Energy Price and Demand Annual Long-Term Forecast: 2009-2028 New York State Energy Plan 2009

December 2009

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1 *Overview*

This document provides all the energy price and demand reference forecasts for the 2009 Energy Plan and policy development process. Section 2 provides an overview of the econometric modeling and analysis technique used to derive the energy demand and price reference forecasts that support the New York energy planning and policy development process. Section 3 is a summary of the annualized growth rates for all fuels, i.e. distillate, residual, kerosene, liquefied petroleum gas (LPG), natural gas, coal, and gasoline, in all sectors, i.e. residential, industrial, commercial, transportation, and electricity, from 2009 through 2028. Sections 4 through 7 contain the price and demand reference forecast data sets for all fuels in all sectors. Statewide energy price reference forecasts are shown by fuel type and sector market and are in 2009 constant dollars, nominal dollars, British thermal units (Btu), and physical units. The New York energy demand reference forecasts are shown according to fuel type and market sector as well as in Btu and physical units. Appendices A and B contain the confidence intervals (upper and lower bounds) for all energy price and demand forecasts in all sectors, respectively. Appendices C and D contain model validation and analysis of all energy price and demand forecasts in all sectors.

2 *Method of Model Specification, Evaluation, and Forecasting*

2.1 **Introduction**

The 20-year reference forecasts of energy price and demand are provided for the New York energy planning and policy development process. The base year for forecasting is 2007. The forecasts are primarily derived through the Ordinary Least Squares econometric modeling methodology unless otherwise specified. The forecasts are constructed as long – term trends that capture the general direction and magnitude of energy prices and demand and are not intended to provide information about short – term market dynamics. A reasonable range of possible oscillation around the trend forecasts are provided through the use of confidence intervals. Model specification and analysis is accomplished using the standard economic forecasting diagnostic tools, such as the T-test, r-squared value, Durbin-Watson statistic, Dickey-Fuller test, and the mean average percent error (MAPE). The primary sources of data for the forecasting models are the New York State Energy Research and Development Authority (NYSERDA) *Patterns and Trends*, the Energy Information Agency (EIA) *Annual Energy Outlook* (AEO), and Energy and Environmental Analysis (EEA), Inc. *Gas Market Compass*.[1]

The historic data extending back 17 years contains information about energy policies implemented at the State and National levels however; anticipated policy proposals, such as a national carbon reduction policy, are not assumed in the reference forecasts. Moreover, broader global issues such as peak oil, political and civil unrest, as well as natural disasters are not assumed in any of the forecasts. Although important, these issues are too difficult to measure or quantify within the forecasts using any reasonable modeling technique. For example, the concept of 'Peak Oil' is embedded in the forecast to the extent that it exists in the historic data. However, it is not explicitly built into the forecast because the lack of accurate and sufficient data on the global oil production rates. Furthermore, peak oil is a dynamic concept that rests on more than just the mathematical rate of extract on the production side of the equation. It should also account for the discovery rates, population growth rates, and consumption rates across the global markets. The forecasts are provided according to market sectors and are in physical and British Thermal Units (Btu) and nominal and constant 2009 dollars. The graphs of the fuel price forecasts are in constant 2009 dollars, which adjusts for inflation so that an appropriate comparison of a fuel prices can be made overtime.

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[1] NYSERDA. *Patterns and Trends - New York State Energy Profiles: 1993-2007*. 2009. http://www.nyserda.org/energy_information/patterns%20&%20trends%201993-2007.pdf

EIA. *Annual Energy Outlook (AEO)*. 2009. http://www.eia.doe.gov/oiaf/aeo/

EEA. *Gas Market Compass*. March 2009.

2.2 Refined Petroleum, Natural Gas, and Coal Prices

The New York State refined petroleum product and natural gas price reference forecasts for the Residential, Commercial, Industrial, Transportation and Electricity sectors are developed using the Ordinary Least Squares econometric modeling methodology with a commodity price as the explanatory variable. The West Texas Intermediate (WTI) light sweet crude oil and Henry Hub natural gas spot price, as depicted in the below figure, are the commodity prices used to forecast all New York State refined petroleum product and natural gas prices, respectively. The projected commodity prices were provided to NYSERDA by EEA.

Figure 1. West Texas Intermediate Crude Oil and Henry Hub Gas Spot Prices
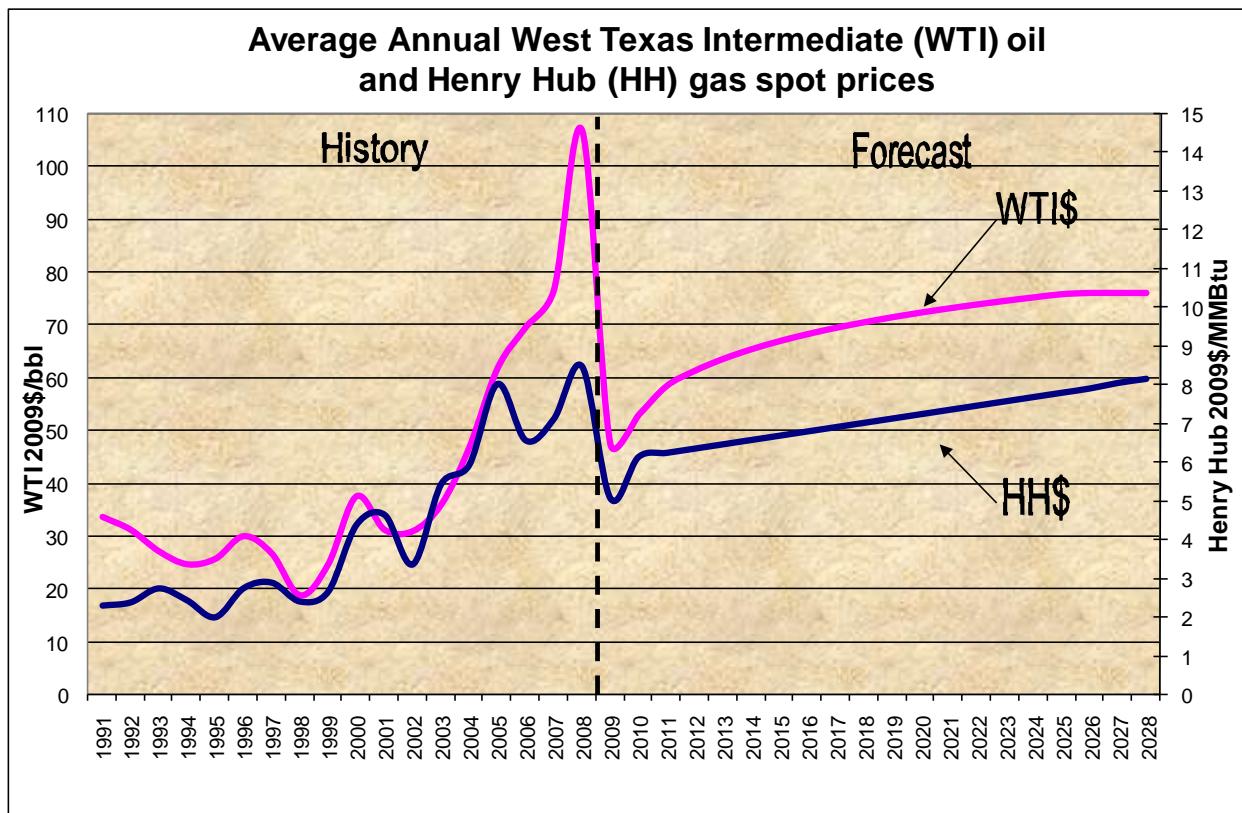
The WTI oil price forecast is derived using two methods that yield consistent results. The first method is the Delphi process, which elicits information about the oil price through interviews with energy and resource professionals, independently and then as a group, that results in a convergence of assumptions about the future oil price trend. The second method is a global econometric oil model developed by ICF International. The econometric oil model contains information about long-run interaction of global oil supply and demand. The long-run price is largely determined by the cost of bringing new supplies to the market. Potential oil supplies in the model include conventional and unconventional crude oil, bio-fuels, fuels from coal-to-liquids and gas-to-liquids plants, and natural gas liquids. Global economic activity and population growth rates are also contained in the forecast model for various regions around the world.

The WTI crude oil spot price has been considered a benchmark for other crude oil spot prices in the United States since the mid-1980s. It can also be used to accurately predict the sector market oil prices. The spot price provides a better predictor than the contract price because the spot price represents the

marginal clearing price within the market. In other words, the WTI spot price represents the last unit of oil purchased on the New York Mercantile Exchange where market equilibrium is reached or where supply equals demand. The sector market petroleum product prices are a magnitude higher than the crude oil spot price. The difference between the WTI oil price and the refined petroleum product prices are the added cost of refinement, transportation and distribution. These additional costs are easily represented in the linear regression models as the fixed and variable costs beyond that of the WTI oil price. So, the quantitative relationship of refined product prices to the crude oil spot price lends itself to the use of linear regression models which are order of magnitude models.

The oil price serves as an input into EEA's Gas Market Model (GMM) which provides outputs of various commodity gas prices, such as the Henry Hub gas price, and the New York-specific gas demand by sector. Although the oil price reflects the global market, the natural gas price is primarily based on geographical price points in the national market. The Henry Hub gas price in real dollars per MMBtu has historically followed the movement of the WTI oil price in real dollars per barrel with a $7 to $9 WTI oil price to Henry Hub gas price ratio. This ratio is a common rule of thumb within the energy industry and the ratio may at times fall outside this normal range. Thus, the forecasts of the WTI oil price and the Henry Hub gas price are consistent with this historical relationship.

The Henry Hub natural gas spot price is an industry recognized price for natural gas east of the Rocky Mountains. Henry Hub is a pipeline hub on the Louisiana Gulf coast. It is the delivery point for the natural gas futures contract on the New York Mercantile Exchange (NYMEX). Similar to the petroleum product forecasts, the sector market natural gas prices are simply a magnitude higher than the Henry Hub prices. The difference between a sector market price, such as residential natural gas price, and the Henry Hub spot price can generally be considered the cost of transportation and distribution of the natural gas. Again, linear regression models perform extremely well at capturing the difference in magnitude. So, differences between the Henry Hub natural gas price and the sector market natural gas prices are the added cost of transportation and distribution. These additional costs are easily represented in the linear regression models as the fixed and variable costs beyond that of the Henry Hub natural gas price.

Sector market fuel prices have long been recognized as fundamentally linked to their commodity prices. Short-term models are usually based on daily, weekly, and monthly average data and typically forecast ahead at most several years. Those forecasts provide useful information about the market dynamics that drive the ups and downs in the near future. Alternatively, long-term forecast models, as in this document, are designed using average annual data and forecast horizons of several decades. These forecasts provide useful information about the general direction and magnitude of long-term trends. Not only do the long-term models answer different questions than the short-term models, but they also require less complexity.

The commodity prices representing the long-term market interactions of supply and demand assume an average annual economic growth of 3.0 percent per year. The commodity prices in the above figure were adjusted for inflation using the all-urban consumer price index (CPI-U), which is a common indicator of inflation and is widely viewed as barometers of conditions in the markets for goods and services. The CPI-U is obtained from the U.S. Department of Labor's Bureau of Labor statistics. Historically, from 1996 to 2006, inflation has averaged 2.6 percent per year. In the projected average annual inflation rate over the 2009-2027 reference forecast horizon is 2.0 percent.

The forecasts are intended to capture the long-term direction and magnitude of fuel prices and not the short-term market dynamics which are masked by the use of the average annual data. The spike in the crude oil prices in 2008 reflect the global tightening of supply and demand for crude oil, China's and India's rapidly expanding economies, as well as influences from outside of the market, such as weather, social unrest in certain regions of the world, and perceptions about the economy. The recent volatility in the markets is captured by a disconnection between the crude oil and natural gas price predictors, but the

commodity prices do remain linked in the long-term as the market moves back into equilibrium. Thus, the drop-off in the oil price over the next year of the forecast is the result of the global recession. However, the steady state price going forward does not reflect the recession. Prior to the 2008 drop-off in oil prices, the price of oil was artificially high and the recession corrected that phenomena causing the prices to more accurately reflect the supply and demand interaction in the market.

The price of coal in the electricity sector is projected by the Integrated Planning Model (IPM) from ICF International. IPM is a dynamic optimization model that uses a linear programming formulation to select investment options and to dispatch generating and load management resources to meet overall electric demand. Basically, IPM simultaneously balances the costs and benefits of a conventional utility supply option, the costs and benefits of non-utility supply options, and the costs and benefits of demand-side options. Because coal competes with natural gas and oil use in the electricity sector the price of coal varies to some extent on the use and price of the other fuels as well as any regulatory constraints placed on the system.

2.3   Refined Petroleum, Natural Gas, and Coal Demand

The petroleum product demand reference forecasts in the residential, commercial, industrial, and transportation sectors are also developed using the Ordinary Least Squares, econometric modeling methodology. Mid-Atlantic[*] petroleum fuel demand for Distillate fuel oil, Residual fuel oil, Liquefied Petroleum Gas, Kerosene, Motor Gasoline is the explanatory variable for each respective fuel type and was obtained from the Energy Information Agency's (EIA) Annual Energy Outlook (AEO) 2009. The AEO2009 economic growth rate for the reference case depends mainly on growth in the labor force and productivity. In the reference case, the labor force grows by an average of 0.7 percent per year; labor productivity in the non-farm business sector grows by 1.9 percent per year; and growth in real GDP averages 2.5 percent per year between 2007 and 2028. In line with the labor and output trends, non-farm employment grows by 0.9 percent per year, while employment in manufacturing shrinks by 1 percent per year. Investment growth averages 2.8 percent per year in the reference case; disposable income available to households grows by 2.8 percent per year; and disposable income per capita increases by 1.9 percent per year.

The natural gas demand reference forecasts for the residential, commercial, and industrial sectors were provided by EEA, dated March 2, 2009. EEA uses a Gas Market Data and Forecasting System to track and analyze monthly behavior in the North American natural gas market. At the heart of the system is a comprehensive gas transmission network that solves for natural gas supply and demand for the U.S., Canada, and northern Mexico. Specifically, the model solves for monthly natural gas production and demand, storage injections and withdrawals, pipeline flows, natural gas prices, locational basis, and seasonal basis for a very detailed natural gas pipeline network comprised of 91 nodes (or market hubs). Results are available at the node level. In the power generation sector, the model solves for monthly electricity demand, power generation by type of fuel, generating capacity additions, and fuel use. The model considers the impact of:
- Weather
- Economic Growth Rates
- Growth Rates for Residential, Commercial, and Industrial Gas Demand
- Growth Rates for Electricity Demand
- Oil and Coal Prices

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[*] New York, New Jersey, and Pennsylvania.

- Power Generating Capacity
- Nuclear Retirements/Additions
- Limitations/Environmental Restrictions on Coal Unit Capacity Utilization
- Gas Supply Capability (Deliverability)
- Gas Pipeline and Storage Expansions
- LNG Imports/Exports
- Mexican Imports/Exports
- Seasonal LNG Requirements

The Gas Market Data and Forecasting System was used to complete the 1999 study on the North American Gas Market for the National Petroleum Council. Moreover, the system has been widely used by gas producers, pipelines, electric utilities, independent power providers, and LDCs for internal strategic planning.

2.4 **Electricity Generation and Fuel Demand**

The electricity sector petroleum, natural gas, and coal demand is projected using the Integrated Planning Model (IPM) from ICF International. IPM is a dynamic optimization model that uses a linear programming formulation to select investment options and to dispatch generating resources to meet overall electric demand. The IPM model determines the fuel demand in the electricity sector based on the WTI oil and Henry Hub gas price inputs as well as an electricity generation forecast from the New York State Independent System Operator (NYISO).

The electricity generation reference forecast from the NYISO, dated August 29, 2008, represents the "starting point" forecast for the State Energy Plan. The starting point forecast assumes continued spending of previously operating energy efficiency programs as well as an 80 percent realization of the $160 million per year spending for new energy efficiency programs within the New York State Energy Efficiency Portfolio Standard that was allocated to NYSERDA and public utilities via the New York State Public Service Commission. Thus, the starting point forecast does not account for other energy efficiency measures, such as weatherization, and codes and standards that are outlined in the Energy Efficiency Portfolio Standard. It assumes approximately 27 percent of the full '15 by 15' policy goal set by the governor. Alternatively, an electricity generation forecast that includes the full '15 by 15' initiative is also provided by the NYISO and represents the "policy-reference" forecast for the State Energy Plan.

The electricity demand forecast for each sector and the statewide total were developed using the ordinary least squares, econometric modeling methodology. Each forecast is adjusted according to the energy efficiency savings and the 80 percent realization of the expected energy efficiency savings from the new Energy Efficiency Portfolio Standards and allocated to NYSERDA and public utilities via the New York State Public Service Commission that is consistent with the starting point forecast. The demand or sales forecasts are also consistent with the policy-reference forecast. The total statewide and commercial electricity forecasts has gross state product as the predictor, whereas the residential sector forecast is based on population and per capita income. The industrial sector electricity use depends on varying site specific factors that are difficult to capture in one or several variables. So, the industrial sector forecast is derived by subtracting the sum of the residential and commercial sector electricity forecast from the total statewide electricity forecast. The data for the predictor variables were obtained from Regional Economic Models Inc. (REMI).[2]

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[2] REMI. *New York REMI Policy Insight Model v9.5*. March 2009.

2.5 **Further Assumptions**

The forecasts are based on the assumption that a national carbon policy will not be enacted. However, the reference forecast does represent the Energy Independence and Security Act of 2007. The federal act sets a corporate average fuel economy target of 35 miles per gallon for the combined fleet of cars and light trucks by model year 2020. Also, a fuel economy program is established for medium – and heavy-duty trucks, and a separate fuel economy standard is created for work trucks. The law also sets a modified renewable fuel standard that starts at 9.0 billion gallons of renewable fuel in 2008 and rises to 36 billion gallons by 2022. Of the latter total, 21 billion gallons is required to be obtained from cellulosic ethanol and other advanced biofuels.

Standards are also set for appliances and lighting efficiency. Energy efficiency standards are set for broad categories of incandescent lamps (light bulbs), incandescent reflector lamps, and fluorescent lamps. A required target is set for lighting efficiency, and energy efficiency labeling is required for consumer electronic products. Also, efficiency standards are set by law for external power supplies, residential clothes washers, dishwashers, dehumidifiers, refrigerators, refrigerator-freezers, freezers, electric motors, residential boilers, commercial walk-in coolers, and commercial walk-in freezers. Further, DOE is directed to set standards by rulemaking for furnace fans and battery chargers.

2.6 **Confidence Intervals**

The confidence intervals represent upper and lower bounds for expected variation around each reference forecast and are not to be confused with high and low scenarios of say, economic growth, prices, infrastructure growth, etc. Values may occur outside the confidence intervals due to external shocks, such as extreme weather, structural changes to the economic system, or technology development. The confidence intervals increase in width throughout the forecast period due to the increasing level of uncertainty in each subsequent year. The upper and lower bounds were based on one to two standard deviations of the historic values, indicating at least a 68 percent probability that future values would be expected to fall within the confidence interval. The confidence interval for the first forecast year is based on one standard deviation and grows linearly until it reaches two standard deviations, or a 95 percent probability, in 2028.

The range is constructed using the estimated sample variance (s^2), or expected spread of values around

the historic average value, multiplied by $\delta = (n_j + \dfrac{n_j}{N} + \dfrac{(Y_j - \dfrac{1}{N}\sum_i y_i)^2}{\sum_i y_i - \dfrac{1}{N}\sum_i y_i^2})$. The ($n_j + \dfrac{n_j}{N}$) term

represents the time step, or distance of each forecast value from the most recent historic value in terms of

years along the x-axis, whereas ($\dfrac{(Y_j - \dfrac{1}{N}\sum_i y_i)^2}{\sum_i y_i - \dfrac{1}{N}\sum_i y_i^2}$) represents the extent to which the forecast values are

drifting from the historic average value along the y-axis. So, δ represents the possible growth in the expected spread of values over the forecast horizon due to uncertainty about the future. Calculating the square root of s^2 multiplied by δ provides a standard deviation that grows throughout the forecast. In other words, for any specific year within the forecast the equation is the square root of the average variation multiplied by the sum of the number of years in the forecast at that time and the difference

between the forecast value and the historic average value. This result is then added to and subtracted from the forecast value to arrive at the upper and lower limit.

$$Y_j \pm \sqrt{s^2 \delta} \quad = \quad Y_j \pm \sqrt{s^2 (n_j + \frac{n_j}{N} + \frac{(Y_j - \frac{1}{N}\sum_i y_i)^2}{\sum_i y_i - \frac{1}{N}\sum_i y_i^2})}$$

where,

Y_j is the forecast value of the jth year.

s^2 is the expected spread of values around the historic average value.

δ is the possible growth in the spread of values over the forecast horizon.

n_j is the number of years in the forecast up to the jth year.

N is the total number of years in the sample (history) data.

y_i is the historic value of the ith year.

2.7   **Model Specification and Analysis**

Model evaluation or analysis is accomplished via inspection of the absolute estimated errors or the difference between the predicted and actual values plotted on the y-axis against the dependent variable on the x-axis. The graphical plots of the absolute estimated error show the predictive error relative to the actual values of the dependent variable for each year. The more tightly clustered the absolute estimated errors are to the dependent variable on the x-axis, the better the model fits the data or the greater the likelihood that the model is sufficiently specified. Inspection of the absolute estimated error is a simple and effective method for detecting the predictive capability of an independent variable and its relation to a dependent variable. It assists in the specification process by determining whether necessary variables have been omitted. The absolute estimated errors and absolute percent estimated errors or the percent difference between actual and predicted values of the dependent variable are tabulated to identify the actual values and corresponding years. If the estimated errors are relatively large, then it is likely they contain information that needs to be explicit within the model by one or more variables.

The mean absolute estimated error (MAE) and mean absolute percent estimated error (MAPE) are calculated and are a standard method of evaluation. An acceptable amount of percent estimated error for any given year is approximately 5 percent however, 3 percent or less is ideal. Model fit is also assessed using the adjusted r-squared. The standard diagnostics for a linear regression model is the r-squared, the Durbin-Watson statistic, and a t-test on β. A Durbin – Watson test determines the existence of autocorrelation. The null hypothesis $H_0 : \rho = 0$ is tested against the alternative hypothesis $H_1 : \rho > 0$, where ρ is the correlation coefficient between successive errors. The rejection criteria is $d < d_L$, reject H_0, $d > d_U$, do not reject H_0, and $d_L < d < d_U$, inconclusive. Moreover, if the test statistic is less

than the r-squared there is reason to suspect a spurious regression. If spurious regression is suspected, then a unit root test would be needed to determine the stationarity of the series. A Dickey-Fuller (DF) test determines the stationarity of the dependent variable where the null hypothesis $H_0 : \rho = 1$ is tested against the alternative hypothesis $H_1 : \rho < 1$. The DF test estimates three possible models, one without a constant, one with a constant, and one with a time trend. The DF statistic $\delta = (\hat{\rho} - 1)/SE_{\hat{\rho}}$ is compared to a DF distribution table. If $\delta < c$, where c is the critical value, then the null hypothesis is rejected. A hypothesis test is accomplished by examining p-values of the t-statistic at a 0.05 significance level, with the null hypothesis of $H_0 : \mu = 0$ tested against the alternative hypothesis $H_0 : \mu \neq 0$.

3 *Annualized Price and Demand Growth Rates: 2009-2028*

3.1   Annualized Price Growth Rates: 2009-2028

Distillate price in constant 2009$ is projected to grow at a rate of
- 1.75 percent per year in the residential sector
- 2.24 percent per year in the commercial sector
- 2.32 percent per year in the industrial sector
- 1.53 percent per year in the transportation sector
- 2.23 percent per year in the electricity sector

Residual price in constant 2009$ is projected to grow at a rate of
- 2.09 percent per year in the commercial sector
- 2.09 percent per year in the industrial sector
- 2.28 percent per year in the transportation sector
- 2.16 percent per year in the electricity (average) sector
- 2.16 percent per year in the electricity (1 percent sulfur) sector
- 2.16 percent per year in the electricity (0.3 percent sulfur) sector

Natural Gas price in constant 2009$ is projected to grow at a rate of
- 0.84 percent per year in the residential sector
- 1.15 percent per year in the commercial sector
- 1.52 percent per year in the industrial sector
- 2.29 percent per year in the electricity (statewide) sector
- 2.53 percent per year in the electricity (DSNY) sector
- 2.53 percent per year in the electricity (UPNY-East) sector
- 2.53 percent per year in the electricity (UPNY-West) sector

Kerosene price in constant 2009$ is projected to grow at a rate of
- 2.47 percent per year in the residential sector
- 2.33 percent per year in the commercial sector
- 2.26 percent per year in the industrial sector

Liquefied Petroleum Gas price in constant 2009$ is projected to grow at a rate of
- 1.02 percent per year in the residential sector
- 1.23 percent per year in the commercial sector
- 1.48 percent per year in the industrial sector

Motor Gasoline price in constant 2009$ is projected to grow at a rate of
- 1.58 percent per year.

Coal price in constant 2009$ is projected to grow at a rate of
- - 0.58 percent per year in the electricity sector

3.2 **Annualized Demand Growth Rates: 2009-2028**

Distillate demand is projected to grow at a rate of
- - 1.84 percent per year in the residential sector
- - 0.42 percent per year in the commercial sector
-   0.00 percent per year in the industrial sector
-   1.46 percent per year in the transportation sector
- - 3.49 percent per year in the electricity sector

Residual demand is projected to grow at a rate of
-   0.74 percent per year in the commercial sector
- - 1.30 percent per year in the industrial sector
-   0.00 percent per year in the transportation sector
- - 3.49 percent per year in the electricity sector

Natural Gas demand is projected to grow at a rate of
-   0.10 percent per year in the residential sector
-   0.65 percent per year in the commercial sector
- - 0.70 percent per year in the industrial sector
-   0.45 percent per year in the electricity sector

Kerosene demand is projected to grow at a rate of
-   0.89 percent per year in the residential sector
- - 0.01 percent per year in the commercial sector

Liquefied Petroleum Gas demand is projected to grow at a rate of
- - 0.09 percent per year in the residential sector
-   0.23 percent per year in the commercial sector
- - 0.04 percent per year in the industrial sector

Motor Gasoline demand is projected to grow at a rate of
- - 0.13 percent per year

Coal Demand is projected to grow at a rate of
-   0.00 percent per year in the residential sector
-   0.00 percent per year in the commercial sector
- - 0.97 percent per year in the industrial sector
-   0.21 percent per year in the electricity sector

4 *Energy Price Reference Forecasts by Fuel Type*

4.1 **Distillate Fuel Oil Price Reference Forecast**

Figure 2. New York Distillate Prices by Sector (Constant 2009$/MMBtu)
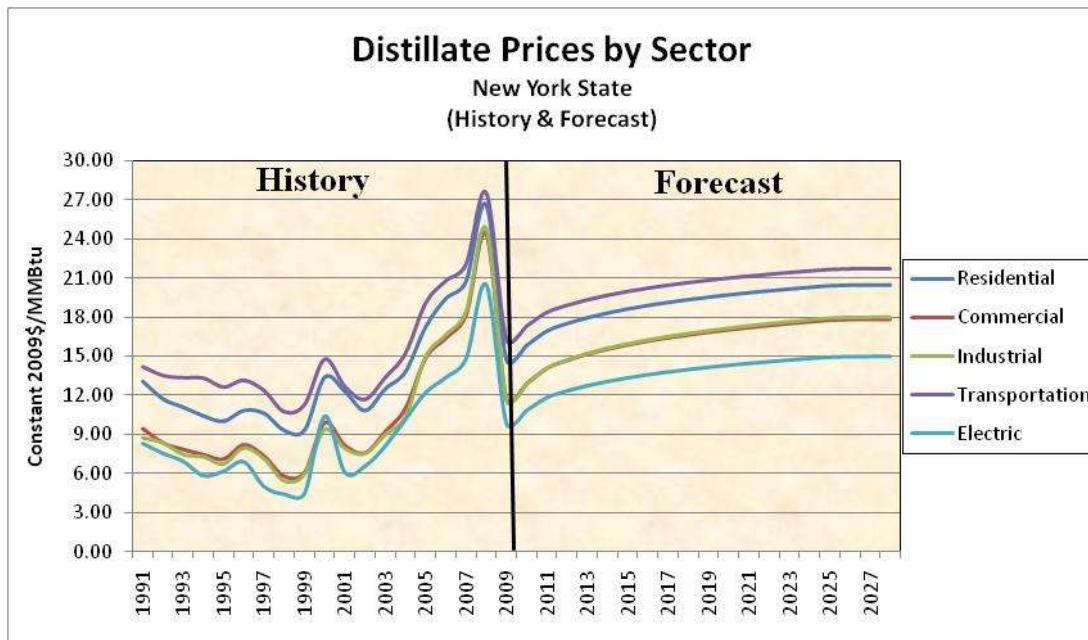
Table 1. Reference Forecast of Distillate Fuel Oil Price by Sector (Constant 2009$/MMBtu)

Year	Residential	Commercial	Industrial	Transportation	Electric
2009	14.72	11.69	11.64	16.26	9.84
2010	15.82	12.86	12.85	17.30	10.82
2011	16.93	14.04	14.08	18.35	11.81
2012	17.51	14.65	14.72	18.89	12.33
2013	17.96	15.13	15.21	19.32	12.73
2014	18.32	15.52	15.62	19.66	13.06
2015	18.63	15.85	15.96	19.96	13.34
2016	18.90	16.14	16.25	20.21	13.58
2017	19.14	16.39	16.52	20.43	13.79
2018	19.35	16.61	16.75	20.64	13.98
2019	19.54	16.82	16.96	20.82	14.15
2020	19.71	17.00	17.15	20.98	14.30
2021	19.87	17.17	17.33	21.13	14.45
2022	20.02	17.33	17.50	21.27	14.58
2023	20.16	17.48	17.65	21.41	14.71
2024	20.29	17.62	17.79	21.53	14.82
2025	20.41	17.75	17.93	21.64	14.93
2026	20.46	17.80	17.98	21.69	14.97
2027	20.46	17.80	17.98	21.69	14.98
2028	20.46	17.80	17.98	21.69	14.98
Annual Growth Rate	1.75%	2.24%	2.32%	1.53%	2.23%

Table 2. Reference Forecast of Distillate Fuel Oil Price by Sector (Constant 2009$/gal)

Year	Residential	Commercial	Industrial	Transportation	Electric
2009	2.03	1.61	1.61	2.24	1.36
2010	2.18	1.78	1.78	2.39	1.49
2011	2.34	1.94	1.94	2.53	1.63
2012	2.42	2.02	2.03	2.61	1.70
2013	2.48	2.09	2.10	2.67	1.76
2014	2.53	2.14	2.16	2.72	1.80
2015	2.57	2.19	2.20	2.76	1.84
2016	2.61	2.23	2.24	2.79	1.87
2017	2.64	2.26	2.28	2.82	1.90
2018	2.67	2.29	2.31	2.85	1.93
2019	2.70	2.32	2.34	2.87	1.95
2020	2.72	2.35	2.37	2.90	1.98
2021	2.74	2.37	2.39	2.92	2.00
2022	2.77	2.39	2.42	2.94	2.01
2023	2.78	2.41	2.44	2.96	2.03
2024	2.80	2.43	2.46	2.97	2.05
2025	2.82	2.45	2.48	2.99	2.06
2026	2.83	2.46	2.48	3.00	2.07
2027	2.83	2.46	2.48	3.00	2.07
2028	2.83	2.46	2.48	3.00	2.07
Annual Growth Rate	1.75%	2.24%	2.32%	1.53%	2.23%

Table 3. Reference Forecast of Distillate Fuel Oil Price by Sector (Nominal $/MMBtu)

Year	Residential	Commercial	Industrial	Transportation	Electric
2009	14.72	11.69	11.64	16.26	9.84
2010	16.07	13.06	13.05	17.56	10.99
2011	17.48	14.49	14.53	18.94	12.20
2012	18.39	15.39	15.46	19.85	12.96
2013	19.20	16.18	16.27	20.66	13.61
2014	19.93	16.89	16.99	21.39	14.21
2015	20.64	17.56	17.68	22.11	14.77
2016	21.34	18.22	18.35	22.82	15.33
2017	22.04	18.88	19.02	23.54	15.88
2018	22.73	19.52	19.68	24.24	16.42
2019	23.43	20.17	20.34	24.97	16.97
2020	24.12	20.81	20.99	25.67	17.50
2021	24.83	21.46	21.65	26.40	18.05
2022	25.57	22.13	22.34	27.16	18.62
2023	26.28	22.79	23.01	27.90	19.17
2024	27.03	23.47	23.70	28.68	19.74
2025	27.79	24.16	24.40	29.46	20.32
2026	28.43	24.73	24.98	30.14	20.80
2027	29.05	25.27	25.52	30.79	21.26
2028	29.68	25.82	26.08	31.46	21.72
Annual Growth Rate	3.76%	4.26%	4.34%	3.54%	4.25%

Table 4. Reference Forecast of Distillate Fuel Oil Price by Sector (Nominal $/gal)

Year	Residential	Commercial	Industrial	Transportation	Electric
2009	2.03	1.61	1.61	2.24	1.36
2010	2.22	1.80	1.80	2.43	1.52
2011	2.41	2.00	2.01	2.62	1.68
2012	2.54	2.13	2.14	2.74	1.79
2013	2.65	2.23	2.25	2.85	1.88
2014	2.75	2.33	2.35	2.95	1.96
2015	2.85	2.42	2.44	3.05	2.04
2016	2.95	2.52	2.53	3.15	2.12
2017	3.04	2.61	2.63	3.25	2.19
2018	3.14	2.70	2.72	3.35	2.27
2019	3.24	2.79	2.81	3.45	2.34
2020	3.33	2.87	2.90	3.55	2.42
2021	3.43	2.96	2.99	3.65	2.49
2022	3.53	3.06	3.08	3.75	2.57
2023	3.63	3.15	3.18	3.85	2.65
2024	3.73	3.24	3.27	3.96	2.73
2025	3.84	3.34	3.37	4.07	2.81
2026	3.93	3.42	3.45	4.16	2.87
2027	4.01	3.49	3.52	4.25	2.94
2028	4.10	3.57	3.60	4.34	3.00
Annual Growth Rate	3.76%	4.26%	4.34%	3.54%	4.25%

4.2 Residual Fuel Oil Price Reference Forecast

Figure 3. New York Residual Prices by Sector (Constant 2009$/MMBtu)
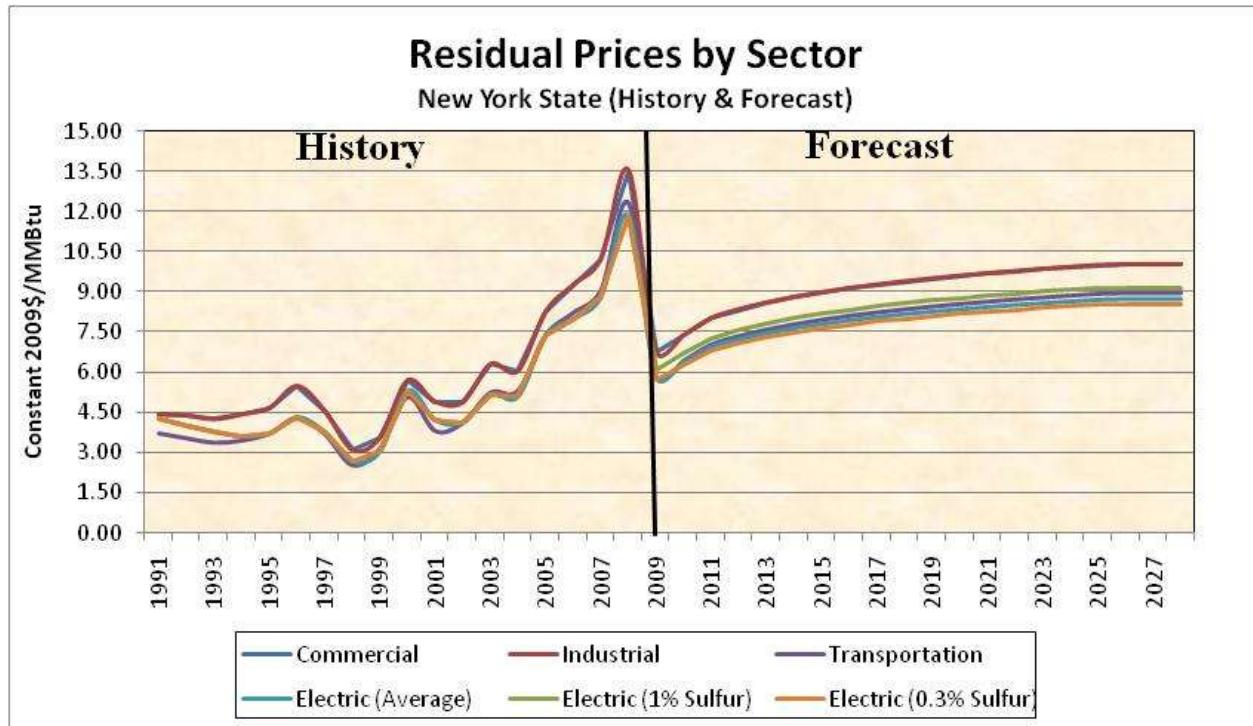
Table 5. Reference Forecast of Residual Fuel Oil Price by Sector (Constant 2009$/MMBtu)

