation of the electric industry. Continued interaction and discussion between New York's energy planning agencies and its energy industries is essential to understand fully how greater competition unfolds in the future.

Comment:

MI suggests that during the transition to a fully competitive market, New York State must insure that consumers experience reduced prices as a result of the multi-year [utility rate] plans and that the incumbent utilities do not engage in anti-competitive behavior. MI also suggests that the SBC is necessary for funding of "low-income energy efficiency and energy management pilot programs" not "low-income" programs in general, and would like the SEP to make note of this point.

Response:

The PSC has reached settlement agreements with each of the State's utilities that contain both rate reductions and safe-guards against anti-competitive behaviors. The PSC has made clear its intention that the low-income energy efficiency programs funded by the system benefits charge is a pilot program. The SEP language has been changed to reflect MI's suggestion. Discussion of the SBC-funded program is consistent with the PSC Order and directives.

Comment:

IPPNY concurs with the SEP contention that markets can be stifled by outdated "command and control" type regulation. In the same vein, IPPNY concurs with the SEP's objective that government serve as a catalyst to promote competition by reducing unnecessary or duplicative regulatory requirements because energy markets are changing. IPPNY also agrees that government should work to eliminate unnecessary barriers to siting new energy supply sources.

Response:

IPPNY's comments are consistent with the language of the SEP.

Comment:

NMPC suggests that the State resist the temptation to manage competition if energy markets are to work properly and that a comprehensive review of all State laws affecting the energy industries is overdue. NMPC suggests further streamlining State government and regulation as means to provide important benefits to the State's economy and employment.

NMPC suggests that the SEP be more clear on the actions it deems desirable for the State to take, and that the SEP steer clear of actions that involve governmental interference, and prescriptive laws and regulations with direct or indirect subsidies. One example provided is in the context of energy efficiency measures and renewable resources. NMPC states that, if an existing law or regulation unnecessarily blocks the use of these measures, that could be a barrier worthy of removal. However, failure of a measure to achieve economic performance due to cost and technical characteristics does not constitute a barrier worthy of governmental remediation. Promoting, supporting, and encouraging such measures through some form of subsidy would be inappropriate.

Response:

The SEP addresses the State's intention "to make sure that the transition to greater choice is orderly and that the benefits of competition are available to all customers, regardless of their size or economic influence." The PSC has various activities underway to ensure that competition unfolds smoothly and that utility divestiture, energy service company aggregation, new merchant plant generation, and related activities occur freely. It is not the State's intention to subsidize energy resources that are uneconomical. However, the State recognizes the continuing need to support research and development in new energy technologies and indigenous resources in New York, particularly in those areas where market incentives and mechanisms do not address adequately the needs of New York businesses and residents.

Information Availability

Comment:

NYSCAA/NYSWDA recommends that the "SEP include a commitment to ensuring that New Yorkers have access to information about their options and about the changes that are occurring ..... with the changing energy market." They express concern that "... the competitive market will encourage the use of the Freedom of Information Law's trade secret protection."

Response:

The PSC, along with the investor-owned utilities, is publicizing the retail access schedule for the electric industry, how retail access will work, and the options available for receiving service under retail access. In the event that energy suppliers file information claimed to be exempt from disclosure because of the trade secret exemption in the Freedom of Information Law (FOIL), the agency receiving the information will have to evaluate such claims on a case-by-case basis. However, in order for markets to perform properly, information must be available to all market participants in a timely manner.

Comment:

NAESCO states, "Equal access at the same time to market price information for all market participants should be established as an important competitive principle in the plan."

Response:

While not mentioning market price information specifically, this tenet is reflected in the discussion in The Role of Government Issue Report, Section 2.6. Equal access to market price information is a basic principle in the development of the New York Independent System Operator (ISO). Once the ISO is operational in 1999, electricity price and other ancillary services market information will be available to all market participants at the same time.

Comment:

Joint Supporters states that utilities should supply customer credit information to energy service companies (ESCOs) or not recover uncollectables in rates, "Credit risk is something that is a factor of the new market."

Response:

The availability of customer credit information to ESCO's is an issue in the detailed development of retail access programs and has been dealt with in the specific utility proceedings before the PSC. Customer credit history will be covered in the PSC's upcoming "uniformity" project which will look at the differences in the individual utility programs and determine which processes should be uniform across the State. The issue is complicated by customer privacy considerations and by the regulated utilities continuing to be the provider of last resort.

System Benefits Charge-Funded Programs

Comment:

NMPC suggests that NYSERDA should continue to fund the types of programs that it currently funds through its existing appropriations, and should fund public benefits programs so directed by the PSC through SBC funds. If NYSERDA only plans to fund SBC-type projects, then the current NYSERDA assessments on the utilities for non-SBC funded R&D should be discontinued.

Response:

NYSERDA's pre-existing statutory R&D programs address all fuels and will continue to be administered as such.

Comment:

NAESCO stated its support for the recently-enacted SBC-funded program approved by the Public Service Commission (PSC) and administered by NYSERDA, and in particular, for the competitive disbursement of funds in an open manner.

Response:

The SBC-funded public benefit programs will be administered predominately on the basis of competitive solicitations consistent with the plan for those programs as approved by the PSC.

Comment:

Decotex 2000 suggests that the SBC funds should be used to inform the public about restructuring and retail access.

Response:

The PSC has broad-based efforts underway to inform the public about restructuring and retail access. In approving NYSERDA's SBC-funded public benefits plan with modifications, the PSC instructed NYSERDA to reduce the scope of its outreach efforts and not to duplicate the PSC's outreach work. NYSERDA's outreach will be targeted specifically to its SBC-funded programs.

Comment:

NYSCAA/NYSWDA appreciates the PSC approval of the plan for SBC-funded public benefit programs with increased funds for low-income programs. These associations believe that the low- income component of the SBC funding will be needed beyond the initial three-year transition period. The Pace Energy Project also voices its concern at the three-year period, stating that it is not going to do the job, particularly if one simply begins phasing out the programs in a year and a half.

Response:

The PSC will review the functioning of the SBC at the end of the three-year period, and will defer to a future decision on whether SBC programs should continue beyond the three-year period (Case 94-E-0952, Opinion No. 98-3, p. 6). Better information for an informed decision should be available after greater experience with the progress of electricity industry restructuring and the functioning of the SBC-funded public benefits program.

ENERGY SUPPLY ASSESSMENTS

3.0 FORECAST SUMMARY

Comment:

NYPP states that, even the high growth scenario, load forecast is below what the NYPP is expecting under normal conditions. Annual load growth has surged from .5% to 1.5%.

Response:

The electricity load forecast is based on anticipated near-term growth expected through the transition to greater competition in the electricity markets, and on expected future growth once markets are fully competitive. The forecasts (low, outlook, and high) represent a range of possible estimates which could differ from those of the NYPP although the range of these estimates fall with the point forecast provided by the NYPP.

3.1 ELECTRICITY

Electric Transmission and Distribution System

Comment:

ESCO-Net suggests that the independent system operator (ISO) should control all transmission facilities so that transmission and distribution (T&D) companies cannot manipulate the market price by creating constraints.

Response:

Market power, whether exercised by a transmission and distribution (T&D) company or generation owner, is a major concern of the PSC and the Federal Energy Regulatory Commission (FERC). This concern has been addressed in the formation of the ISO where all transmission facilities that participate in the transfer of electric energy between utilities will be under the control of a board independent of transmission owners. The ISO filing is discussed in Section 2.3 "Competition Plans and Progress" and in the Effects of Competition on New York Appendix.

Comment:

The Pace Energy Project states that T&D system planning should not be left to private decision making, and that the State needs to look at the economic and environmental impact of these types of system reinforcements.

Response:

The T&D systems will remain regulated facilities and, as such, will continue to be subject to review for public need and environmental compatibility, as in the past. In the competitive energy market, entities other than regulated utilities will also be able to propose, plan, and finance system reinforcements. The PSC's traditional role of reviewing and licensing proposed reinforcements will remain.

Reliability

Comment:

Consolidated Edison states that the SEP should declare that the "State's energy-related activities must not compromise the reliability of either the bulk power system or the local electric distribution systems for potentially lower rates that a competitive electric industry may produce."

Response:

The transmission and distribution systems will remain fully regulated, subject to penalties for failure to maintain suitable service quality, and will not be compromised. Although electricity supply sources will not be regulated, New York's ISO and the New York State Reliability Council, as well as the regulatory oversight of the PSC and the FERC, will assure that New York's electricity system continues to be reliable.

Comment:

Assemblyman Paul Tonko suggests that as utilities divest their generation and independent power producers (IPPs) restructure their power purchase agreements, the State should evaluate how much and what type of supply is available in-state and out-of-state in relation to current and projected demand, with and without competition for electricity services. Assemblyman Tonko also suggests that the State should track anticipated need dates to ensure that market forces are adequately anticipating and meeting in-state demand, without exacerbating the State's overcapacity problem.

Response

The PSC and NYSERDA will continue to monitor need dates for capacity and projected demand, as was done in the electric resource assessment in this SEP. However, the generation market being established under electric restructuring will be a far better barometer of need dates and demand. This electric-generating market will provide the proper signals through a daily bidding process to determine

what and where electric-generating capacity and transmission capacity are needed. As a result of the competitive market structure being established in New York State, utility electric generation is being divested to new owners and there are numerous proposals to build new electric generation capacity.

Comment:

The Rensselaer County Environmental Management Council (RCEMC) believes that the SEP should support cogeneration through State incentives as it creates and retains jobs and reduces air and water pollution.

Response:

When nearly all generation is deregulated, the new market will favor those technologies that are most efficient and dependable. Cogeneration should be able to compete on its strengths of efficiency and dependability.

Comment:

The RCEMC takes issue with the statements in the SEP that "New York will be capacity deficient by the year 1999-2002." Further, it disagrees with the assumption that all "independent power producers (IPPs) will not have their contracts renewed."

Response:

The capacity need analysis presented in the SEP covers a range of assumptions for the load requirements and available capacity. Starting with New York Power Pool's (NYPP's) model, five other alternate scenarios were developed. There is also a discussion in the Electricity Resource Supply Assessment of the effect of continued operation of the IPPS at the expiration of their contracts. The year when the capacity will become deficient is given as a range 1999 thru 2005 (RCEMC incorrectly quotes it as 2002) for a low to high range of projected electricity load growth, including the reserve margin. The projections are best estimates, and could change depending upon factors discussed in the SEP.