Year	Commercial	Industrial	Transportation	Electric (Average)	Electric (1% Sulfur)	Electric (0.3% Sulfur)
2009	6.77	6.77	5.85	5.82	6.11	5.70
2010	7.39	7.39	6.45	6.38	6.70	6.25
2011	8.02	8.02	7.05	6.94	7.29	6.80
2012	8.35	8.35	7.36	7.23	7.60	7.09
2013	8.60	8.60	7.61	7.46	7.84	7.31
2014	8.81	8.81	7.81	7.65	8.03	7.50
2015	8.98	8.98	7.98	7.81	8.20	7.65
2016	9.14	9.14	8.12	7.94	8.34	7.78
2017	9.27	9.27	8.25	8.06	8.47	7.90
2018	9.39	9.39	8.37	8.17	8.58	8.01
2019	9.50	9.50	8.47	8.27	8.68	8.10
2020	9.60	9.60	8.57	8.36	8.77	8.19
2021	9.69	9.69	8.65	8.44	8.86	8.27
2022	9.78	9.78	8.74	8.51	8.94	8.34
2023	9.85	9.85	8.81	8.58	9.01	8.41
2024	9.93	9.93	8.88	8.65	9.08	8.48
2025	10.00	10.00	8.95	8.71	9.15	8.54
2026	10.02	10.02	8.97	8.74	9.17	8.56
2027	10.03	10.03	8.98	8.74	9.17	8.56
2028	10.03	10.03	8.98	8.74	9.17	8.56
Annual Growth Rate	2.09%	2.09%	2.28%	2.16%	2.16%	2.16%

Table 6. Reference Forecast of Residual Fuel Oil Price by Sector (Constant 2009$/bbl)

Year	Commercial	Industrial	Transportation	Electric (Average)	Electric (1% Sulfur)	Electric (0.3% Sulfur)
2009	42.62	42.62	36.83	36.67	38.50	35.94
2010	46.56	46.56	40.61	40.19	42.20	39.38
2011	50.52	50.52	44.41	43.73	45.92	42.86
2012	52.58	52.58	46.39	45.58	47.86	44.67
2013	54.19	54.19	47.93	47.01	49.37	46.07
2014	55.50	55.50	49.19	48.19	50.60	47.22
2015	56.60	56.60	50.25	49.18	51.64	48.19
2016	57.56	57.56	51.17	50.04	52.54	49.04
2017	58.41	58.41	51.99	50.79	53.33	49.78
2018	59.17	59.17	52.71	51.47	54.04	50.44
2019	59.85	59.85	53.37	52.08	54.69	51.04
2020	60.48	60.48	53.97	52.64	55.27	51.59
2021	61.05	61.05	54.52	53.16	55.81	52.09
2022	61.58	61.58	55.04	53.63	56.31	52.56
2023	62.08	62.08	55.51	54.08	56.78	52.99
2024	62.54	62.54	55.96	54.49	57.22	53.40
2025	62.98	62.98	56.37	54.88	57.62	53.78
2026	63.15	63.15	56.54	55.03	57.79	53.93
2027	63.16	63.16	56.55	55.04	57.79	53.94
2028	63.16	63.16	56.55	55.04	57.79	53.94
Annual Growth Rate	2.09%	2.09%	2.28%	2.16%	2.16%	2.16%

Table 7. Reference Forecast of Residual Fuel Oil Price by Sector (Nominal $/MMBtu)

Year	Commercial	Industrial	Transportation	Electric (Average)	Electric (1% Sulfur)	Electric (0.3% Sulfur)
2009	6.77	6.77	5.85	5.82	6.11	5.70
2010	7.50	7.50	6.54	6.48	6.80	6.35
2011	8.28	8.28	7.28	7.17	7.52	7.02
2012	8.77	8.77	7.74	7.60	7.98	7.45
2013	9.20	9.20	8.14	7.98	8.38	7.82
2014	9.58	9.58	8.50	8.32	8.74	8.16
2015	9.95	9.95	8.84	8.65	9.08	8.47
2016	10.32	10.32	9.17	8.97	9.42	8.79
2017	10.68	10.68	9.51	9.29	9.75	9.10
2018	11.03	11.03	9.83	9.60	10.08	9.41
2019	11.39	11.39	10.16	9.91	10.41	9.72
2020	11.75	11.75	10.48	10.22	10.74	10.02
2021	12.11	12.11	10.81	10.54	11.07	10.33
2022	12.48	12.48	11.15	10.87	11.41	10.65
2023	12.85	12.85	11.49	11.19	11.75	10.97
2024	13.23	13.23	11.83	11.52	12.10	11.29
2025	13.61	13.61	12.18	11.86	12.45	11.62
2026	13.93	13.93	12.47	12.14	12.74	11.89
2027	14.23	14.23	12.74	12.40	13.02	12.15
2028	14.54	14.54	13.02	12.67	13.31	12.42
Annual Growth Rate	4.11%	4.11%	4.30%	4.18%	4.18%	4.18%

Table 8. Reference Forecast of Residual Fuel Oil Price by Sector (Nominal $/bbl)

Year	Commercial	Industrial	Transportation	Electric (Average)	Electric (1% Sulfur)	Electric (0.3% Sulfur)
2009	42.62	42.62	36.83	36.67	38.50	35.94
2010	47.27	47.27	41.23	40.81	42.85	39.99
2011	52.15	52.15	45.84	45.14	47.40	44.24
2012	55.24	55.24	48.74	47.89	50.28	46.93
2013	57.94	57.94	51.25	50.27	52.79	49.27
2014	60.38	60.38	53.52	52.43	55.05	51.38
2015	62.71	62.71	55.67	54.48	57.20	53.39
2016	65.00	65.00	57.78	56.50	59.32	55.37
2017	67.28	67.28	59.88	58.51	61.43	57.34
2018	69.51	69.51	61.93	60.47	63.49	59.26
2019	71.78	71.78	64.01	62.46	65.59	61.21
2020	74.00	74.00	66.04	64.42	67.64	63.13
2021	76.27	76.27	68.11	66.41	69.73	65.08
2022	78.63	78.63	70.27	68.48	71.90	67.11
2023	80.92	80.92	72.36	70.49	74.02	69.08
2024	83.32	83.32	74.54	72.59	76.22	71.14
2025	85.74	85.74	76.74	74.71	78.45	73.22
2026	87.74	87.74	78.56	76.46	80.29	74.93
2027	89.65	89.65	80.27	78.13	82.04	76.57
2028	91.61	91.61	82.02	79.83	83.82	78.23
Annual Growth Rate	4.11%	4.11%	4.30%	4.18%	4.18%	4.18%

4.3 **Natural Gas Price Reference Forecast**

Figure 4. New York Natural Gas Prices by Sector (Constant 2009$/MMBtu)
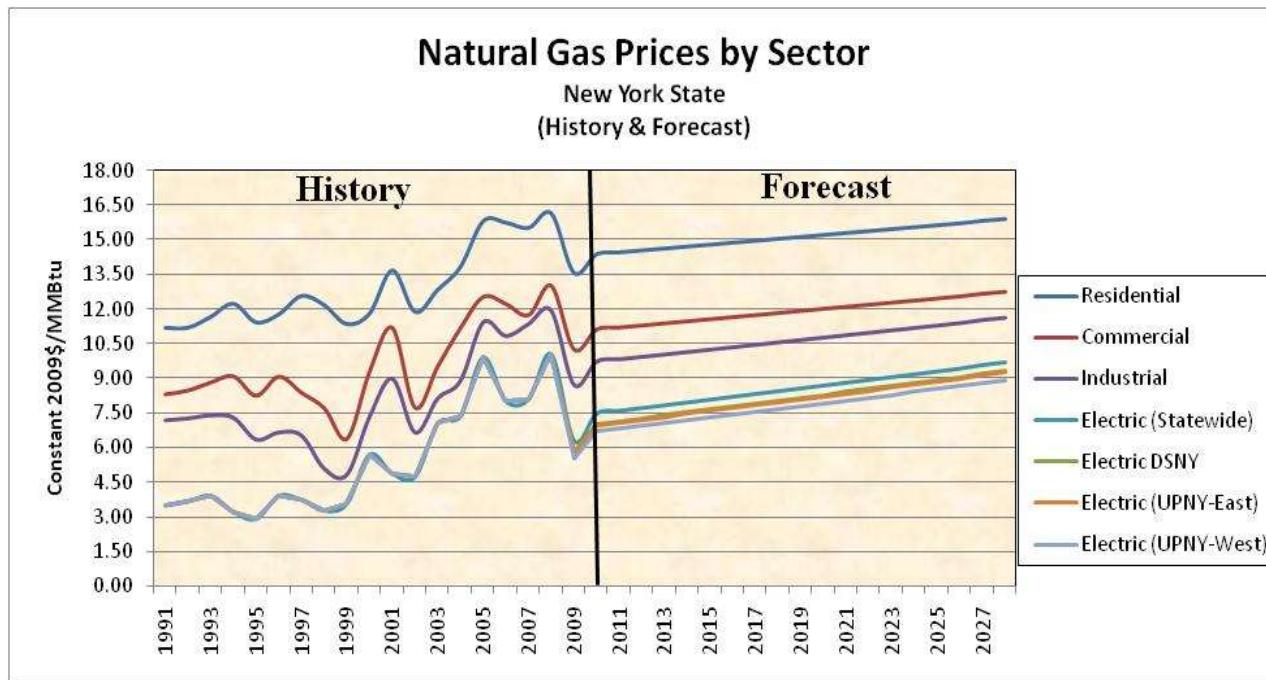
Table 9. Reference Forecast of Natural Gas Price by Sector (Constant 2009$/MMBtu)

Year	Residential	Commercial	Industrial	Electric (Statewide)	Electric DSNY*	Electric (UPNY-East)*	Electric (UPNY-West)*
2009	13.58	10.27	8.73	6.30	5.79	5.74	5.54
2010	14.39	11.13	9.74	7.46	7.01	6.95	6.70
2011	14.47	11.22	9.84	7.58	7.13	7.07	6.82
2012	14.56	11.31	9.94	7.70	7.26	7.20	6.94
2013	14.64	11.39	10.05	7.82	7.39	7.32	7.06
2014	14.72	11.48	10.15	7.94	7.51	7.45	7.18
2015	14.81	11.57	10.25	8.07	7.64	7.57	7.30
2016	14.89	11.66	10.36	8.19	7.76	7.70	7.42
2017	14.98	11.75	10.46	8.31	7.89	7.82	7.55
2018	15.06	11.84	10.57	8.43	8.02	7.95	7.67
2019	15.14	11.93	10.67	8.55	8.14	8.07	7.79
2020	15.23	12.02	10.78	8.67	8.27	8.20	7.91
2021	15.31	12.11	10.88	8.79	8.40	8.32	8.03
2022	15.40	12.20	10.98	8.92	8.52	8.45	8.15
2023	15.48	12.29	11.09	9.04	8.65	8.57	8.27
2024	15.56	12.38	11.19	9.16	8.78	8.70	8.39
2025	15.65	12.47	11.30	9.28	8.90	8.83	8.51
2026	15.73	12.56	11.40	9.40	9.03	8.95	8.63
2027	15.84	12.67	11.54	9.56	9.19	9.11	8.79
2028	15.92	12.76	11.64	9.67	9.31	9.23	8.91
Annual Growth Rate	0.84%	1.15%	1.52%	2.29%	2.53%	2.53%	2.53%

Note: DSNY = Downstate New York and UPNY = Upstate New York.

Table 10. Reference Forecast of Natural Gas Price by Sector (Constant 2009$/Mcf)

Year	Residential	Commercial	Industrial	Electric (Statewide)	Electric DSNY	Electric (UPNY-East)	Electric (UPNY-West)
2009	13.99	10.58	9.00	6.48	5.97	5.91	5.71
2010	14.82	11.46	10.03	7.69	7.22	7.16	6.90
2011	14.91	11.55	10.13	7.81	7.35	7.28	7.02
2012	14.99	11.64	10.24	7.93	7.48	7.41	7.15
2013	15.08	11.74	10.35	8.06	7.61	7.54	7.27
2014	15.17	11.83	10.45	8.18	7.74	7.67	7.40
2015	15.25	11.92	10.56	8.31	7.87	7.80	7.52
2016	15.34	12.01	10.67	8.43	8.00	7.93	7.65
2017	15.43	12.11	10.78	8.56	8.13	8.06	7.77
2018	15.51	12.20	10.88	8.68	8.26	8.19	7.90
2019	15.60	12.29	10.99	8.81	8.39	8.32	8.02
2020	15.69	12.38	11.10	8.93	8.52	8.44	8.15
2021	15.77	12.47	11.21	9.06	8.65	8.57	8.27
2022	15.86	12.57	11.31	9.18	8.78	8.70	8.39
2023	15.95	12.66	11.42	9.31	8.91	8.83	8.52
2024	16.03	12.75	11.53	9.43	9.04	8.96	8.64
2025	16.12	12.84	11.64	9.56	9.17	9.09	8.77
2026	16.20	12.94	11.74	9.68	9.30	9.22	8.89
2027	16.32	13.06	11.88	9.85	9.47	9.39	9.05
2028	16.40	13.14	11.98	9.96	9.59	9.51	9.17
Annual Growth Rate	0.84%	1.15%	1.52%	2.29%	2.53%	2.53%	2.53%

Table 11. Reference Forecast of Natural Gas Price by Sector (Nominal $/MMBtu)

Year	Residential	Commercial	Industrial	Electric (Statewide)	Electric DSNY	Electric (UPNY-East)	Electric (UPNY-West)
2009	13.58	10.27	8.73	6.30	5.79	5.74	5.54
2010	14.61	11.30	9.89	7.58	7.12	7.06	6.81
2011	14.94	11.58	10.15	7.83	7.36	7.30	7.04
2012	15.29	11.88	10.44	8.09	7.63	7.56	7.29
2013	15.65	12.18	10.74	8.37	7.90	7.83	7.55
2014	16.02	12.49	11.04	8.64	8.17	8.10	7.81
2015	16.40	12.82	11.36	8.94	8.46	8.39	8.09
2016	16.82	13.17	11.70	9.24	8.77	8.69	8.38
2017	17.25	13.54	12.05	9.57	9.09	9.01	8.69
2018	17.69	13.91	12.41	9.90	9.42	9.34	9.01
2019	18.16	14.31	12.80	10.26	9.77	9.68	9.34
2020	18.63	14.71	13.19	10.61	10.12	10.03	9.68
2021	19.13	15.13	13.59	10.99	10.49	10.40	10.03
2022	19.66	15.58	14.02	11.38	10.88	10.79	10.41
2023	20.18	16.02	14.45	11.78	11.28	11.18	10.78
2024	20.73	16.49	14.91	12.20	11.69	11.59	11.18
2025	21.30	16.97	15.38	12.63	12.12	12.01	11.59
2026	21.86	17.45	15.84	13.06	12.55	12.44	12.00
2027	22.49	17.99	16.38	13.57	13.05	12.94	12.48
2028	23.09	18.51	16.88	14.03	13.51	13.39	12.92
Annual Growth Rate	2.83%	3.15%	3.53%	4.31%	4.56%	4.56%	4.56%

Table 12. Reference Forecast of Natural Gas Price by Sector (Nominal $/Mcf)

Year	Residential	Commercial	Industrial	Electric (Statewide)	Electric DSNY	Electric (UPNY-East)	Electric (UPNY-West)
2009	13.99	10.58	9.00	6.48	5.97	5.91	5.71
2010	15.05	11.64	10.18	7.81	7.33	7.27	7.01
2011	15.39	11.93	10.46	8.06	7.58	7.52	7.25
2012	15.75	12.23	10.76	8.33	7.85	7.79	7.51
2013	16.12	12.55	11.06	8.62	8.13	8.06	7.78
2014	16.50	12.87	11.37	8.90	8.42	8.34	8.05
2015	16.90	13.21	11.70	9.20	8.72	8.64	8.33
2016	17.32	13.56	12.05	9.52	9.03	8.95	8.63
2017	17.77	13.94	12.41	9.86	9.36	9.28	8.95
2018	18.22	14.33	12.79	10.20	9.70	9.62	9.28
2019	18.71	14.74	13.18	10.56	10.06	9.97	9.62
2020	19.19	15.15	13.58	10.93	10.42	10.33	9.97
2021	19.70	15.58	14.00	11.32	10.81	10.71	10.33
2022	20.25	16.04	14.45	11.73	11.21	11.11	10.72
2023	20.79	16.50	14.89	12.13	11.62	11.51	11.11
2024	21.36	16.99	15.36	12.57	12.04	11.94	11.52
2025	21.94	17.48	15.84	13.01	12.48	12.38	11.94
2026	22.52	17.97	16.32	13.46	12.92	12.81	12.36
2027	23.16	18.53	16.87	13.98	13.44	13.32	12.85
2028	23.78	19.06	17.38	14.45	13.91	13.79	13.30
Annual Growth Rate	2.83%	3.15%	3.53%	4.31%	4.56%	4.56%	4.56%

4.4 Motor Gasoline Price Reference Forecast

Figure 5. New York Motor Gasoline Prices (Constant 2009$/MMBtu)
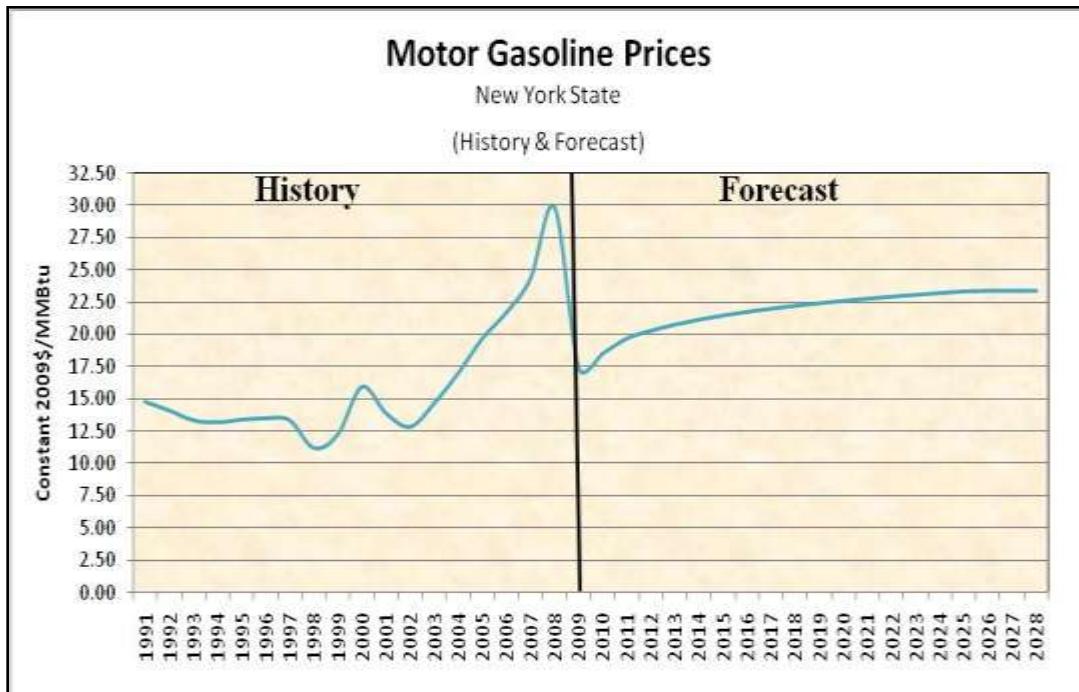
Table 13. Reference Forecast of Motor Gasoline Price (Constant 2009$)

Year	2009$/MMBtu	2009$/BBL	2009$/Gal
2009	17.36	90.30	2.15
2010	18.52	96.28	2.29
2011	19.67	102.30	2.44
2012	20.28	105.45	2.51
2013	20.75	107.89	2.57
2014	21.13	109.88	2.62
2015	21.46	111.57	2.66
2016	21.74	113.03	2.69
2017	21.98	114.31	2.72
2018	22.20	115.46	2.75
2019	22.41	116.51	2.77
2020	22.59	117.46	2.80
2021	22.76	118.33	2.82
2022	22.91	119.14	2.84
2023	23.06	119.90	2.85
2024	23.19	120.60	2.87
2025	23.32	121.26	2.89
2026	23.37	121.52	2.89
2027	23.37	121.54	2.89
2028	23.37	121.54	2.89
Annual Growth Rate	1.58%	1.58%	1.58%

Table 14. Reference Forecast of Motor Gasoline Price (Nominal Dollars)

Year	$/MMBtu	$/BBL	$/Gal
2009	17.36	90.30	2.15
2010	18.80	97.76	2.33
2011	20.31	105.61	2.51
2012	21.30	110.78	2.64
2013	22.19	115.36	2.75
2014	22.99	119.55	2.85
2015	23.77	123.59	2.94
2016	24.54	127.62	3.04
2017	25.32	131.67	3.14
2018	26.09	135.65	3.23
2019	26.87	139.73	3.33
2020	27.64	143.73	3.42
2021	28.43	147.83	3.52
2022	29.25	152.12	3.62
2023	30.06	156.29	3.72
2024	30.90	160.66	3.83
2025	31.75	165.08	3.93
2026	32.47	168.85	4.02
2027	33.18	172.52	4.11
2028	33.90	176.28	4.20
Annual Growth Rate	3.58%	3.58%	3.58%

4.5 Liquefied Petroleum Gas Reference Forecast

Figure 6. New York Liquefied Petroleum Gas Prices by Sector (Constant 2009$/MMBtu)
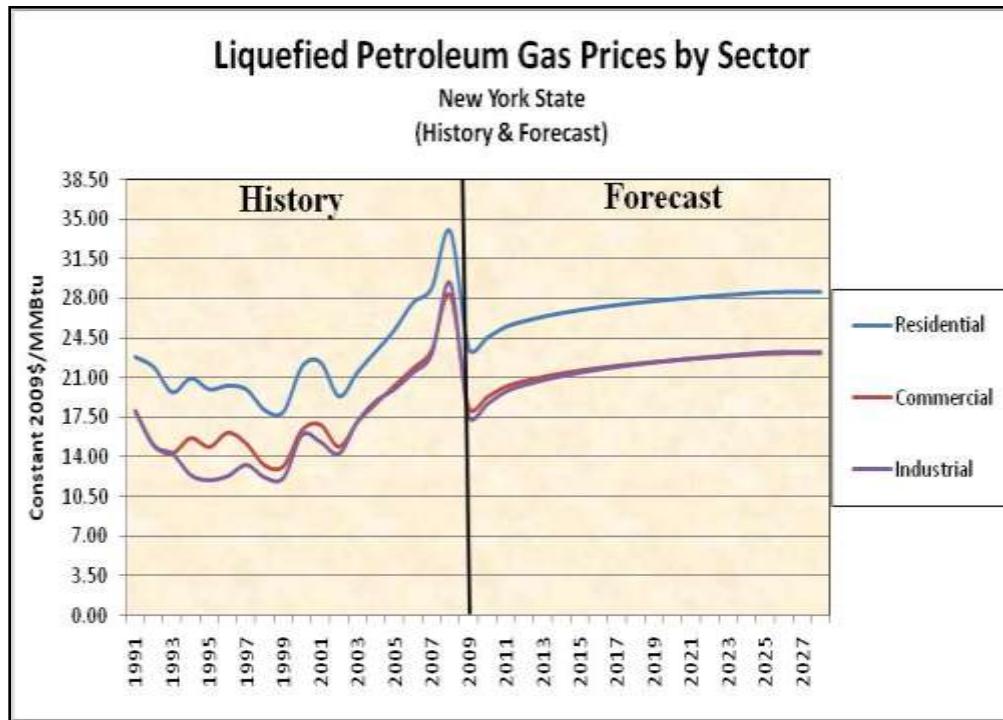
Table 15. Reference Forecast of Liquefied Petroleum Gas Price by Sector (Constant 2009$/MMBtu)

Year	Residential	Commercial	Industrial
2009	23.57	18.34	17.61
2010	24.53	19.26	18.70
2011	25.50	20.18	19.79
2012	26.00	20.66	20.36
2013	26.39	21.03	20.81
2014	26.71	21.34	21.17
2015	26.98	21.60	21.47
2016	27.22	21.82	21.74
2017	27.42	22.02	21.97
2018	27.61	22.19	22.18
2019	27.77	22.35	22.37
2020	27.93	22.50	22.54
2021	28.07	22.63	22.70
2022	28.20	22.76	22.85
2023	28.32	22.87	22.98
2024	28.43	22.98	23.11
2025	28.54	23.08	23.23
2026	28.58	23.12	23.28
2027	28.58	23.12	23.28
2028	28.58	23.12	23.28
Annual Growth Rate	1.02%	1.23%	1.48%

Table 16. Reference Forecast of Liquefied Petroleum Gas Price by Sector (Constant 2009$/gal)

Year	Residential	Commercial	Industrial
2009	3.26	2.53	2.43
2010	3.39	2.66	2.58
2011	3.52	2.79	2.73
2012	3.59	2.85	2.81
2013	3.64	2.90	2.87
2014	3.69	2.95	2.92
2015	3.73	2.98	2.97
2016	3.76	3.01	3.00
2017	3.79	3.04	3.03
2018	3.81	3.06	3.06
2019	3.84	3.09	3.09
2020	3.86	3.11	3.11
2021	3.88	3.13	3.13
2022	3.89	3.14	3.16
2023	3.91	3.16	3.17
2024	3.93	3.17	3.19
2025	3.94	3.19	3.21
2026	3.95	3.19	3.21
2027	3.95	3.19	3.22
2028	3.95	3.19	3.22
Annual Growth Rate	1.02%	1.23%	1.48%

Table 17. Reference Forecast of Liquefied Petroleum Gas Price by Sector (Nominal $/MMBtu)

Year	Residential	Commercial	Industrial
2009	23.57	18.34	17.61
2010	24.91	19.55	18.99
2011	26.32	20.83	20.43
2012	27.32	21.70	21.39
2013	28.22	22.49	22.25
2014	29.06	23.22	23.03
2015	29.89	23.92	23.79
2016	30.73	24.64	24.55
2017	31.59	25.36	25.31
2018	32.43	26.07	26.06
2019	33.31	26.81	26.83
2020	34.17	27.53	27.58
2021	35.06	28.27	28.36
2022	36.00	29.05	29.17
2023	36.91	29.81	29.96
2024	37.87	30.61	30.79
2025	38.85	31.42	31.63
2026	39.71	32.12	32.34
2027	40.57	32.82	33.05
2028	41.45	33.54	33.77
Annual Growth Rate	3.02%	3.23%	3.48%

Table 18. Reference Forecast of Liquefied Petroleum Gas Price by Sector (Nominal $/gal)

Year	Residential	Commercial	Industrial
2009	3.26	2.53	2.43
2010	3.44	2.70	2.62
2011	3.63	2.88	2.82
2012	3.77	3.00	2.95
2013	3.90	3.11	3.07
2014	4.01	3.21	3.18
2015	4.13	3.30	3.28
2016	4.24	3.40	3.39
2017	4.36	3.50	3.49
2018	4.48	3.60	3.60
2019	4.60	3.70	3.70
2020	4.72	3.80	3.81
2021	4.84	3.90	3.92
2022	4.97	4.01	4.03
2023	5.10	4.12	4.14
2024	5.23	4.23	4.25
2025	5.36	4.34	4.37
2026	5.48	4.44	4.47
2027	5.60	4.53	4.56
2028	5.72	4.63	4.66
Annual Growth rate	3.02%	3.23%	3.48%

4.6   Kerosene Price Reference Forecast

Figure 7. New York Kerosene Prices by Sector (Constant 2009$/MMBtu)
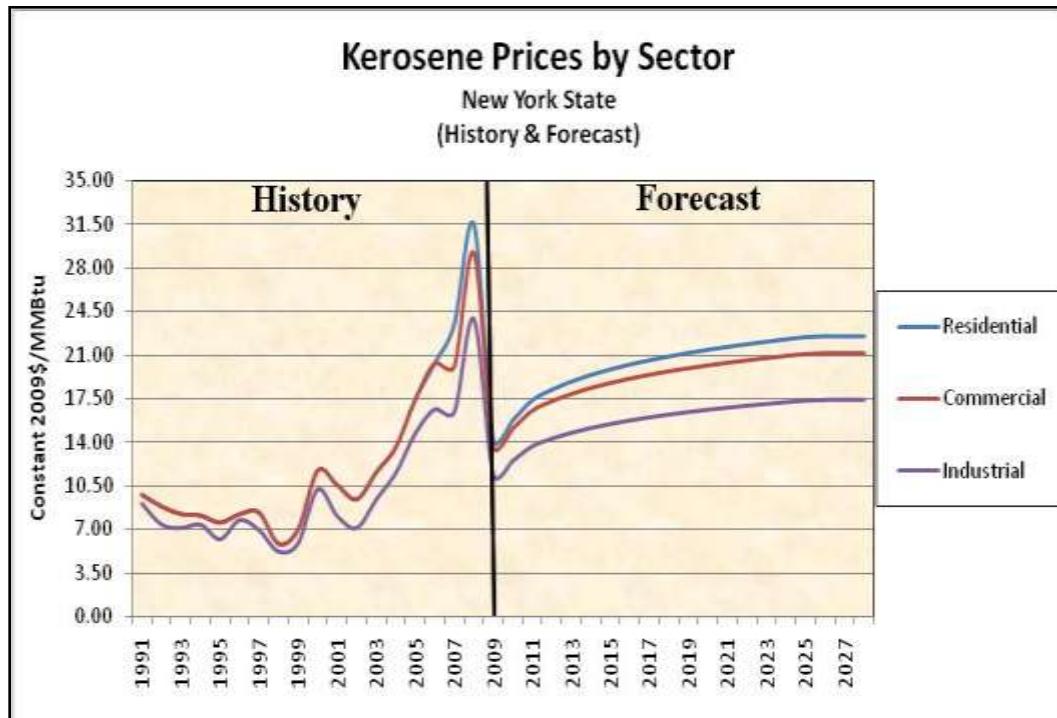
Table 19. Reference Forecast of Kerosene Price by Sector (Constant 2009$/MMBtu)

Year	Residential	Commercial	Industrial
2009	14.14	13.63	11.37
2010	15.74	15.06	12.53
2011	17.34	16.50	13.69
2012	18.18	17.26	14.29
2013	18.83	17.84	14.77
2014	19.36	18.32	15.15
2015	19.81	18.72	15.47
2016	20.20	19.07	15.76
2017	20.54	19.38	16.00
2018	20.85	19.65	16.23
2019	21.13	19.90	16.43
2020	21.38	20.13	16.61
2021	21.62	20.34	16.78
2022	21.83	20.53	16.94
2023	22.03	20.71	17.08
2024	22.22	20.88	17.22
2025	22.40	21.04	17.35
2026	22.47	21.10	17.40
2027	22.47	21.11	17.40
2028	22.47	21.11	17.40
Annual Growth Rate	2.47%	2.33%	2.26%

Table 20. Reference Forecast of Kerosene Price by Sector (Constant 2009$/gal)

Year	Residential	Commercial	Industrial
2009	1.92	1.85	1.54
2010	2.14	2.04	1.70
2011	2.35	2.24	1.86
2012	2.47	2.34	1.94
2013	2.56	2.42	2.00
2014	2.63	2.49	2.06
2015	2.69	2.54	2.10
2016	2.74	2.59	2.14
2017	2.79	2.63	2.17
2018	2.83	2.67	2.20
2019	2.87	2.70	2.23
2020	2.90	2.73	2.25
2021	2.93	2.76	2.28
2022	2.96	2.79	2.30
2023	2.99	2.81	2.32
2024	3.02	2.83	2.34
2025	3.04	2.86	2.35
2026	3.05	2.86	2.36
2027	3.05	2.86	2.36
2028	3.05	2.86	2.36
Annual Growth Rate	2.47%	2.33%	2.26%

Table 21. Reference Forecast of Kerosene Price by Sector (Nominal $/MMBtu)

Year	Residential	Commercial	Industrial
2009	14.14	13.63	11.37
2010	15.98	15.29	12.72
2011	17.90	17.04	14.13
2012	19.10	18.13	15.02
2013	20.14	19.08	15.79
2014	21.07	19.93	16.48
2015	21.95	20.74	17.14
2016	22.81	21.53	17.79
2017	23.67	22.32	18.44
2018	24.50	23.09	19.06
2019	25.34	23.87	19.70
2020	26.17	24.63	20.33
2021	27.00	25.41	20.96
2022	27.87	26.22	21.62
2023	28.72	27.00	22.27
2024	29.60	27.82	22.94
2025	30.49	28.64	23.61
2026	31.22	29.32	24.17
2027	31.90	29.96	24.70
2028	32.59	30.61	25.23
Annual Growth Rate	4.49%	4.35%	4.28%

Table 22. Reference Forecast of Kerosene Price by Sector (Nominal $/gal)

Year	Residential	Commercial	Industrial
2009	1.92	1.85	1.54
2010	2.17	2.08	1.73
2011	2.43	2.31	1.92
2012	2.59	2.46	2.04
2013	2.73	2.59	2.14
2014	2.86	2.70	2.24
2015	2.98	2.81	2.33
2016	3.10	2.92	2.41
2017	3.21	3.03	2.50
2018	3.32	3.13	2.59
2019	3.44	3.24	2.67
2020	3.55	3.34	2.76
2021	3.66	3.45	2.84
2022	3.78	3.56	2.93
2023	3.90	3.66	3.02
2024	4.02	3.78	3.11
2025	4.14	3.89	3.20
2026	4.24	3.98	3.28
2027	4.33	4.07	3.35
2028	4.42	4.15	3.42
Annual Growth rate	4.49%	4.35%	4.28%

4.7 **Coal Price (in Electricity Sector) Reference Forecast**

Figure 8. New York Coal Prices (Constant 2009$/MMBtu)

Table 23. Reference Forecast of Coal Price (Constant 2009$)

Year	2009$/MMBtu	2009$/Ton
2009	2.85	56.75
2010	2.76	54.95
2011	2.72	54.06
2012	2.67	53.16
2013	2.64	52.57
2014	2.63	52.27
2015	2.61	51.97
2016	2.59	51.47
2017	2.57	51.22
2018	2.56	50.97
2019	2.56	50.87
2020	2.55	50.82
2021	2.55	50.77
2022	2.55	50.77
2023	2.55	50.77
2024	2.55	50.77
2025	2.55	50.77
2026	2.55	50.77
2027	2.55	50.77
2028	2.55	50.77
Annual Growth Rate	-0.58%	-0.58%

Table 24. Reference Forecast of Coal Price (Nominal Dollars)

Year	$/MMBtu	$/Ton
2009	2.85	56.75
2010	2.80	55.80
2011	2.80	55.80
2012	2.81	55.85
2013	2.82	56.21
2014	2.86	56.87
2015	2.89	57.57
2016	2.92	58.12
2017	2.96	59.00
2018	3.01	59.88
2019	3.06	61.01
2020	3.12	62.19
2021	3.19	63.43
2022	3.26	64.83
2023	3.32	66.18
2024	3.40	67.64
2025	3.47	69.12
2026	3.54	70.54
2027	3.62	72.07
2028	3.70	73.64
Annual Growth Rate	1.38%	1.38%

5 *Energy Price Reference Forecasts by Sector*

5.1   Residential Sector Fuel Price Reference Forecast

Figure 9. New York Residential Fuel Prices (Constant 2009$/MMBtu)
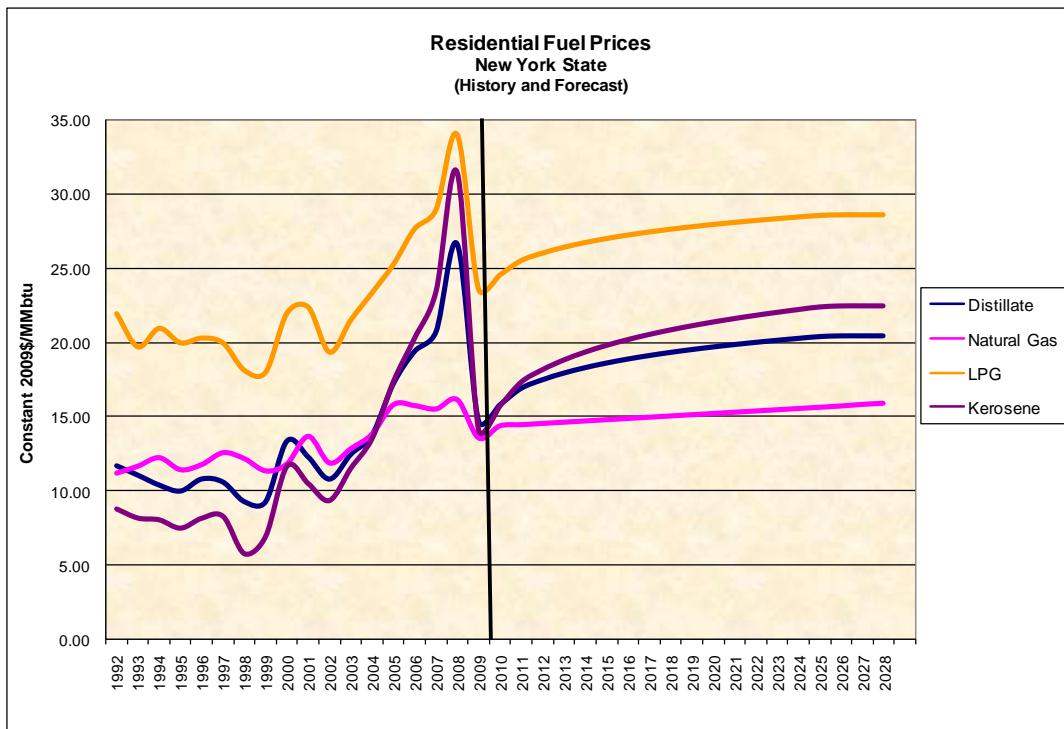
Table 25. Reference Forecast of Residential Sector Fuel Price (Constant 2009$/MMBtu)

Year	Distillate 2009$/MMbtu	Natural Gas 2009$/MMbtu	LPG 2009$/MMbtu	Kerosene 2009$/MMbtu
2009	14.72	13.58	23.57	14.14
2010	15.82	14.39	24.53	15.74
2011	16.93	14.47	25.50	17.34
2012	17.51	14.56	26.00	18.18
2013	17.96	14.64	26.39	18.83
2014	18.32	14.72	26.71	19.36
2015	18.63	14.81	26.98	19.81
2016	18.90	14.89	27.22	20.20
2017	19.14	14.98	27.42	20.54
2018	19.35	15.06	27.61	20.85
2019	19.54	15.14	27.77	21.13
2020	19.71	15.23	27.93	21.38
2021	19.87	15.31	28.07	21.62
2022	20.02	15.40	28.20	21.83
2023	20.16	15.48	28.32	22.03
2024	20.29	15.56	28.43	22.22
2025	20.41	15.65	28.54	22.40
2026	20.46	15.73	28.58	22.47
2027	20.46	15.84	28.58	22.47
2028	20.46	15.92	28.58	22.47
Annual Growth Rate	1.75%	0.84%	1.02%	2.47%

Table 26. Reference Forecast of Residential Sector Fuel Price (Constant 2009$/Physical Unit)

Year	Distillate 2009$/Gal	Natural Gas 2009$/Mcf	LPG 2009$/Gal	Kerosene 2009$/Gal
2009	2.03	13.99	3.26	1.92
2010	2.18	14.82	3.39	2.14
2011	2.34	14.91	3.52	2.35
2012	2.42	14.99	3.59	2.47
2013	2.48	15.08	3.64	2.56
2014	2.53	15.17	3.69	2.63
2015	2.57	15.25	3.73	2.69
2016	2.61	15.34	3.76	2.74
2017	2.64	15.43	3.79	2.79
2018	2.67	15.51	3.81	2.83
2019	2.70	15.60	3.84	2.87
2020	2.72	15.69	3.86	2.90
2021	2.74	15.77	3.88	2.93
2022	2.77	15.86	3.89	2.96
2023	2.78	15.95	3.91	2.99
2024	2.80	16.03	3.93	3.02
2025	2.82	16.12	3.94	3.04
2026	2.83	16.20	3.95	3.05
2027	2.83	16.32	3.95	3.05
2028	2.83	16.40	3.95	3.05
Annual Growth Rate	1.75%	0.84%	1.02%	2.47%

Table 27. Reference Forecast of Residential Sector Fuel Price (Nominal $/MMBtu)

Year	Distillate $/MMbtu	Natural Gas $/MMbtu	LPG $/MMbtu	Kerosene $/MMbtu
2009	14.72	13.58	23.57	14.14
2010	16.07	14.61	24.91	15.98
2011	17.48	14.94	26.32	17.90
2012	18.39	15.29	27.32	19.10
2013	19.20	15.65	28.22	20.14
2014	19.93	16.02	29.06	21.07
2015	20.64	16.40	29.89	21.95
2016	21.34	16.82	30.73	22.81
2017	22.04	17.25	31.59	23.67
2018	22.73	17.69	32.43	24.50
2019	23.43	18.16	33.31	25.34
2020	24.12	18.63	34.17	26.17
2021	24.83	19.13	35.06	27.00
2022	25.57	19.66	36.00	27.87
2023	26.28	20.18	36.91	28.72
2024	27.03	20.73	37.87	29.60
2025	27.79	21.30	38.85	30.49
2026	28.43	21.86	39.71	31.22
2027	29.05	22.49	40.57	31.90
2028	29.68	23.09	41.45	32.59
Annual Growth rate	3.76%	2.83%	3.02%	4.49%

Table 28. Reference Forecast of Residential Sector Fuel Price (Nominal $/Physical Unit)

Year	Distillate $/Gal	Natural Gas $/Mcf	LPG $/Gal	Kerosene $/Gal
2009	2.03	13.99	3.26	1.92
2010	2.22	15.05	3.44	2.17
2011	2.41	15.39	3.63	2.43
2012	2.54	15.75	3.77	2.59
2013	2.65	16.12	3.90	2.73
2014	2.75	16.50	4.01	2.86
2015	2.85	16.90	4.13	2.98
2016	2.95	17.32	4.24	3.10
2017	3.04	17.77	4.36	3.21
2018	3.14	18.22	4.48	3.32
2019	3.24	18.71	4.60	3.44
2020	3.33	19.19	4.72	3.55
2021	3.43	19.70	4.84	3.66
2022	3.53	20.25	4.97	3.78
2023	3.63	20.79	5.10	3.90
2024	3.73	21.36	5.23	4.02
2025	3.84	21.94	5.36	4.14
2026	3.93	22.52	5.48	4.24
2027	4.01	23.16	5.60	4.33
2028	4.10	23.78	5.72	4.42
Annual Growth Rate	3.76%	2.83%	3.02%	4.49%

5.2   **Commercial Sector Fuel Price Reference Forecast**

Figure 10. New York Commercial Fuel Prices (Constant 2009$/MMBtu)

Table 29. Reference Forecast of Commercial Sector Fuel Price (Constant 2009$/MMBtu)

Year	Distillate	Natural Gas	Residual	LPG	Kerosene
	2009$/MMbtu	2009$/MMbtu	2009$/MMbtu	2009$/MMbtu	2009$/MMbtu
2009	11.69	10.27	6.77	18.34	13.63
2010	12.86	11.13	7.39	19.26	15.06
2011	14.04	11.22	8.02	20.18	16.50
2012	14.65	11.31	8.35	20.66	17.26
2013	15.13	11.39	8.60	21.03	17.84
2014	15.52	11.48	8.81	21.34	18.32
2015	15.85	11.57	8.98	21.60	18.72
2016	16.14	11.66	9.14	21.82	19.07
2017	16.39	11.75	9.27	22.02	19.38
2018	16.61	11.84	9.39	22.19	19.65
2019	16.82	11.93	9.50	22.35	19.90
2020	17.00	12.02	9.60	22.50	20.13
2021	17.17	12.11	9.69	22.63	20.34
2022	17.33	12.20	9.78	22.76	20.53
2023	17.48	12.29	9.85	22.87	20.71
2024	17.62	12.38	9.93	22.98	20.88
2025	17.75	12.47	10.00	23.08	21.04
2026	17.80	12.56	10.02	23.12	21.10
2027	17.80	12.67	10.03	23.12	21.11
2028	17.80	12.76	10.03	23.12	21.11
Annual Growth Rate	2.24%	1.15%	2.09%	1.23%	2.33%

Table 30. Reference Forecast of Commercial Sector Fuel Price (Constant 2009$/Physical Unit)

Year	Distillate	Natural Gas	Residual	LPG	Kerosene
	2009$/Gal	2009$/Mcf	2009$/BBL	2009$/Gal	2009$/Gal
2009	1.61	10.58	42.62	2.53	1.85
2010	1.78	11.46	46.56	2.66	2.04
2011	1.94	11.55	50.52	2.79	2.24
2012	2.02	11.64	52.58	2.85	2.34
2013	2.09	11.74	54.19	2.90	2.42
2014	2.14	11.83	55.50	2.95	2.49
2015	2.19	11.92	56.60	2.98	2.54
2016	2.23	12.01	57.56	3.01	2.59
2017	2.26	12.11	58.41	3.04	2.63
2018	2.29	12.20	59.17	3.06	2.67
2019	2.32	12.29	59.85	3.09	2.70
2020	2.35	12.38	60.48	3.11	2.73
2021	2.37	12.47	61.05	3.13	2.76
2022	2.39	12.57	61.58	3.14	2.79
2023	2.41	12.66	62.08	3.16	2.81
2024	2.43	12.75	62.54	3.17	2.83
2025	2.45	12.84	62.98	3.19	2.86
2026	2.46	12.94	63.15	3.19	2.86
2027	2.46	13.06	63.16	3.19	2.86
2028	2.46	13.14	63.16	3.19	2.86
Annual Growth Rate	2.24%	1.15%	2.09%	1.23%	2.33%

Table 31. Reference Forecast of Commercial Sector Fuel Price (Nominal $/MMBtu)

Year	Distillate $/MMbtu	Natural Gas $/MMbtu	Residual $/MMbtu	LPG $/MMbtu	Kerosene $/MMbtu
2009	11.69	10.27	6.77	18.34	13.63
2010	13.06	11.30	7.50	19.55	15.29
2011	14.49	11.58	8.28	20.83	17.04
2012	15.39	11.88	8.77	21.70	18.13
2013	16.18	12.18	9.20	22.49	19.08
2014	16.89	12.49	9.58	23.22	19.93
2015	17.56	12.82	9.95	23.92	20.74
2016	18.22	13.17	10.32	24.64	21.53
2017	18.88	13.54	10.68	25.36	22.32
2018	19.52	13.91	11.03	26.07	23.09
2019	20.17	14.31	11.39	26.81	23.87
2020	20.81	14.71	11.75	27.53	24.63
2021	21.46	15.13	12.11	28.27	25.41
2022	22.13	15.58	12.48	29.05	26.22
2023	22.79	16.02	12.85	29.81	27.00
2024	23.47	16.49	13.23	30.61	27.82
2025	24.16	16.97	13.61	31.42	28.64
2026	24.73	17.45	13.93	32.12	29.32
2027	25.27	17.99	14.23	32.82	29.96
2028	25.82	18.51	14.54	33.54	30.61
Annual Growth Rate	4.26%	3.15%	4.11%	3.23%	4.35%

Table 32. Reference Forecast of Commercial Sector Fuel Price (Nominal $/Physical Units)

Year	Distillate $/Gal	Natural Gas $/Mcf	Residual $/BBL	LPG $/Gal	Kerosene $/Gal
2009	1.61	10.58	42.62	2.53	1.85
2010	1.80	11.64	47.27	2.70	2.08
2011	2.00	11.93	52.15	2.88	2.31
2012	2.13	12.23	55.24	3.00	2.46
2013	2.23	12.55	57.94	3.11	2.59
2014	2.33	12.87	60.38	3.21	2.70
2015	2.42	13.21	62.71	3.30	2.81
2016	2.52	13.56	65.00	3.40	2.92
2017	2.61	13.94	67.28	3.50	3.03
2018	2.70	14.33	69.51	3.60	3.13
2019	2.79	14.74	71.78	3.70	3.24
2020	2.87	15.15	74.00	3.80	3.34
2021	2.96	15.58	76.27	3.90	3.45
2022	3.06	16.04	78.63	4.01	3.56
2023	3.15	16.50	80.92	4.12	3.66
2024	3.24	16.99	83.32	4.23	3.78
2025	3.34	17.48	85.74	4.34	3.89
2026	3.42	17.97	87.74	4.44	3.98
2027	3.49	18.53	89.65	4.53	4.07
2028	3.57	19.06	91.61	4.63	4.15
Annual Growth Rate	4.26%	3.15%	4.11%	3.23%	4.35%

5.3 **Industrial Sector Fuel Price Reference Forecast**

Figure 11. New York Industrial Fuel Prices (Constant 2009$/MMBtu)

Table 33. Reference Forecast of Industrial Sector Fuel Price (Constant 2009$/MMBtu)

Year	Distillate	Natural Gas	Residual	LPG	Kerosene
	2009$/MMbtu	2009$/MMbtu	2009$/MMbtu	2009$/MMbtu	2009$/MMbtu
2009	11.64	8.73	6.77	17.61	11.37
2010	12.85	9.74	7.39	18.70	12.53
2011	14.08	9.84	8.02	19.79	13.69
2012	14.72	9.94	8.35	20.36	14.29
2013	15.21	10.05	8.60	20.81	14.77
2014	15.62	10.15	8.81	21.17	15.15
2015	15.96	10.25	8.98	21.47	15.47
2016	16.25	10.36	9.14	21.74	15.76
2017	16.52	10.46	9.27	21.97	16.00
2018	16.75	10.57	9.39	22.18	16.23
2019	16.96	10.67	9.50	22.37	16.43
2020	17.15	10.78	9.60	22.54	16.61
2021	17.33	10.88	9.69	22.70	16.78
2022	17.50	10.98	9.78	22.85	16.94
2023	17.65	11.09	9.85	22.98	17.08
2024	17.79	11.19	9.93	23.11	17.22
2025	17.93	11.30	10.00	23.23	17.35
2026	17.98	11.40	10.02	23.28	17.40
2027	17.98	11.54	10.03	23.28	17.40
2028	17.98	11.64	10.03	23.28	17.40
Annual Growth Rate	2.32%	1.52%	2.09%	1.48%	2.26%

Table 34. Reference Forecast of Industrial Sector Fuel Price (Constant 2009$/Physical Unit)

Year	Distillate	Natural Gas	Residual	LPG	Kerosene
	2009$/Gal	2009$/Mcf	2009$/BBL	2009$/Gal	2009$/Gal
2009	1.61	9.00	42.62	2.43	1.54
2010	1.78	10.03	46.56	2.58	1.70
2011	1.94	10.13	50.52	2.73	1.86
2012	2.03	10.24	52.58	2.81	1.94
2013	2.10	10.35	54.19	2.87	2.00
2014	2.16	10.45	55.50	2.92	2.06
2015	2.20	10.56	56.60	2.97	2.10
2016	2.24	10.67	57.56	3.00	2.14
2017	2.28	10.78	58.41	3.03	2.17
2018	2.31	10.88	59.17	3.06	2.20
2019	2.34	10.99	59.85	3.09	2.23
2020	2.37	11.10	60.48	3.11	2.25
2021	2.39	11.21	61.05	3.13	2.28
2022	2.42	11.31	61.58	3.16	2.30
2023	2.44	11.42	62.08	3.17	2.32
2024	2.46	11.53	62.54	3.19	2.34
2025	2.48	11.64	62.98	3.21	2.35
2026	2.48	11.74	63.15	3.21	2.36
2027	2.48	11.88	63.16	3.22	2.36
2028	2.48	11.98	63.16	3.22	2.36
Annual Growth Rate	2.32%	1.52%	2.09%	1.48%	2.26%

Table 35. Reference Forecast of Industrial Sector Fuel Price (Nominal $/MMBtu)

Year	Distillate	Natural Gas	Residual	LPG	Kerosene
	$/MMbtu	$/MMbtu	$/MMbtu	$/MMbtu	$/MMbtu
2009	11.64	8.73	6.77	17.61	11.37
2010	13.05	9.89	7.50	18.99	12.72
2011	14.53	10.15	8.28	20.43	14.13
2012	15.46	10.44	8.77	21.39	15.02
2013	16.27	10.74	9.20	22.25	15.79
2014	16.99	11.04	9.58	23.03	16.48
2015	17.68	11.36	9.95	23.79	17.14
2016	18.35	11.70	10.32	24.55	17.79
2017	19.02	12.05	10.68	25.31	18.44
2018	19.68	12.41	11.03	26.06	19.06
2019	20.34	12.80	11.39	26.83	19.70
2020	20.99	13.19	11.75	27.58	20.33
2021	21.65	13.59	12.11	28.36	20.96
2022	22.34	14.02	12.48	29.17	21.62
2023	23.01	14.45	12.85	29.96	22.27
2024	23.70	14.91	13.23	30.79	22.94
2025	24.40	15.38	13.61	31.63	23.61
2026	24.98	15.84	13.93	32.34	24.17
2027	25.52	16.38	14.23	33.05	24.70
2028	26.08	16.88	14.54	33.77	25.23
Annual Growth Rate	4.34%	3.53%	4.11%	3.48%	4.28%

Table 36. Reference Forecast of Industrial Sector Fuel Price (Nominal $/Physical Units)

Year	Distillate	Natural Gas	Residual	LPG	Kerosene
	$/Gal	$/Mcf	$/BBL	$/Gal	$/Gal
2009	1.61	9.00	42.62	2.43	1.54
2010	1.80	10.18	47.27	2.62	1.73
2011	2.01	10.46	52.15	2.82	1.92
2012	2.14	10.76	55.24	2.95	2.04
2013	2.25	11.06	57.94	3.07	2.14
2014	2.35	11.37	60.38	3.18	2.24
2015	2.44	11.70	62.71	3.28	2.33
2016	2.53	12.05	65.00	3.39	2.41
2017	2.63	12.41	67.28	3.49	2.50
2018	2.72	12.79	69.51	3.60	2.59
2019	2.81	13.18	71.78	3.70	2.67
2020	2.90	13.58	74.00	3.81	2.76
2021	2.99	14.00	76.27	3.92	2.84
2022	3.08	14.45	78.63	4.03	2.93
2023	3.18	14.89	80.92	4.14	3.02
2024	3.27	15.36	83.32	4.25	3.11
2025	3.37	15.84	85.74	4.37	3.20
2026	3.45	16.32	87.74	4.47	3.28
2027	3.52	16.87	89.65	4.56	3.35
2028	3.60	17.38	91.61	4.66	3.42
Annual Growth Rate	4.34%	3.53%	4.11%	3.48%	4.28%

5.4   **Transportation Sector Fuel Price Reference Forecast**

Figure 12. New York Transportation Fuel Prices (Constant 2009$/MMBtu)
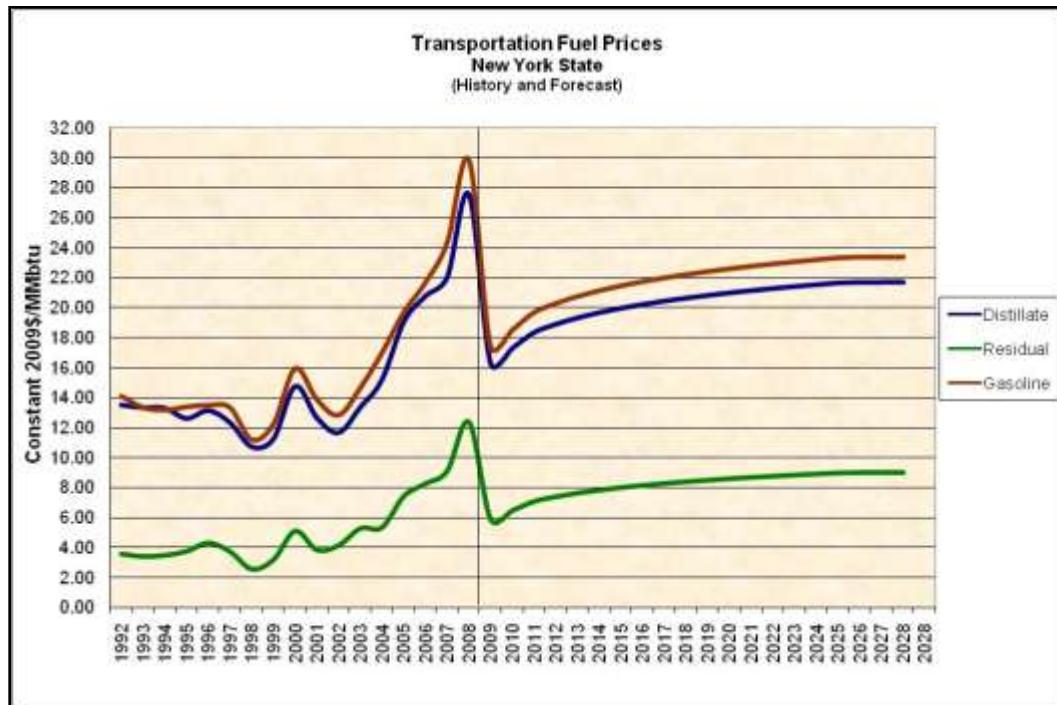
Table 37. Reference Forecast of Transportation Fuel Price (Constant 2009$/MMBtu)

Year	Gasoline	Distillate	Residual
	2009$/MMbtu	2009$/MMbtu	2009$/MMbtu
2009	17.36	16.26	5.85
2010	18.52	17.30	6.45
2011	19.67	18.35	7.05
2012	20.28	18.89	7.36
2013	20.75	19.32	7.61
2014	21.13	19.66	7.81
2015	21.46	19.96	7.98
2016	21.74	20.21	8.12
2017	21.98	20.43	8.25
2018	22.20	20.64	8.37
2019	22.41	20.82	8.47
2020	22.59	20.98	8.57
2021	22.76	21.13	8.65
2022	22.91	21.27	8.74
2023	23.06	21.41	8.81
2024	23.19	21.53	8.88
2025	23.32	21.64	8.95
2026	23.37	21.69	8.97
2027	23.37	21.69	8.98
2028	23.37	21.69	8.98
Annual Growth Rate	1.58%	1.53%	2.28%

Table 38. Reference Forecast of Transportation Sector Fuel Price (Constant 2009$/Physical Unit)

Year	Gasoline 2009$/Gal	Distillate 2009$/Gal	Residual 2009$/BBL
2009	2.15	2.24	36.83
2010	2.29	2.39	40.61
2011	2.44	2.53	44.41
2012	2.51	2.61	46.39
2013	2.57	2.67	47.93
2014	2.62	2.72	49.19
2015	2.66	2.76	50.25
2016	2.69	2.79	51.17
2017	2.72	2.82	51.99
2018	2.75	2.85	52.71
2019	2.77	2.87	53.37
2020	2.80	2.90	53.97
2021	2.82	2.92	54.52
2022	2.84	2.94	55.04
2023	2.85	2.96	55.51
2024	2.87	2.97	55.96
2025	2.89	2.99	56.37
2026	2.89	3.00	56.54
2027	2.89	3.00	56.55
2028	2.89	3.00	56.55
Annual Growth Rate	1.58%	1.53%	2.28%

Table 39. Reference Forecast of Transportation Sector Fuel Price (Nominal $/MMBtu)

Year	Gasoline $/MMbtu	Distillate $/MMbtu	Residual $/MMbtu
2009	17.36	16.26	5.85
2010	18.80	17.56	6.54
2011	20.31	18.94	7.28
2012	21.30	19.85	7.74
2013	22.19	20.66	8.14
2014	22.99	21.39	8.50
2015	23.77	22.11	8.84
2016	24.54	22.82	9.17
2017	25.32	23.54	9.51
2018	26.09	24.24	9.83
2019	26.87	24.97	10.16
2020	27.64	25.67	10.48
2021	28.43	26.40	10.81
2022	29.25	27.16	11.15
2023	30.06	27.90	11.49
2024	30.90	28.68	11.83
2025	31.75	29.46	12.18
2026	32.47	30.14	12.47
2027	33.18	30.79	12.74
2028	33.90	31.46	13.02
Annual Growth Rate	3.58%	3.54%	4.30%

Table 40. Reference Forecast of Transportation Sector Fuel Price (Nominal $/Physical) Units

Year	Gasoline $/Gal	Distillate $/Gal	Residual $/BBL
2009	2.15	2.24	36.83
2010	2.33	2.43	41.23
2011	2.51	2.62	45.84
2012	2.64	2.74	48.74
2013	2.75	2.85	51.25
2014	2.85	2.95	53.52
2015	2.94	3.05	55.67
2016	3.04	3.15	57.78
2017	3.14	3.25	59.88
2018	3.23	3.35	61.93
2019	3.33	3.45	64.01
2020	3.42	3.55	66.04
2021	3.52	3.65	68.11
2022	3.62	3.75	70.27
2023	3.72	3.85	72.36
2024	3.83	3.96	74.54
2025	3.93	4.07	76.74
2026	4.02	4.16	78.56
2027	4.11	4.25	80.27
2028	4.20	4.34	82.02
Annual Growth Rate	3.58%	3.54%	4.30%

5.5 Electricity Sector Fuel Price Reference Forecast

Figure 13. New York Electric Fuel Prices (Constant 2009$/MMBtu)
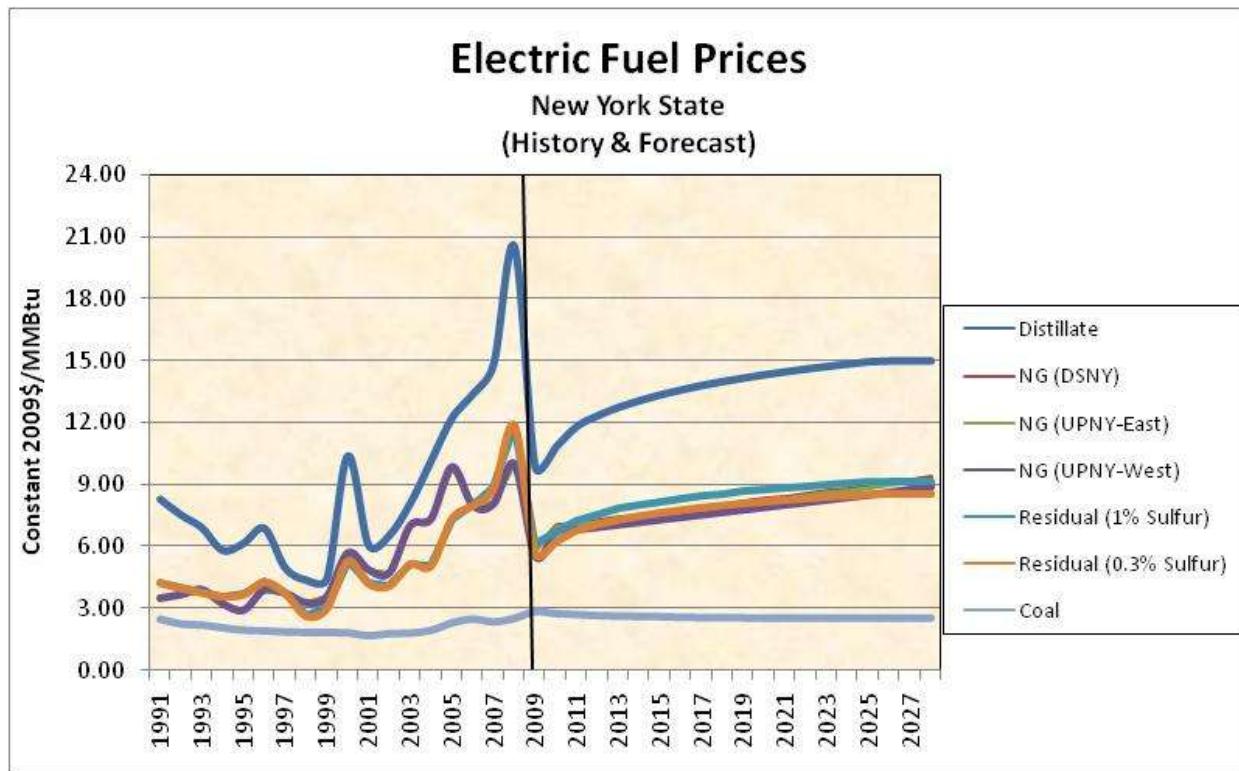
Table 41. Reference Forecast of Electricity Sector Fuel Price (Constant 2009$/MMBtu)

Year	Distillate	Natural Gas (Statewide)	Natural Gas (Down State)	Natural Gas (Upstate-East)	Natural Gas (Upstate-West)	Residual (Average)	Residual (1% Sulfur)	Residual (0.3% Sulfur)	Coal
	2009$/MMbtu	2009$/MMbtu	2009$/MMbtu	2009$/MMbtu	2009$/MMbtu	2009$/MMbtu	2009$/MMbtu	2009$/MMbtu	2009$/MMbtu
2009	9.84	6.30	5.79	5.74	5.54	5.82	6.11	5.70	2.85
2010	10.82	7.46	7.01	6.95	6.70	6.38	6.70	6.25	2.76
2011	11.81	7.58	7.13	7.07	6.82	6.94	7.29	6.80	2.72
2012	12.33	7.70	7.26	7.20	6.94	7.23	7.60	7.09	2.67
2013	12.73	7.82	7.39	7.32	7.06	7.46	7.84	7.31	2.64
2014	13.06	7.94	7.51	7.45	7.18	7.65	8.03	7.50	2.63
2015	13.34	8.07	7.64	7.57	7.30	7.81	8.20	7.65	2.61
2016	13.58	8.19	7.76	7.70	7.42	7.94	8.34	7.78	2.59
2017	13.79	8.31	7.89	7.82	7.55	8.06	8.47	7.90	2.57
2018	13.98	8.43	8.02	7.95	7.67	8.17	8.58	8.01	2.56
2019	14.15	8.55	8.14	8.07	7.79	8.27	8.68	8.10	2.56
2020	14.30	8.67	8.27	8.20	7.91	8.36	8.77	8.19	2.55
2021	14.45	8.79	8.40	8.32	8.03	8.44	8.86	8.27	2.55
2022	14.58	8.92	8.52	8.45	8.15	8.51	8.94	8.34	2.55
2023	14.71	9.04	8.65	8.57	8.27	8.58	9.01	8.41	2.55
2024	14.82	9.16	8.78	8.70	8.39	8.65	9.08	8.48	2.55
2025	14.93	9.28	8.90	8.83	8.51	8.71	9.15	8.54	2.55
2026	14.97	9.40	9.03	8.95	8.63	8.74	9.17	8.56	2.55
2027	14.98	9.56	9.19	9.11	8.79	8.74	9.17	8.56	2.55
2028	14.98	9.67	9.31	9.23	8.91	8.74	9.17	8.56	2.55
Annual Growth Rate	2.23%	2.29%	2.53%	2.53%	2.53%	2.16%	2.16%	2.16%	-0.58%

Table 42. Reference Forecast of Electricity Sector Fuel Price (Constant 2009$/Physical Unit)

Year	Distillate	Natural Gas (Statewide)	Natural Gas (Down State)	Natural Gas (Upstate-East)	Natural Gas (Upstate-West)	Residual (Average)	Residual (1% Sulfur)	Residual (0.3% Sulfur)	Coal
	2009$/Gal	2009$/Mcf	2009$/Mcf	2009$/Mcf	2009$/Mcf	2009$/BBL	2009$/BBL	2009$/BBL	2009$/ton
2009	1.36	6.48	5.97	5.91	5.71	36.67	38.50	35.94	56.75
2010	1.49	7.69	7.22	7.16	6.90	40.19	42.20	39.38	54.95
2011	1.63	7.81	7.35	7.28	7.02	43.73	45.92	42.86	54.06
2012	1.70	7.93	7.48	7.41	7.15	45.58	47.86	44.67	53.16
2013	1.76	8.06	7.61	7.54	7.27	47.01	49.37	46.07	52.57
2014	1.80	8.18	7.74	7.67	7.40	48.19	50.60	47.22	52.27
2015	1.84	8.31	7.87	7.80	7.52	49.18	51.64	48.19	51.97
2016	1.87	8.43	8.00	7.93	7.65	50.04	52.54	49.04	51.47
2017	1.90	8.56	8.13	8.06	7.77	50.79	53.33	49.78	51.22
2018	1.93	8.68	8.26	8.19	7.90	51.47	54.04	50.44	50.97
2019	1.95	8.81	8.39	8.32	8.02	52.08	54.69	51.04	50.87
2020	1.98	8.93	8.52	8.44	8.15	52.64	55.27	51.59	50.82
2021	2.00	9.06	8.65	8.57	8.27	53.16	55.81	52.09	50.77
2022	2.01	9.18	8.78	8.70	8.39	53.63	56.31	52.56	50.77
2023	2.03	9.31	8.91	8.83	8.52	54.08	56.78	52.99	50.77
2024	2.05	9.43	9.04	8.96	8.64	54.49	57.22	53.40	50.77
2025	2.06	9.56	9.17	9.09	8.77	54.88	57.62	53.78	50.77
2026	2.07	9.68	9.30	9.22	8.89	55.03	57.79	53.93	50.77
2027	2.07	9.85	9.47	9.39	9.05	55.04	57.79	53.94	50.77
2028	2.07	9.96	9.59	9.51	9.17	55.04	57.79	53.94	50.77
Annual Growth Rate	2.23%	2.29%	2.53%	2.53%	2.53%	2.16%	2.16%	2.16%	-0.58%

Table 43. Reference Forecast of Electricity Sector Fuel Price (Nominal $/MMBtu)

Year	Distillate	Natural Gas (Statewide)	Natural Gas (Down State)	Natural Gas (Upstate-East)	Natural Gas (Upstate-West)	Residual (Average)	Residual (1% Sulfur)	Residual (0.3% Sulfur)	Coal
	$/MMbtu	$/MMbtu	$/MMbtu	$/MMbtu	$/MMbtu	$/MMbtu	$/MMbtu	$/MMbtu	$/MMbtu
2009	9.84	6.30	5.79	5.74	5.54	5.82	6.11	5.70	2.85
2010	10.99	7.58	7.12	7.06	6.81	6.48	6.80	6.35	2.80
2011	12.20	7.83	7.36	7.30	7.04	7.17	7.52	7.02	2.80
2012	12.96	8.09	7.63	7.56	7.29	7.60	7.98	7.45	2.81
2013	13.61	8.37	7.90	7.83	7.55	7.98	8.38	7.82	2.82
2014	14.21	8.64	8.17	8.10	7.81	8.32	8.74	8.16	2.86
2015	14.77	8.94	8.46	8.39	8.09	8.65	9.08	8.47	2.89
2016	15.33	9.24	8.77	8.69	8.38	8.97	9.42	8.79	2.92
2017	15.88	9.57	9.09	9.01	8.69	9.29	9.75	9.10	2.96
2018	16.42	9.90	9.42	9.34	9.01	9.60	10.08	9.41	3.01
2019	16.97	10.26	9.77	9.68	9.34	9.91	10.41	9.72	3.06
2020	17.50	10.61	10.12	10.03	9.68	10.22	10.74	10.02	3.12
2021	18.05	10.99	10.49	10.40	10.03	10.54	11.07	10.33	3.19
2022	18.62	11.38	10.88	10.79	10.41	10.87	11.41	10.65	3.26
2023	19.17	11.78	11.28	11.18	10.78	11.19	11.75	10.97	3.32
2024	19.74	12.20	11.69	11.59	11.18	11.52	12.10	11.29	3.40
2025	20.32	12.63	12.12	12.01	11.59	11.86	12.45	11.62	3.47
2026	20.80	13.06	12.55	12.44	12.00	12.14	12.74	11.89	3.54
2027	21.26	13.57	13.05	12.94	12.48	12.40	13.02	12.15	3.62
2028	21.72	14.03	13.51	13.39	12.92	12.67	13.31	12.42	3.70
Annual Growth Rate	4.25%	4.31%	4.56%	4.56%	4.56%	4.18%	4.18%	4.18%	1.38%