Comment:

The New York Power Pool (NYPP) suggests that the SEP should contain a new energy policy strategy that states "New York State should support and encourage compliance with reliability standards by all electric market participants to assure continued reliable electric service in New York State."

Response:

The PSC articulated one of its goals for the transition to a competitive environment to be the maintenance of a reliable electric system. In fact, the establishment of the New York State Reliability Council, in conjunction with the ISO, is designed to ensure that the electric system continues to operate reliably in the competitive environment.

Comment:

NYPP suggests that the SEP should contain a new energy policy strategy that states "New York should encourage resource additions that increase fuel diversity."

Response:

The current resource mix for electric generation in New York is highly diversified and balanced. The SEP states that new generation will burn natural gas, because it is projected that gas will be inexpensive and available in the future. However, if the price of natural gas increases, it is expected that market forces would dictate the introduction of alternate fuel capability at new and existing plants. Moreover, customers and ESCOs can be expected to seek a diversified portfolio to hedge price fluctuations or for environmental reasons. Additionally, the PSC is examining the use of environmental disclosure as a means to allow consumers to choose their energy supply, which could lead to greater fuel diversity in the future. Therefore, fuel diversity can be expected to be an element in the competitive market as market participants attempt to differentiate their product offerings to consumers.

Comment:

NMPC points out that the SEP states, "In a fully competitive retail market, customers should be able to choose the combinations of price, service, reliability, and environmental characteristics that suit them best." "Reliability" should be dropped from this statement or clearly defined, as most customers will not have much choice with regard to reliability.

NYSCAA/NYSWDA state that "New York must ensure reliability and must recognize that families and communities will continue to need support in understanding the terms and conditions of their service."

Response:

The term "reliability" is appropriate in this context. It is true that the customer will have no direct choice in the level of reliability that is provided by the distribution system because the distribution system will not be part of the competitive market. The supply of energy, on the other hand, will be competitive. Customers can negotiate a desired level of reliability of supply and implement end-user equipment required to accompany that choice (as opposed to distribution reliability). For example, some customers currently can select either a firm or non-firm service level for either supply or transmission access.

The PSC, as a member of New York's Energy Planning Board, will continue to supervise the reliability of the transmission and distribution system and ensure that the utilities maintain reliable service. Consumers, however, are free to choose a lower level of reliability for supply if they desire it and if it is offered. As in the purchase of any commodity in a competitive market, consumers must question and negotiate the terms and conditions of their service. However, the PSC and energy service providers will also provide information on retail access and be available to answer consumer questions.

Worker Safety and Maintenance

Comment:

NMPC states that tight margins and intense competition may create pressures on market participants to reduce worker safety training or reduce expenditures on safety equipment, subjecting workers to greater hazards. Equipment and facility maintenance programs may also be affected.

Response:

As in the past, Occupational Safety and Health Administration (OSHA) regulations that ensure the safety of electric industry workers, along with other workers in both regulated and competitive industries, will remain in effect and enforced. Transmission and distribution (T&D) functions will continue to be fully regulated and, therefore, there should be no change in the maintenance of these facilities. As the electricity generation market becomes fully competitive, poorly maintained and operated facilities will be unable to compete in the marketplace. There will be a strong incentive to maintain facilities in good operating condition so that they can continue to supply competitively priced electricity to the marketplace.

Nuclear Issues

Comment:

The Pace Energy Project states, "... the plan seems to suggest that potential air quality benefits [suggest] future roles for nuclear power in New York State. Please don't go there. The public will really not stand for any new adventures in nuclear technology. There are far better ways to address air quality problems than to prop up a plant that can't compete or to buy into a new generation of reactors."

Response:

The SEP does not advocate development of new nuclear reactor technology, rather, it suggests that there be a careful and deliberate analysis of the role of the current nuclear generators in the competitive market. That analysis should consider all relevant issues related to nuclear power, including air quality benefits.

Comment:

NYPP points out that a SEP policy strategy states: "Continue to investigate nuclear energy's role in a restructured electricity industry focusing on economic competitiveness, potential air quality benefits..." The NYPP suggests that the air quality benefits of nuclear power already exist and are clearly demonstrable and suggests that the word "potential" should be removed.

Response:

Nuclear-generated electricity currently provides demonstrable air quality benefits. However, the future air quality benefits that nuclear units produce will be based on their future economic viability in a restructured electric industry. The word "potential" is appropriately used in this context.

Comment:

The Sierra Club (Atlantic Chapter) comments that radioactive waste from nuclear power plants poses a public health and safety problem.

Response:

The regulation of safety, including the handling of waste from nuclear power plants, falls under the jurisdiction of the U.S. Nuclear Regulatory Commission (NRC) and, in some cases, agencies of various states with authority delegated from the NRC.

Comment:

The Sierra Club (Atlantic Chapter) suggests that the New York Power Authority (NYPA) should be excluded from nuclear plant auctions and nuclear plant sales to NYPA should be disallowed. NYPA's independence provides it with an advantage which "do[es] not bode well for competition."

Response:

Growing attention to global warming and greenhouse gas emissions by power plants may necessitate a new look at nuclear power's status as an emission-free source of energy. Precluding the involvement of New York State's public power agency in deliberations about New York's nuclear future would be shortsighted. State ownership of NYPA permits greater public input and control of such deliberations.

State and federal law set limits and describe the parameters for the allocation of NYPA electricity. As a consequence, NYPA is not independent to compete in the full market and therefore, cannot exercise market power to influence competition.

Comment:

The Sierra Club (Atlantic Chapter) states that money set aside for nuclear plant decommissioning must be adequate and should be collected from the generator.

Response:

The PSC determined that it should "review specific costs for nuclear power plant decommissioning on a utility-by-utility basis in rate or other proceedings and the allowance in rates of reasonable for decommissioning is consistent with U.S. Nuclear Regulatory Commission (NRC) requirements. This would mitigate concerns regarding the provision of adequate funding for the effective and timely clean up of nuclear plants." (Case 94-E-0952 - *In the Matter of Competitive Opportunities Regarding Electric Service* May 3, 1996. pp. 6-45.)

The NRC is amending its regulations on financial assurance requirements for the decommissioning of nuclear power plants. The amendments respond to the potential rate deregulation in the power generating industry and NRC concerns regarding whether current NRC decommissioning funding assurance requirements will need to be modified. The amendment requires power reactor licensees to report periodically on the status of their decommissioning funds, and on charges in their external trust agreements and other financial assurance mechanisms. The amendment also allows licensees to take credit for certain earnings on decommissioning trust funds.

Comment:

The Sierra Club (Atlantic Chapter) states that nuclear power should operate on a competitive basis, both profits and costs should be internalized. The Sierra Club also states that epidemiological studies should be conducted to determine the effects of routine releases of radioactivity currently considered acceptable, as any exposure to ionizing radiation is unsafe.

Response:

New York State continues to examine the issues associated with internalizing the costs of nuclear production, and these issues will be addressed in the Public Service Commission proceeding announced in Opinion No. 98-7. Safety concerns associated with releases of radioactivity within acceptable limits are the responsibility of the U.S. Environmental Protection Agency (EPA) and the U.S. Nuclear Regulatory Commission (NRC) who have conducted safety studies on these issues and are the federal agencies responsible for setting the standards for the emission of radiation. However, the New York State Department of Health (DOH) independently monitors radioactivity in the environment of nuclear power plants in the State and annually reports the results. DOH also monitors and reports health statistics by county.

Comment:

NMPC is "particularly concerned" with the "characterization of nuclear power as 'high cost' without any supporting evidence. It asserts that, on a forward looking basis, many nuclear power plants may be very competitive."

Response:

The SEP advocates a continuing investigation into "nuclear energy's role in a restructured electricity industry, focusing on economic competitiveness" with due consideration given to all relevant issues, including total cost. The PSC, as a member agency of the Energy Planning Board, intends to conduct that investigation as announced in Opinion No. 98-7.

Comment:

NMPC charges that the SEP does not fairly acknowledge the benefits of nuclear power with respect to fuel diversity, including less reliance on imported oil and environmental benefits including Clean Air Act attainment. Consolidated Edison "believes that the SEP discussion of Energy and the Environment is significantly remiss in failing to acknowledge the environmental benefits of nuclear energy, particularly in light of the SEP's stated concern that the economics of certain nuclear facilities in a competitive market can cause a shift of generation to fossil plants." Consolidated Edison points to the historic air emission reduction benefits of nuclear power and requests that the environmental benefits of nuclear power be recognized and acknowledged in the SEP. NMPC questions the State's ability to meet the nitrogen oxide (NO_x) emissions cap if nuclear power is lost. NMPC also states that replacement of nuclear-generated electricity with existing or new fossil fuel-fired generation could require use of between 35% and 77% of the State's current proposed NO_x emission allowance.

Response:

Nuclear generating plants contribute to fuel diversity, although diversity goals must be weighed against costs. These issues will be addressed in the forthcoming proceeding on nuclear energy instituted by the

Public Service Commission (PSC) in Opinion No. 98-7. It appears that the loss of nuclear power could increase the cost of compliance with the NO_x emission cap. The SEP considers the case where two representative nuclear plants are assumed to be unavailable. In that case, new generation would be needed in the year 2000. As is the case with the retirement of any generation unit, adequate capacity will need to be provided to maintain generation reserve margins and preserve bulk power system security. However, the comment presupposes that nuclear power is the only option available to the market to meet emissions caps. This assumption would ignore other opportunities to achieve environmental compliance while supplying load, such as: building low-emission, combined-cycle generation to displace high emission fossil plants; retrofitting existing fossil units; taking advantage of any cap and trade program that is initiated; generating emissions credits by seeking to reduce emissions from other sources, building additional transmission capacity; pursuing greater energy efficiency, etc. While NMPC's analysis of the strain placed upon New York generation to meet ambient air limits may be accurate, the decision to continue to operate nuclear plants will be driven principally by economic considerations that reflect numerous factors, including environmental needs, diversity, reliability, and return on investment.

Comment:

NMPC states that Nuclear Regulatory Commission (NRC) license renewal provides a source of extremely low cost, environmentally beneficial electricity.

Response:

This issue will be considered and explored in the PSC's forthcoming proceeding on nuclear power (PSC Opinion 98-7).

Comment:

Consolidated Edison argues that the SEP should also note that the wholesale market for electric generation will probably not "fully recognize or value air quality attributes of continued nuclear generation" absent explicit State or federal governmental intervention, making it difficult to achieve ambient air quality standards in non-attainment areas.