Table 44. Reference Forecast of Electricity Sector Fuel Price (Nominal $/Physical Unit)

Year	Distillate	Natural Gas (Statewide)	Natural Gas (Down State)	Natural Gas (Upstate-East)	Natural Gas (Upstate-West)	Residual (Average)	Residual (1% Sulfur)	Residual (0.3% Sulfur)	Coal
	$/Gal	$/Mcf	$/Mcf	$/Mcf	$/Mcf	$/BBL	$/BBL	$/BBL	$/ton
2009	1.36	6.48	5.97	5.91	5.71	36.67	38.50	35.94	56.75
2010	1.52	7.81	7.33	7.27	7.01	40.81	42.85	39.99	55.80
2011	1.68	8.06	7.58	7.52	7.25	45.14	47.40	44.24	55.80
2012	1.79	8.33	7.85	7.79	7.51	47.89	50.28	46.93	55.85
2013	1.88	8.62	8.13	8.06	7.78	50.27	52.79	49.27	56.21
2014	1.96	8.90	8.42	8.34	8.05	52.43	55.05	51.38	56.87
2015	2.04	9.20	8.72	8.64	8.33	54.48	57.20	53.39	57.57
2016	2.12	9.52	9.03	8.95	8.63	56.50	59.32	55.37	58.12
2017	2.19	9.86	9.36	9.28	8.95	58.51	61.43	57.34	59.00
2018	2.27	10.20	9.70	9.62	9.28	60.47	63.49	59.26	59.88
2019	2.34	10.56	10.06	9.97	9.62	62.46	65.59	61.21	61.01
2020	2.42	10.93	10.42	10.33	9.97	64.42	67.64	63.13	62.19
2021	2.49	11.32	10.81	10.71	10.33	66.41	69.73	65.08	63.43
2022	2.57	11.73	11.21	11.11	10.72	68.48	71.90	67.11	64.83
2023	2.65	12.13	11.62	11.51	11.11	70.49	74.02	69.08	66.18
2024	2.73	12.57	12.04	11.94	11.52	72.59	76.22	71.14	67.64
2025	2.81	13.01	12.48	12.38	11.94	74.71	78.45	73.22	69.12
2026	2.87	13.46	12.92	12.81	12.36	76.46	80.29	74.93	70.54
2027	2.94	13.98	13.44	13.32	12.85	78.13	82.04	76.57	72.07
2028	3.00	14.45	13.91	13.79	13.30	79.83	83.82	78.23	73.64
Annual Growth Rate	4.25%	4.31%	4.56%	4.56%	4.56%	4.18%	4.18%	4.18%	1.38%

6 *Energy Demand Reference Forecasts by Fuel Type*

6.1 Distillate Fuel Oil Demand Reference Forecast

Figure 14. New York Distillate Fuel Demand (TBtu)
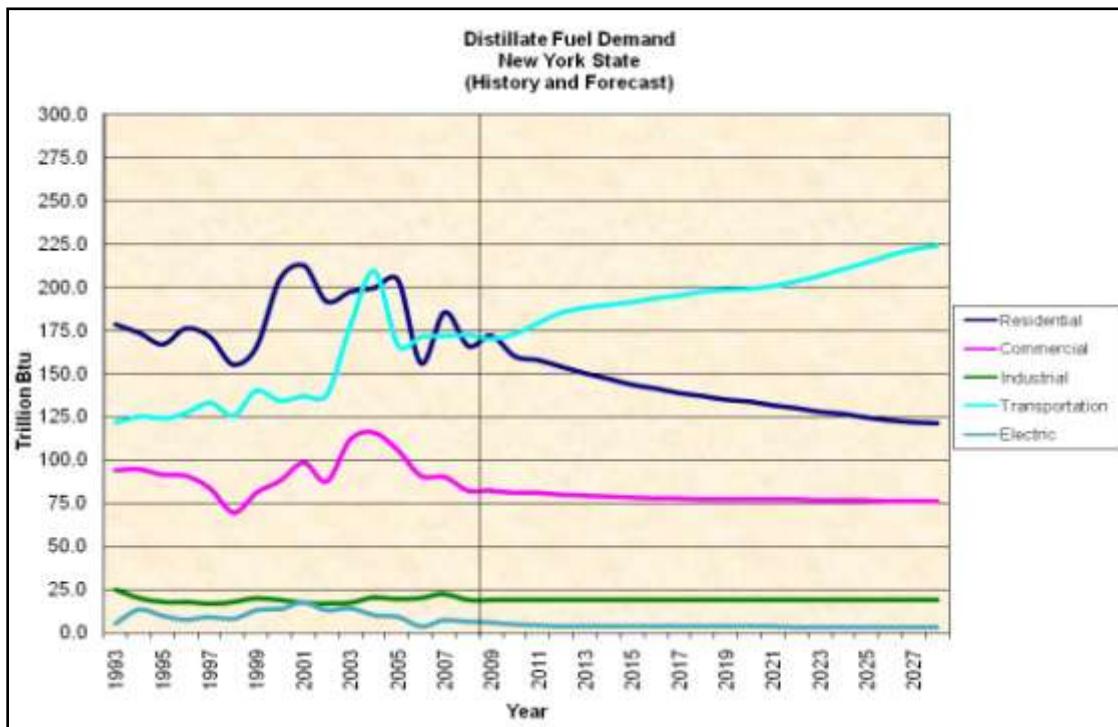
Table 45. Reference Forecast of Distillate Fuel Oil Demand (TBtu)

Year	Residential	Commercial	Industrial	Transportation	Electric	Total
2009	172.0	82.2	19.1	170.0	6.1	449.5
2010	159.9	81.0	19.1	173.0	4.9	437.9
2011	157.6	80.8	19.1	179.6	4.3	441.4
2012	154.1	80.0	19.1	185.2	3.7	442.0
2013	150.2	79.3	19.1	188.3	3.6	440.5
2014	146.7	78.5	19.1	189.9	3.6	437.7
2015	143.6	78.0	19.1	191.2	3.6	435.5
2016	141.3	77.7	19.1	193.4	3.5	434.9
2017	138.9	77.5	19.1	195.2	3.5	434.2
2018	136.9	77.4	19.1	197.3	3.5	434.1
2019	135.0	77.2	19.1	198.5	3.5	433.3
2020	133.7	77.1	19.1	198.9	3.5	432.3
2021	131.6	77.1	19.1	200.7	3.5	432.0
2022	129.8	76.9	19.1	203.3	3.3	432.4
2023	128.0	76.7	19.1	206.5	3.2	433.5
2024	126.6	76.6	19.1	210.4	3.1	435.7
2025	124.6	76.5	19.1	214.3	3.1	437.6
2026	123.0	76.3	19.1	218.8	3.1	440.2
2027	122.0	76.1	19.1	222.0	3.1	442.3
2028	121.0	76.0	19.1	224.0	3.1	443.1
Annual Growth Rate	-1.84%	-0.42%	0.00%	1.46%	-3.49%	-0.07%

Table 46. Reference Forecast of Distillate Fuel Oil Demand (Million bbl)

Year	Residential	Commercial	Industrial	Transportation	Electric	Total
2009	29.7	14.2	3.3	29.3	1.1	77.5
2010	27.6	14.0	3.3	29.8	0.8	75.5
2011	27.2	13.9	3.3	31.0	0.7	76.1
2012	26.6	13.8	3.3	31.9	0.6	76.2
2013	25.9	13.7	3.3	32.5	0.6	75.9
2014	25.3	13.5	3.3	32.7	0.6	75.5
2015	24.8	13.4	3.3	33.0	0.6	75.1
2016	24.4	13.4	3.3	33.3	0.6	75.0
2017	23.9	13.4	3.3	33.7	0.6	74.9
2018	23.6	13.3	3.3	34.0	0.6	74.8
2019	23.3	13.3	3.3	34.2	0.6	74.7
2020	23.0	13.3	3.3	34.3	0.6	74.5
2021	22.7	13.3	3.3	34.6	0.6	74.5
2022	22.4	13.3	3.3	35.1	0.6	74.6
2023	22.1	13.2	3.3	35.6	0.6	74.7
2024	21.8	13.2	3.3	36.3	0.5	75.1
2025	21.5	13.2	3.3	37.0	0.5	75.4
2026	21.2	13.2	3.3	37.7	0.5	75.9
2027	21.0	13.1	3.3	38.3	0.5	76.3
2028	20.9	13.1	3.3	38.6	0.5	76.4
Annual Growth Rate	-1.84%	-0.42%	0.00%	1.46%	-3.49%	-0.07%

6.2 Residual Fuel Oil Demand Reference Forecast

Figure 15. New York Residual Fuel Demand (TBtu)
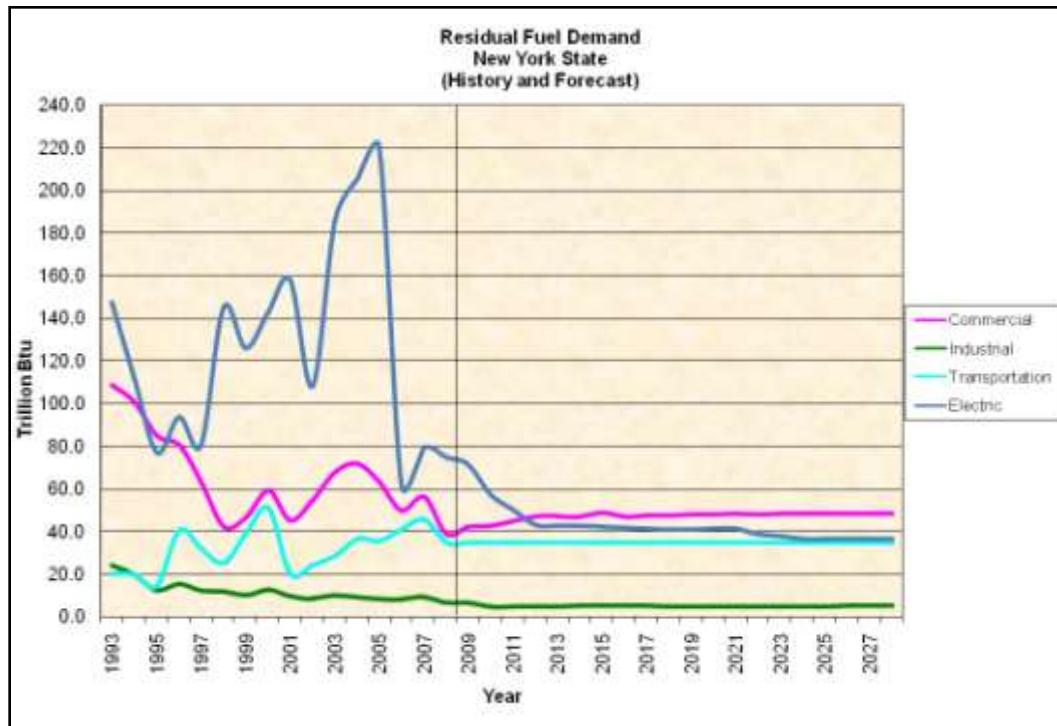
Table 47. Reference Forecast of Residual Fuel Oil Demand (TBtu)

Year	Commercial	Industrial	Transportation	Electric	Total
2009	42.1	6.5	34.8	71.6	155.0
2010	42.8	4.8	34.8	57.3	139.6
2011	45.0	4.8	34.8	50.1	134.7
2012	47.0	4.9	34.8	43.0	129.8
2013	47.3	5.1	34.8	42.7	129.8
2014	47.0	5.1	34.8	42.5	129.4
2015	48.8	5.1	34.8	42.3	131.0
2016	47.0	5.1	34.8	41.6	128.5
2017	47.7	5.1	34.8	41.3	128.8
2018	47.7	5.1	34.8	40.9	128.5
2019	48.1	5.0	34.8	41.1	129.1
2020	48.2	5.0	34.8	41.2	129.2
2021	48.3	5.0	34.8	41.3	129.5
2022	48.2	5.0	34.8	38.9	126.9
2023	48.3	5.0	34.8	37.7	125.8
2024	48.4	5.0	34.8	36.4	124.6
2025	48.5	5.1	34.8	36.4	124.8
2026	48.6	5.1	34.8	36.4	124.8
2027	48.6	5.1	34.8	36.4	124.9
2028	48.5	5.1	34.8	36.4	124.8
Annual Growth Rate	0.74%	-1.30%	0.00%	-3.49%	-1.13%

Table 48. Reference Forecast of Residual Fuel Oil Demand (Million bbl)

Year	Commercial	Industrial	Transportation	Electric	Total
2009	6.7	1.0	5.5	11.4	24.6
2010	6.8	0.8	5.5	9.1	22.2
2011	7.1	0.8	5.5	8.0	21.4
2012	7.5	0.8	5.5	6.8	20.6
2013	7.5	0.8	5.5	6.8	20.6
2014	7.5	0.8	5.5	6.7	20.5
2015	7.7	0.8	5.5	6.7	20.8
2016	7.5	0.8	5.5	6.6	20.4
2017	7.6	0.8	5.5	6.6	20.4
2018	7.6	0.8	5.5	6.5	20.4
2019	7.6	0.8	5.5	6.5	20.5
2020	7.6	0.8	5.5	6.5	20.5
2021	7.7	0.8	5.5	6.6	20.6
2022	7.6	0.8	5.5	6.2	20.1
2023	7.7	0.8	5.5	6.0	20.0
2024	7.7	0.8	5.5	5.8	19.8
2025	7.7	0.8	5.5	5.8	19.8
2026	7.7	0.8	5.5	5.8	19.8
2027	7.7	0.8	5.5	5.8	19.8
2028	7.7	0.8	5.5	5.8	19.8
Annual Growth Rate	0.74%	-1.30%	0.00%	-3.49%	-1.13%

6.3 **Natural Gas Demand Reference Forecast**

Figure 16. New York Natural Gas Demand (TBtu)
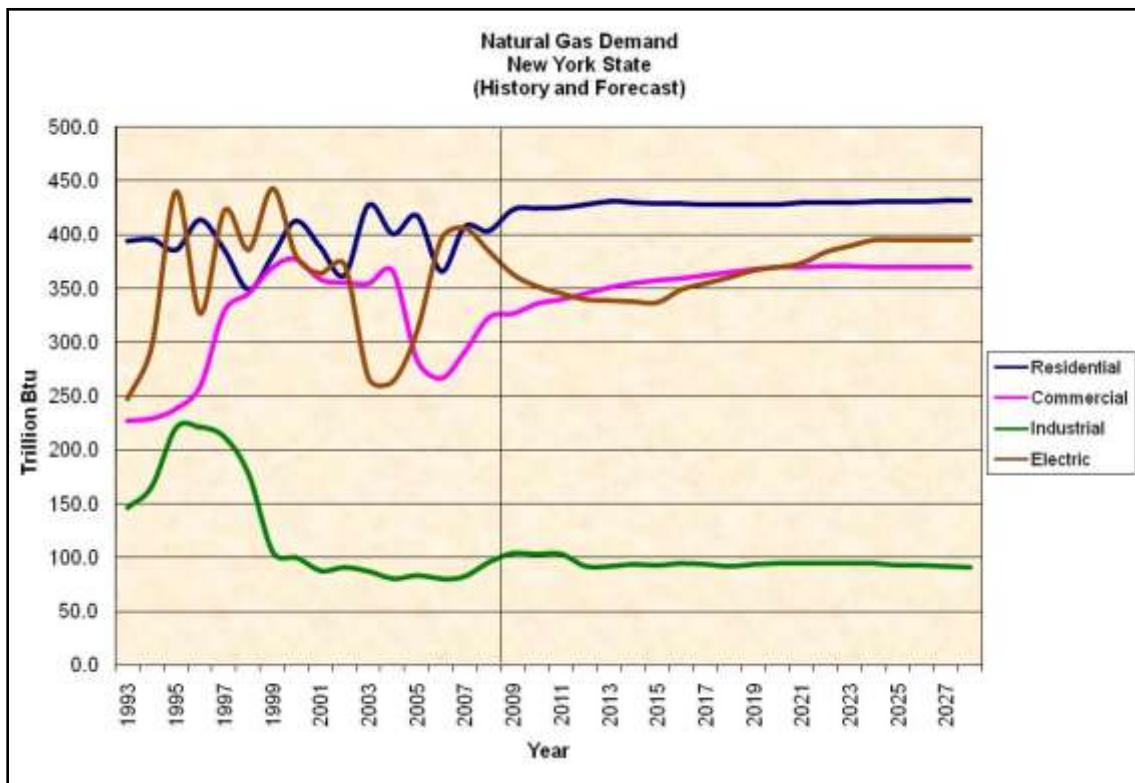
Table 49. Reference Forecast of Natural Gas Demand（*TBtu*）

Year	Residential	Commercial	Industrial	Electric	Total
2009	423.9	327.0	104.0	363.4	1218.3
2010	425.1	336.1	103.0	351.7	1215.8
2011	425.3	340.0	103.0	345.8	1214.1
2012	428.4	345.1	91.7	340.0	1205.2
2013	431.2	351.6	91.7	338.7	1213.2
2014	430.4	354.5	93.7	338.1	1216.7
2015	429.4	357.5	92.7	337.4	1217.1
2016	428.7	359.2	94.8	349.1	1231.8
2017	428.3	362.8	93.7	354.9	1239.7
2018	428.4	365.7	91.7	360.8	1246.6
2019	428.1	368.1	93.7	367.0	1256.9
2020	428.1	370.2	94.8	370.1	1263.2
2021	429.9	370.3	95.0	373.3	1268.4
2022	430.2	370.8	95.2	384.4	1280.5
2023	430.5	370.8	95.0	390.0	1286.3
2024	430.8	370.4	94.4	395.5	1291.1
2025	431.1	369.6	93.2	395.5	1289.4
2026	431.4	370.0	93.0	395.5	1289.9
2027	431.7	370.0	92.0	395.5	1289.2
2028	432.0	370.0	91.0	395.5	1288.5
Annual Growth Rate	0.10%	0.65%	-0.70%	0.45%	0.30%

Table 50. Reference Forecast of Natural Gas Demand (Bcf)

Year	Residential	Commercial	Industrial	Electric	Total
2009	411.5	317.5	101.0	352.8	1182.8
2010	412.7	326.3	100.0	341.4	1180.4
2011	412.9	330.1	100.0	335.8	1178.8
2012	416.0	335.0	89.0	330.1	1170.1
2013	418.6	341.4	89.0	328.8	1177.8
2014	417.9	344.1	91.0	328.2	1181.2
2015	416.9	347.1	90.0	327.6	1181.6
2016	416.2	348.8	92.0	338.9	1195.9
2017	415.8	352.2	91.0	344.6	1203.6
2018	415.9	355.1	89.0	350.2	1210.2
2019	415.6	357.4	91.0	356.3	1220.3
2020	415.6	359.4	92.0	359.4	1226.4
2021	417.4	359.5	92.2	362.4	1231.5
2022	417.7	360.0	92.4	373.2	1243.2
2023	418.0	360.0	92.2	378.6	1248.8
2024	418.2	359.6	91.6	384.0	1253.5
2025	418.5	358.8	90.5	384.0	1251.8
2026	418.8	359.2	90.3	384.0	1252.4
2027	419.1	359.2	89.3	384.0	1251.7
2028	419.4	359.2	88.3	384.0	1251.0
Annual Growth Rate	0.10%	0.65%	-0.70%	0.45%	0.30%

6.4 **Kerosene Demand Reference Forecast**

Figure 17. New York Kerosene Demand (TBtu)

Kerosene Demand
New York State
(History and Forecast)
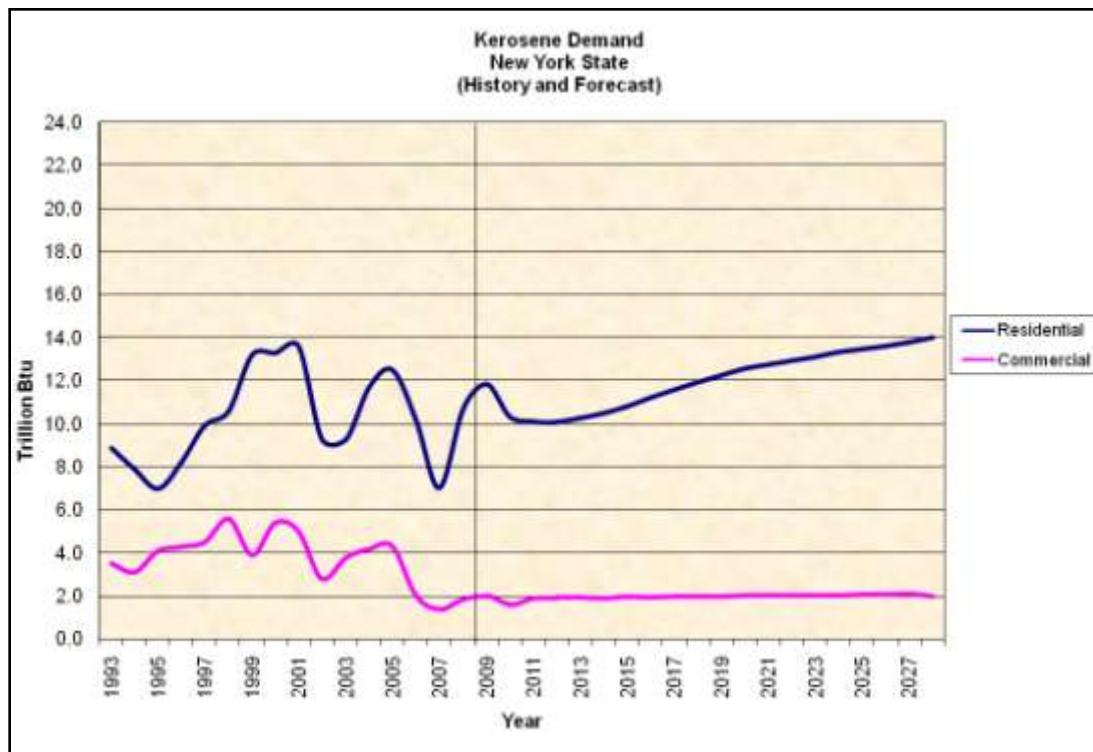
Table 51. Reference Forecast of Kerosene Demand（TBtu）

Year	Residential	Commercial	Total
2009	11.8	2.0	13.8
2010	10.3	1.6	11.9
2011	10.1	1.9	12.0
2012	10.1	1.9	12.0
2013	10.3	1.9	12.2
2014	10.5	1.9	12.4
2015	10.8	2.0	12.8
2016	11.2	2.0	13.2
2017	11.6	2.0	13.6
2018	12.0	2.0	14.0
2019	12.3	2.0	14.3
2020	12.6	2.0	14.6
2021	12.8	2.0	14.8
2022	13.0	2.0	15.0
2023	13.1	2.0	15.2
2024	13.3	2.0	15.4
2025	13.5	2.1	15.5
2026	13.6	2.1	15.7
2027	13.8	2.1	15.9
2028	14.0	2.0	16.0
Annual Growth Rate	0.89%	-0.01%	0.77%

Table 52. Reference Forecast of Kerosene Demand (Million bbl)

Year	Residential	Commercial	Total
2009	2.1	0.4	2.4
2010	1.8	0.3	2.1
2011	1.8	0.3	2.1
2012	1.8	0.3	2.1
2013	1.8	0.3	2.1
2014	1.9	0.3	2.2
2015	1.9	0.3	2.3
2016	2.0	0.3	2.3
2017	2.0	0.4	2.4
2018	2.1	0.4	2.5
2019	2.2	0.4	2.5
2020	2.2	0.4	2.6
2021	2.2	0.4	2.6
2022	2.3	0.4	2.6
2023	2.3	0.4	2.7
2024	2.4	0.4	2.7
2025	2.4	0.4	2.7
2026	2.4	0.4	2.8
2027	2.4	0.4	2.8
2028	2.5	0.4	2.8
Annual Growth Rate	0.89%	-0.01%	0.77%

6.5   **Liquefied Petroleum Gas Demand Reference Forecast**

Figure 18. New York Liquefied Petroleum Gas Demand (TBtu)
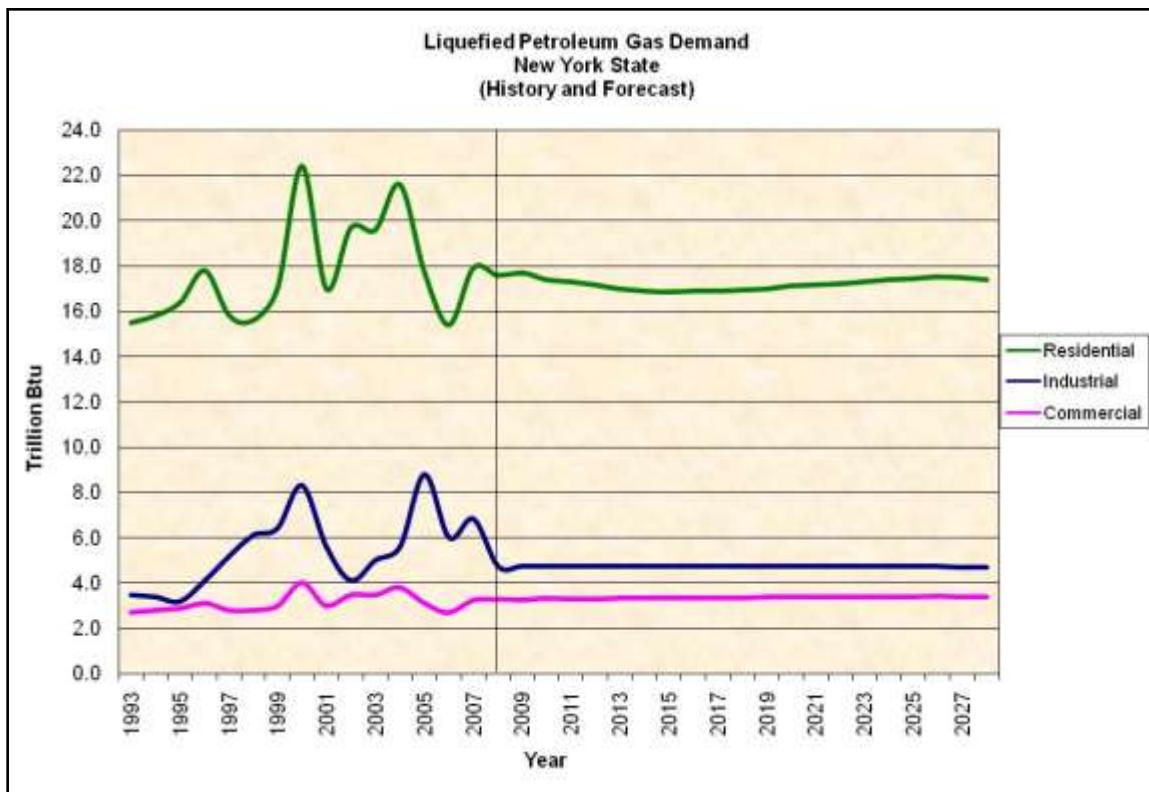
Table 53. Reference Forecast of Liquefied Petroleum Gas Demand（*TBtu*）

Year	Residential	Commercial	Industrial	Total
2009	17.7	3.3	4.7	25.7
2010	17.4	3.3	4.7	25.5
2011	17.3	3.3	4.7	25.3
2012	17.2	3.3	4.7	25.2
2013	17.0	3.3	4.7	25.1
2014	16.9	3.3	4.7	25.0
2015	16.9	3.4	4.7	25.0
2016	16.9	3.4	4.7	25.0
2017	16.9	3.4	4.7	25.0
2018	16.9	3.4	4.7	25.0
2019	17.0	3.4	4.7	25.1
2020	17.1	3.4	4.7	25.2
2021	17.2	3.4	4.7	25.3
2022	17.2	3.4	4.7	25.3
2023	17.3	3.4	4.7	25.4
2024	17.4	3.4	4.7	25.5
2025	17.4	3.4	4.7	25.6
2026	17.5	3.4	4.7	25.7
2027	17.5	3.4	4.7	25.6
2028	17.4	3.4	4.7	25.5
Annual Growth Rate	-0.09%	0.23%	-0.04%	-0.04%

Table 54. Reference Forecast of Liquefied Petroleum Gas Demand (Million bbl)

Year	Residential	Commercial	Industrial	Total
2009	4.9	0.9	1.3	7.1
2010	4.8	0.9	1.3	7.1
2011	4.8	0.9	1.3	7.0
2012	4.8	0.9	1.3	7.0
2013	4.7	0.9	1.3	7.0
2014	4.7	0.9	1.3	6.9
2015	4.7	0.9	1.3	6.9
2016	4.7	0.9	1.3	6.9
2017	4.7	0.9	1.3	6.9
2018	4.7	0.9	1.3	7.0
2019	4.7	0.9	1.3	7.0
2020	4.8	0.9	1.3	7.0
2021	4.8	0.9	1.3	7.0
2022	4.8	0.9	1.3	7.0
2023	4.8	0.9	1.3	7.1
2024	4.8	0.9	1.3	7.1
2025	4.8	0.9	1.3	7.1
2026	4.9	0.9	1.3	7.1
2027	4.9	0.9	1.3	7.1
2028	4.8	0.9	1.3	7.1
Annual Growth Rate	-0.09%	0.23%	-0.04%	-0.04%

6.6   **Motor Gasoline Demand Reference Forecast**

Figure 19. New York Gasoline Demand (TBtu)
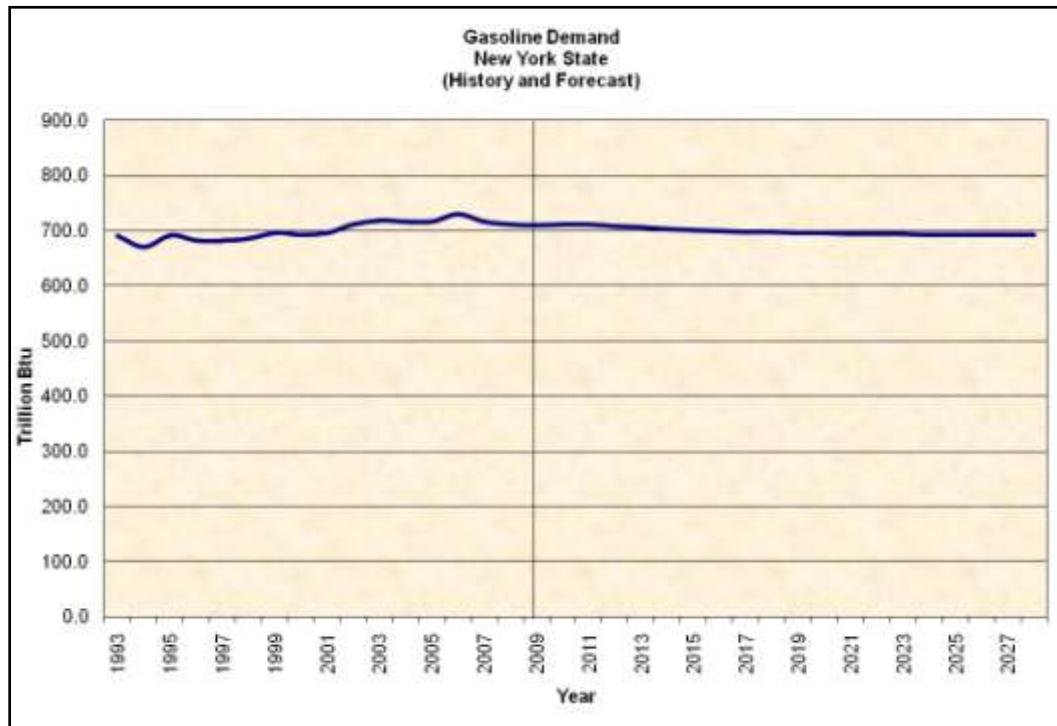
Table 55. Reference Forecast of Motor Gasoline Demand

Year	TBTU	Mbbl
2009	710.0	136.5
2010	710.9	136.7
2011	711.1	136.8
2012	708.9	136.3
2013	706.2	135.8
2014	703.5	135.3
2015	700.8	134.8
2016	699.3	134.5
2017	697.8	134.2
2018	697.2	134.1
2019	696.3	133.9
2020	695.3	133.7
2021	694.9	133.6
2022	694.9	133.6
2023	693.8	133.4
2024	693.4	133.3
2025	693.1	133.3
2026	693.0	133.3
2027	692.9	133.3
2028	692.5	133.2
Annual Growth Rate	-0.13%	-0.13%

6.7　**Coal Demand Reference Forecast**

Figure 20. New York Coal Demand (TBtu)
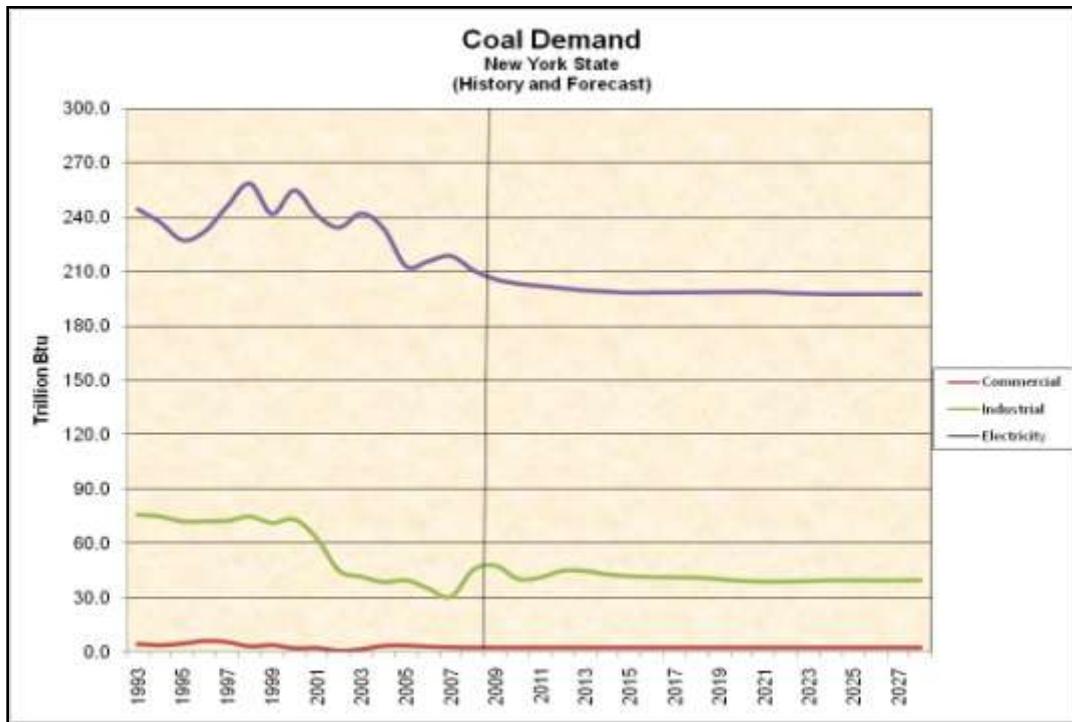
Table 56. Reference Forecast of Coal Demand（*TBtu*）

Year	Residential	Commercial	Industrial	Electric	Total
2009	0.3	2.6	48.1	205.8	256.8
2010	0.3	2.6	40.6	203.4	246.9
2011	0.3	2.6	41.5	202.2	246.6
2012	0.3	2.6	45.1	201.0	249.0
2013	0.3	2.6	45.0	199.7	247.7
2014	0.3	2.6	43.1	199.1	245.1
2015	0.3	2.6	42.1	198.5	243.5
2016	0.3	2.6	41.7	198.6	243.1
2017	0.3	2.6	41.5	198.6	243.0
2018	0.3	2.6	41.4	198.7	242.9
2019	0.3	2.6	40.6	198.8	242.3
2020	0.3	2.6	39.5	198.9	241.3
2021	0.3	2.6	39.2	199.0	241.1
2022	0.3	2.6	39.2	198.3	240.4
2023	0.3	2.6	39.4	198.0	240.3
2024	0.3	2.6	39.9	197.6	240.4
2025	0.3	2.6	39.9	197.6	240.4
2026	0.3	2.6	39.8	197.6	240.3
2027	0.3	2.6	39.8	197.6	240.4
2028	0.3	2.6	40.0	197.6	240.5
Annual Growth Rate	0.00%	0.00%	-0.97%	-0.21%	-0.34%

Table 57. Reference Forecast of Coal Demand (Ton)