Response:

If the environmental benefits of nuclear energy have value by virtue of avoided costs of environmental compliance, then it is reasonable to assume that these advantages will be reflected in the market without further government intervention. Environmental compliance will be achieved in non-attainment areas through the successful implementation of the Clean Air Act and the State Implementation Plan (SIP). The role of nuclear power in the competitive market is more likely to be determined by overall economics rather than any single factor such as air quality benefit.

Comment:

Environmental Advocates is strongly opposed to further development of nuclear power.

Response:

The SEP does not advocate the development of any particular energy supply resources, including increased use of nuclear energy. However, the PSC is conducting an investigation into the role that nuclear power will play in a restructured electricity industry to determine how nuclear generation facilities will operate in a more competitive electricity industry.

3.2 NATURAL GAS

Comment:

NYGAS notes that several issues and concerns its members brought up in PSC Cases 97-G-1380 and 93-G-0932 need clarification, stating "Without clarification of these issues, NYGAS is concerned that the competitive stature of natural gas may be weakened." NMPC, similar to NYGAS, is concerned that a resolution is needed on issues such as: whether NMPC will be a merchant supplier; whether it will have the obligation to serve responsibility; and whether full recovery of stranded costs will be allowed. NMPC suggests that the SEP should highlight the need for prompt attention to these issues.

Response:

The discussion in the Natural Gas Resource Assessment covers these issues, particularly with regard to the future of the merchant function in the natural gas market. Further, these issues were presented by DPS staff to the PSC at the September 16, 1998 session.

Comment:

NYGAS notes that, while the State's gas prices have increased compared to the national average, in real terms they have declined over the past ten years.

Response:

The SEP language has been clarified to reflect NYGAS's comments.

Comment:

The Empire State Petroleum Association (ESPA) states that regulated natural gas utilities need to entirely exit from the merchant function as soon as possible.

Response:

In its Position Paper on the Future of the Gas Industry (Case 97-G-1380), the DPS staff recommended that local distribution companies (LDCs) exit the merchant function within five years. As a result of this case, the PSC, in September 1998, established a vision for the future of the gas industry in New York in an increasingly competitive market. The PSC's principal conclusion is that the most effective way to establish a robustly competitive market in gas supply is to separate the merchant and distribution functions. The PSC also established specific implementation steps to move in this direction. The PSC decision on exiting the merchant function has been reflected in this SEP.

Comment:

Vandor + Vandor states the SEP should note that AFVs powered by compressed natural gas (CNG) or liquefied natural gas (LNG) are available from original equipment manufacturers and that leading AFV engine and LNG tank manufacturers are located in New York. However, the cost and operation of medium- and heavy-duty AFVs are higher than conventional vehicles and private fleet owners and operators do not voluntarily choose AFVs.

Response:

The SEP discusses the role of AFVs in the Transportation and Energy Issue Report. Additionally, the SEP describes the State and federal tax incentives that are available to lower the cost of medium- and heavy-duty AFVs for fleet owners and operators. New York recently enacted tax incentive legislation for a wide range of AFVs, including clean-fuel vehicle property and clean fuel refueling property that is in effect until 2003. New York has also extended and expanded the sales tax exemption on the incremental cost of AFVs and refueling property until 2003 as well.

Comment:

Vandor + Vandor observes that New York's high tax structure is another factor that influences the high cost of natural gas in New York.

Response:

The Factors That Affect Energy Prices Issue Report describes the factors that influence New York's natural gas prices. The Issue Report finds that New York's higher State and local taxes are one of the contributing factors that influence natural gas prices within the State.

Comment:

Vandor + Vandor describe the physical characteristics of LNG compared to other fossil fuels and its "excellent" safety record. Additionally, Vandor + Vandor states that because LNG is non-toxic and non-carcinogenic it does not pose a threat to soil on surface or ground water. Also, Vandor + Vandor recommends that the existing moratorium on the manufacture, storage, and dispensing of LNG be replaced with reasonable and predictable safety standards based on National Fire Protection Association codes and other industry-wide technical standards.

Response:

The Energy Planning Board agencies are preparing a statutorily-required study on the current statutory moratorium on new LNG facilities in New York for the Board that will be submitted to the Governor and the Legislature by December 1998. The study examines the physical, operational, and safety characteristics of LNG. The study also addresses LNG regulations and policies in other states and public concerns with LNG facilities, as well as the economic and environmental impacts of expanded LNG usage in New York.

Comment:

Vandor + Vandor recommends that CNG fleets be allowed to receive certain energy incentives under New York City's Industrial/Commercial/Incentive and Energy Cost Savings Programs.

Response:

The SEP supports the development of an alternative fuels industry in New York. However, because the SEP is designed to coordinate State government's energy policies and strategies it would be inappropriate to recommend revisions to the New York City incentive programs to which Vandor + Vandor refers.

3.3 PETROLEUM

Comment:

Decotex 2000 commented that the SEP concludes fossil fuel deregulation during the 1980's allowed the oil and natural gas industries to find and produce new sources of supply and lower consumer costs. As a result, Decotex 2000 states that the SEP projects that petroleum products and natural gas will remain the future fuel of choice for transportation energy and stationary demand, respectively.

Response:

The Petroleum Resource Supply Assessment and Natural Gas Resource Supply Assessments describe the effects that computer and other technological advances over the past decade have had on oil and gas exploration and production activities. Moreover, the SEP acknowledges that oil producing countries are pursuing modern technology from western firms, forming joint ventures with international companies, and investing in entrepreneurial ventures in consuming nations, which commit their own future economic well being to satisfying an increasing share of global petroleum demand. Also, interest in expanding the North American natural gas interstate pipeline system remains strong, with several projects proposed to increase gas deliveries to the Northeast markets. The favorable oil and gas outlook, combined with improvements in fuel quality and the existing extensive distribution infrastructures, supports the forecast that oil and gas will continue to serve dominant segments of the mobile and stationary energy markets over the SEP 20-year forecast period.

Comment:

The New York Petroleum Council (NYPC) supports the SEP's emphasis on policies that promote competition and lower taxes in the energy marketplace.

Response:

No response necessary.

Comment:

The ESPA concurs with the SEP that policies promoting competition, ensuring fairness, equity, and system reliability, and improving environmental quality, and public health and safety will form the framework for an effective and rational energy plan.

Response:

No response necessary.

Comment:

The ESPA is pleased that the SEP articulates its objectives and goals in a fuel neutral manner, in contrast to past SEPs that promoted the use of one fuel over all others in what the ESOA considers a misguided attempt to influence energy demand patterns.

Response:

No response necessary.

Comment:

The ESPA proposes that the SEP recommend eliminating the Petroleum Business Tax (PBT) on all heating oils, significantly reducing or eliminating the PBT on motor fuels, and adopting a unified petroleum tax.

Response:

The SEP currently recommends "reduction of energy taxes as a means to lower energy costs and make energy prices more competitive, thereby promoting economic development ..." While the SEP clearly concludes that State taxes are high on virtually all energy resources and strongly advocates lower energy taxes, it is neutral on designating specific categories of taxes that should be modified.

Comment:

Joan Bozer commented that the SEP is an opportunity for tremendous change and leadership in New York because the State exports money and imports energy. Improving the national economy by drastically reducing dependence on oil would realize enormous savings for New York State.

Response:

New York has few indigenous energy resources to satisfy Statewide energy demand, with the exception of its hydroelectric resources. The SEP concludes that the keys to accelerating the use of renewable resources are to develop additional cost-effective products to serve existing markets, and to promote research and development of technologies that have potential for niche applications in the short-term and to compete with fossil fuels in the longer-term. The SEP encourages the use of environmental disclosure mechanisms as a market-based approach to encouraging customer choice with regard to energy supply.

Comment:

The ESPA suggests that there should be a recognition and recommendation by the EPB for minimum #2 oil storage capacity for customers with dual-fuel facilities.

Response:

The storage requirements of competing fuels should be determined by the marketplace. The marketplace, rather than government requirements, offers the flexibility businesses require to establish oil storage targets and pricing practices that best serve their operating objectives. Government mandated minimum dual-fuel customer #2 oil storage capacity levels are intended to eliminate the potential for large businesses to enter the fuel oil market suddenly and unexpectedly, when demand for this petroleum product is at a peak level, thereby creating strong upward pressure on consumer prices. However, requiring certain facilities to maintain storage facilities: places a financial burden on dual-fuel consumers; assumes all businesses have equal price risk exposure; and, ignores other alternatives for sheltering small customers from unanticipated fuel oil price escalation. Commercial price hedging instruments may permit businesses to purchase their

primary fuel economically, removing the necessity for them to enter the fuel oil market, or allow regional petroleum suppliers and local distributors to meet small customer fuel needs at planned prices during periods of supply uncertainty.

3.4 ENERGY EFFICIENCY

Comment:

Assemblyman Paul Tonko notes that the PSC chose to implement a system benefits charge to support various public policy programs, despite the availability of alternatives which do not burden ratepayers. Paul Tonko suggests that the draft plan should examine alternative strategies

Response

The PSC instituted the SBC for funding public benefit programs to mitigate the environmental impacts of electric restructuring and ease the transition to a more competitive electric industry. Likewise, the EPB favors approaches that place greater reliance on competition and the marketplace in determining consumer demands for energy efficiency and renewable sources of electricity. The State needs to permit the development of a vibrant, effective, and permanent energy efficiency industry, and also create opportunities for consumers to purchase renewable energy at a fair market price. Both of these objectives are embodied in this SEP and are being implemented through the restructuring of the electric industry. Other alternatives mentioned that involve proposed legislation, particularly those involving NYPA and its assets, are beyond the scope of the PSC's authority.

New York is already seeing the growth of a strong, market-based, efficiency industry that will be providing consumers with products and services on demand and thousands of new jobs in New York - all on a permanent and continuing basis. The industry is showing signs of a new market in "green power" as the electric industry moves toward deregulation. Green power alternatives will provide consumers with a menu of opportunities to chose their electric- generating sources, at prices they deem reasonable, which will provide clear signals to the market to include renewable energy projects in the portfolio of alternatives available to consumers.