Year	Residential	Commercial	Industrial	Electric	Total
2009	0.01	0.1	2.1	9.2	11.5
2010	0.01	0.1	1.8	9.1	11.0
2011	0.01	0.1	1.9	9.0	11.0
2012	0.01	0.1	2.0	9.0	11.1
2013	0.01	0.1	2.0	8.9	11.1
2014	0.01	0.1	1.9	8.9	11.0
2015	0.01	0.1	1.9	8.9	10.9
2016	0.01	0.1	1.9	8.9	10.9
2017	0.01	0.1	1.9	8.9	10.9
2018	0.01	0.1	1.8	8.9	10.9
2019	0.01	0.1	1.8	8.9	10.8
2020	0.01	0.1	1.8	8.9	10.8
2021	0.01	0.1	1.8	8.9	10.8
2022	0.01	0.1	1.8	8.9	10.7
2023	0.01	0.1	1.8	8.8	10.7
2024	0.01	0.1	1.8	8.8	10.7
2025	0.01	0.1	1.8	8.8	10.7
2026	0.01	0.1	1.8	8.8	10.7
2027	0.01	0.1	1.8	8.8	10.7
2028	0.01	0.1	1.8	8.8	10.8
Annual Growth Rate	0.00%	0.00%	-0.97%	-0.21%	-0.34%

7 *Energy Demand Reference Forecasts by Sector*

7.1   Residential Fuel Demand Reference Forecast

Figure 21. New York Residential Fuel Demand (TBtu)
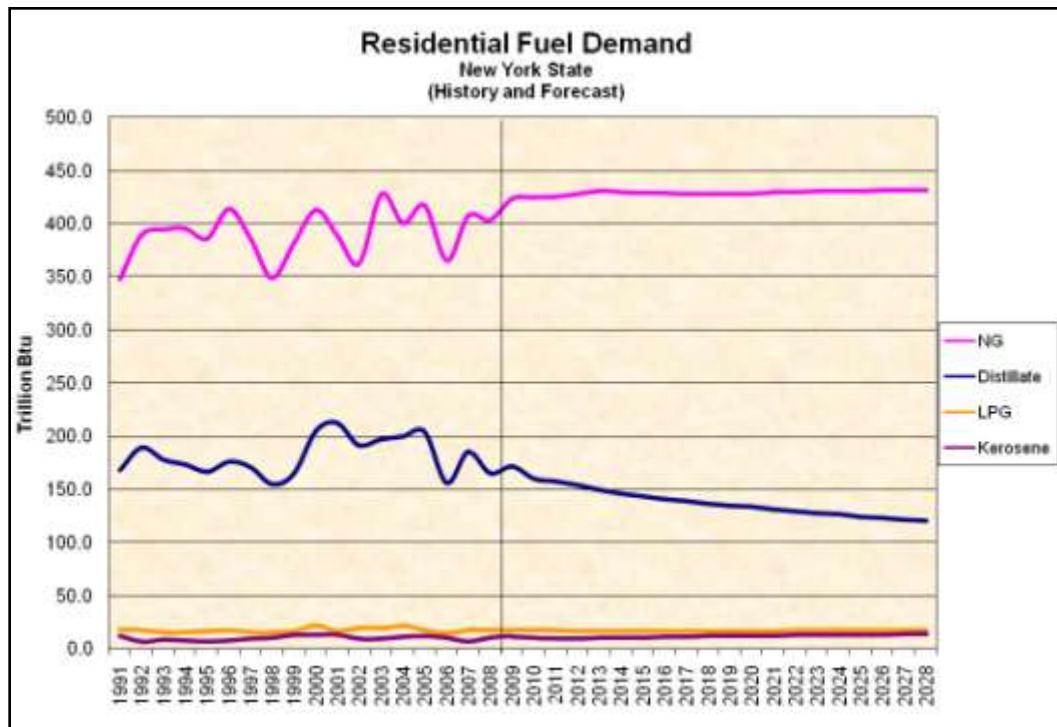
Table 58. Reference Forecast of Residential Fuel Demand (*TBtu*)

Year	Distillate	LPG	Kerosene	Natural Gas	Coal	Total Petroleum
2009	172.0	17.7	11.8	423.9	0.28	201.6
2010	159.9	17.4	10.3	425.1	0.28	187.7
2011	157.6	17.3	10.1	425.3	0.28	185.0
2012	154.1	17.2	10.1	428.4	0.28	181.3
2013	150.2	17.0	10.3	431.2	0.28	177.5
2014	146.7	16.9	10.5	430.4	0.28	174.1
2015	143.6	16.9	10.8	429.4	0.28	171.2
2016	141.3	16.9	11.2	428.7	0.28	169.4
2017	138.9	16.9	11.6	428.3	0.28	167.3
2018	136.9	16.9	12.0	428.4	0.28	165.8
2019	135.0	17.0	12.3	428.1	0.28	164.3
2020	133.7	17.1	12.6	428.1	0.28	163.3
2021	131.6	17.2	12.8	429.9	0.28	161.5
2022	129.8	17.2	13.0	430.2	0.28	160.0
2023	128.0	17.3	13.1	430.5	0.28	158.4
2024	126.6	17.4	13.3	430.8	0.28	157.3
2025	124.6	17.4	13.5	431.1	0.28	155.5
2026	123.0	17.5	13.6	431.4	0.28	154.1
2027	122.0	17.5	13.8	431.7	0.28	153.3
2028	121.0	17.4	14.0	432.0	0.28	152.4
Annual Growth Rate	-1.84%	-0.09%	0.89%	0.10%	0.00%	-1.46%

Table 59. Reference Forecast of Residential Fuel Demand (Physical Units)

Year	Distillate (MMbbl)	LPG (MMbbl)	Kerosene (MMbbl)	Natural Gas (Bcf)	Coal (Ton)	Total Petroleum (Mbbl)
2009	29.7	4.9	2.1	411.5	0.01	36.7
2010	27.6	4.8	1.8	412.7	0.01	34.2
2011	27.2	4.8	1.8	412.9	0.01	33.8
2012	26.6	4.8	1.8	416.0	0.01	33.1
2013	25.9	4.7	1.8	418.6	0.01	32.4
2014	25.3	4.7	1.9	417.9	0.01	31.8
2015	24.8	4.7	1.9	416.9	0.01	31.3
2016	24.4	4.7	2.0	416.2	0.01	31.0
2017	23.9	4.7	2.0	415.8	0.01	30.7
2018	23.6	4.7	2.1	415.9	0.01	30.4
2019	23.3	4.7	2.2	415.6	0.01	30.2
2020	23.0	4.8	2.2	415.6	0.01	30.0
2021	22.7	4.8	2.2	417.4	0.01	29.7
2022	22.4	4.8	2.3	417.7	0.01	29.5
2023	22.1	4.8	2.3	418.0	0.01	29.2
2024	21.8	4.8	2.4	418.2	0.01	29.0
2025	21.5	4.8	2.4	418.5	0.01	28.7
2026	21.2	4.9	2.4	418.8	0.01	28.5
2027	21.0	4.9	2.4	419.1	0.01	28.3
2028	20.9	4.8	2.5	419.4	0.01	28.2
Annual Growth Rate	-1.84%	-0.09%	0.89%	0.10%	0.00%	-1.38%

7.2 **Commercial Fuel Demand Reference Forecast**

Figure 22. New York Commercial Fuel Demand (TBtu)
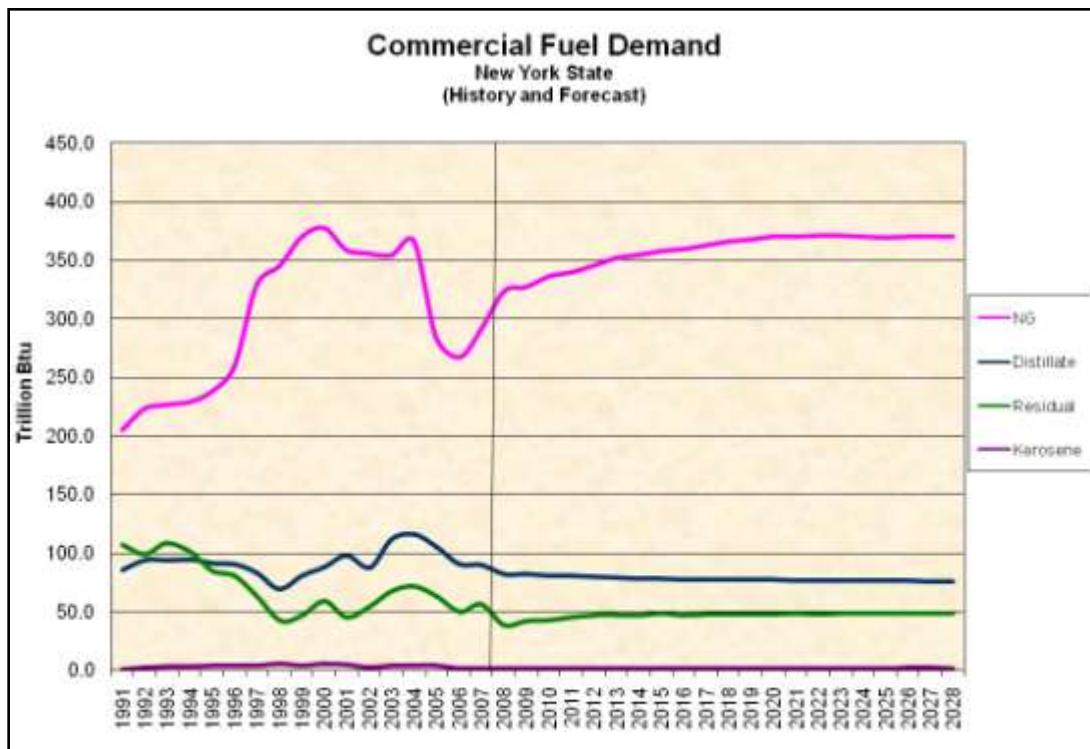
Table 60. Reference Forecast of Commercial Fuel Demand (*TBtu*)

Year	Distillate	Residual	LPG	Kerosene	Natural Gas	Coal	Total Petroleum
2009	82.2	42.1	3.3	2.0	327.0	2.6	129.6
2010	81.0	42.8	3.3	1.6	336.1	2.6	128.8
2011	80.8	45.0	3.3	1.9	340.0	2.6	131.0
2012	80.0	47.0	3.3	1.9	345.1	2.6	132.2
2013	79.3	47.3	3.3	1.9	351.6	2.6	131.8
2014	78.5	47.0	3.3	1.9	354.5	2.6	130.7
2015	78.0	48.8	3.4	2.0	357.5	2.6	132.2
2016	77.7	47.0	3.4	2.0	359.2	2.6	130.0
2017	77.5	47.7	3.4	2.0	362.8	2.6	130.5
2018	77.4	47.7	3.4	2.0	365.7	2.6	130.5
2019	77.2	48.1	3.4	2.0	368.1	2.6	130.8
2020	77.1	48.2	3.4	2.0	370.2	2.6	130.7
2021	77.1	48.3	3.4	2.0	370.3	2.6	130.8
2022	76.9	48.2	3.4	2.0	370.8	2.6	130.5
2023	76.7	48.3	3.4	2.0	370.8	2.6	130.5
2024	76.6	48.4	3.4	2.0	370.4	2.6	130.4
2025	76.5	48.5	3.4	2.1	369.6	2.6	130.4
2026	76.3	48.6	3.4	2.1	370.0	2.6	130.4
2027	76.1	48.6	3.4	2.1	370.0	2.6	130.2
2028	76.0	48.5	3.4	2.0	370.0	2.6	129.9
Annual Growth Rate	-0.42%	0.74%	0.23%	-0.01%	0.65%	0.00%	0.01%

Table 61. Reference Forecast of Commercial Fuel Demand (Physical Units)

Year	Distillate (MMbbl)	Residual (MMbbl)	LPG (MMbbl)	Kerosene (MMbbl)	Natural Gas (Bcf)	Coal (Ton)	Total Petroleum (Mbbl)
2009	14.2	6.7	0.9	0.4	317.5	0.1	22.1
2010	14.0	6.8	0.9	0.3	326.3	0.1	22.0
2011	13.9	7.1	0.9	0.3	330.1	0.1	22.3
2012	13.8	7.5	0.9	0.3	335.0	0.1	22.5
2013	13.7	7.5	0.9	0.3	341.4	0.1	22.4
2014	13.5	7.5	0.9	0.3	344.1	0.1	22.3
2015	13.4	7.7	0.9	0.3	347.1	0.1	22.5
2016	13.4	7.5	0.9	0.3	348.8	0.1	22.1
2017	13.4	7.6	0.9	0.4	352.2	0.1	22.2
2018	13.3	7.6	0.9	0.4	355.1	0.1	22.2
2019	13.3	7.6	0.9	0.4	357.4	0.1	22.2
2020	13.3	7.6	0.9	0.4	359.4	0.1	22.2
2021	13.3	7.7	0.9	0.4	359.5	0.1	22.3
2022	13.3	7.6	0.9	0.4	360.0	0.1	22.2
2023	13.2	7.7	0.9	0.4	360.0	0.1	22.2
2024	13.2	7.7	0.9	0.4	359.6	0.1	22.2
2025	13.2	7.7	0.9	0.4	358.8	0.1	22.2
2026	13.2	7.7	0.9	0.4	359.2	0.1	22.2
2027	13.1	7.7	0.9	0.4	359.2	0.1	22.2
2028	13.1	7.7	0.9	0.4	359.2	0.1	22.1
Annual Growth Rate	-0.42%	0.74%	0.23%	-0.01%	0.65%	0.00%	-0.01%

7.3 **Industrial Fuel Demand Reference Forecast**

Figure 23. New York Industrial Fuel Demand (TBtu)
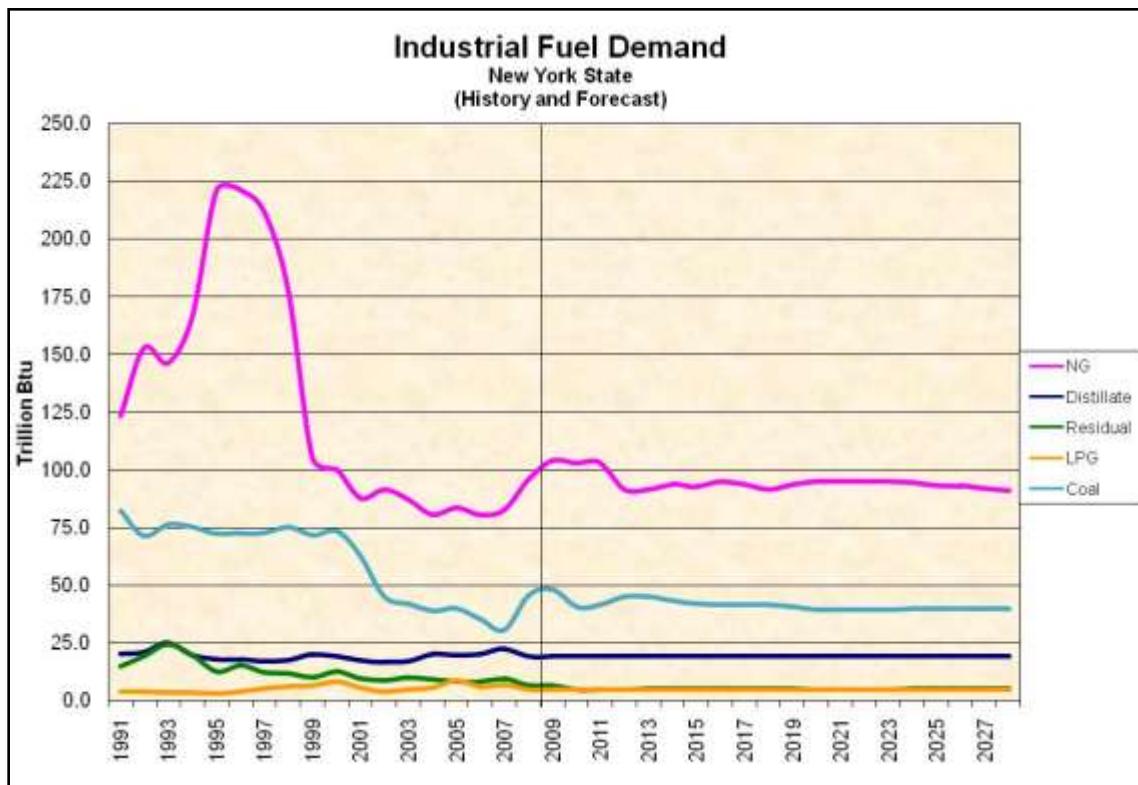
Table 62. Reference Forecast of Industrial Fuel Demand （TBtu）

Year	Distillate	Residual	LPG	Natural Gas	Coal	Total Petroleum
2009	19.1	6.5	4.7	104.0	48.1	30.3
2010	19.1	4.8	4.7	103.0	40.6	28.5
2011	19.1	4.8	4.7	103.0	41.5	28.6
2012	19.1	4.9	4.7	91.7	45.1	28.7
2013	19.1	5.1	4.7	91.7	45.0	28.8
2014	19.1	5.1	4.7	93.7	43.1	28.9
2015	19.1	5.1	4.7	92.7	42.1	28.9
2016	19.1	5.1	4.7	94.8	41.7	28.9
2017	19.1	5.1	4.7	93.7	41.5	28.9
2018	19.1	5.1	4.7	91.7	41.4	28.8
2019	19.1	5.0	4.7	93.7	40.6	28.8
2020	19.1	5.0	4.7	94.8	39.5	28.8
2021	19.1	5.0	4.7	95.0	39.2	28.8
2022	19.1	5.0	4.7	95.2	39.2	28.8
2023	19.1	5.0	4.7	95.0	39.4	28.8
2024	19.1	5.0	4.7	94.4	39.9	28.8
2025	19.1	5.1	4.7	93.2	39.9	28.8
2026	19.1	5.1	4.7	93.0	39.8	28.9
2027	19.1	5.1	4.7	92.0	39.8	28.9
2028	19.1	5.1	4.7	91.0	40.0	28.9
Annual Growth Rate	0.00%	-1.30%	-0.04%	-0.70%	-0.97%	-0.26%

Table 63. Reference Forecast of Industrial Fuel Demand (Physical Units)

Year	Distillate (MMbbl)	Residual (MMbbl)	LPG (MMbbl)	Natural Gas (Bcf)	Coal (Ton)	Total Petroleum (Mbbl)
2009	3.3	1.0	1.3	101.0	2.1	5.6
2010	3.3	0.8	1.3	100.0	1.8	5.4
2011	3.3	0.8	1.3	100.0	1.9	5.4
2012	3.3	0.8	1.3	89.0	2.0	5.4
2013	3.3	0.8	1.3	89.0	2.0	5.4
2014	3.3	0.8	1.3	91.0	1.9	5.4
2015	3.3	0.8	1.3	90.0	1.9	5.4
2016	3.3	0.8	1.3	92.0	1.9	5.4
2017	3.3	0.8	1.3	91.0	1.9	5.4
2018	3.3	0.8	1.3	89.0	1.8	5.4
2019	3.3	0.8	1.3	91.0	1.8	5.4
2020	3.3	0.8	1.3	92.0	1.8	5.4
2021	3.3	0.8	1.3	92.2	1.8	5.4
2022	3.3	0.8	1.3	92.4	1.8	5.4
2023	3.3	0.8	1.3	92.2	1.8	5.4
2024	3.3	0.8	1.3	91.6	1.8	5.4
2025	3.3	0.8	1.3	90.5	1.8	5.4
2026	3.3	0.8	1.3	90.3	1.8	5.4
2027	3.3	0.8	1.3	89.3	1.8	5.4
2028	3.3	0.8	1.3	88.3	1.8	5.4
Annual Growth Rate	0.00%	-1.30%	-0.04%	-0.70%	-0.97%	-0.23%

7.4 **Transportation Fuel Demand Reference Forecast**

Figure 24. New York Transportation Fuel Demand (TBtu)
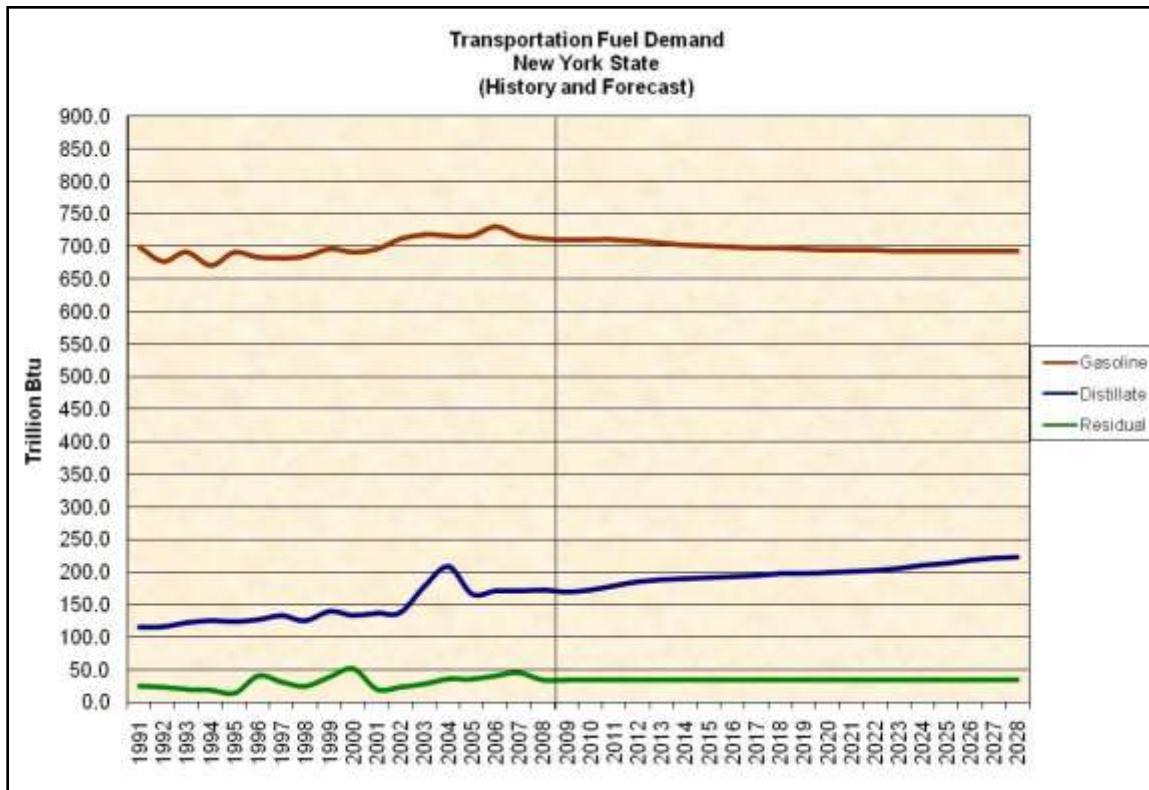
Table 64. Reference Forecast of Transportation Fuel Demand（TBtu）

Year	Distillate	Residual	Gasoline	Total Petroleum
2009	170.0	34.8	710.0	914.8
2010	173.0	34.8	710.9	918.7
2011	179.6	34.8	711.1	925.5
2012	185.2	34.8	708.9	928.9
2013	188.3	34.8	706.2	929.3
2014	189.9	34.8	703.5	928.1
2015	191.2	34.8	700.8	926.8
2016	193.4	34.8	699.3	927.4
2017	195.2	34.8	697.8	927.8
2018	197.3	34.8	697.2	929.3
2019	198.5	34.8	696.3	929.6
2020	198.9	34.8	695.3	929.0
2021	200.7	34.8	694.9	930.3
2022	203.3	34.8	694.9	933.0
2023	206.5	34.8	693.8	935.1
2024	210.4	34.8	693.4	938.5
2025	214.3	34.8	693.1	942.2
2026	218.8	34.8	693.0	946.6
2027	222.0	34.8	692.9	949.7
2028	224.0	34.8	692.5	951.3
Annualized Growth Rate	1.46%	0.00%	-0.13%	0.21%

Table 65. Reference Forecast of Transportation Fuel Demand (Physical Units)

Year	Distillate (MMbbl)	Residual (MMbbl)	Gasoline (MMbbl)	Total Petroleum (Mbbl)
2009	29.3	5.5	136.5	171.4
2010	29.8	5.5	136.7	172.1
2011	31.0	5.5	136.8	173.2
2012	31.9	5.5	136.3	173.8
2013	32.5	5.5	135.8	173.8
2014	32.7	5.5	135.3	173.5
2015	33.0	5.5	134.8	173.3
2016	33.3	5.5	134.5	173.3
2017	33.7	5.5	134.2	173.4
2018	34.0	5.5	134.1	173.6
2019	34.2	5.5	133.9	173.7
2020	34.3	5.5	133.7	173.5
2021	34.6	5.5	133.6	173.7
2022	35.1	5.5	133.6	174.2
2023	35.6	5.5	133.4	174.6
2024	36.3	5.5	133.3	175.1
2025	37.0	5.5	133.3	175.8
2026	37.7	5.5	133.3	176.5
2027	38.3	5.5	133.3	177.1
2028	38.6	5.5	133.2	177.3
Annualized Growth Rate	1.46%	0.00%	-0.13%	0.18%

7.5 Electricity Sector Fuel Demand (TBtu) Reference Forecast

Figure 25. New York Electricity Sector Fuel Demand (TBtu)

Electricity Sector Fuel Demand
New York State
(History & Forecast)
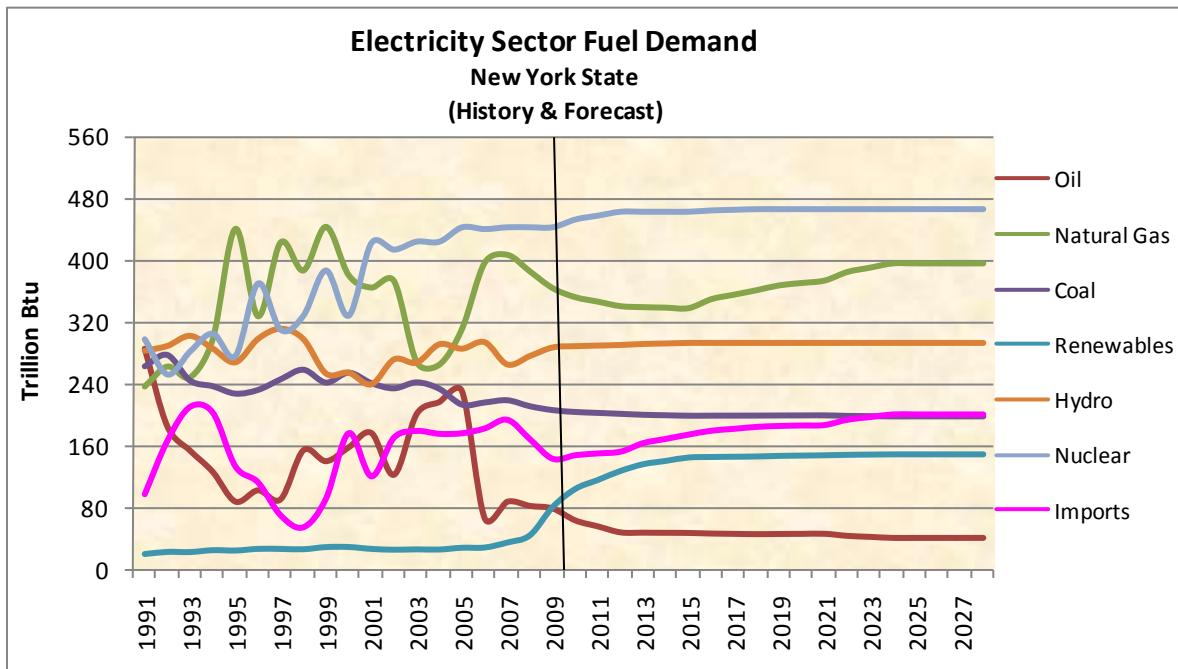
Table 66. Reference Forecast of Electric Fuel Demand （TBtu）

Year	Distillate (Tbtu)	Residual (Tbtu)	Natural Gas (Tbtu)	Coal (Tbtu)	Renewables (Tbtu)	Hydro (Tbtu)	Nuclear (Tbtu)	Imports (Tbtu)	Other (Tbtu)
2009	6.1	71.6	363.4	205.8	81.1	286.7	442.4	142.1	15.0
2010	4.9	57.3	351.7	203.4	104.4	288.3	452.4	146.8	15.0
2011	4.3	50.1	345.8	202.2	116.0	289.1	457.4	149.1	15.0
2012	3.7	43.0	340.0	201.0	127.7	290.0	462.4	151.4	15.0
2013	3.6	42.7	338.7	199.7	136.3	291.3	462.4	162.5	15.0
2014	3.6	42.5	338.1	199.1	140.6	292.0	462.4	168.1	15.0
2015	3.6	42.3	337.4	198.5	144.9	292.7	462.4	173.7	15.0
2016	3.5	41.6	349.1	198.6	145.6	292.7	464.0	178.7	15.0
2017	3.5	41.3	354.9	198.6	145.9	292.7	464.9	181.2	15.0
2018	3.5	40.9	360.8	198.7	146.2	292.7	465.7	183.7	15.0
2019	3.5	41.1	367.0	198.8	147.0	292.7	465.7	184.9	15.0
2020	3.5	41.2	370.1	198.9	147.4	292.7	465.7	185.5	15.0
2021	3.5	41.3	373.3	199.0	147.8	292.7	465.7	186.1	15.0
2022	3.3	38.9	384.4	198.3	148.4	292.7	465.7	193.0	15.0
2023	3.2	37.7	390.0	198.0	148.7	292.7	465.7	196.5	15.0
2024	3.1	36.4	395.5	197.6	149.0	292.7	465.7	199.9	15.0
2025	3.1	36.4	395.5	197.6	149.0	292.7	465.7	199.9	15.0
2026	3.1	36.4	395.5	197.6	149.0	292.7	465.7	199.9	15.0
2027	3.1	36.4	395.5	197.6	149.0	292.7	465.7	199.9	15.0
2028	3.1	36.4	395.5	197.6	149.0	292.7	465.7	199.9	15.0
Annualized Growth Rate	-3.49%	-3.49%	0.45%	-0.21%	3.25%	0.11%	0.27%	1.81%	0.00%

7.6 **Electricity Demand (GWh) Reference Forecast**

Figure 26. New York Statewide Total and Sector Electricity Sales (GWh)
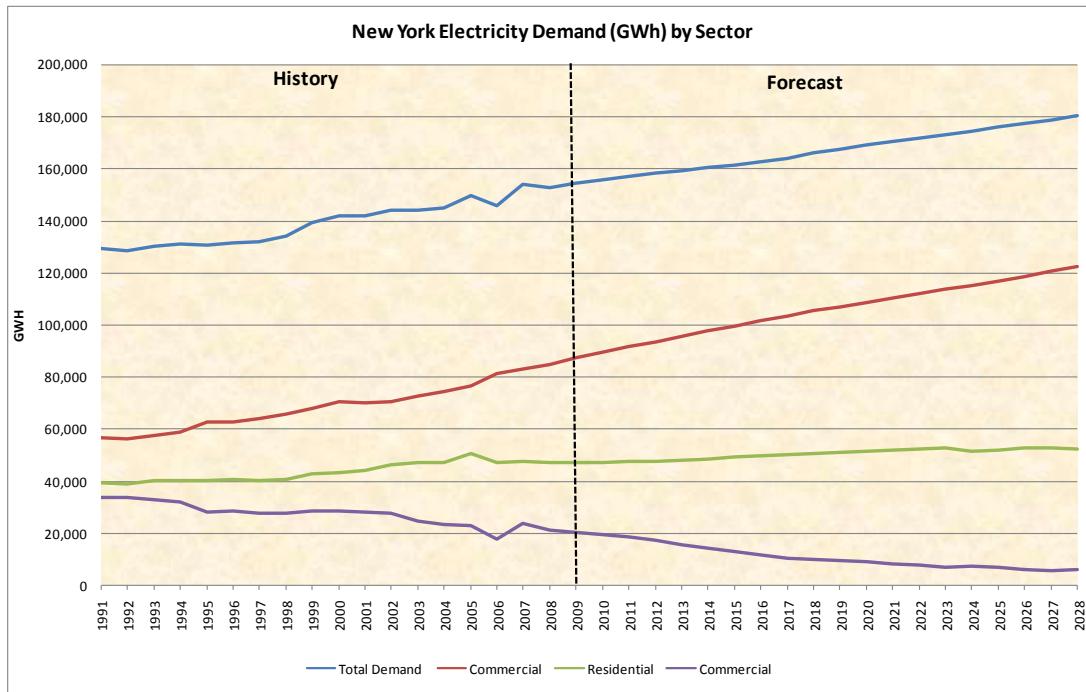
Table 67. Reference Forecast of Electricity Demand (GWh)

Year	Residential (gWh)	Commercial (gWh)	Industrial (gWh)	Total (gWh)
2009	46,981	87,321	20,298	154,601
2010	47,145	89,355	19,383	155,883
2011	47,414	91,525	18,297	157,236
2012	47,751	93,463	17,019	158,234
2013	48,188	95,457	15,625	159,271
2014	48,708	97,759	14,132	160,599
2015	49,215	99,450	12,742	161,407
2016	49,841	101,503	11,459	162,803
2017	50,423	103,576	10,217	164,215
2018	50,957	105,495	9,700	166,152
2019	51,246	106,923	9,186	167,355
2020	51,626	108,588	8,966	169,181
2021	52,010	110,263	8,188	170,461
2022	52,431	111,951	7,359	171,740
2023	52,864	113,638	6,519	173,020
2024	51,813	115,326	7,161	174,300
2025	52,295	117,012	6,654	175,960
2026	52,819	118,674	5,750	177,243
2027	52,967	120,566	5,384	178,916
2028	52,304	122,498	5,686	180,488
Annualized Growth Rate	0.57%	1.80%	-6.48%	0.82%

8 *Appendix A: Confidence Intervals for Energy Price Reference Forecasts*

Table 68. Distillate Fuel Price Upper and Lower Bounds (2009$/MMBtu)

Year	Residential		Commercial		Industrial		Transportation		Electric	
	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower
2009	18.11	11.33	15.25	8.12	15.29	8.08	19.56	12.95	13.05	6.63
2010	19.37	12.27	16.59	9.12	16.68	9.12	20.76	13.83	14.19	7.46
2011	20.64	13.22	17.94	10.13	18.08	10.17	21.97	14.72	15.33	8.30
2012	21.38	13.63	18.73	10.58	18.89	10.64	22.67	15.11	16.00	8.66
2013	21.99	13.92	19.37	10.89	19.56	10.97	23.25	15.38	16.55	8.91
2014	22.52	14.12	19.93	11.11	20.13	11.20	23.76	15.57	17.04	9.08
2015	22.99	14.27	20.43	11.27	20.65	11.37	24.21	15.71	17.47	9.21
2016	23.42	14.38	20.89	11.38	21.12	11.50	24.62	15.80	17.86	9.29
2017	23.82	14.46	21.31	11.47	21.56	11.59	25.00	15.87	18.22	9.35
2018	24.19	14.51	21.70	11.52	21.96	11.66	25.36	15.91	18.56	9.39
2019	24.54	14.54	22.08	11.56	22.35	11.70	25.70	15.94	18.89	9.41
2020	24.88	14.55	22.43	11.57	22.71	11.72	26.02	15.94	19.20	9.41
2021	25.20	14.55	22.78	11.57	23.07	11.73	26.33	15.94	19.49	9.40
2022	25.51	14.54	23.10	11.56	23.40	11.72	26.63	15.92	19.78	9.38
2023	25.81	14.51	23.42	11.54	23.73	11.71	26.92	15.90	20.06	9.35
2024	26.10	14.48	23.73	11.51	24.05	11.68	27.20	15.86	20.33	9.32
2025	26.39	14.44	24.03	11.47	24.36	11.65	27.47	15.82	20.59	9.27
2026	26.60	14.33	24.25	11.35	24.58	11.53	27.67	15.71	20.78	9.16
2027	26.76	14.17	24.42	11.18	24.76	11.36	27.83	15.55	20.94	9.01
2028	26.92	14.01	24.59	11.01	24.93	11.19	27.99	15.39	21.09	8.86

Table 69. Natural Gas Price Upper and Lower Bounds (2009$/MMBtu)

Year	Residential		Commercial		Industrial		Electric(Statewide)		Electric (DSNY)		Electric (UPNY-East)		Electric (UPNY-West)	
	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower
2009	15.23	11.94	12.23	8.31	10.48	6.77	8.44	4.15	8.11	3.47	8.04	3.44	7.76	3.32
2010	16.11	12.67	13.18	9.08	11.56	7.68	9.71	5.22	9.44	4.58	9.36	4.54	9.03	4.38
2011	16.27	12.67	13.36	9.07	11.75	7.69	9.93	5.23	9.67	4.59	9.59	4.55	9.25	4.39
2012	16.43	12.68	13.55	9.06	11.93	7.70	10.15	5.25	9.91	4.61	9.82	4.57	9.48	4.40
2013	16.60	12.68	13.73	9.06	12.12	7.71	10.38	5.27	10.15	4.62	10.06	4.58	9.70	4.42
2014	16.76	12.69	13.91	9.06	12.31	7.72	10.60	5.29	10.38	4.64	10.29	4.60	9.93	4.44
2015	16.92	12.69	14.10	9.05	12.50	7.73	10.82	5.31	10.62	4.65	10.53	4.61	10.16	4.45
2016	17.08	12.70	14.28	9.05	12.68	7.74	11.05	5.33	10.86	4.67	10.76	4.63	10.38	4.47
2017	17.25	12.71	14.46	9.04	12.87	7.75	11.27	5.35	11.10	4.69	11.00	4.65	10.61	4.48
2018	17.41	12.71	14.64	9.04	13.06	7.77	11.50	5.37	11.33	4.70	11.23	4.66	10.84	4.50
2019	17.57	12.72	14.83	9.04	13.25	7.78	11.72	5.38	11.57	4.72	11.47	4.68	11.06	4.51
2020	17.73	12.72	15.01	9.03	13.43	7.79	11.94	5.40	11.81	4.74	11.70	4.69	11.29	4.53
2021	17.90	12.73	15.19	9.03	13.62	7.80	12.17	5.42	12.04	4.75	11.94	4.71	11.52	4.54
2022	18.06	12.73	15.38	9.03	13.81	7.81	12.39	5.44	12.28	4.77	12.17	4.73	11.74	4.56
2023	18.22	12.74	15.56	9.02	13.99	7.82	12.61	5.46	12.52	4.78	12.41	4.74	11.97	4.57
2024	18.38	12.75	15.74	9.02	14.18	7.83	12.84	5.48	12.76	4.80	12.64	4.76	12.20	4.59
2025	18.55	12.75	15.92	9.01	14.37	7.84	13.06	5.50	12.99	4.82	12.88	4.77	12.42	4.60
2026	18.71	12.76	16.11	9.01	14.56	7.85	13.28	5.52	13.23	4.83	13.11	4.79	12.65	4.62
2027	18.90	12.79	16.32	9.03	14.77	7.89	13.54	5.57	13.50	4.88	13.39	4.84	12.91	4.67
2028	19.05	12.79	16.49	9.02	14.96	7.90	13.76	5.59	13.73	4.89	13.61	4.85	13.13	4.67

Table 70. Residual Oil Price Upper and Lower Bounds (2009$/MMBtu)

Year	Commercial		Industrial		Transportation		Electric - (Average)		Electric - (1% Sulfur)		Electric - (0.3% Sulfur)	
	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower
2009	8.69	4.84	8.69	4.84	7.70	3.99	7.59	4.05	7.88	4.34	7.48	3.93
2010	9.40	5.38	9.40	5.38	8.39	4.50	8.24	4.52	8.56	4.84	8.11	4.39
2011	10.12	5.91	10.12	5.91	9.08	5.01	8.88	5.00	9.23	5.35	8.74	4.86
2012	10.54	6.15	10.54	6.15	9.49	5.24	9.26	5.21	9.62	5.57	9.12	5.06
2013	10.89	6.31	10.89	6.31	9.82	5.40	9.57	5.35	9.95	5.72	9.42	5.20
2014	11.19	6.43	11.19	6.43	10.11	5.51	9.84	5.45	10.23	5.84	9.69	5.30
2015	11.46	6.51	11.46	6.51	10.37	5.59	10.09	5.53	10.48	5.92	9.93	5.37
2016	11.70	6.57	11.70	6.57	10.60	5.65	10.31	5.58	10.70	5.98	10.15	5.42
2017	11.93	6.62	11.93	6.62	10.82	5.69	10.51	5.61	10.91	6.02	10.35	5.45
2018	12.14	6.65	12.14	6.65	11.02	5.71	10.70	5.64	11.11	6.05	10.54	5.47
2019	12.34	6.66	12.34	6.66	11.21	5.73	10.88	5.65	11.30	6.06	10.72	5.48
2020	12.53	6.67	12.53	6.67	11.40	5.74	11.06	5.65	11.48	6.07	10.89	5.49
2021	12.71	6.67	12.71	6.67	11.57	5.74	11.22	5.65	11.65	6.07	11.06	5.48
2022	12.89	6.66	12.89	6.66	11.74	5.73	11.38	5.64	11.81	6.07	11.21	5.47
2023	13.06	6.65	13.06	6.65	11.91	5.71	11.54	5.63	11.97	6.06	11.37	5.46
2024	13.22	6.63	13.22	6.63	12.07	5.70	11.69	5.61	12.12	6.04	11.52	5.44
2025	13.38	6.61	13.38	6.61	12.22	5.67	11.84	5.59	12.27	6.02	11.66	5.41
2026	13.50	6.55	13.50	6.55	12.34	5.61	11.94	5.53	12.38	5.96	11.77	5.35
2027	13.60	6.46	13.60	6.46	12.43	5.53	12.03	5.44	12.47	5.88	11.86	5.27
2028	13.69	6.36	13.69	6.36	12.51	5.44	12.11	5.36	12.55	5.80	11.94	5.18

Table 71. Motor Gasoline Price Upper and Lower Bounds (2006$/MMBtu)

Year	Transportation	
	Upper	Lower
2009	21.01	13.72
2010	22.33	14.70
2011	23.66	15.68
2012	24.44	16.12
2013	25.08	16.41
2014	25.64	16.62
2015	26.14	16.77
2016	26.59	16.88
2017	27.01	16.95
2018	27.41	17.00
2019	27.78	17.03
2020	28.14	17.04
2021	28.48	17.03
2022	28.81	17.01
2023	29.13	16.99
2024	29.44	16.95
2025	29.74	16.90
2026	29.96	16.78
2027	30.14	16.61
2028	30.31	16.43

Table 72. Liquefied Petroleum Gas Price Upper and Lower Bounds (2009$/MMBtu)

Year	Residential		Commercial		Industrial	
	Upper	Lower	Upper	Lower	Upper	Lower
2009	26.54	20.61	21.72	14.96	21.68	13.55
2010	27.64	21.42	22.80	15.71	22.96	14.44
2011	28.75	22.25	23.88	16.47	24.24	15.34
2012	29.39	22.61	24.53	16.79	25.01	15.72
2013	29.92	22.86	25.06	17.00	25.64	15.97
2014	30.38	23.04	25.53	17.15	26.20	16.14
2015	30.79	23.17	25.95	17.24	26.70	16.25
2016	31.17	23.26	26.33	17.31	27.15	16.32
2017	31.52	23.33	26.69	17.34	27.58	16.36
2018	31.84	23.37	27.03	17.36	27.98	16.38
2019	32.15	23.40	27.35	17.36	28.37	16.37
2020	32.45	23.41	27.65	17.34	28.73	16.35
2021	32.73	23.41	27.95	17.31	29.08	16.32
2022	33.00	23.39	28.23	17.28	29.43	16.27
2023	33.26	23.37	28.51	17.23	29.76	16.21
2024	33.51	23.35	28.78	17.18	30.08	16.15
2025	33.76	23.31	29.04	17.12	30.39	16.07
2026	33.94	23.21	29.24	17.00	30.63	15.93
2027	34.09	23.07	29.41	16.84	30.83	15.74
2028	34.23	22.93	29.57	16.68	31.02	15.54

Table 73. Kerosene Price Upper and Lower Bounds (2009$/MMBtu)

Year	Residential		Commercial		Industrial	
	Upper	Lower	Upper	Lower	Upper	Lower
2009	19.26	9.02	17.33	9.93	15.09	7.66
2010	21.10	10.38	18.94	11.18	16.42	8.63
2011	22.95	11.74	20.56	12.45	17.76	9.62
2012	24.03	12.33	21.49	13.03	18.54	10.05
2013	24.92	12.74	22.25	13.43	19.19	10.34
2014	25.70	13.03	22.90	13.73	19.75	10.55
2015	26.39	13.23	23.48	13.96	20.25	10.70
2016	27.02	13.38	24.00	14.13	20.71	10.80
2017	27.61	13.48	24.49	14.26	21.14	10.87
2018	28.16	13.54	24.94	14.36	21.54	10.92
2019	28.68	13.58	25.37	14.44	21.91	10.94
2020	29.18	13.59	25.77	14.49	22.27	10.95
2021	29.66	13.58	26.16	14.52	22.62	10.94
2022	30.12	13.55	26.53	14.54	22.95	10.92
2023	30.56	13.50	26.88	14.54	23.27	10.89
2024	30.99	13.45	27.23	14.54	23.59	10.85
2025	31.41	13.38	27.56	14.52	23.89	10.80
2026	31.73	13.21	27.80	14.40	24.12	10.67
2027	31.98	12.97	27.98	14.23	24.30	10.50
2028	32.22	12.72	28.16	14.06	24.48	10.32

Table 74. Coal Price Upper and Lower Bounds (2009$/MMBtu)

Year	Electric	
	Upper	Lower
2009	3.12	2.58
2010	3.04	2.48
2011	3.01	2.42
2012	2.97	2.37
2013	2.96	2.32
2014	2.95	2.30
2015	2.95	2.27
2016	2.94	2.23
2017	2.94	2.21
2018	2.94	2.18
2019	2.95	2.16
2020	2.96	2.15
2021	2.97	2.13
2022	2.98	2.12
2023	2.99	2.11
2024	3.00	2.10
2025	3.02	2.08
2026	3.03	2.07
2027	3.04	2.06
2028	3.06	2.04

9 *Appendix B: Confidence Intervals for Energy Demand Reference Forecasts*

Table 75. Distillate Demand Upper and Lower Bounds (TBtu)

Year	Residential		Commercial		Industrial		Transportation		Electric	
	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower
2009	190.61	153.49	93.89	70.56	21.35	16.75	197.76	142.30	10.35	1.84
2010	179.37	140.49	93.23	68.79	21.46	16.64	202.06	143.97	9.34	0.42
2011	177.97	137.32	93.58	68.03	21.57	16.53	209.99	149.25	8.93	0.00
2012	175.30	132.89	93.30	66.64	21.68	16.42	216.91	153.53	8.53	0.00
2013	172.29	128.10	93.15	65.38	21.79	16.31	221.35	155.33	8.70	0.00
2014	169.63	123.68	92.99	64.11	21.90	16.20	224.20	155.54	8.89	0.00
2015	167.41	119.69	93.00	63.01	22.01	16.09	226.89	155.59	9.08	0.00
2016	166.04	116.56	93.22	62.12	22.12	15.98	230.32	156.38	9.22	0.00
2017	164.50	113.24	93.62	61.41	22.23	15.87	233.51	156.94	9.39	0.00
2018	163.37	110.35	94.03	60.71	22.34	15.76	236.90	157.69	9.57	0.00
2019	162.43	107.64	94.45	60.01	22.45	15.66	239.43	157.57	9.79	0.00
2020	161.94	105.38	94.91	59.37	22.56	15.55	241.16	156.66	10.00	0.00
2021	160.79	102.47	95.39	58.73	22.67	15.44	244.26	157.12	10.21	0.00
2022	159.88	99.79	95.80	58.03	22.78	15.33	248.22	158.44	10.20	0.00
2023	158.92	97.06	96.16	57.28	22.89	15.22	252.73	160.31	10.30	0.00
2024	158.43	94.80	96.57	56.58	23.00	15.11	257.93	162.87	10.40	0.00
2025	157.34	91.95	97.00	55.90	23.11	15.00	263.18	165.48	10.60	0.00
2026	156.58	89.41	97.42	55.21	23.22	14.89	268.93	168.59	10.81	0.00
2027	156.46	87.54	97.81	54.48	23.33	14.78	273.49	170.51	11.01	0.00
2028	156.35	85.65	98.19	53.76	23.44	14.67	276.81	171.19	11.21	0.00

Table 76. Natural Gas Demand Upper and Lower Bounds (TBtu)

Year	Residential		Commercial		Industrial		Electric	
	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower
2009	448.24	399.46	391.23	262.80	158.83	49.23	486.73	338.24
2010	450.61	399.52	403.38	268.83	160.41	45.59	475.20	319.64
2011	452.02	398.60	410.31	269.65	163.02	42.98	471.20	308.58
2012	456.32	400.58	418.47	271.69	154.30	29.04	467.20	297.51
2013	460.19	402.12	428.09	275.19	156.91	26.43	463.36	286.60
2014	460.58	400.19	433.98	274.97	161.58	25.88	463.21	279.38
2015	460.76	398.05	440.08	274.95	163.16	22.24	463.06	272.15
2016	461.22	396.19	444.87	273.62	167.83	21.69	473.97	276.00
2017	461.95	394.59	451.45	274.09	169.41	18.05	481.20	276.15
2018	463.26	393.58	457.45	273.98	169.96	13.38	488.42	276.31
2019	464.11	392.11	462.87	273.28	174.63	12.83	496.55	277.36
2020	465.22	390.89	468.05	272.34	178.26	11.26	502.39	276.13
2021	468.21	391.56	471.18	269.35	181.09	8.86	508.22	274.89
2022	469.67	390.70	474.74	266.80	183.89	6.44	510.88	270.48
2023	471.14	389.84	477.85	263.79	186.35	3.68	513.97	266.50
2024	472.60	388.98	480.50	260.33	188.34	0.45	517.07	262.53
2025	474.06	388.12	482.70	256.41	189.76	0.00	520.61	258.99
2026	475.52	387.26	486.20	253.80	192.16	0.00	524.14	255.46
2027	476.99	386.40	489.26	250.74	193.77	0.00	527.68	251.92
2028	478.45	385.54	492.32	247.68	195.38	0.00	531.21	248.39

Table 77. Residual Oil Demand Upper and Lower Bounds (TBtu)

Year	Commercial		Industrial		Transportation		Electric	
	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower
2009	65.56	18.73	11.39	1.69	45.76	23.80	140.86	16.49
2010	67.34	18.28	9.84	0.00	46.28	23.28	125.57	0.00
2011	70.61	19.31	10.15	0.00	46.81	22.75	119.41	0.00
2012	73.80	20.27	10.49	0.00	47.33	22.23	113.24	0.00
2013	75.17	19.42	10.84	0.00	47.85	21.71	115.73	0.00
2014	75.95	17.96	11.15	0.00	48.37	21.19	118.46	0.00
2015	78.93	18.72	11.34	0.00	48.90	20.66	121.19	0.00
2016	78.26	15.81	11.55	0.00	49.42	20.14	123.54	0.00
2017	79.99	15.31	11.78	0.00	49.94	19.62	126.20	0.00
2018	81.20	14.30	12.00	0.00	50.47	19.09	128.86	0.00
2019	82.71	13.58	12.22	0.00	50.99	18.57	131.01	0.00
2020	83.88	12.51	12.42	0.00	51.51	18.05	133.57	0.00
2021	85.13	11.53	12.64	0.00	52.03	17.53	136.13	0.00
2022	86.09	10.27	12.87	0.00	52.56	17.00	134.74	0.00
2023	87.35	9.30	13.11	0.00	53.08	16.48	135.52	0.00
2024	88.52	8.23	13.36	0.00	53.60	15.96	136.31	0.00
2025	89.78	7.27	13.61	0.00	54.13	15.43	139.27	0.00
2026	90.94	6.19	13.85	0.00	54.65	14.91	142.23	0.00
2027	92.09	5.11	14.12	0.00	55.17	14.39	145.19	0.00
2028	93.10	3.90	14.35	0.00	55.69	13.87	148.15	0.00

Table 78. Motor Gasoline Demand Upper and Lower Bounds (TBtu)

Year	Transportation	
	Upper	**Lower**
2009	719.43	698.05
2010	721.08	698.69
2011	722.10	698.69
2012	720.76	696.33
2013	719.01	693.56
2014	716.94	690.47
2015	714.95	687.47
2016	714.03	685.53
2017	713.13	683.61
2018	712.22	681.68
2019	711.37	679.81
2020	705.88	673.31
2021	701.63	668.04
2022	696.86	662.25
2023	695.23	659.60
2024	693.30	656.65
2025	691.23	653.56
2026	689.06	650.38
2027	686.85	647.15
2028	686.36	645.64

Table 79. LPG Demand Upper and Lower Bounds (TBtu)

Year	Residential		Commercial		Industrial	
	Upper	**Lower**	**Upper**	**Lower**	**Upper**	**Lower**
2009	19.89	15.50	3.65	2.86	6.48	3.00
2010	19.71	15.11	3.74	2.91	6.55	2.91
2011	19.69	14.88	3.75	2.88	6.64	2.83
2012	19.66	14.64	3.76	2.85	6.72	2.75
2013	19.62	14.40	3.81	2.86	6.80	2.67
2014	19.63	14.20	3.83	2.84	6.88	2.58
2015	19.68	14.04	3.87	2.85	6.97	2.50
2016	19.81	13.96	3.88	2.82	7.05	2.42
2017	19.91	13.85	3.91	2.81	7.13	2.34
2018	20.07	13.80	3.93	2.80	7.21	2.25
2019	20.25	13.77	3.96	2.79	7.30	2.17
2020	20.46	13.78	3.99	2.78	7.38	2.09
2021	20.60	13.71	4.01	2.76	7.46	2.00
2022	20.77	13.67	4.03	2.74	7.54	1.92
2023	20.94	13.63	4.06	2.73	7.63	1.84
2024	21.16	13.64	4.08	2.72	7.71	1.76
2025	21.31	13.58	4.11	2.71	7.79	1.67
2026	21.50	13.56	4.13	2.69	7.87	1.59
2027	21.57	13.43	4.14	2.66	7.92	1.48
2028	21.58	13.22	4.16	2.64	8.01	1.39

Table 80. Kerosene Demand Upper and Lower Bounds (TBtu)

Year	Residential		Commercial	
	Upper	Lower	Upper	Lower
2009	14.23	9.44	3.38	0.63
2010	12.83	7.81	3.06	0.17
2011	12.73	7.49	3.41	0.40
2012	12.82	7.35	3.49	0.34
2013	13.11	7.41	3.56	0.28
2014	13.48	7.55	3.59	0.18
2015	13.91	7.75	3.74	0.20
2016	14.41	8.03	3.79	0.12
2017	14.89	8.27	3.90	0.10
2018	15.38	8.54	3.96	0.03
2019	15.81	8.74	4.03	0.00
2020	16.21	8.92	4.11	0.00
2021	16.52	8.99	4.18	0.00
2022	16.83	9.07	4.25	0.00
2023	17.11	9.13	4.33	0.00
2024	17.44	9.23	4.41	0.00
2025	17.67	9.24	4.48	0.00
2026	17.94	9.27	4.56	0.00
2027	18.25	9.35	4.66	0.00
2028	18.56	9.44	4.62	0.00

Table 81. Coal Demand Upper and Lower Bounds (TBtu)

Year	Residential		Commercial		Industrial		Electric	
	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower
2009	0.65	0.00	4.16	1.06	66.59	29.54	223.76	187.88
2010	0.67	0.00	4.24	0.98	60.05	21.24	222.18	184.60
2011	0.68	0.00	4.31	0.91	61.79	21.21	221.83	182.54
2012	0.70	0.00	4.39	0.84	66.30	23.96	221.47	180.47
2013	0.72	0.00	4.46	0.76	67.09	22.99	221.07	178.36
2014	0.74	0.00	4.53	0.69	66.07	20.20	221.30	176.88
2015	0.75	0.00	4.61	0.61	65.96	18.32	221.52	175.40
2016	0.77	0.00	4.68	0.54	66.39	16.99	222.48	174.65
2017	0.79	0.00	4.76	0.47	67.12	15.95	223.39	173.85
2018	0.81	0.00	4.83	0.39	67.84	14.91	224.29	173.05
2019	0.82	0.00	4.90	0.32	67.90	13.21	225.30	172.35
2020	0.84	0.00	4.98	0.24	67.77	11.31	226.23	171.57
2021	0.86	0.00	5.05	0.17	68.36	10.14	227.16	170.79
2022	0.88	0.00	5.13	0.10	69.22	9.24	227.34	169.26
2023	0.89	0.00	5.20	0.02	70.32	8.57	227.86	168.07
2024	0.91	0.00	5.27	0.00	71.66	8.15	228.37	166.87
2025	0.93	0.00	5.35	0.00	72.49	7.21	229.23	166.02
2026	0.95	0.00	5.42	0.00	73.35	6.31	230.08	165.16
2027	0.96	0.00	5.50	0.00	74.24	5.44	230.93	164.31
2028	0.98	0.00	5.57	0.00	75.26	4.69	231.79	163.46

Table 82. Other Fuel Demand Upper and Lower Bounds in Electricity Sector (TBtu)

Year	Renewables		Hydro		Nuclear		Imports	
	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower
2009	84.53	77.71	307.90	265.49	512.48	372.33	193.11	91.13
2010	107.96	100.83	310.54	266.11	525.81	378.98	200.19	93.36
2011	119.76	112.30	312.36	265.92	534.14	380.64	204.95	93.26
2012	131.56	123.78	314.19	265.73	542.47	382.30	209.70	93.15
2013	140.34	132.23	316.55	266.07	545.81	378.97	223.25	101.85
2014	144.81	136.37	318.24	265.74	549.15	375.63	231.24	104.98
2015	149.28	140.52	319.93	265.40	552.48	372.29	239.23	108.11
2016	150.10	141.02	320.94	264.39	557.48	370.61	246.67	110.70
2017	150.59	141.19	321.95	263.38	561.64	368.11	251.60	110.77
2018	151.08	141.35	322.96	262.37	565.81	365.60	256.53	110.85
2019	152.02	141.96	323.96	261.36	569.15	362.26	260.17	109.63
2020	152.56	142.19	324.97	260.35	572.48	358.93	263.20	107.81
2021	153.11	142.41	325.98	259.34	575.82	355.59	266.24	105.99
2022	153.87	142.84	326.99	258.33	579.16	352.25	275.57	110.46
2023	154.33	142.98	328.00	257.32	582.50	348.91	281.44	111.48
2024	154.80	143.12	329.01	256.31	585.83	345.58	287.32	112.50
2025	154.96	142.96	330.02	255.30	589.17	342.24	289.75	110.08
2026	155.12	142.79	331.03	254.29	592.51	338.90	292.18	107.65
2027	155.28	142.63	332.04	253.29	595.84	335.57	294.61	105.22
2028	155.44	142.47	333.05	252.28	599.18	332.23	297.04	102.79

Table 83. Electricity Demand Upper and Lower Bounds (GWh)

	Residential		Commercial		Industrial		Total	
Year	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower
2009	50,896	43,066	96,006	78,637	24,785	15,812	163,058	146,144
2010	51,246	43,043	98,453	80,257	24,084	14,683	164,743	147,023
2011	51,702	43,126	101,037	82,014	23,211	13,383	166,499	147,974
2012	52,226	43,277	103,388	83,539	22,147	11,891	167,899	148,569
2013	52,849	43,528	105,795	85,119	20,967	10,284	169,339	149,203
2014	53,556	43,861	108,511	87,008	19,687	8,577	171,070	150,129
2015	54,249	44,181	110,615	88,285	18,511	6,973	172,281	150,534
2016	55,061	44,621	113,082	89,924	17,441	5,476	174,079	151,527
2017	55,829	45,016	115,568	91,583	16,413	4,021	175,894	152,536
2018	56,550	45,364	117,901	93,089	16,110	3,290	178,234	154,070
2019	57,025	45,466	119,743	94,104	15,810	2,563	179,840	154,871
2020	57,592	45,660	121,822	95,355	15,803	2,129	182,068	156,294
2021	58,162	45,857	123,910	96,617	15,239	1,137	183,750	157,171
2022	58,770	46,092	126,011	97,890	14,623	94	185,433	158,048
2023	59,389	46,338	128,112	99,164	13,997	0	187,116	158,925
2024	58,525	45,101	130,213	100,439	14,853	0	188,798	159,802
2025	59,193	45,397	132,313	101,711	14,559	0	190,861	161,060
2026	59,904	45,734	134,388	102,960	13,869	0	192,546	161,939
2027	60,238	45,696	136,693	104,438	13,716	0	194,622	163,210
2028	59,761	44,846	139,039	105,957	14,232	0	196,597	164,379

10 *Appendix C: Model Validation and Analysis of Energy Price by Sector*

10.1 Distillate Fuel Price Regression Analysis

Figure 27. New York Residential Distillate Price (Constant 2009$/MMBtu)

Table 84. Statistical Results of Residential Distillate Price

Statistical Analysis Table								
	Coefficients	SE	t Stat	P-value	R Square	DW-Stat	DF-Stat		
							Constant	No-constant	Time-trend
Intercept	5.29	0.27	19.39	0.001	0.99	1.85			
WTI$	1.16	0.03	34.27	0.001			-4.92	-24.78	-5.68

Table 85. Backcast Results of Residential Distillate Price

Year	Actual Price	Predicted Price	Error	Absolute Error	Absolute Percent Error
1991	13.1	12.0	1.0	1.05	8%
1992	11.7	11.5	0.2	0.18	2%
1993	11.1	10.7	0.4	0.36	3%
1994	10.4	10.2	0.2	0.18	2%
1995	10.0	10.4	-0.4	0.42	4%
1996	10.8	11.3	-0.5	0.46	4%
1997	10.6	10.6	0.0	0.03	0%
1998	9.3	9.1	0.2	0.24	3%
1999	9.3	10.2	-0.9	0.93	10%
2000	13.4	12.8	0.6	0.58	4%
2001	12.3	11.5	0.8	0.77	6%
2002	10.8	11.5	-0.7	0.67	6%
2003	12.5	12.5	0.0	0.01	0%
2004	13.8	14.6	-0.8	0.84	6%
2005	17.3	17.6	-0.4	0.39	2%
2006	19.4	19.2	0.2	0.24	1%
2007	20.7	20.6	0.1	0.13	1%
2008	26.6	26.6	0.0	0.00	0%
Mean				0.42	3%

Figure 28. New York Commercial Distillate Price (Constant 2009$/MMBtu)
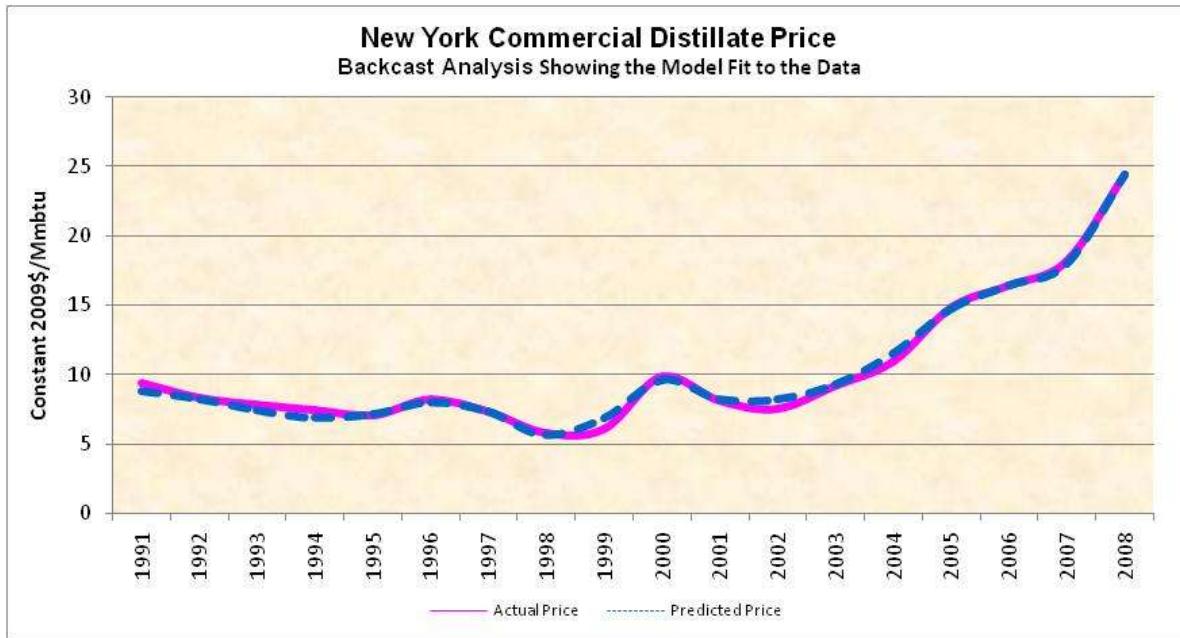
Table 86. Statistical Results of Commercial Distillate Price

Statistical Analysis Table									
	Coefficients	SE	t Stat	P-value	R Square	DW-Stat	DF-Stat		
							Constant	No-constant	Time-trend
Intercept	1.60	0.20	8.14	0.001	0.99	1.80			
WTI$	1.24	0.02	50.81	0.001			-5.08	-18.35	-5.59

Table 87. Backcast Results of Commercial Distillate Price

Year	Actual Price	Predicted Price	Error	Absolute Error	Absolute Percent Error
1991	9.4	8.8	0.6	0.63	7%
1992	8.3	8.3	0.1	0.05	1%
1993	7.8	7.4	0.4	0.41	5%
1994	7.4	6.9	0.5	0.54	7%
1995	7.1	7.1	0.0	0.01	0%
1996	8.2	8.0	0.2	0.16	2%
1997	7.3	7.3	0.0	0.00	0%
1998	5.7	5.6	0.1	0.12	2%
1999	6.0	6.9	-0.8	0.84	14%
2000	9.9	9.6	0.2	0.24	2%
2001	8.1	8.3	-0.1	0.14	2%
2002	7.5	8.2	-0.7	0.66	9%
2003	9.2	9.3	-0.1	0.09	1%
2004	11.0	11.6	-0.6	0.61	6%
2005	14.8	14.8	0.1	0.07	0%
2006	16.4	16.4	-0.1	0.06	0%
2007	18.1	17.9	0.2	0.18	1%
2008	24.4	24.4	0.0	0.00	0%
Mean				0.27	3%

Figure 29. New York Industrial Distillate Price (Constant 2009$/MMBtu)
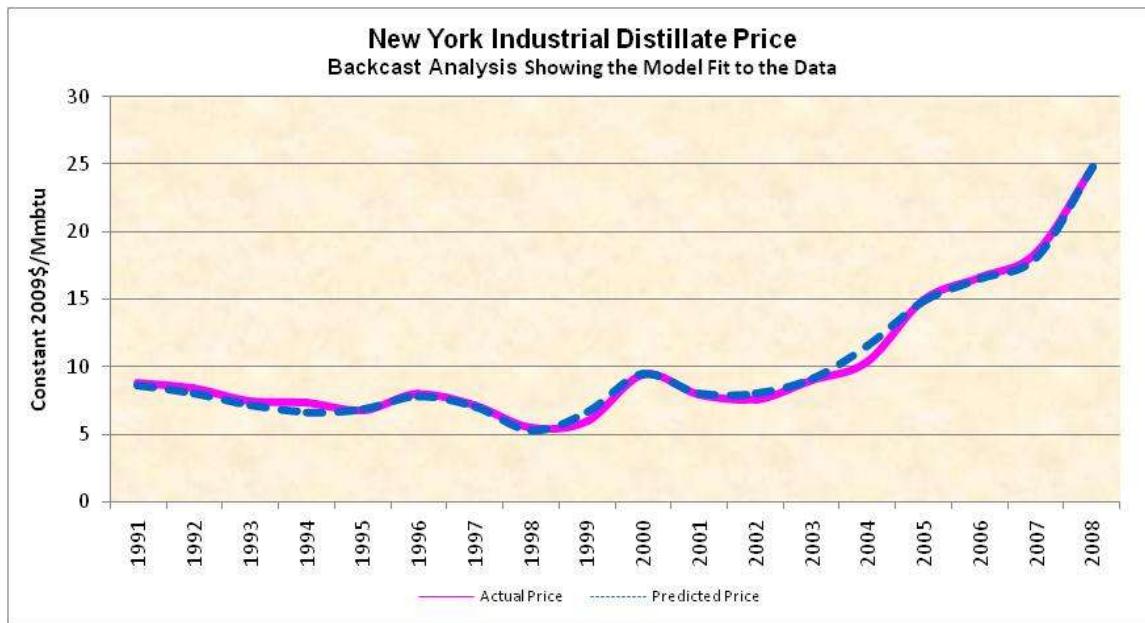
Table 88. Statistical Results of Industrial Distillate Price

Statistical Analysis Table									
	Coefficients	**SE**	**t Stat**	**P-value**	**R Square**	**DW-Stat**	**DF-Stat**		
							Constant	**No-constant**	**Time-trend**
Intercept	1.13	0.21	5.48	0.001	0.99	1.73	-5.31	-18.15	-5.55
WTI$	1.28	0.03	50.10	0.001					

Table 89. Backcast Results of Industrial Distillate Price

Year	Actual Price	Predicted Price	Error	Absolute Error	Absolute Percent Error
1991	8.8	8.6	0.2	0.17	2%
1992	8.4	8.1	0.3	0.32	4%
1993	7.5	7.2	0.3	0.33	4%
1994	7.3	6.6	0.7	0.70	10%
1995	6.8	6.8	-0.1	0.07	1%
1996	8.0	7.8	0.2	0.20	3%
1997	7.2	7.1	0.1	0.10	1%
1998	5.5	5.3	0.2	0.16	3%
1999	6.0	6.6	-0.6	0.64	11%
2000	9.4	9.5	-0.1	0.06	1%
2001	8.0	8.1	-0.1	0.10	1%
2002	7.6	8.0	-0.4	0.44	6%
2003	9.0	9.1	-0.1	0.09	1%
2004	10.4	11.5	-1.1	1.13	11%
2005	15.0	14.8	0.1	0.15	1%
2006	16.6	16.5	0.1	0.09	1%
2007	18.4	18.1	0.3	0.30	2%
2008	24.8	24.8	0.0	0.00	0%
Mean				0.28	3%

Figure 30. New York Transportation Distillate Price (Constant 2009$/MMBtu)
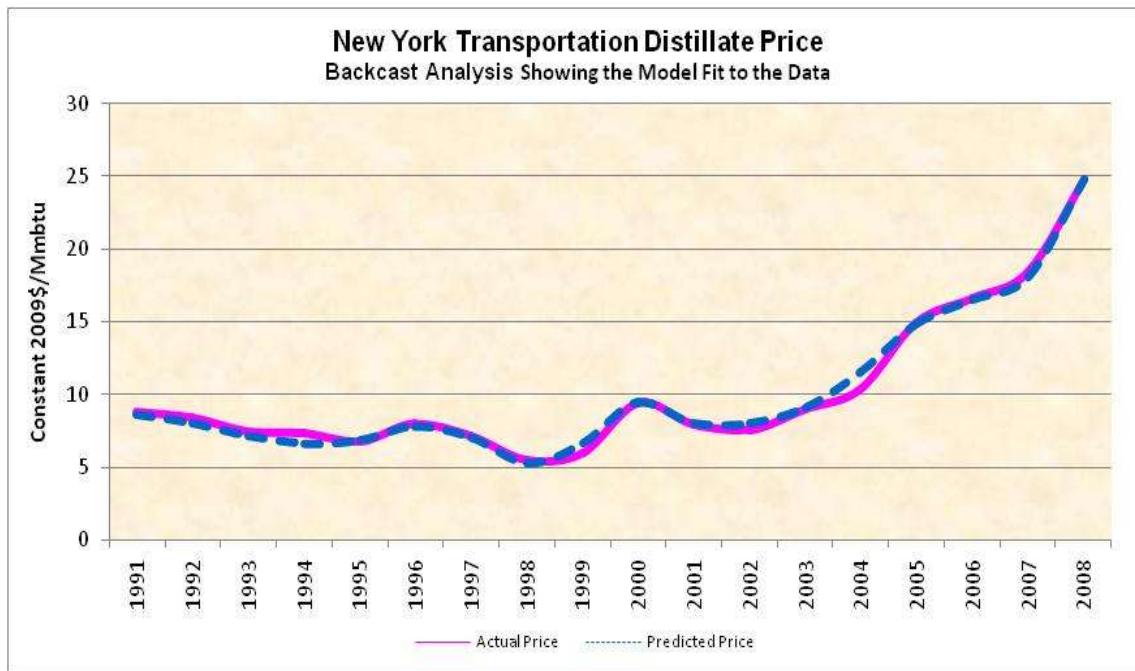
Table 90. Statistical Results of Transportation Distillate Price