Comment:

The Pace Energy Project states that more needs to be done to improve the efficiency of municipal, county, and non-profit buildings to reap the energy, economic, and environmental benefits available from improving the efficiency of these buildings. The Pace Energy Project also supports the statement in the SEP calling for improvement in energy building codes, and procurement policies and appliance standards. The Citizens' Advisory Panel (CAP) states that while the SEP calls for improved building codes and stricter appliance standards, the SEP fails to offer a comprehensive strategy to ensure that New Yorkers capture the "abundant opportunities" for greater energy efficiency. Natural Resources Defense Council (NRDC) is concerned that New York has lost its position as a leader in the area of energy efficiency and would like to see the SEP provide data, analysis, and a plan for re-establishing New York's leadership position by developing coordinated programs to promote energy efficiency, clean generation, green buildings, national leadership on climate change, and sound transmission and distribution regulation. The Sierra Club (Niagara Group) feels that the Draft SEP does not substantiate its statement on p. 166 that "New York is a leader in sustainable energy development."

Response:

The SEP is designed to provide the framework for a comprehensive strategy for capturing the opportunities for greater energy efficiency, rather than dictate a host of specific actions. Contained within the SEP policy objectives and strategies (Section 1.2, Energy Policy and Long-Range Planning Objectives and Strategies) are many strategies designed to promote greater energy efficiency, including maximizing energy efficiency opportunities in public and private buildings, continuing to develop energy-efficient travel, and capturing the benefits of updating New York's energy conservation construction code and equipment efficiency standards.

For example, NYSERDA's State Energy Investment (State EnVest) Program uses a pool of private-sector capital to encourage energy performance contractors to design and install energy efficiency capital improvements in State facilities. Also, NYSERDA's Flexible Technical (FlexTech) Assistance Program provides local government and non-profit building owners with on-site engineering studies, technical and economic analyses, design assistance, and other services.

Improved enforcement and more stringent energy efficiency construction building codes will increase new building operating efficiency, lower owner costs, and achieve significant air emission reductions. Efforts are currently underway by a group of interested parties to re-evaluate the State's commercial and residential energy construction codes. Under the Energy Code Technical Analysis Project, an Energy Code Advisory Committee has been established and work has begun to: provide technical and economic analysis of energy code options, impacts, and opportunities; build consensus to review, update, and implement energy code improvements; and develop and provide training on improved New York energy codes.

Comment:

RCEMC suggests that the SEP be revised to reflect an increased emphasis on measures that would make the State more competitive by reducing energy costs, improving air quality, and set the stage for a renewed interest in economic development and job growth/retention. RCEMC provides many equipment-specific examples of energy efficient upgrades stemming from a NYSERDA report, *Potential for Electricity Conservation in New York State*. RCEMC references the findings of the report and a recently published ACEEE report that RCEMC suggests offers a tangible cornerstone for increased attention to energy issues.

Response:

In SEP Section 2.2, Energy and Economic Development Issue Report many measures are addressed that will make the State more competitive by reducing energy costs, improving environmental quality, and providing economic development and job growth/retention opportunities. Moreover, the SEP recognizes and affirms that improving energy efficiency is good for the economy and the environment.

Low-cost energy programs, such as flexible rates, business incentive rates, and area development rates, will continue to be necessary to help preserve and create jobs as the competitive market develops. Legislative actions and proposals, including the New York Power Authority's "Power for Jobs" program, reductions to the Gross Receipts Tax (GRT) and the Petroleum Business Tax (PBT), and the proposal to securitize utility debt associated with stranded assets, will further reduce energy costs. Environmental measures, such as emission reduction credits, will help mitigate the environmental impacts of economic development.

As explained in SEP Section 2.3, The Effect of Competition on New York's Energy Industries, competition will offer customers the best combination of price, service, reliability, and environmental characteristics and technological innovation. Increased responsiveness to customers' energy needs will enhance economic development in New York.

Comment:

The NYPP, CAP, Sierra Club (Niagara Group), Sierra Club (Atlantic Chapter), NAESCO, Onondaga County Energy Group, and NRDC raised several concerns with regard to energy efficiency in general. The NYPP believes that the use of the word "maximize" on the Draft SEP p. 16 is inconsistent with the first strategy on p. 16, unless it is qualified to indicate that economical and environmentally appropriate energy efficiency should be maximized.

The Sierra Club (Niagara Group) states that verbal support for energy efficiency in the SEP is not backed up by policies and programs which will adequately maintain and encourage efficiency improvements. The impact of cuts in energy efficiency is dismissed by the SEP with unsubstantiated optimism about market-based alternatives. The environmental and economic benefits of utility DSM programs are well-established. The Sierra Club (Niagara Group) has many concerns about the Niagara Mohawk Settlement Agreement, and feels that new marginal rate structures undermine conservation incentives because end-users will have less incentive to conserve.

The Onondaga County Energy Group believes that the Niagara Mohawk PowerChoice agreement creates economic disincentives for energy conservation and technological innovation. The Group proposes the consideration of modifications to PowerChoice to meet these commitments.

Assemblyman Tonko also suggests that the SEP should define and identify market-based strategies, provide a mechanism for evaluating their effectiveness, and develop steps to ensure customers benefit if the market does not perform as anticipated.

The CAP states that the most serious flaw of the SEP is that, although the SEP provides excellent analysis of the current status of energy supply and demand in the State, it falls far short of offering clear guidance,

or merely direction, to decision making agencies. CAP also states that the SEP seems to ignore the fact that funding for electric energy efficiency has declined drastically and steadily over the last few years, fails to give rise to any hope that the unprecedented cuts will be made up by private sector or market driven investments, and fails to propose mechanisms to monitor development of private-sector energy efficiency services.

The RCEMC specifically states that the primary focus of the SEP should be on energy conservation, efficiency, and demand-side management programs, stating that the economic benefits of this approach far out-pace the envisioned path of building more power plants to meet increasing demand due to lower energy costs.

NRDC states that a failure to coordinate strategy will be doing things poorly and will waste money. NRDC states that you cannot talk about energy without talking about the environmental implications, and that the environmental costs are not incorporated in the price of the product. New York needs to focus on bills and not just rates. NRDC also feels that the SEP does not adequately address the issue of energy efficiency, it highlights lots of words, but doesn't really ask the question of what the market will or will not do in terms of energy efficiency and what the need for public policy is in this area. NRDC feels that the SEP states clearly that high costs have nothing to do with investments in efficiency, and that the SEP should analyze the situation in other states. Finally, NRDC states that the SEP is an ideal tool to review policies and guide future agency decisions to ensure opportunities for energy efficiency and renewable resource development are capitalized on. To serve as an effective policy tool, the SEP must set forth a clear direction in energy efficiency, renewables, and other clean energy initiatives.

Response:

With regard to NYPP's concern, the language has been clarified in the SEP. The SEP's objective to "maximize energy efficiency opportunities" is premised on doing so in a cost-effective manner. The SEP states, "pursuing cost-effective energy efficiency is important to achieving the State's energy security, economic competitiveness, environmental quality, and health and safety goals."

Also, a critical part of the evaluation process SBC-funded public benefit program will be to provide measurable results in terms of energy savings, increased affordability, improved environmental quality, and other value-added benefits and non-energy benefits (SBC Program Plan, p. 8-3).

Throughout the SEP, many current and future programs and policies are described that maintain and encourage efficiency improvements. The Energy Efficiency Resource Assessment outlines a wide-range of energy efficiency programs that New York is pursuing. Moreover, under the SBC-funded energy efficiency market-transformation initiative, participating New York State customers are expected to realize approximately 293,000 megawatt hours in cumulative electrical energy savings and $14.6 million in electrical cost savings (at an assumed value of 5¢ per kWh), over the three-year initial period of the program. Under the SBC-funded new construction initiative, participating New York State customers are expected to realize approximately 840,000 megawatt hours in cumulative electric savings and $42.5 million in electrical cost savings, at an assumed value of $.05 per kWh, over the three-year period. Under the SBC-funded financial assistance initiative, participating New York customers are expected to realize approximately 228,000 megawatt hours in cumulative electrical energy savings and $11.4 million in electrical cost savings, (at an assumed value of $.05/kWh) over the three-year period. Further, under the residential building performance initiatives program, participating New York households are expected to realize approximately 283,000 megawatt hours in cumulative electric energy savings and $20.5 million in life-cycle electric cost savings at $.10 per kWh, over the initial three-year program period.

The SEP favors emphasizing market-based approaches as much as practical to meet New York's existing and future energy requirements. The Energy Planning Board believes providing consumers with objective, timely, and accurate information will give customers the opportunity to make informed choices on their energy decisions.

Comment:

The Sierra Club (Atlantic Chapter) states that energy efficiency will substantially lower bills, create good paying jobs, improve New York's economy, and reduce air pollution. Other benefits highlighted by the Sierra Club include economic development, fewer power plants constructed, reduced use of fossil fuel, less air pollution (leading to better health), and reduced environmental compliance costs.

Response:

The Energy Planning Board supports the Sierra Club's (Atlantic Chapter) observations regarding the additional benefits energy efficiency brings to New York. Throughout the SEP, there are references and statistical support for the energy, economic, and environmental benefits resulting from increased energy efficiency practices and equipment, including those enumerated by the Sierra Club. The SEP affirms that pursuing efficiency is good for New York's economy, environment, and consumers.

Comment:

While NAESCO supports the completion of utility-supported energy efficiency programs under long-term competitively bid contracts, NAESCO proposes that the SEP adopt the principle, adopted in several Massachusetts electric utility restructuring settlement agreements that customers not be required to repay demand-side management incentive payments if the customer purchases electricity from an alternative supplier.

Response:

The SBC-funded standard performance contract initiative offers fixed-price incentives to energy service companies for energy savings achieved under a standard agreement. Incentives will be provided to ESCO's on a first-come, first-serve basis and tied to performance. Regarding utility customer repayment of DSM incentives upon contracting with an alternate supplier, the PSC has allowed utilities to recover these costs as long as the repayment schedule is not unreasonably short.

Comment:

Assemblyman Tonko states that the SEP should consist of more than descriptions of existing programs. The SEP should explicitly define the planning period, identify objectives, establish strategies, and highlight implementation steps for State agencies and local governments. The SEP should include a timetable for specific accomplishments over the course of the planning period as a way to measure the State's progress toward realizing the SEP's objectives.

Response:

The strategies, objectives, and policies of this SEP cover the twenty year SEP planning period. In addition, this SEP endorses the COB restructuring implementation process for restructuring the electric and gas industries. There are clear and unambiguous timetables set for customer choice, the ISO, metering and billing practices, and all the other components necessary to complete restructuring of the electric industry. Moreover, the PSC has established target dates for gas utilities to exit the merchant function. The timetables for restructuring these industries are set forth in the Impact of Competition on New York's Industries and the Natural Gas Resource Assessment sections of this SEP. Progress will be monitored over the next five years to determine the effectiveness and extent of customer choice that is being offered with an eye toward removing even more governmental control over the marketplace.