Statistical Analysis Table									
	Coefficients	**SE**	**t Stat**	**P-value**	**R Square**	**DW-Stat**	**DF-Stat**		
							Constant	**No-constant**	**Time-trend**
Intercept	7.29	0.35	20.99	0.001	0.98	0.86	-4.89	-28.62	-5.61
WTI$	1.10	0.04	25.57	0.001					

Table 91. Backcast Results of Transportation Distillate Price

Year	Actual Price	Predicted Price	Error	Absolute Error	Absolute Percent Error
1991	14.2	13.7	0.5	0.51	4%
1992	13.5	13.2	0.3	0.30	2%
1993	13.3	12.4	0.9	0.90	7%
1994	13.3	12.0	1.3	1.34	10%
1995	12.6	12.2	0.5	0.45	4%
1996	13.1	13.0	0.2	0.16	1%
1997	12.3	12.4	0.0	0.02	0%
1998	10.7	10.9	-0.1	0.13	1%
1999	11.3	12.0	-0.7	0.71	6%
2000	14.8	14.4	0.3	0.35	2%
2001	12.7	13.2	-0.5	0.54	4%
2002	11.7	13.2	-1.5	1.49	13%
2003	13.4	14.1	-0.7	0.75	6%
2004	15.2	16.2	-1.0	0.95	6%
2005	19.1	19.0	0.1	0.07	0%
2006	20.8	20.5	0.3	0.30	1%
2007	22.0	21.8	0.2	0.22	1%
2008	27.5	27.5	0.0	0.00	0%
Mean				0.51	4%

10.2 **Residual Fuel Price Regression Analysis**

Figure 31. New York Commercial Residual Price (Constant 2009$/MMBtu)
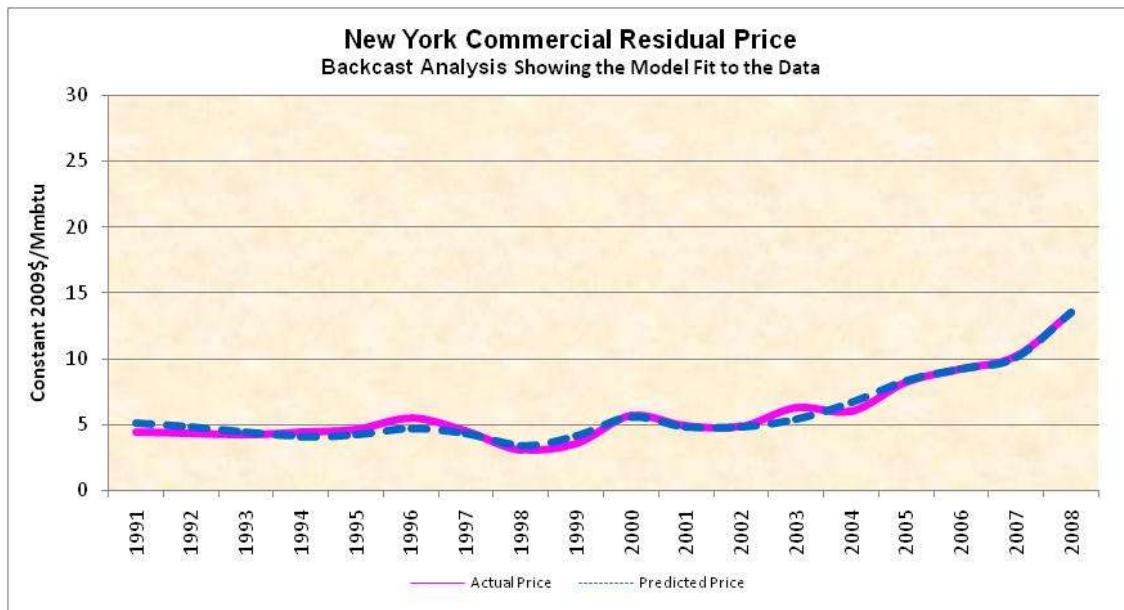
Table 92. Statistical Results of Commercial Residual Price

Statistical Analysis Table									
	Coefficients	**SE**	**t Stat**	**P-value**	**R Square**	**DW-Stat**	**DF-Stat**		
							Constant	**No-constant**	**Time-trend**
Intercept	1.29	0.22	5.75	0.001	0.97	1.41	-5.03	-18.60	-4.50
WTI$	0.66	0.03	23.94	0.001					

Table 93. Backcast Results of Commercial Residual Price

Year	Actual Price	Predicted Price	Error	Absolute Error	Absolute Percent Error
1991	4.4	5.1	-0.7	0.72	16%
1992	4.4	4.9	-0.5	0.48	11%
1993	4.2	4.4	-0.2	0.15	4%
1994	4.4	4.1	0.3	0.31	7%
1995	4.7	4.2	0.4	0.43	9%
1996	5.5	4.7	0.8	0.76	14%
1997	4.6	4.4	0.2	0.22	5%
1998	3.1	3.4	-0.3	0.33	11%
1999	3.6	4.1	-0.6	0.56	16%
2000	5.7	5.6	0.1	0.10	2%
2001	4.9	4.9	0.0	0.03	1%
2002	4.9	4.8	0.0	0.04	1%
2003	6.3	5.4	0.9	0.89	14%
2004	6.1	6.7	-0.6	0.60	10%
2005	8.3	8.4	-0.1	0.10	1%
2006	9.3	9.3	0.0	0.01	0%
2007	10.2	10.1	0.2	0.15	1%
2008	13.5	13.5	0.0	0.00	0%
Mean				0.33	7%

Figure 32. New York Industrial Residual Price (Constant 2009$/MMBtu)

Table 94. Statistical Results of Industrial Residual Price

Statistical Analysis Table								
	Coefficients	**SE**	**t Stat**	**P-value**	**R Square**	**DW-Stat**	**DF-Stat**		
							Constant	**No-constant**	**Time-trend**
Intercept	1.29	0.22	5.75	0.001	0.97	1.41	-5.03	-18.60	-4.50
WTI$	0.66	0.03	23.94	0.001					

Table 95. Backcast Results of Industrial Residual Price

Year	Actual Price	Predicted Price	Error	Absolute Error	Absolute Percent Error
1991	4.4	5.1	-0.7	0.72	16%
1992	4.4	4.9	-0.5	0.48	11%
1993	4.2	4.4	-0.2	0.15	4%
1994	4.4	4.1	0.3	0.31	7%
1995	4.7	4.2	0.4	0.43	9%
1996	5.5	4.7	0.8	0.76	14%
1997	4.6	4.4	0.2	0.22	5%
1998	3.1	3.4	-0.3	0.33	11%
1999	3.6	4.1	-0.6	0.56	16%
2000	5.7	5.6	0.1	0.10	2%
2001	4.9	4.9	0.0	0.03	1%
2002	4.9	4.8	0.0	0.04	1%
2003	6.3	5.4	0.9	0.89	14%
2004	6.1	6.7	-0.6	0.60	10%
2005	8.3	8.4	-0.1	0.10	1%
2006	9.3	9.3	0.0	0.01	0%
2007	10.2	10.1	0.2	0.15	1%
2008	13.5	13.5	0.0	0.00	0%
Mean				0.33	7%

Figure 33. New York Transportation Residual Price (Constant 2009$/MMBtu)
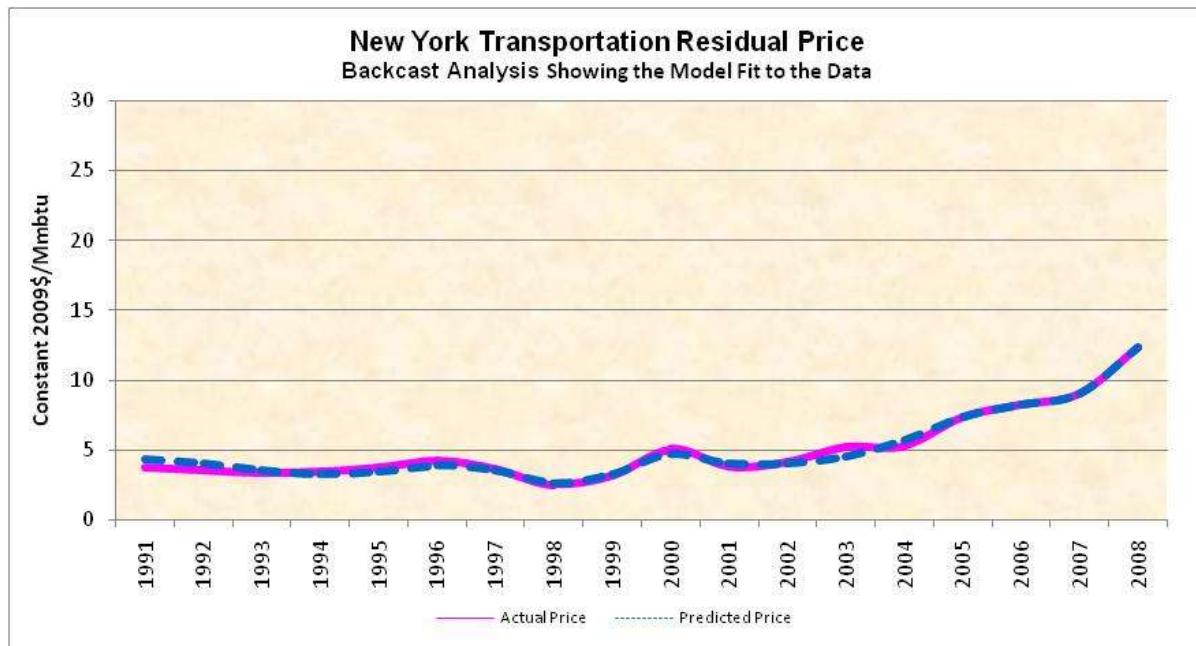
Table 96. Statistical Results of Transportation Residual Price

Statistical Analysis Table									
	Coefficients	SE	t Stat	P-value	R Square	DW-Stat	DF-Stat		
							Constant	No-constant	Time-trend
Intercept	0.60	0.16	3.63	0.002	0.98	1.59	-5.06	-16.92	-4.42
WTI$	0.64	0.02	31.28	0.001					

Table 97. Backcast Results of Transportation Residual Price

Year	Actual Price	Predicted Price	Error	Absolute Error	Absolute Percent Error
1991	3.7	4.3	-0.6	0.57	15%
1992	3.5	4.0	-0.5	0.49	14%
1993	3.4	3.6	-0.2	0.20	6%
1994	3.5	3.3	0.1	0.14	4%
1995	3.7	3.4	0.3	0.29	8%
1996	4.3	3.9	0.4	0.38	9%
1997	3.7	3.5	0.2	0.17	5%
1998	2.5	2.7	-0.1	0.13	5%
1999	3.2	3.3	-0.2	0.15	5%
2000	5.1	4.7	0.3	0.35	7%
2001	3.8	4.0	-0.2	0.22	6%
2002	4.1	4.0	0.1	0.11	3%
2003	5.2	4.6	0.7	0.70	13%
2004	5.3	5.7	-0.4	0.43	8%
2005	7.4	7.4	0.0	0.01	0%
2006	8.2	8.2	0.0	0.01	0%
2007	9.1	9.0	0.1	0.06	1%
2008	12.3	12.3	0.0	0.00	0%
Mean				0.25	6%

10.3 **LPG Price Regression Analysis**

Figure 34. New York Residential LPG Price (Constant 2009$/MMBtu)

Table 98. Statistical Results of Residential LPG Price

Statistical Analysis Table								
	Coefficients	SE	t Stat	P-value	R Square	DW-Stat	DF-Stat		
							Constant	No-constant	Time-trend
Intercept	15.41	0.46	33.23	0.001	0.95	1.85	-4.53	-41.40	-5.71
WTI$	1.01	0.06	17.53	0.001					

Table 99. Backcast Results of Residential LPG Price

Year	Actual Price	Predicted Price	Error	Absolute Error	Absolute Percent Error
1991	22.8	21.3	1.6	1.58	7%
1992	21.9	20.8	1.1	1.09	5%
1993	19.7	20.1	-0.4	0.43	2%
1994	20.9	19.7	1.2	1.24	6%
1995	20.0	19.9	0.1	0.08	0%
1996	20.3	20.6	-0.3	0.34	2%
1997	20.0	20.1	-0.1	0.11	1%
1998	18.1	18.7	-0.6	0.57	3%
1999	18.0	19.7	-1.7	1.71	10%
2000	22.0	21.9	0.0	0.02	0%
2001	22.4	20.8	1.5	1.53	7%
2002	19.3	20.8	-1.5	1.46	8%
2003	21.5	21.7	-0.2	0.16	1%
2004	23.3	23.5	-0.2	0.20	1%
2005	25.2	26.1	-0.9	0.90	4%
2006	27.6	27.5	0.1	0.15	1%
2007	28.9	28.7	0.2	0.20	1%
2008	34.0	34.0	0.0	0.00	0%
Mean				0.65	3%

Figure 35. New York Commercial LPG Price (Constant 2009$/MMBtu)
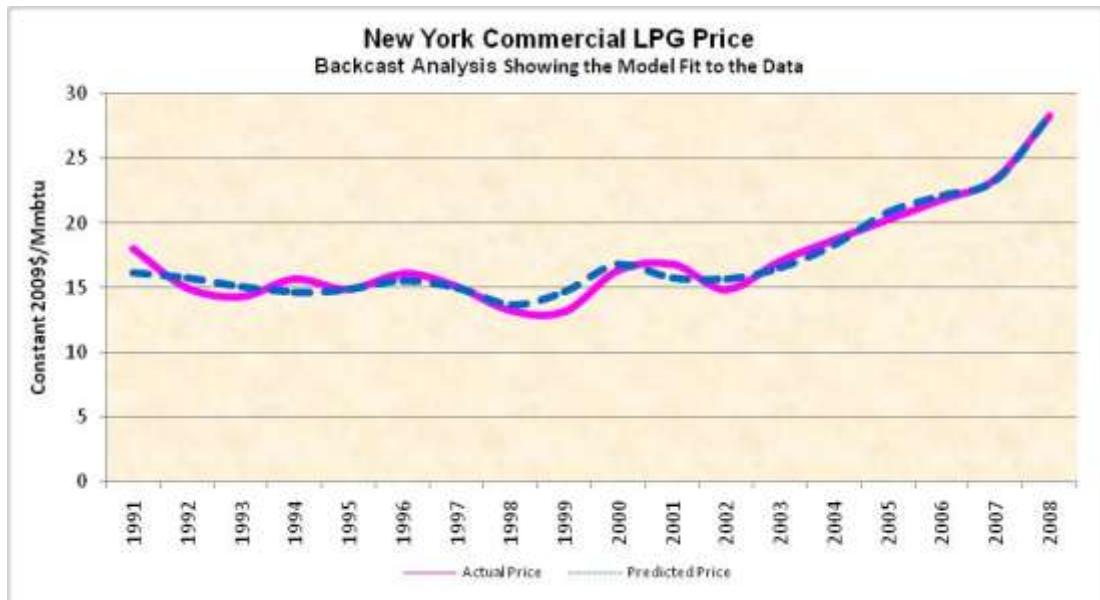
Table 100. Statistical Results of Commercial LPG Price

Statistical Analysis Table								
	Coefficients	SE	t Stat	P-value	R Square	DW-Stat	DF-Stat		
							Constant	No-constant	Time-trend
Intercept	10.58	0.41	25.53	0.001	0.96	2.00	-4.56	-33.94	-5.98
WTI$	0.96	0.05	18.69	0.001					

Table 101. Backcast Results of Commercial LPG Price

Year	Actual Price	Predicted Price	Error	Absolute Error	Absolute Percent Error
1991	18.0	16.2	1.9	1.89	10%
1992	15.0	15.8	-0.7	0.74	5%
1993	14.3	15.1	-0.8	0.77	5%
1994	15.6	14.7	1.0	0.96	6%
1995	14.9	14.8	0.0	0.01	0%
1996	16.1	15.6	0.6	0.56	3%
1997	15.1	15.0	0.1	0.12	1%
1998	13.2	13.7	-0.5	0.49	4%
1999	13.2	14.7	-1.5	1.51	11%
2000	16.4	16.8	-0.4	0.45	3%
2001	16.8	15.8	1.1	1.06	6%
2002	14.9	15.7	-0.8	0.84	6%
2003	17.1	16.5	0.5	0.54	3%
2004	18.7	18.3	0.4	0.36	2%
2005	20.3	20.8	-0.5	0.52	3%
2006	21.8	22.1	-0.3	0.31	1%
2007	23.4	23.3	0.1	0.14	1%
2008	28.3	28.3	0.0	0.00	0%
Mean				0.63	4%

Figure 36. New York Industrial LPG Price (Constant 2009$/MMBtu)
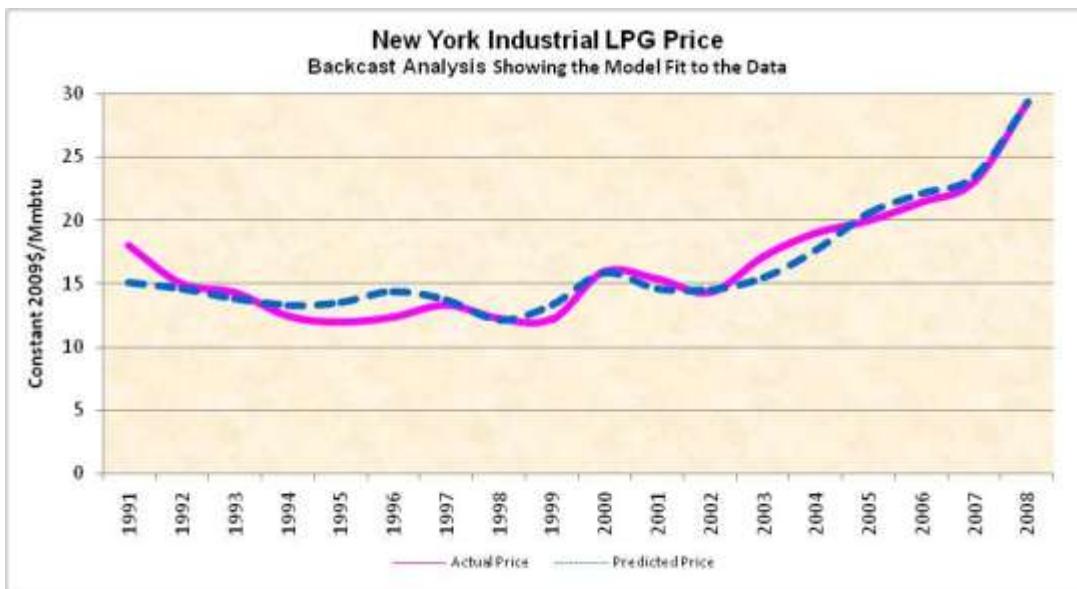
Table 102. Statistical Results of Industrial LPG Price

Statistical Analysis Table									
	Coefficients	**SE**	**t Stat**	**P-value**	**R Square**	**DW-Stat**	**DF-Stat**		
							Constant	**No-constant**	**Time-trend**
Intercept	8.49	0.60	14.09	0.001	0.94	1.00			
WTI$	1.13	0.07	15.19	0.001			-4.94	-28.78	-7.10

Table 103. Backcast Results of Industrial LPG Price

Year	Actual Price	Predicted Price	Error	Absolute Error	Absolute Percent Error
1991	18.0	15.1	3.0	2.97	16%
1992	15.0	14.6	0.4	0.41	3%
1993	14.3	13.8	0.5	0.51	4%
1994	12.4	13.3	-0.9	0.90	7%
1995	12.0	13.5	-1.5	1.54	13%
1996	12.4	14.4	-2.0	2.01	16%
1997	13.3	13.7	-0.4	0.39	3%
1998	12.2	12.2	0.0	0.04	0%
1999	12.2	13.3	-1.1	1.13	9%
2000	16.0	15.8	0.1	0.13	1%
2001	15.4	14.6	0.8	0.76	5%
2002	14.3	14.6	-0.2	0.24	2%
2003	17.2	15.5	1.7	1.66	10%
2004	19.0	17.6	1.3	1.33	7%
2005	20.0	20.6	-0.6	0.57	3%
2006	21.5	22.1	-0.6	0.62	3%
2007	23.1	23.5	-0.4	0.41	2%
2008	29.4	29.4	0.0	0.00	0%
Mean				0.87	6%

10.4 **Kerosene Price Regression Analysis**

Figure 37. New York Residential Kerosene Price (Constant 2009$/MMBtu)
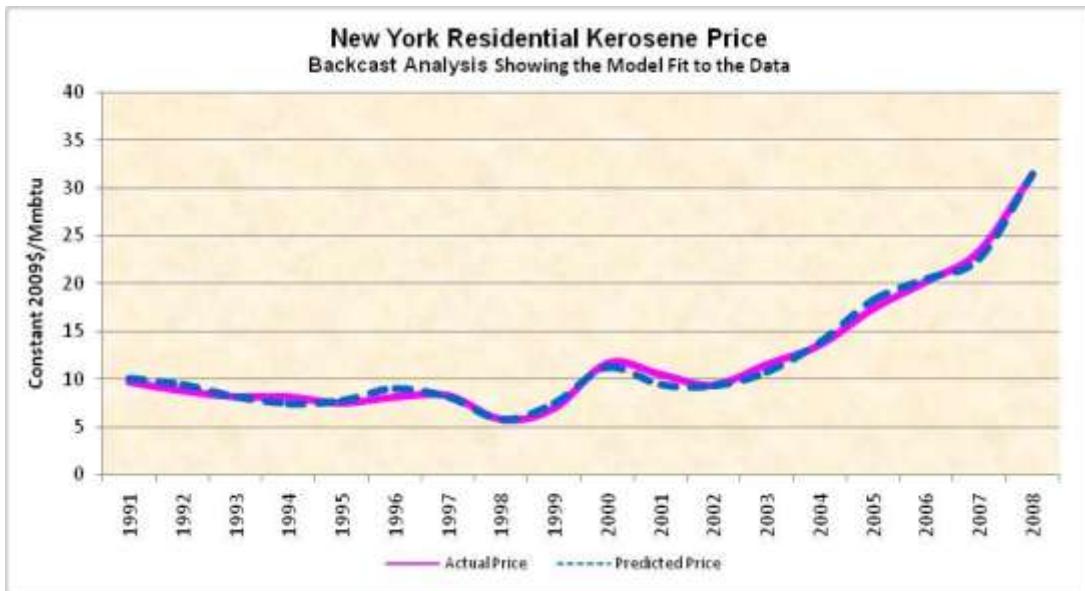
Table 104. Statistical Results of Residential Kerosene Price

Statistical Analysis Table								
	Coefficients	SE	t Stat	P-value	R Square	DW-Stat	DF-Stat		
Intercept	0.29	0.29	0.97	0.347	0.99	1.79	Constant	No-constant	Time-trend
WTI$	1.69	0.04	46.41	0.001			-6.11	-18.60	-5.51

Table 105. Backcast Results of Residential Kerosene Price

Year	Actual Price	Predicted Price	Error	Absolute Error	Absolute Percent Error
1991	9.8	10.1	-0.4	0.35	4%
1992	8.8	9.4	-0.6	0.58	7%
1993	8.2	8.2	0.0	0.00	0%
1994	8.1	7.5	0.6	0.59	7%
1995	7.5	7.8	-0.3	0.27	4%
1996	8.2	9.0	-0.8	0.84	10%
1997	8.3	8.1	0.2	0.23	3%
1998	5.8	5.8	0.0	0.03	1%
1999	7.0	7.5	-0.5	0.52	7%
2000	11.7	11.2	0.4	0.45	4%
2001	10.5	9.4	1.1	1.13	11%
2002	9.4	9.3	0.1	0.07	1%
2003	11.6	10.8	0.8	0.78	7%
2004	13.6	13.9	-0.4	0.37	3%
2005	17.4	18.3	-0.9	0.91	5%
2006	20.3	20.6	-0.2	0.25	1%
2007	23.4	22.6	0.8	0.81	3%
2008	31.4	31.4	0.0	0.00	0%
Mean				0.45	4%

Figure 38. New York Commercial Kerosene Price (Constant 2009$/MMBtu)

Table 106. Statistical Results of Commercial Kerosene Price

Statistical Analysis Table								
	Coefficients	SE	t Stat	P-value	R Square	DW-Stat	DF-Stat		
							Constant	No-constant	Time-trend
Intercept	1.20	0.33	3.68	0.002	0.99	1.98	-4.84	-16.08	-4.66
WTI$	1.52	0.04	37.48	0.001					

Table 107. Backcast Results of Commercial Kerosene Price

Year	Actual Price	Predicted Price	Error	Absolute Error	Absolute Percent Error
1991	9.8	10.0	-0.3	0.26	3%
1992	8.8	9.4	-0.6	0.56	6%
1993	8.2	8.3	-0.1	0.10	1%
1994	8.1	7.7	0.4	0.42	5%
1995	7.5	7.9	-0.4	0.41	5%
1996	8.2	9.1	-0.9	0.86	11%
1997	8.3	8.2	0.1	0.12	1%
1998	5.8	6.1	-0.3	0.32	6%
1999	7.0	7.7	-0.7	0.69	10%
2000	11.7	11.0	0.7	0.66	6%
2001	10.5	9.4	1.1	1.15	11%
2002	9.4	9.3	0.1	0.08	1%
2003	11.6	10.6	0.9	0.94	8%
2004	13.6	13.4	0.1	0.11	1%
2005	17.4	17.4	0.0	0.02	0%
2006	20.3	19.4	0.9	0.92	5%
2007	20.0	21.2	-1.2	1.21	6%
2008	29.1	29.1	0.0	0.00	0%
Mean				0.49	5%

Figure 39. New York Industrial Kerosene Price (Constant 2009$/MMBtu)

Table 108. Statistical Results of Industrial Kerosene Price

Statistical Analysis Table								
	Coefficients	**SE**	**t Stat**	**P-value**	**R Square**	**DW-Stat**	**DF-Stat**		
							Constant	**No-constant**	**Time-trend**
Intercept	1.43	0.29	4.91	0.001	0.99	2.66	-4.42	-15.03	-4.89
WTI$	1.22	0.04	33.87	0.001					

Table 109. Backcast Results of Industrial Kerosene Price

Year	Actual Price	Predicted Price	Error	Absolute Error	Absolute Percent Error
1991	9.1	8.5	0.6	0.57	6%
1992	7.4	8.0	-0.6	0.58	8%
1993	7.1	7.1	0.0	0.01	0%
1994	7.4	6.6	0.8	0.79	11%
1995	6.2	6.8	-0.6	0.60	10%
1996	7.8	7.7	0.0	0.04	0%
1997	7.0	7.0	-0.1	0.09	1%
1998	5.2	5.4	-0.1	0.14	3%
1999	5.9	6.6	-0.7	0.70	12%
2000	10.2	9.3	0.9	0.90	9%
2001	8.1	8.0	0.1	0.11	1%
2002	7.1	7.9	-0.8	0.79	11%
2003	9.4	9.0	0.4	0.43	5%
2004	11.5	11.3	0.3	0.27	2%
2005	14.7	14.4	0.3	0.30	2%
2006	16.6	16.0	0.6	0.60	4%
2007	16.4	17.5	-1.1	1.11	7%
2008	23.9	23.9	0.0	0.00	0%
Mean				0.45	5%

10.5 **Motor Gasoline Price Regression Analysis**

Figure 40. New York Transportation Motor Gasoline Prices (Constant 2009$/MMBtu)
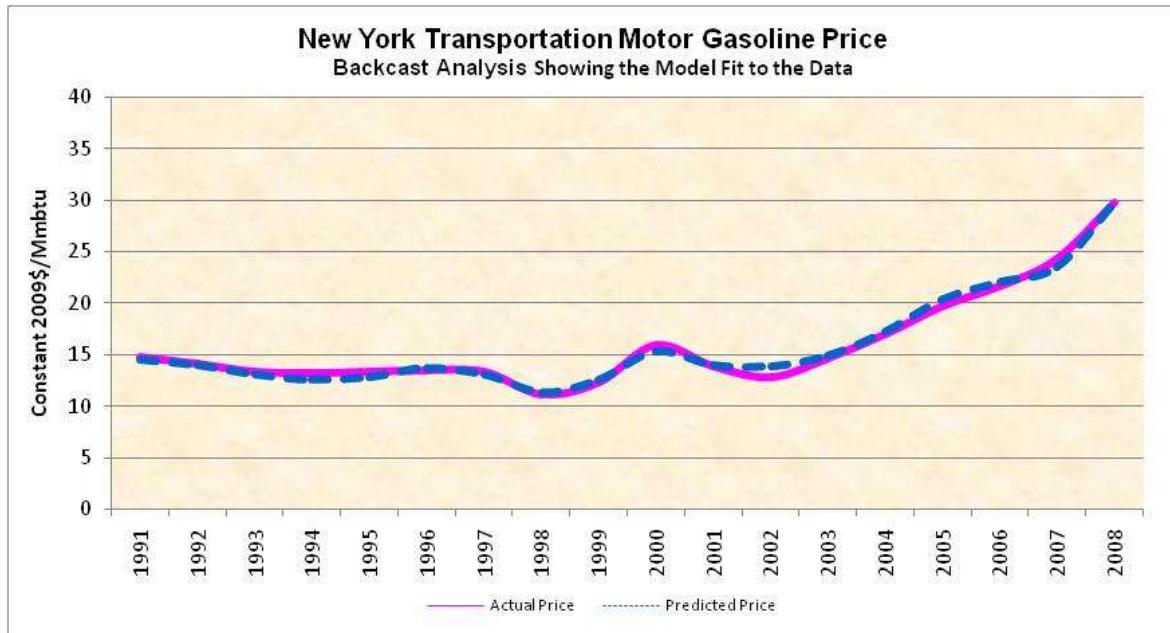
Table 110. Statistical Results of Transportation Motor Gasoline Price

Statistical Analysis Table								
	Coefficients	SE	t Stat	P-value	R Square	DW-Stat	DF-Stat		
							Constant	No-constant	Time-trend
Intercept	7.42	0.25	29.58	0.001	0.99	1.68	-5.32	-30.39	-5.67
WTI$	1.22	0.03	39.14	0.001					

Table 111. Backcast Results of Transportation Motor Gasoline Price

Year	Actual Price	Predicted Price	Error	Absolute Error	Absolute Percent Error
1991	14.8	14.5	0.3	0.29	2%
1992	14.1	14.0	0.1	0.13	1%
1993	13.3	13.1	0.2	0.22	2%
1994	13.2	12.6	0.6	0.57	4%
1995	13.4	12.8	0.6	0.56	4%
1996	13.5	13.7	-0.2	0.23	2%
1997	13.3	13.0	0.3	0.30	2%
1998	11.2	11.4	-0.2	0.18	2%
1999	12.2	12.6	-0.4	0.36	3%
2000	15.9	15.3	0.6	0.63	4%
2001	13.9	14.0	-0.1	0.10	1%
2002	12.8	13.9	-1.1	1.09	8%
2003	14.7	15.0	-0.3	0.31	2%
2004	17.0	17.2	-0.2	0.24	1%
2005	19.7	20.4	-0.7	0.70	4%
2006	21.7	22.0	-0.3	0.33	2%
2007	24.3	23.5	0.8	0.85	3%
2008	29.8	29.8	0.0	0.00	0%
Mean				0.39	3%

10.6 **Natural Gas Price Regression Analysis**

Figure 41. New York Residential Natural Gas Price Prices (Constant 2009$/MMBtu)
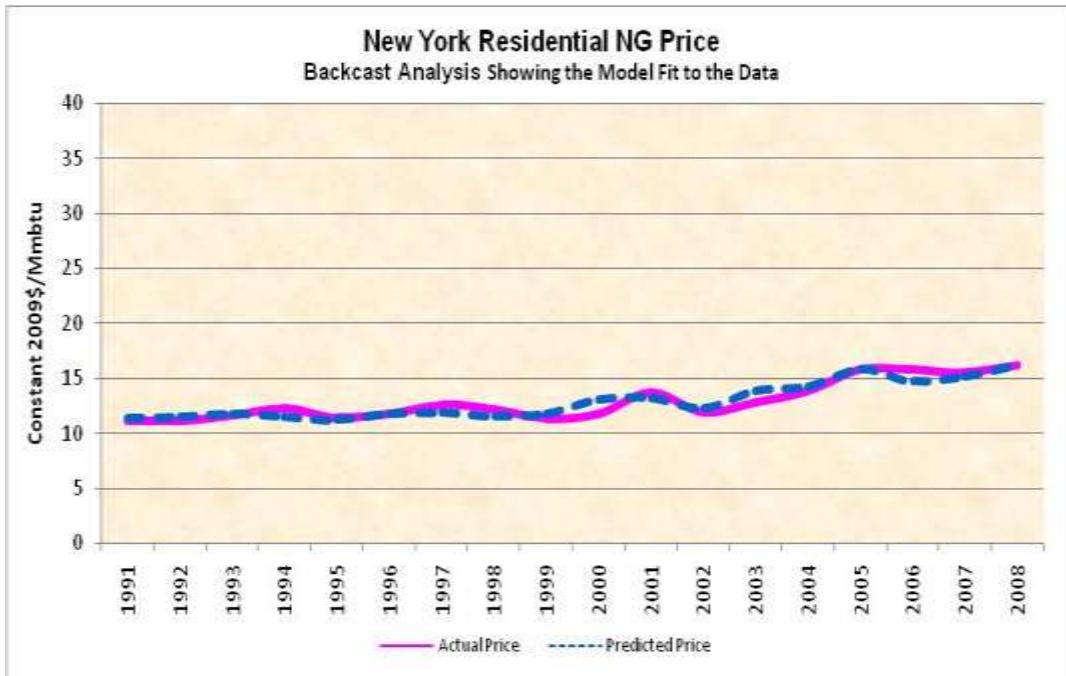
Table 112. Statistical Results of Residential Natural Gas Price

	Coefficients	SE	t Stat	P-value	R Square	DW-Stat	DF-Stat		
							Constant	No-constant	Time-trend
Intercept	9.69	0.33	29.75	0.001	0.89	1.57			
HH$	0.76	0.07	11.14	0.001			-7.12	-53.99	-6.38

Table 113. Backcast Results of Residential Natural Gas Price

Year	Actual Price	Predicted Price	Error	Absolute Error	Absolute Percent Error
1991	11.2	11.5	-0.3	0.26	2%
1992	11.2	11.5	-0.3	0.32	3%
1993	11.7	11.8	-0.1	0.12	1%
1994	12.2	11.6	0.7	0.69	6%
1995	11.4	11.2	0.2	0.21	2%
1996	11.8	11.8	0.0	0.01	0%
1997	12.6	11.9	0.7	0.68	5%
1998	12.2	11.5	0.6	0.65	5%
1999	11.4	11.7	-0.4	0.38	3%
2000	11.8	13.0	-1.2	1.22	10%
2001	13.7	13.2	0.4	0.44	3%
2002	11.9	12.3	-0.4	0.38	3%
2003	12.8	13.8	-1.0	1.00	8%
2004	13.8	14.2	-0.4	0.39	3%
2005	15.8	15.8	0.0	0.01	0%
2006	15.8	14.7	1.0	1.05	7%
2007	15.5	15.1	0.4	0.39	3%
2008	16.2	16.2	0.0	0.01	0%
Mean				0.46	4%

Figure 42. New York Commercial Natural Gas Price Prices (Constant 2009$/MMBtu)
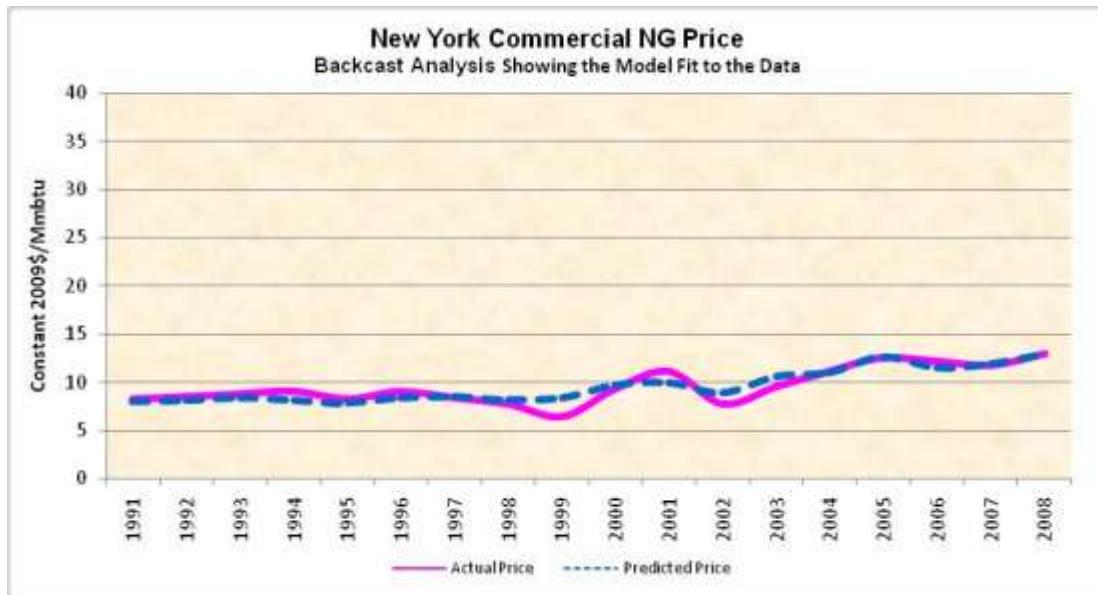
Table 114. Statistical Results of Commercial Natural Gas Price