A goal of the SEP is to reduce governmental control interference in the marketplace, provide consumers with greater choice of alternatives for their energy supplies and services, further reduce energy taxes, and provide for private investment to fund future energy projects. The role of government in this setting should be to identify and remove governmental obstacles to accomplishing the goals of this plan and the efficient operation of competitive energy markets.

Comment:

The Pace Energy Project urges greater study of energy conservation strategies, including pollution taxes and building codes, which reduce energy usage.

Response:

The SEP's energy policy objectives include encouraging wider use of high efficiency technologies, green building initiatives, and environmentally preferred products, with State government taking the lead in implementing and demonstrating the benefits. Emission fees are currently assessed on major air emission sources, water discharges, and other pollution sources under Article 72 of the Environmental Conservation Law. The SEP also encourages the use of environmental disclosure mechanisms as a market-based approach to encouraging the use of renewable resources.

Comment:

Environmental Advocates is pleased that the SEP makes many positive statements in support of energy efficiency and renewables, but believes that it does not serve as a viable plan for achieving an environmentally sound energy future for New York State. It believes that the SBC funding level is grossly inadequate to address the energy efficiency and renewable commitment and the reliance on competitive markets to support such programs is unwise. It also believes that additional measures to clean up older power plants are needed.

Response:

The SEP encourages State agencies to pursue energy, economic development, environmental, and transportation policies that are sustainable and support a growing economy. Providing consumers, businesses, and industries with objective information and the ability to make informed energy choices, targeting and leveraging SBC funds through public benefit energy efficiency, R&D, environmental protection, and low-income energy efficiency programs to achieve significant energy improvements throughout New York's economy, and developing transportation systems that promote mobility and reduce congestion are necessary ingredients for developing a viable and sustainable plan for meeting New York's future energy needs cleanly and cost-effectively. The energy policies and strategies outlined in the SEP provide a plan and a vision that will lead to an environmentally-sound future for New York. The issue of funding levels for energy efficiency programs was considered by the PSC in the individual rate settlements and in the SBC proceeding which addressed the level of funding needed for energy efficiency and renewable source deployment in a competitive electric industry. SBC funding was approved by the PSC for an initial three-year period. The need and the level of SBC funding in future years will be decided by the PSC after examining how the initial SBC-funded public benefit programs progress during the first three years of the transition to competition.

The SEP also endorses competition without subsidies for particular technologies beyond energy efficiency and R&D funding stipulated in the settlement agreements. Customers will be able to choose efficiency or renewable products in the new market as retail access and greater choice are introduced in New York. Regarding cleaning up older plants, federal and State environmental programs, particularly EPA's new

ozone and particulate matter standards, will force existing and new power plants to meet more stringent environmental requirements.

Comment:

The Regional Plan Association (RPA) states that the SEP stresses in principle market-based approaches to energy efficiency, but could be more descriptive of the kinds of State tax and loan incentives that could boost and reward energy reducing initiatives. These might include incentives for "green" building design and materials and conservation of heating and lighting sources in commercial and residential buildings. The NRDC suggests endorsing the green building tax credit.

Response:

Currently, Section 606 of the New York Tax Law provides for tax credits for the installation of qualified solar generating equipment. Under recent amendments to the Solar Choice Act (Chapter 467 of the Laws of 1998), a residential income tax credit has been adopted for qualified solar electric generating equipment expenditures (capped at $3,750). A residential tax credit expenditure cap of six dollars per watt (based on the rated capacity of the solar electric generating equipment) is in place under this law.

There are several new green building tax initiatives that are being developed and reviewed. Examples of these initiatives include tax credits to building owners and tenants who invest in measures to increase energy efficiency, improve indoor air quality, and reduce the environmental impacts of commercial and residential buildings in New York State. Some initiatives also include tax credits for clean, on-site electric generation through technologies such as fuel cells and building-integrated solar panels.

Comment:

MI recommends the SEP discussion on environmental disclosure requirements be revised to indicate that consistent with the goal of lower prices, environmental disclosure requirements be reviewed to ensure that they do not raise prices. They also state that disclosure requirements should be placed on those suppliers who claim their sources of energy are cleaner and want to differentiate their products from other sources.

Response:

The issues raised by MI are being considered in the environmental disclosure proceeding being conducted by the PSC. The DPS staff issued its draft paper on disclosure requirements based on the parties' comments, and recommendations went to the PSC in October 1998.

The DPS staff's proposals are designed to minimize administrative and transactional costs. These costs would be funded through the SBC and capped at $3 million. DPS staff is also recommending that all retail suppliers be required to disclose their sources, so that customers will have the information they need to make informed choices. If only retailers who made claims needed to disclose, customers would be unable to distinguish between suppliers using sources with system-average emissions rates, and those using sources with higher than system-average emission rates.

Comment:

The NYEEC requests clarification to note that not all ESCOs sell energy commodity services. Most of NYEEC's members provide only demand-side energy services.

Response:

The SEP has been revised to reflect NYEEC's comment.

Comment:

The NRDC suggests establishing a monitoring program for private sector energy efficiency efforts, establishing a timetable for updating New York's energy code, and endorsing expanded funding and statewide energy efficiency programs for public buildings.

Assemblyman Tonko observes that the SEP states that New York State Energy Conservation Construction Code has not been systematically reviewed since 1991. Chapter 292 of the Laws of 1998 transferred the energy code to the Department of State, and a rulemaking process should commence immediately to

further strengthen the code's provisions to maximize the efficient use of energy, savings for consumers, and environmental benefits. Assemblyman Tonko also states that in addition to considering an update of the Code, compliance training for designers, builders, and local code officials is essential for meeting efficiency standards.

Response:

In response to NRDC's suggestion with regard to monitoring private sector energy efficiency efforts, in April, NYSERDA conducted a survey of ESCOs to determine the value of energy performance contracting projects signed during 1997 in New York State. Responses were received from 17 of the 22 ESCOs surveyed, with activity reported by 13 ESCOs. The ESCOs reported that over $153 million was under contract to pursue energy efficiency activities in 1997.

As described in the Energy Efficiency Supply Resource Assessment, the State Energy Investment Program uses a pool of private-sector capital energy performance contractors to design and install energy efficiency capital improvements in State facilities. In addition, under NYSERDA's Flexible Technical (Flex Tech) Assistance Program, local government, and non-profit building owners are eligible for on-site engineering studies, technical and economic analyses, design assistance and other services. This assistance is anticipated to result in the design of a local government investment program, similar to that of the State EnVest Program.

Efforts are currently underway to re-evaluate the State's commercial and residential energy construction codes which falls under the jurisdiction of the Department of State. Under the Energy Code Technical Analysis Project, an Energy Code Advisory Committee has been established. The goals of the project are to: provide technical and economic analysis of energy code options, impacts and opportunities; build consensus to review, update and implement energy code improvements; and develop and provide training on improved New York energy codes.

Comment:

EANYS states that the SEP endorsement of mandated environmental disclosure and environmental labeling of energy sources ignores the cost associated with doing so. RPA also states that the State should mandate that companies that compete to provide energy to customers provide information about their energy sources.

Response:

The PSC, in its Case 94-E-0952, endorsed agreements reached by the utilities and other parties to develop and implement a cost-effective mechanism to disclose environmental information on generation sources by electricity retailers. As stated in the SEP, the DPS, in consultation with the parties in Case 94-E-0952, is developing such a mechanism. The parties have had an opportunity to present their views on the costs and benefits of environmental disclosure in that proceeding. In the July 7, 1998 order approving the SBC-funded public benefit program, the Commission reserved $3 million of SBC funds for environmental disclosure. The DPS staff's August 1998 paper recommends this as a cap on administrative spending through June 2001 (except for contributions from the Long Island Power Authority (LIPA) and the New York Power Authority (NYPA). The staff paper recommends that DPS staff serve as the administrator of the program to handle the tracking and provide content for labeling.

Comment:

NYEEC believes that lower electric prices resulting from retail competition will make energy conservation harder to sell to customers. Hence, it recommends that New York commit higher funding for energy efficiency and environmental protection activities.

Response:

The PSC addressed the funding for energy efficiency and renewable technologies during the transition period leading to full competition in the electric industry through settlement agreements reached with New York's utilities and other interested parties. The PSC has established a System Benefits Charge fund to

support energy efficiency R&D, environmental monitoring and low-income programs for an initial three-year period. Also, as the competition in the electricity market unfolds, it is expected that ESCOs will greatly increase offering energy efficiency services at competitive prices.

Comment:

NRDC states that the Long Island Power Authority (LIPA) will be spending less on energy efficiency pursuits than what the Long Island Lighting Company (LILCO) spent four years ago, although LIPA is doing better than the rest of the utilities on energy efficiency.

Response:

The need for mandated utility investments in energy efficiency products and services decreases as the markets for them is transformed. For example, the utility investments promoting certain fluorescent bulbs and ballasts are no longer needed because markets have developed and the products are priced competitively.

The PSC has set an SBC requirement for six of New York's utilities. The PSC does not have jurisdiction over the Long Island Power Authority. The SBC funding level for energy-efficiency measures was thoroughly examined by the PSC's electric industry restructuring proceedings.

Comment:

The Western Sustainable Energy Association states that SEP Table 3-12 (Draft SEP, p. 176) "New York Power Pool Member Utilities' Demand-Side Management (DSM) Spending and Achievements, 1990-1995" shows that investor-owned utility spending has fallen and the New York Power Authority (NYPA) has increased spending but has not produced commensurate results. NYPA spending has not achieved the savings and the conservation that the utility spending accomplished over the time period.

Response:

Several factors lead to the results presented in Table 3-12 in the Energy Efficiency Resource Supply Assessment. First, utilities' spending predominately focused on programs that were relatively low-cost, but captured much of the energy savings available. Each additional increment of DSM savings became more expensive to achieve. Over time it could be expected that benefit/cost ratios of DSM investments would decline. Second, NYPA spending has been targeted to customers who pay a significantly lower rate for energy than do investor-owned utilities (IOU) customers. The benefit/cost ratio, therefore, is less than for the same programs offered by the IOUs, making it more difficult to attract participation. Also, increasingly the competitive market is becoming a larger force in providing energy efficiency services so that as utility spending decreases, private sector efficiency producers are stepping in. The savings resulting from competitive market programs are not captured in Table 3-12.

Comment:

Environmental Advocates state that the spending level for energy efficiency has decreased significantly over the years, and indicates there is no commitment to bring these expenditures to "reasonable levels."

Response:

Settlements reached in the individual utilities restructuring cases represent compromise among a wide-range of interest groups, including environmental groups. Further, under SBC-funded public benefit programs, competitive solicitations are expected to leverage greater efficiency gains per dollar spent. Also, ESCOs will offer energy efficiency services to distinguish themselves in the market. Utility investments will decline as the market for energy efficiency products is transformed. For example, the utility investments promoting certain fluorescent bulbs and ballasts are no longer needed because markets have developed and the products are priced competitively.

Comment:

NRDC states that the SEP correctly recognizes that investments in energy efficiency can create more jobs than investments in energy production, although NRDC believes that New York's energy efficiency programs have been de-emphasized. NRDC finds the SEP statement that the competitive market will take over where the utilities left off, is unsubstantiated. NRDC also suggests that New York's current level of investments in efficiency and renewables put it far behind its neighbors, and the best way to re-establish New York's leadership on clean energy issues would be to increase the level of New York's SBC funding for energy efficiency and renewables.

Response:

The SEP's reliance on competitive market providers of energy efficiency services is supported by the broad array of energy efficient products, equipment, and appliances that are becoming more widely accepted in commercial markets, in part as a result of State and utility efficiency programs. These products, including compact fluorescent lighting, energy efficient building materials (particularly windows), efficient refrigerators, office equipment, etc., increase efficiency and reduce operating costs for those who use them. Energy efficiency efforts have shifted from government and utility programs to market-based approaches that provide consumers with more choices.

Comment:

NYEEC supports the use of a SBC to encourage energy efficiency, but is disappointed by the limited funds and duration of the program, pointing out that the amount ordered through the various utility settlements to date is significantly lower than investments in past years. Also, NYEEC feels that it is more difficult to sell energy conservation services to customers if they do not have an incentive to pursue energy efficient measures.

Response:

A competitive energy services industry has developed in New York over the past several years, led by approximately 50 ESCOs and supported by hundreds of small-to-medium contractors, consulting firms, and local manufacturers. This industry has emerged in response to a number of market factors, including the high cost of energy, the deregulation of the electric and gas industries, the opportunity to profit from goods and services not previously offered to customers, and the potential for growth of this industry. Levels of SBC funding were determined as part of the overall balancing considered by the PSC in approving settlements in the individual electric restructuring cases. The PSC will consider issues of whether to consider (and, if so, at what levels) SBC-funded public benefit programs toward the end of the initial three-year SBC period.

Comment:

The Pace Energy Project states that the SEP obscures the fact that public funding for energy conservation has decreased in recent years. Pace suggests that the level of market-based energy efficiency investments be tracked so that opportunities can be identified where limited intervention might be warranted.

Response:

The SEP acknowledges that energy efficiency investments by the State's investor-owned utilities has declined. Historical data included in the SEP shows that utility expenditures increased through 1992, and declined through 1996. The SEP, however, recognizes that the SBC-funded public benefit programs are intended to encourage more private sector investment in energy efficiency, by tapping the ingenuity and innovation of the marketplace to cost-effectively deliver energy efficiency services by leveraging public and private funds.

Performance contracting

Comment:

Decotex 2000, NAESCO, and NYEEC raise issues with regard to energy performance contracting. Decotex 2000 states that New York would be able to create a "boom" market through energy performance contracting for its own facilities, financed through energy savings. Listing several energy efficient equipment applications, Decotex 2000 states that SBC funds should be used to create model performance contracts, and to promote the results of early installations to the public. Decotex 2000 calls for State leadership in the use of energy performance contracting in State facilities to improve their energy efficiency. Decotex 2000 challenges the State to create an industry of significant scale by stimulating the market for energy efficiency products and services. Decotex 2000 believes that the industry is awaiting government purchase orders to begin this work.

NAESCO advocates the use of a standard performance contract (SPC) with stipulated pricing as the implementation vehicle for distribution of SBC funds for energy efficiency. The PSC-approved plan for SBC-funded programs delineates an SPC program generally acceptable to NAESCO, although the funding levels should be increased. NAESCO suggests increasing SPC funding by using funds from NYPA and LIPA. NAESCO feels that residential SPC programs should be designed to: provide incentives and support for all segments of the residential market; allow for different incentives by market segmentation; provide a multi-year commitment to the program; address both the gas and electric markets; and support marketplace creativity in promoting the development of effective measurement and verification tools for the residential market.

NYEEC endorses energy performance contracting as a means of encouraging a strong energy efficiency marketplace, and agrees that energy performance contracting will encourage the growth of a strong ESCO industry in New York. However, NYEEC feels that the SEP defines ESCOs too narrowly, and that ESCOs should be more broadly defined to include companies that provide energy efficiency services regardless of whether they engage in the sale of energy.

Response:

The SEP's Energy Efficiency Supply Resource Assessment acknowledges that energy performance contracting is proving to be an effective mechanism in the competitive marketplace, compared to more traditional rebate programs. It also acknowledges that ESCOs, through performance contracting and third-party financing, have become an integral element of New York's energy efficiency industry.

SBC-funded energy efficiency programs include the use of standard performance contracts as a major element. That program offers fixed-price incentives for measurable energy savings achieved by installing energy efficiency measures as specified in a standard agreement. Under this program, $45 million in incentive payments over the initial three-year life of the SBC program is available to contractors, which could leverage an additional $200 million in private sector investments in commercial and industrial facilities (including multi-family buildings). The SPC program will provide support for the residential market, allow for different incentives by market segment, provide a three-year commitment, and promote the development of effective measurement and verification tools. The SPC program does not address the gas market, because funding was specifically targeted to address the electric market to mitigate the impacts of the transition to competition. However, NYSERDA offers additional energy efficiency program services, such as State EnVest and the Flexible Technical Assistance Programs, that address natural gas efficiency.

Moreover, NYSERDA's State EnVest program serves State facilities exclusively in providing performance contract assistance, complete with a performance contracting manual for use by facilities managers, technical assistance, sample contracts, and an approved list of ESCOs to perform the work. Under this program, $65 million in private sector capital is being leveraged, with an expansion of $250 million being considered for Phase II of this program.

NYSERDA's EnVest and FlexTech Programs address the needs of State buildings, local governments, and schools and hospitals. NYSERDA's $3.8 million program costs in 1998 nearly are expected to leverage more than $132 million in energy efficiency investments by customers served by these programs.

NYPA, at the direction of the Governor and the State Legislature, devotes a significant portion of its revenues to energy services programs. Financing services beyond the current policy mandates and customer-support functions would result in a NYPA ratepayer subsidy that might be precluded by statute, case law, or bond covenants.

Competitive Energy Services

Comment:

NAESCO advocates an open competitive process at all market levels in procuring energy efficiency improvements, and suggests that the SEP should explicitly endorse this principle as a basis for developing a competitive energy services market in New York.

Response:

The SEP advocates an open, competitive process at all market levels. The SEP states that one of the State's responsibilities will be to oversee how the markets are working to allow businesses to enter and exit freely, ensuring that all energy suppliers and consumers are afforded non-discriminatory access to energy transportation (transmission) and local distribution systems. In addition, the programs implemented under the plan for SBC-funded public benefit programs will use, to the extent practical, competitive processes.

3.5 RENEWABLE ENERGY

Comment:

The Pace Energy Project and Global Biorefineries, Inc. address the issue of green marketing. The Pace Energy Project is concerned that if an outlet for the widely documented desire for people to buy clean energy resources is not provided, one of the principle tenets of restructuring will not be met. Global Biorefineries, Inc. provides a comprehensive list of ways to change the primary fuel consumption in New York State in a "green" direction. Some of Global Biorefineries suggestions include: ensuring that 10% of New York's electricity supplies are from "green sources" by 2010; launching educational programs to

encourage participation; supporting federal and State funding in R&D to advance renewable resources; and encouraging the deployment of renewable technologies in New York through tax exemptions and the use of "enterprise zones."

NRDC states that the SEP should establish a timetable for the implementation of environmental disclosure so that customers may make informed choices, so that a full mechanism is developed and implemented by January 1999. More specifically, NMPC commented that the timetable for submitting a report on Environmental Disclosure to the PSC be changed to September 1998 to reflect the plan of the parties involved in that effort.

Response:

As stated in the SEP, increased competition as a result of restructuring the electric utility industry is expected to lead to a number of positive environmental outcomes. Increased consumer choice should provide additional opportunities for customers to select cleaner energy through green pricing, marketing programs, or environmental disclosure. In an effort to ensure that public benefit programs are continued to mitigate impacts of the transition to competition, the PSC required funding of such programs through a non-bypassable system benefits charge. This will enable the funding of public benefit energy efficiency, research and development, pilot low-income, and environmental protection programs during transition in the initial three-year period.

Environmental disclosure and green pricing are being widely viewed by some states and regions of the country as mechanisms for helping to promote renewable technologies by providing customers with information to make informed energy choices. A study of environmental disclosure in New York State has been completed and the PSC has acted on a DPS Staff recommendation to adopt a disclosure program. The SEP encourages the use of environmental disclosure mechanisms as a market-based approach to encouraging the use of renewable resources. The reference to the submittal date for the Environmental Disclosure Report was changed to October 1998.

With regard to tax exemptions and "enterprise zones," (Section 606 of the New York Tax Law) tax credits for the installation of qualified solar generating equipment are provided to businesses, regardless of

geographic location. Additionally, a residential tax credit expenditure cap of six dollars per watt (based on the rated capacity of the solar electric generating equipment) is effective under the recently enacted Net Metering Law.

Comment:

NRDC wants environmental disclosure for electric sources to be available in time for people to make their electricity choices.

Response:

DPS staff issued its draft paper on the requirement for environmental disclosure, which was submitted to the PSC in November 1998. The staff proposal calls for a disclosure program to be available in time for widespread retail access.

Comment:

The Pace Energy Project and the Citizens Advisory Panel (CAP) both state that the State currently lacks decisive and effective renewable energy implementation policies. The Pace Energy Project suggests that the State should focus in the next year on increasing the potential for renewable energy in New York and that the SEP should attempt to identify the industrial barriers to renewable development which remain, in particular, the role and use of intermittent renewable generators in the emerging competitive electricity market.

Response:

New York State is currently involved in an array of renewable energy initiatives that will serve to develop its renewable resources. The SEP states that "the key to accelerating the use of renewable resources is to develop additional cost-effective products to serve existing markets, and to continue to promote R&D of technologies that have the most potential for niche applications in the short term and to compete with fossil fuel applications over the longer term. Developing and supporting innovative technologies and

manufacturing methods are designed to create viable components, systems, and products industry within the State. These technologies could be used both to serve near-term end-use energy needs for the State's commercial, industrial, and residential consumers and to create export markets for New York products and services."

Significant efforts are underway nationally and in New York to develop more efficient batteries and other electricity storage methods that will help resolve the storage and intermittency problems of solar generation. A system is being developed and manufactured in New York to provide high-reliability, utility-grade PV inverters (equipment that converts direct current to alternating current) with battery storage for enhancing reliability of utility lines and for utility customers with critical loads. A NYSERDA demonstration project of this type of technology is sited in the Town of New Scotland, Albany County in cooperation with a local utility company. The SEP, rather than dictating a host of specific actions that State government agencies should pursue, provides broad policy guidance for State government agencies to pursue.

Promotion of Renewables

Comment:

Jeffrey Beller, John M. Daniels, and Joan Bozer raised the issue of the promoting renewable energy. Mr. Daniels suggests that the global opportunities for New York businesses in the manufacture of renewable energy components and products be promoted.

Mr. Beller suggested that New York State must promote all renewable technologies, stressing the economic and environmental benefits that would accrue. Mr. Beller stressed the amount of money New York spends on energy imports compared to the State's expenditures on the lottery and tourism. He also suggested not taxing any renewable fuel produced in the State, stating that the job creation alone would make up the revenue loss. Mr. Beller also emphasizes the value of renewable energy and proposes that the time to promote the renewable energy industry is now, while fossil fuels are inexpensive.

Joan Bozer stated that New York has an opportunity now to provide major incentives for the development of solar, wind, and other renewable energy technologies and that New York should be a leader in demonstrating and exhibiting the effectiveness of renewables.

Response:

The SEP endorses developing cost-effective renewable technologies and advocates consumer choice regarding the purchase of energy supplies. While the State can assist in promoting public awareness with regard to energy choices, through such efforts as environmental disclosure and outreach and education, renewable energy developers must also assist in these efforts. The State funds many renewable energy projects through NYSERDA's R&D program, the SBC-funded research and development program, and the activities of the New York Power Authority. The net metering legislation and implementation of environmental disclosure should help the renewables industry.

Landfill Gas

Comment:

The Chautauqua County Department of Public Works (Division of Solid Waste) and Jeffrey Beller raised issues regarding landfill gas. Both parties suggested that landfill gas, while limited, is a viable, proven way to provide a portion of the State's energy supply and efforts to expand its use should be pursued. Chautauqua County specifically suggests that the energy supply assessment of the SEP should examine the specific impediments to landfill gas energy recovery projects and outline ways that the State can encourage their development, while remaining consistent with its move toward a competitive energy market.

Response:

The Energy Planning Board agrees that landfill gas has a place in the State's energy supply and efforts to expand its use should be pursued. For example, nearly 30 MWs of electricity are generated annually by landfill gas in New York. Through NYSERDA, New York State is already involved in several landfill gas projects, ranging from leachate evaporation, leachate recirculation (to enhance gas production) and a

mobile power system project (a dual-fuel landfill gas/diesel, 100 kW station), each of which either saves or produces energy.

Fuel Cells

Comment:

Decotex 2000, NYSCAA/NYSWDA, NRDC and Somerset Energy Services all addressed issues relating to fuel cells. The issues raised include: the market potential for fuel cells, the use of SBC funds for furthering fuel cell use, the modularity and flexibility of fuel cells to meet demand requirements, the ability of customers to leave the electric grid by using fuel cells, the use of carbonate technology (rather than solely proton exchange membrane (PEM) fuel cells), and fuel cells as cogenerators.

Somerset Energy Services, in particular, encourages the expansion of the SEP to address the development of all fuel cell technologies, including providing financial support to New York corporations and agencies that wish to assist with funding the commercialization of fuel cell technologies and entering into collaborative efforts with neighboring states. NRDC calls for air permitting exemptions for fuel cells and supports the expansion of NYPA's fuel cell program.

Response:

The SEP recognizes the positive attributes of fuel cells and developing fuel cell technology. For example, NYPA and NYSERDA successfully installed and demonstrated the application of a 200 kW anaerobic digester fuel cell at a wastewater treatment plant that provides electricity as well as thermal energy to the facility. Fuel cells are one of the eligible technologies for funding under the Strategic Energy Research element of NYSERDA's SBC-funded R&D. NYSERDA is also assisting in the development of new materials that will offer cost-effective options for proton-exchange-membrane (PEM) fuel cell materials. The demonstration of these lower-cost materials and the development of manufacturing processes should facilitate more widespread use of other fuel cell technologies. NYPA is working to organize a variety of sources of funding to support expansion of its fuel cell efforts and welcomes NRDC support.

Biomass:

Comment:

Jeffrey Beller suggests that New York State has a large biomass potential and insufficient appropriations for the biomass industry in the State. Mr. Beller also suggests that New York needs to increase public awareness of biomass and biofuels. John M. Daniels suggests that New York could take the lead in developing forest products and biomass, as well as the use of fuel cells powered by gas produced from biomass.

Response:

The SEP notes that New York State has much biomass potential. As the SEP acknowledges, biomass resources are significant in New York, as more than 60% of the State's land is forested and more than 1.8 million tons of waste wood are generated annually across the State. Under NYSERDA's multi-year plan for its statutory R&D program, over $1.1 million will be earmarked over the next three years for biomass projects. The focus of these projects will be on three areas: converting low-cost feedstocks, such as agricultural, manufacturing, and clean municipal wastes, into fuel and chemical products; developing industrial technologies, such an enzyme manufacturing, that support New York's emerging biotechnology industry; and expanding the use of willow plantations as both a source of energy and a crop for New York farmers. Under NYSERDA's SBC-funded R&D program for renewable energy, dedicated feedstock supply is one example of an eligible project area.

Within the next several years, NYSERDA's biomass program will demonstrate sustainable operation of a levulinic acid facility in Glens Falls; demonstrate the value of co-firing wood in utility-scale pulverized coal power plants, create opportunities to make a competitive product from New York biomass resources, and establish 1,000 acres of willow plantations on private farmland.

Net Metering

Comment:

NMPC recommends deletion of a sentence on the Draft SEP, p. 180 that reads, "Net metering can provide the necessary incentive to encourage additional investment in renewable energy technology," as it implies a subsidy is necessary for development of renewable technologies.

Response:

Since the Net Metering legislation is specific to PV technology, the sentence will be revised to read, "Net metering should encourage additional investments in PV technologies."

Comment:

NYPP suggests that the SEP should point out the potential risk of providing subsidies which are not universally available to all forms of generation, referring to New York's net metering law, and using the "six cent law" as an example. NRDC states that the net metering law is an important step forward and that the policies that the State puts forward should make sure that energy distribution is allowed to flourish. NRDC calls for the close monitoring of the utilities' implementation of net metering and for a proceeding on the interconnection of small clean generation in order to prevent onerous interconnection standards and contracts.

Response:

New York's Net Metering Law (Chapter 399 of the Laws of 1997) provides a limited subsidiary for solar photovoltaic systems, allowing up to 1/10th of 1% of a utility's electric demand, for the year 1996, to come on line or approximately 22 megawatt of PV capacity. The PSC will continue to monitor the implementation of the net metering law and a collaborative process will be implemented in order to investigate other opportunities for interconnection of PV and other distributed technologies.

Solar Building Systems

Comment:

Joan Bozer believes that, unlike the large-scale installation effort in Japan, New York State has no efforts to improve the competitiveness of residential solar systems. Ms. Bozer is concerned that she has not seen New York "coming out with bold initiatives and exciting things for the future" and is further concerned that New York may be "missing the boat" where solar building systems are concerned. NRDC calls for a green building tax credit that would encourage the installation of fuel cell and building integrated solar panels in commercial buildings by providing a tax credit based on cost of the equipment and installation.

Response:

As stated in the SEP, New York State has been active in R&D on the potential for solar power use in various applications. For example, a photovoltaic (PV) array installed with NYSERDA's assistance at the Center for Environmental Sciences and Technology Management at the State University of New York in Albany has a peak nominal rating of 17 kilowatts, and is believed to be the largest alternating-current module PV array in the United States. With regard to residential systems, beginning in 1998, New York State provides homeowners an income tax credit for a portion of the cost of solar electric generating equipment, of up to 25% of the qualifying costs, up to a maximum of $3,750 per residence (New York Tax Law, Section 606). Nonetheless, barriers to large-scale installations still exist. However, technological improvements and economies of mass production are dramatically reducing the costs of photovoltaics for use in the commercial and residential sectors.

In addition, building-integrated photovoltaics and residential photovoltaic systems are eligible projects under the renewable resource portion of SBC-funded R&D programs. There are several new green building tax initiatives that are being developed and reviewed. Examples of these initiatives include tax credits to building owners and tenants who invest in measures to increase energy efficiency, improve indoor air quality, and reduce the environmental impacts of commercial and residential buildings in New York State. Some initiatives also include tax credits for clean, on-site electric generation through technologies such as fuel cells and building-integrated solar panels.

Hydroelectric

Comment:

The Sierra Club (Niagara Group) and Environmental Advocates are concerned with the environmental implications of large-scale hydro, and are particularly concerned with the importation of hydroelectricity from HydroQuebec.

Response:

The SEP does acknowledge that hydropower facilities have some adverse environmental effects, including fish impingement and entrainment, disturbance of the riparian environment, and potentially reducing the dissolved oxygen content of water. However, the SEP does not advocate the limitation of imports of electricity from any supply sources. Market participants, based on a host of factors, are in a better position to make electricity supply decisions, which will be facilitated by environmental disclosure requirements under development by the PSC.

Distributed Energy

Comment:

The Joint Supporters see distributed local generation as part of a comprehensive energy services array that ESCOs may bring to some customers, either as a supply or demand reducing resource. Joint Supporters envisions a bright future for microturbines, small and intermediate advanced turbine technology, improved internal combustion machines, PVs and fuel cells.

Response:

Interconnection requirements, the development of small generation technologies, new transmission and generation pricing, and locational-based marginal pricing (LBMP) should result in price signals that foster

the advancement of distributed resources. A number of electric utility settlement agreements require the utilities to consider distributed generation as an alternative to transmission and distribution upgrades. In addition, clean, dispersed power generation, such as fuel cells and microturbines would be eligible programs under the Strategic Energy Research portion of the SBC-funded R&D program.

3.6 COAL

Comment:

NRDC calls for establishing a timetable for retrofitting all of New York's coal burning schools, building on the Clean Water/Clean Air Bond Act, perhaps by forming partnerships with the private sector.

Response:

Using U.S. DOE Petroleum Overcharge Recovery funds and New York State Clean Air/Clean Water Bond Act proceeds, public schools in the New York City and Buffalo regions will be converted from coal to dual-fuel (oil and natural gas) boiler capability under a program administered by NYPA. The Clean Air for Schools program of the Clean Water/Clean Air Bond Act provides $125 million for conversion of coal-burning furnaces in public schools. The Bond Act statute and annual authorizations prescribe NYPA's administration of the program. There are on-going discussions with all interested parties regarding further development of the program to address the issues cited by NRDC. This program is intended to modernize outdated heating systems, reduce air emissions and waste, and implement high-efficiency lighting and domestic hot water improvements. The New York City Board of Education purchased approximately 94,000 tons of anthracite coal in fiscal year 1996 for space heating and hot water, accounting for roughly 90% of total New York anthracite coal use in the commercial and residential sectors. This entire amount is likely to be displaced by other fuels over the life of the program, as referenced in the SEP.

Comment:

The Pace Energy Project points out that if coal is used to generate electricity in New York, it must be used efficiently, with up-to-date emission controls. A free market should eliminate the competitive advantage

given to older coal-fired power plants that have minimal environmental controls and new power plants that are require to meet more stringent pollution control requirements.

Response:

Existing coal-fired electric generating facilities could be required to meet more stringent environmental regulations as New York takes steps to meet the air quality requirements under the Ozone Transport Commission Memorandum of Understanding. New facilities are required to meet new source performance standards under the Clean Air Act Amendments of 1990, and are subject to approval by the New York State Board on Electric Generation and the Environment. Consistent application of, and compliance with, federal environmental regulations will level the playing field between old and new energy resources, as air quality standards are tightened in the future.

MISCELLANEOUS ISSUES

State Energy Plan Availability

Comment:

NMPC suggests that the SEP be posted on the NYSERDA Internet web site. Since there may be reason for future searches and quotations from the SEP, its availability in electronic format on the Internet could be useful.

Response:

NYSERDA will make the SEP available on its website and other Energy Planning Board agencies will provide links to the NYSERDA site for that purpose. The SEP is accessible through the NYSERDA home page on the Internet at "www.nyserda.org."

State Energy Plan Implementation

Comment:

The Regional Plan Association (RPA) states that the SEP is not clear on which agencies will be accountable for meeting targets and implementing provisions of the SEP or on facilitating and supporting legislation that may be required to implement the SEP's objectives and strategies. RPA calls for further clarification of responsibility, to enlist the bureaucratic and public support necessary to carry out the SEP's recommendations.

Response:

The SEP's Executive Summary is intended to provide strategic direction and policy guidance, and to coordinate State government's activities and responses to the fundamental changes that will occur in the energy industry over the next several years. Throughout the SEP activities are identified for State agencies to pursue in order to meet New York's energy policy objectives.

Statutes and Regulations in the Context of Utility Restructuring

Comment:

NYPP comments recognize that "regulations have been streamlined," but states that more needs to be done to reflect the realities of the evolving competitive market place. Further, the NYPP calls for a process for new legislation to amend applicable energy laws to reflect the changing competitive electricity market in New York.

Response:

The Role of Government Issue Report addresses government's role in changing energy markets including electricity. The responsibility for on-going reexamination of that role is described. The SEP states that regulation will continue to be used as an instrument of public policy, to address issues of public concern

and to ensure equal access to necessary energy services. Moreover, the SEP recognizes that regulation of energy industries must be flexible, responsive to the needs of market participants, including energy producers, suppliers and consumers, and must be applied fairly in a way that encourages market innovation and efficiency. This indeed requires ongoing review and revision to regulations as necessary and appropriate.

Comment:

EANYS, NYGAS, and NMPC point out that the New York Energy Law, Public Service Law, portions of the Tax Law, Transportation Corporations Law, Business Corporations Law and others are predicated on a system of vertically integrated, highly regulated companies. These laws need to be studied, revised and/or repealed in light of energy industry restructuring. Specifically the SEP should be phased out with this being the last plan under current law. State legislators also need to be educated on restructuring.

Response:

State laws which are no longer relevant under the new industry structures will need to be modified, amended, replaced, or repealed. As the SEP points out in Section 2.6, Role of Government Issue Report, laws that need to be changed to foster competition will be addressed on a going forward basis.

Comment:

The Empire State Petroleum Association, Inc. (ESPA) acknowledges the efforts of the Energy Planning Board to streamline the planning process and minimize government intervention into the private energy markets. The simplification of the regulatory and filing requirements for major energy suppliers and the reduction of the size and scope of the SEP itself, while still addressing critical energy issues, is appreciated by ESPA.

Response:

ESPA's response is acknowledged and, as such, no response is necessary.

Comment:

The Independent Power Producers of New York (IPPNY) endorse certain sections of the SEP.

Response:

No response is necessary.

Niagara Mohawk's Power Corporation's PowerChoice

Comment:

The Sierra Club (Niagara Chapter) states that (NMPC) PowerChoice settlement experience has convinced many members of the Western New York environmental community that the PSC has implemented electric deregulation based on the principal of lower costs for the largest customers without regard for anyone or anything else. The Sierra Club does not know how else to explain the deregulation plans and inequities and attacks on efficiency in clean air and inadequate attention to renewable energy development. The Sierra Club (Niagara Chapter) also contends the NMPC settlement negotiations were conducted in secret.

The Sierra Club (Niagara Chapter) comments included "an open letter" which was filed by the Western New York community groups and community leaders in response to the Public Service Commission (PSC) approval of NMPC PowerChoice Agreement. In that letter, the Western New York community groups state that the PowerChoice Agreement provides inadequate funding for energy efficiency programs and lacks financial incentives for promoting efficiency.

Deborah Baxter comments that NMPC's "exit fee" should not be imposed for all generation sources and particularly for renewable sources.

Response to Comments

The Onondaga County Energy Group recommends the PSC maintain the approved schedule for recovery of NMPC's DSM investments, and continue to insulate non-DSM participants from future embedded costs. The Onondaga County Energy Group (OCEG) states that substantial capital investments have been made by utility customers in concert with existing NMPC tariffs. These investments were encouraged to improve NMPC load-use patterns for on, off, and shoulder peak periods. NMPC's PowerChoice Agreement, in its present form, will dilute savings as afforded under previous tariffs, thus creating customer "stranded assets." Furthermore, many customers were afforded optional tariffs to justify expansion and additional financial investment in New York State. Under the NMPC PowerChoice Agreement, optional tariffs are eliminated as rate classes are allowed to enter retail access. Preliminary data suggests dollar increases under the PowerChoice Agreement for participants now in optional tariffs in excess of 20% per year. The Onondaga County Energy Group (OCEG) forwarded a letter that was addressed to the Public Service Commission (PSC) Chairman in the context of NMPC's PowerChoice Agreement. Claiming PowerChoice will dilute the savings afforded by existing tariffs, OCEG is requesting the PSC to grandfather in the existing tariff.

The back-out rate for energy in the NMPC PowerChoice program is below the national "open market rate" precluding ESCO's from participating in this retail access program. The competition transition charge (CTC) fee recovery period should be extended to allow and increase of the back-out rate for energy.

OCEG also argues that the decision time line in NMPC PowerChoice Option 1 & 2 for Rate 3 users is too short for a decision of this magnitude. Members of each rate class should be allowed to participate on their own time line, or when rate relief from competition is within their grasp.

Response:

The comments do not address the SEP and are not relevant to the SEP. The PSC provided ample opportunity for comment on the proposed settlement agreements in the individual utility restructuring proceedings. Parties who were dissatisfied with the outcome of these proceedings also had the opportunity to challenge them in a judicial forum.

Comment:

NMPC states that the SEP's table summarizing the retail access phase-in schedule for Niagara Mohawk should be updated. The first group will have access one to two months after the PowerChoice Implementation Date. That date is currently estimated to be in late-August, yielding access in the late-September/October 1998 time frame.

Response:

This SEP has been updated to reflect the implementation schedule set forth in the settlement agreement on NMPC's PowerChoice proposal, as approved.

Comment:

Niagara Mohawk Power Corporation (NMPC) states that the SEP should contain a new strategy that states "require that appropriate shares of stranded costs be recovered from new municipal electric loads through exit fees, to prevent inequitable shifting of these costs to other customers." OCEG brings up this issue relating to PowerChoice regarding modification to PowerChoice proposal. Deborah A. Baxter disputes the use of "exit fees" included as part of NMPC's PowerChoice and wants it eliminated. The Honorable Kenneth Pakorski, Mayor of the Village of Sloan, provides a general discussion critical of Public Service Commission (PSC) "exit fees" in NMPC's PowerChoice proposal and encourages municipalization.

Response:

The PSC supported NMPC's position in its Order 98-8 adopting, with modifications, the NMPC PowerChoice Settlement Agreement. The Opinion explicitly provides for the imposition of certain fees on customers either departing or bypassing the system in order to assure that costs associated with the funding of the Master Restructuring Agreement (MRA) are not unfairly shifted to the remaining customers. The assurance of a stable revenue stream was key to NMPC's ability to fund the MRA, thus mitigating a long-standing problem which benefits all the company's customers. The MRA reduces the financial burdens associated with uneconomic purchase power contracts with independent power producers.

Otherwise, to the extent these comments criticize the NMPC PowerChoice Settlement agreement, as approved by the PSC, they are not addressed to the SEP and are not relevant to the SEP.

The Federal Energy Regulatory Commission (FERC) has asserted jurisdiction over the retail-turned-wholesale stranded costs that could result from municipalization in its Order 888. While New York State is pursuing a resolution to the jurisdictional issue, FERC guidelines dominate in this area. Those guidelines, however, do call for the municipality to bear all associated unmitigated stranded costs resulting from municipalization.