Statistical Analysis Table									
	Coefficients	SE	t Stat	P-value	R Square	DW-Stat	DF-Stat		
							Constant	No-constant	Time-trend
Intercept	4.13	0.46	9.07	0.001	0.85	1.66			
HH$	0.91	0.10	9.51	0.001			-5.97	-25.39	-6.47

Table 115. Backcast Results of Commercial Natural Gas Price

Year	Actual Price	Predicted Price	Error	Absolute Error	Absolute Percent Error
1991	8.3	8.1	0.3	0.27	3%
1992	8.5	8.1	0.4	0.37	4%
1993	8.8	8.4	0.4	0.42	5%
1994	9.1	8.2	0.9	0.94	10%
1995	8.3	7.8	0.4	0.45	5%
1996	9.1	8.4	0.7	0.67	7%
1997	8.4	8.5	-0.1	0.14	2%
1998	7.7	8.1	-0.4	0.41	5%
1999	6.4	8.3	-1.9	1.94	30%
2000	9.3	9.7	-0.4	0.41	4%
2001	11.2	9.9	1.3	1.26	11%
2002	7.8	8.9	-1.2	1.16	15%
2003	9.5	10.6	-1.0	1.03	11%
2004	11.2	11.0	0.2	0.22	2%
2005	12.5	12.6	-0.1	0.11	1%
2006	12.2	11.5	0.8	0.76	6%
2007	11.8	11.9	-0.2	0.17	1%
2008	13.0	13.0	0.0	0.01	0%
Mean				0.60	7%

Figure 43. New York Industrial Natural Gas Price Prices (Constant 2009$/MMBtu)

Table 116. Statistical Results of Industrial Natural Gas Price

Statistical Analysis Table									
	Coefficients	**SE**	**t Stat**	**P-value**	**R Square**	**DW-Stat**	**DF-Stat**		
							Constant	**No-constant**	**Time-trend**
Intercept	4.13	0.46	9.07	0.001	0.85	0.66	-6.50	-24.87	-6.73
HH$	0.91	0.10	9.51	0.001					

Table 117. Backcast Results of Industrial Natural Gas Price

Year	Actual Price	Predicted Price	Error	Absolute Error	Absolute Percent Error
1991	7.2	6.2	1.0	0.96	13%
1992	7.3	6.3	1.0	0.96	13%
1993	7.4	6.6	0.8	0.76	10%
1994	7.3	6.4	0.9	0.95	13%
1995	6.4	6.0	0.4	0.40	6%
1996	6.7	6.6	0.0	0.02	0%
1997	6.5	6.8	-0.2	0.24	4%
1998	5.1	6.3	-1.2	1.23	24%
1999	4.8	6.6	-1.7	1.72	35%
2000	7.4	8.1	-0.8	0.78	11%
2001	9.0	8.4	0.6	0.61	7%
2002	6.7	7.2	-0.5	0.54	8%
2003	8.1	9.1	-1.0	0.96	12%
2004	8.9	9.6	-0.7	0.65	7%
2005	11.4	11.5	0.0	0.04	0%
2006	10.8	10.1	0.7	0.71	7%
2007	11.4	10.6	0.7	0.71	6%
2008	11.9	11.9	0.1	0.05	0%
Mean				0.68	10%

11 *Appendix D: Model Validation and Analysis of Energy Demand by Sector*

11.1 **Distillate Fuel Demand Regression Analysis**

Figure 44. New York Residential Distillate Demand (TBtu)
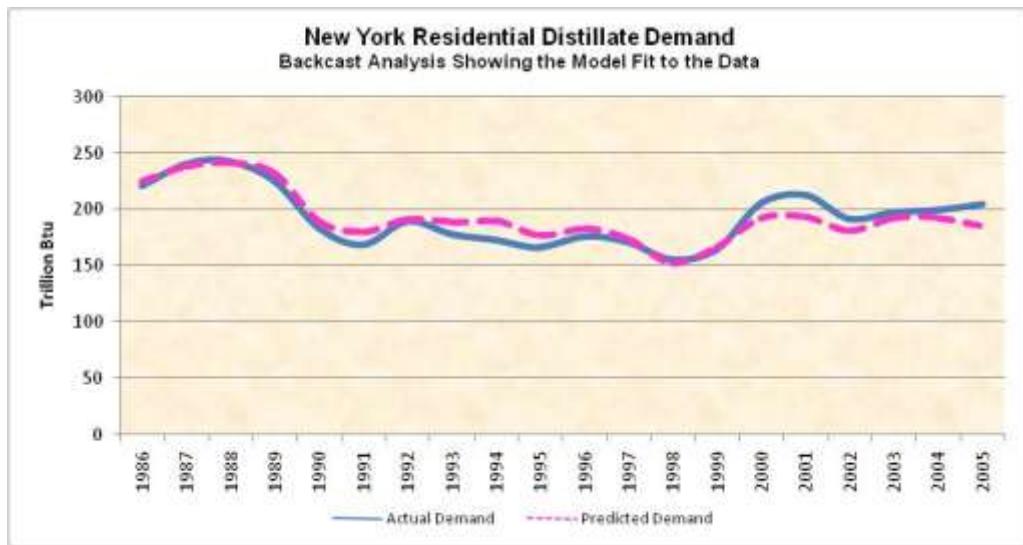
Table 118. Statistical Results of Residential Distillate Demand

Statistical Analysis Table								
	Coefficients	SE	t Stat	P-value	R Square	DW-Stat	DF-Stat		
Intercept	8.89	18.67	0.48	0.640	0.85	0.53	Constant	No-constant	Time-trend
Mid. Atl. Demand	0.47	0.05	9.96	0.001			-8.17	-47.40	-7.24

Table 119. Backcast Results of Residential Distillate Demand

Year	Actual Demand	Predicted Demand	Error	Absolute Error	Absolute Percent Error
1986	221.2	225.0	-3.8	3.82	2%
1987	241.0	238.3	2.7	2.70	1%
1988	242.9	241.8	1.1	1.05	0%
1989	225.3	232.3	-7.0	6.95	3%
1990	183.6	189.5	-5.9	5.87	3%
1991	168.7	180.1	-11.4	11.44	7%
1992	189.6	191.4	-1.8	1.80	1%
1993	178.3	189.0	-10.7	10.72	6%
1994	173.4	189.8	-16.4	16.43	9%
1995	166.7	177.2	-10.5	10.54	6%
1996	176.1	183.2	-7.1	7.09	4%
1997	171.1	174.3	-3.2	3.20	2%
1998	155.2	152.5	2.7	2.71	2%
1999	165.1	167.1	-2.0	2.01	1%
2000	205.2	192.2	13.0	13.03	6%
2001	212.6	193.5	19.1	19.14	9%
2002	191.6	181.3	10.3	10.26	5%
2003	197.2	192.3	4.9	4.94	3%
2004	199.6	192.8	6.8	6.79	3%
2005	204.2	184.9	19.3	19.26	9%
Mean				8.51	5%

Figure 45. New York Commercial Distillate Demand (TBtu)
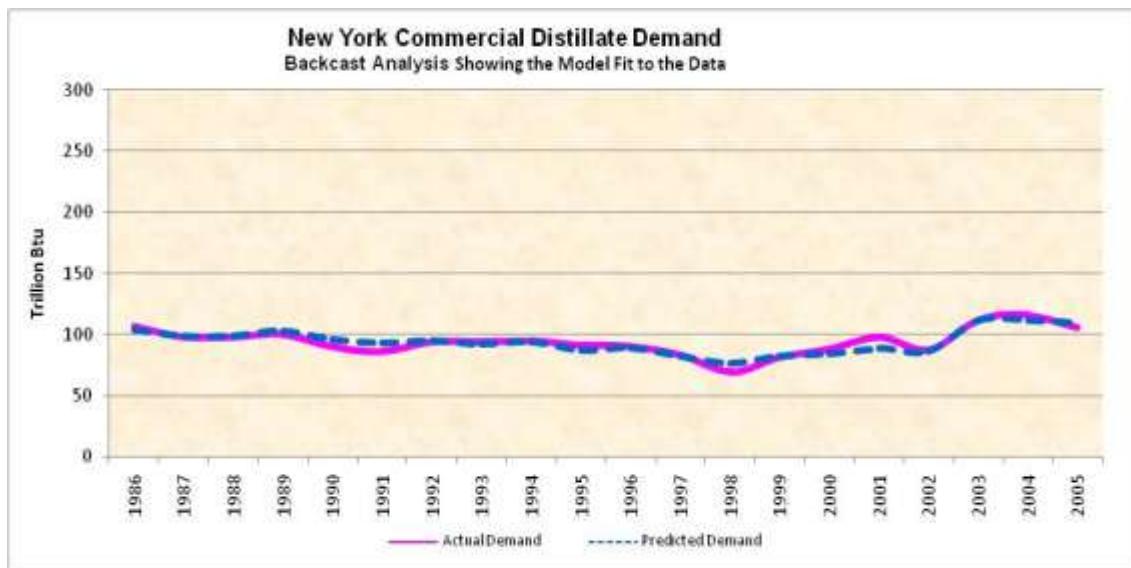
Table 120. Statistical Results of Commercial Distillate Demand

Statistical Analysis Table									
	Coefficients	SE	t Stat	P-value	R Square	DW-Stat	DF-Stat		
							Constant	No-constant	Time-trend
Intercept	42.62	7.09	6.01	0.001					
Dummy	0.30	0.04	6.95	0.001	0.84	1.40			
Mid. Atl. Demand	18.83	2.74	6.86	0.001			-8.17	-47.40	-7.24

Table 121. Backcast Results of Commercial Distillate Demand

Year	Actual Demand	Predicted Demand	Error	Absolute Error	Absolute Percent Error
1986	107.0	103.83	3.17	3.17	3%
1987	98.3	99.04	-0.74	0.74	1%
1988	98.2	99.14	-0.94	0.94	1%
1989	100.2	102.81	-2.61	2.61	3%
1990	89.8	95.61	-5.81	5.81	6%
1991	86.0	92.80	-6.80	6.80	8%
1992	94.1	94.87	-0.77	0.77	1%
1993	94.0	92.52	1.48	1.48	2%
1994	94.6	94.20	0.40	0.40	0%
1995	91.5	87.28	4.22	4.22	5%
1996	90.5	89.23	1.27	1.27	1%
1997	83.5	82.09	1.41	1.41	2%
1998	69.4	76.88	-7.48	7.48	11%
1999	81.2	82.56	-1.36	1.36	2%
2000	88.1	84.57	3.53	3.53	4%
2001	98.2	88.57	9.63	9.63	10%
2002	87.6	86.20	1.40	1.40	2%
2003	111.8	111.37	0.43	0.43	0%
2004	116.0	111.87	4.13	4.13	4%
2005	105.4	109.96	-4.56	4.56	4%
Mean				3.23	4%

Note: A dummy variable is used in forecasting Commercial Distillate Demand to account for the possible misreporting in the data for the years 2003, 2004 and 2005.

Figure 46. New York Industrial Distillate Demand (TBtu)

Table 122. Statistical Results of Industrial Distillate Demand

Statistical Analysis Table								
	Coefficients	SE	t Stat	P-value	R Square	DW-Stat	DF-Stat		
Intercept	29.27	3.21	9.12	0.001	0.31	1.11	Constant	No-constant	Time-trend
Mid. Atl. Demand	-0.02	0.01	-2.83	0.011			-7.38	-36.84	-7.40

Table 123. Backcast Results of Industrial Distillate Demand

Year	Actual Demand	Predicted Demand	Error	Absolute Error	Absolute Percent Error
1986	20.4	22.7	-2.3	2.27	11%
1987	25.7	22.0	3.7	3.69	14%
1988	24.7	21.5	3.2	3.15	13%
1989	24.9	22.0	2.9	2.91	12%
1990	23.7	21.8	1.9	1.87	8%
1991	20.5	22.0	-1.5	1.50	7%
1992	21.1	21.7	-0.6	0.62	3%
1993	25.1	21.3	3.8	3.77	15%
1994	19.9	20.7	-0.8	0.82	4%
1995	17.9	20.8	-2.9	2.90	16%
1996	17.8	20.8	-3.0	2.98	17%
1997	17.0	20.1	-3.1	3.10	18%
1998	17.6	20.0	-2.4	2.39	14%
1999	20.0	19.5	0.5	0.51	3%
2000	19.1	19.3	-0.2	0.20	1%
2001	17.4	18.9	-1.5	1.47	8%
2002	16.8	18.9	-2.1	2.12	13%
2003	17.2	18.4	-1.2	1.21	7%
2004	20.3	16.9	3.4	3.44	17%
2005	19.6	17.4	2.2	2.22	11%
Mean				2.07	10%

Note: A 10-year average is used to forecast Industrial Distillate Demand because of the disconnection between the New York and Mid-Atlantic data series.

Figure 47. New York Transportation Distillate Demand (TBtu)

New York Transportation Distillate Demand
Backcast Analysis Showing the Model Fit to the Data
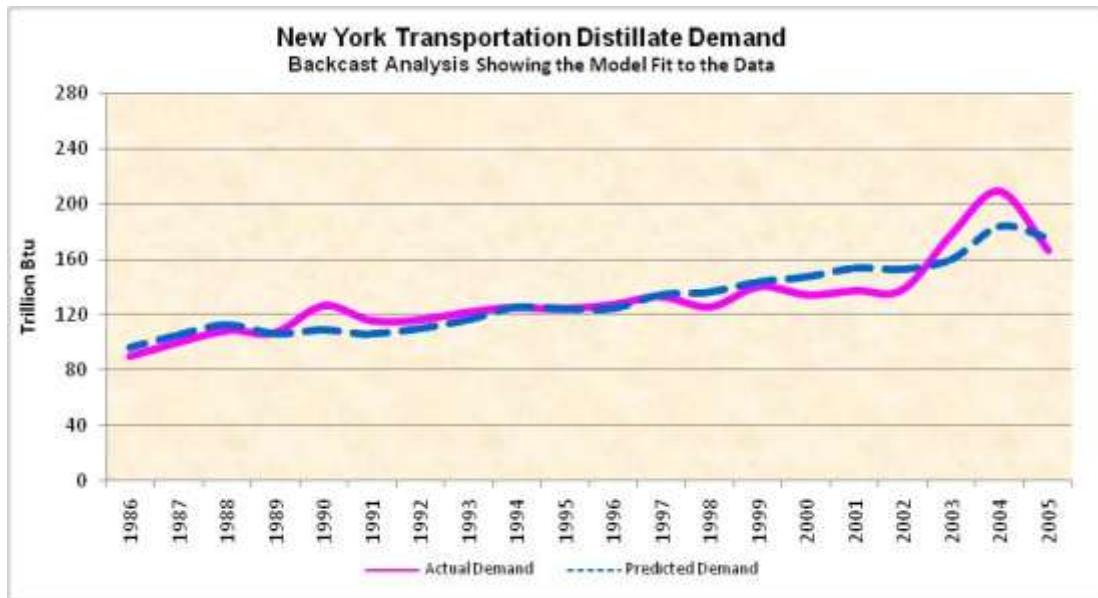
Table 124. Statistical Results of Transportation Distillate Demand

Statistical Analysis Table								
	Coefficients	SE	t Stat	P-value	R Square	DW-Stat	DF-Stat		
							Constant	No-constant	Time-trend
Intercept	-4.21	14.63	-0.29	0.777	0.83	1.26	-8.47	-32.55	-7.12
Mid. Atl. Demand	0.33	0.04	9.40	0.001					

Table 125. Backcast Results of Transportation Distillate Demand

Year	Actual Demand	Predicted Demand	Error	Absolute Error	Absolute Percent Error
1986	89.4	95.7	-6.3	6.33	7%
1987	99.7	105.7	-6.0	5.99	6%
1988	108.4	112.7	-4.3	4.27	4%
1989	106.7	106.1	0.6	0.64	1%
1990	126.4	108.4	18.0	17.96	14%
1991	115.5	105.9	9.6	9.57	8%
1992	115.9	110.1	5.8	5.79	5%
1993	121.9	116.1	5.8	5.84	5%
1994	125.3	125.2	0.1	0.05	0%
1995	124.2	124.0	0.2	0.22	0%
1996	127.1	124.3	2.8	2.84	2%
1997	133.0	134.6	-1.6	1.60	1%
1998	125.6	136.3	-10.7	10.73	9%
1999	140.0	143.8	-3.8	3.80	3%
2000	134.2	146.8	-12.6	12.60	9%
2001	137.0	153.3	-16.3	16.31	12%
2002	137.7	152.5	-14.8	14.82	11%
2003	177.7	160.2	17.5	17.53	10%
2004	209.2	183.7	25.5	25.51	12%
2005	166.3	175.8	-9.5	9.49	6%
Mean				8.87	6%

11.2 **Residual Fuel Demand Regression Analysis**

Figure 48. New York Commercial Residual Demand (TBtu)
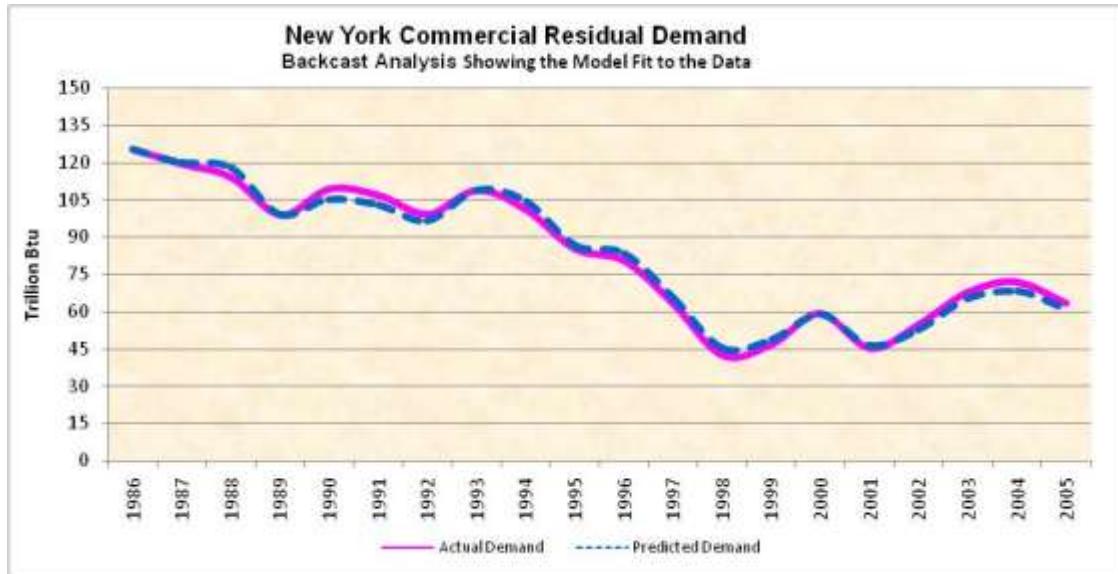
Table 126. Statistical Results of Commercial Residual Demand

Statistical Analysis Table								
	Coefficients	**SE**	**t Stat**	**P-value**	**R Square**	**DW-Stat**	**DF-Stat**	
Intercept	5.25	1.84	2.85	0.011	0.99	0.73	**Constant**	**No-constant**	**Time-trend**
Mid. Atl. Demand	0.81	0.02	44.58	0.001			-12.41	-38.15	-6.71

Table 127. Backcast Results of Commercial Residual Demand

Year	Actual Demand	Predicted Demand	Error	Absolute Error	Absolute Percent Error
1986	125.5	125.4	0.1	0.09	0%
1987	119.4	120.1	-0.7	0.72	1%
1988	114.1	118.0	-3.9	3.87	3%
1989	99.0	99.0	0.0	0.01	0%
1990	109.4	105.2	4.2	4.16	4%
1991	106.9	103.1	3.8	3.83	4%
1992	99.2	96.8	2.4	2.35	2%
1993	108.8	109.0	-0.2	0.16	0%
1994	101.0	104.5	-3.5	3.45	3%
1995	85.2	86.7	-1.5	1.52	2%
1996	80.4	83.5	-3.1	3.07	4%
1997	63.5	65.9	-2.4	2.43	4%
1998	42.5	45.2	-2.7	2.70	6%
1999	46.8	48.8	-2.0	2.05	4%
2000	59.3	58.9	0.4	0.42	1%
2001	45.2	46.3	-1.1	1.14	3%
2002	54.6	52.7	1.9	1.87	3%
2003	67.8	65.2	2.6	2.57	4%
2004	71.9	68.3	3.6	3.58	5%
2005	63.3	61.1	2.2	2.23	4%
Mean				2.30	3%

Figure 49. New York Industrial Residual Demand (TBtu)
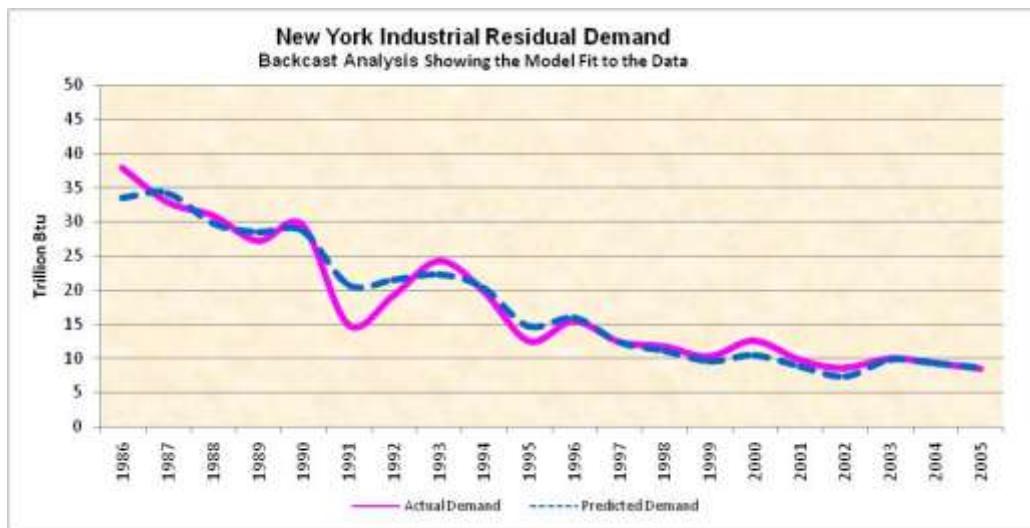
Table 128. Statistical Results of Industrial Residual Demand

Statistical Analysis Table									
	Coefficients	SE	t Stat	P-value	R Square	DW-Stat	DF-Stat		
							Constant	No-constant	Time-trend
Intercept	1.61	1.00	1.61	0.125	0.95	1.76	-11.61	-23.59	-7.68
Mid. Atl. Demand	0.31	0.02	18.47	0.001					

Table 129. Backcast Results of Industrial Residual Demand

Year	Actual Demand	Predicted Demand	Error	Absolute Error	Absolute Percent Error
1986	37.9	33.4	4.5	4.46	12%
1987	32.9	34.2	-1.3	1.32	4%
1988	30.9	29.8	1.1	1.09	4%
1989	27.2	28.5	-1.3	1.34	5%
1990	29.5	28.7	0.8	0.81	3%
1991	14.9	20.8	-5.9	5.88	39%
1992	19.2	21.5	-2.3	2.28	12%
1993	24.3	22.2	2.1	2.07	9%
1994	19.9	20.3	-0.4	0.45	2%
1995	12.5	14.7	-2.2	2.19	18%
1996	15.4	15.9	-0.5	0.50	3%
1997	12.4	12.3	0.1	0.09	1%
1998	11.7	11.1	0.6	0.55	5%
1999	10.2	9.6	0.6	0.56	6%
2000	12.6	10.5	2.1	2.13	17%
2001	9.7	8.8	0.9	0.86	9%
2002	8.6	7.3	1.3	1.26	15%
2003	10.0	9.7	0.3	0.28	3%
2004	9.3	9.2	0.1	0.09	1%
2005	8.4	8.7	-0.3	0.31	4%
Mean				1.26	9%

Figure 50. New York Transportation Residual Demand (TBtu)
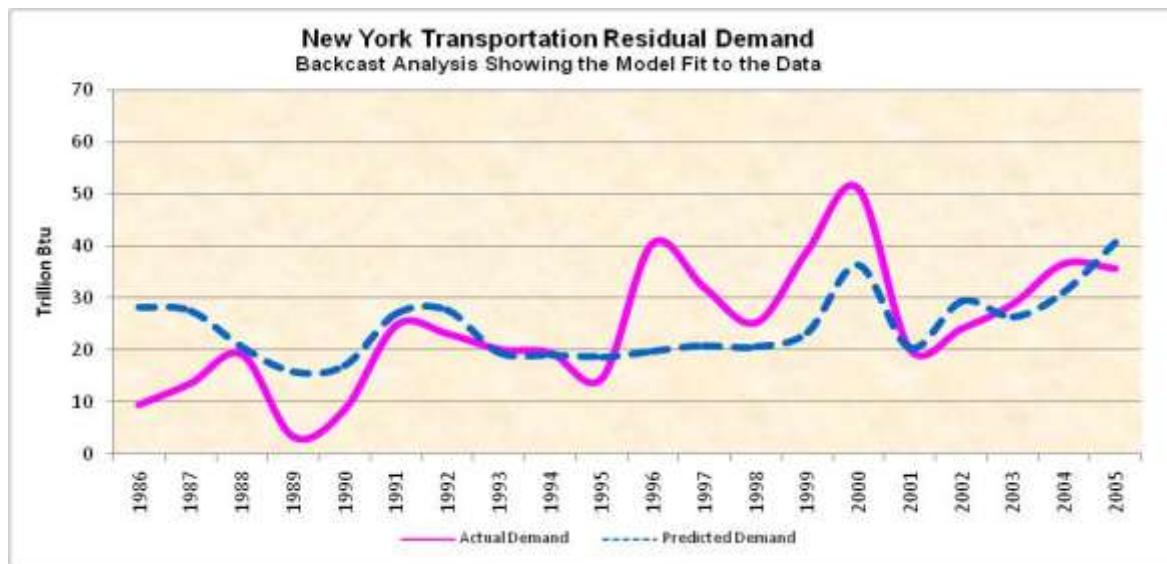
Table 130. Statistical Results of Transportation Residual Demand

Statistical Analysis Table								
	Coefficients	SE	t Stat	P-value	R Square	DW-Stat	DF-Stat		
Intercept	-8.14	12.14	-0.67	0.511	0.29	0.88	Constant	No-constant	Time-trend
Mid. Atl. Demand	0.28	0.10	2.74	0.013			-7.34	-9.96	-7.82

Table 131. Backcast Results of Transportation Residual Demand

Year	Actual Demand	Predicted Demand	Error	Absolute Error	Absolute Percent Error
1986	9.6	28.3	-18.7	18.66	194%
1987	13.7	27.5	-13.8	13.85	101%
1988	19.2	20.6	-1.4	1.38	7%
1989	3.3	15.9	-12.6	12.57	381%
1990	8.5	17.1	-8.6	8.59	101%
1991	24.8	27.0	-2.2	2.16	9%
1992	23.2	27.7	-4.5	4.49	19%
1993	20.2	19.6	0.6	0.60	3%
1994	19.6	19.0	0.6	0.57	3%
1995	14.6	18.7	-4.1	4.13	28%
1996	40.5	19.9	20.6	20.64	51%
1997	32.1	20.9	11.2	11.22	35%
1998	25.3	20.6	4.7	4.75	19%
1999	39.2	23.3	15.9	15.89	41%
2000	51.1	36.3	14.8	14.77	29%
2001	20.2	20.3	-0.1	0.15	1%
2002	24.1	29.4	-5.3	5.29	22%
2003	28.8	26.4	2.4	2.35	8%
2004	36.6	31.2	5.4	5.42	15%
2005	35.7	40.6	-4.9	4.94	14%
Mean				6.66	44%

Note: A 10-year average is used to forecast Transportation Residual Demand because of the disconnection between the New York and Mid-Atlantic data series.

11.3 **LPG Fuel Demand Regression Analysis**

Figure 51. New York Residential LPG Demand (TBtu)
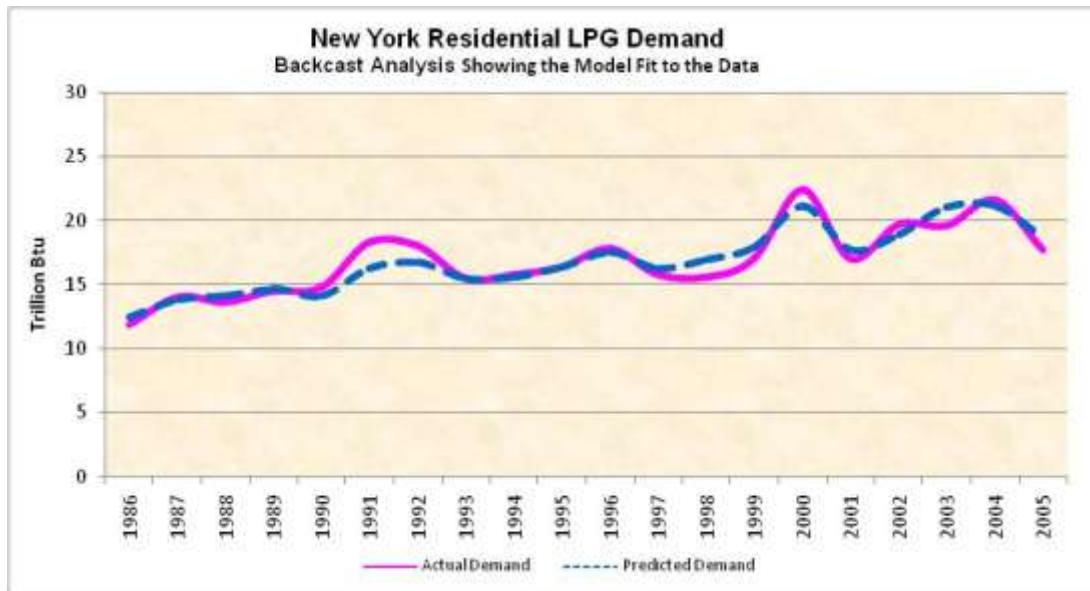
Table 132. Statistical Results of Residential LPG Demand

Statistical Analysis Table								
	Coefficients	SE	t Stat	P-value	R Square	DW-Stat	DF-Stat		
							Constant	No-constant	Time-trend
Intercept	3.83	1.15	3.34	0.004	0.88	1.84	-8.21	-28.92	-8.26
Mid. Atl. Demand	0.38	0.03	11.54	0.001					

Table 133. Backcast Results of Residential LPG Demand

Year	Actual Demand	Predicted Demand	Error	Absolute Error	Absolute Percent Error
1986	11.9	12.5	-0.6	0.59	5%
1987	14.0	13.8	0.2	0.21	2%
1988	13.6	14.1	-0.5	0.51	4%
1989	14.5	14.7	-0.2	0.15	1%
1990	14.8	14.1	0.7	0.66	4%
1991	18.3	16.3	2.0	2.02	11%
1992	18.0	16.7	1.3	1.28	7%
1993	15.5	15.5	0.0	0.03	0%
1994	15.8	15.6	0.2	0.21	1%
1995	16.4	16.4	0.0	0.01	0%
1996	17.8	17.5	0.3	0.31	2%
1997	15.8	16.3	-0.5	0.47	3%
1998	15.6	16.9	-1.3	1.32	8%
1999	17.0	17.9	-0.9	0.94	6%
2000	22.4	21.1	1.3	1.26	6%
2001	17.0	17.8	-0.8	0.75	4%
2002	19.7	18.9	0.8	0.76	4%
2003	19.6	21.0	-1.4	1.41	7%
2004	21.6	21.2	0.4	0.45	2%
2005	17.7	18.7	-1.0	1.04	6%
Mean				0.75	4%

Figure 52. New York Commercial LPG Demand (TBtu)
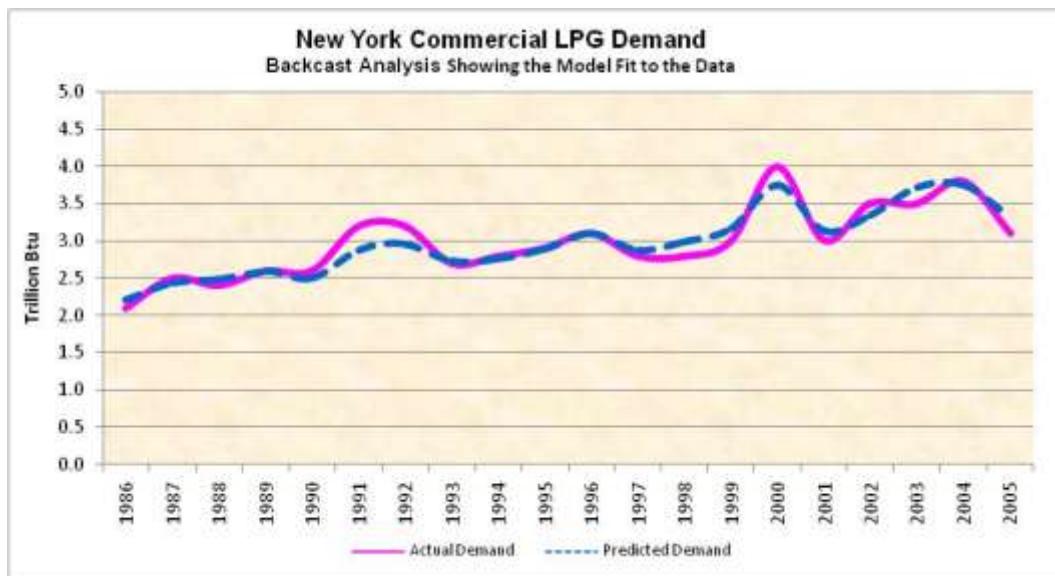
Table 134. Statistical Results of Commercial LPG Demand

Statistical Analysis Table									
	Coefficients	**SE**	**t Stat**	**P-value**	**R Square**	**DW-Stat**	**DF-Stat**		
							Constant	**No-constant**	**Time-trend**
Intercept	0.66	0.20	3.31	0.004	0.89	1.99	-8.21	-28.31	-8.41
Mid. Atl. Demand	0.38	0.03	11.82	0.001					

Table 135. Backcast Results of Commercial LPG Demand

Year	Actual Demand	Predicted Demand	Error	Absolute Error	Absolute Percent Error
1986	2.1	2.2	-0.1	0.10	5%
1987	2.5	2.4	0.1	0.07	3%
1988	2.4	2.5	-0.1	0.09	4%
1989	2.6	2.6	0.0	0.01	0%
1990	2.6	2.5	0.1	0.10	4%
1991	3.2	2.9	0.3	0.32	10%
1992	3.2	3.0	0.2	0.24	8%
1993	2.7	2.7	0.0	0.03	1%
1994	2.8	2.8	0.0	0.04	2%
1995	2.9	2.9	0.0	0.00	0%
1996	3.1	3.1	0.0	0.01	0%
1997	2.8	2.9	-0.1	0.08	3%
1998	2.8	3.0	-0.2	0.19	7%
1999	3.0	3.2	-0.2	0.17	6%
2000	4.0	3.7	0.3	0.26	6%
2001	3.0	3.1	-0.1	0.14	5%
2002	3.5	3.4	0.1	0.15	4%
2003	3.5	3.7	-0.2	0.22	6%
2004	3.8	3.7	0.1	0.05	1%
2005	3.1	3.3	-0.2	0.22	7%
Mean				0.13	4%

Figure 53. New York Industrial LPG Demand (TBtu)

New York Industrial LPG Demand
Backcast Analysis Showing the Model Fit to the Data
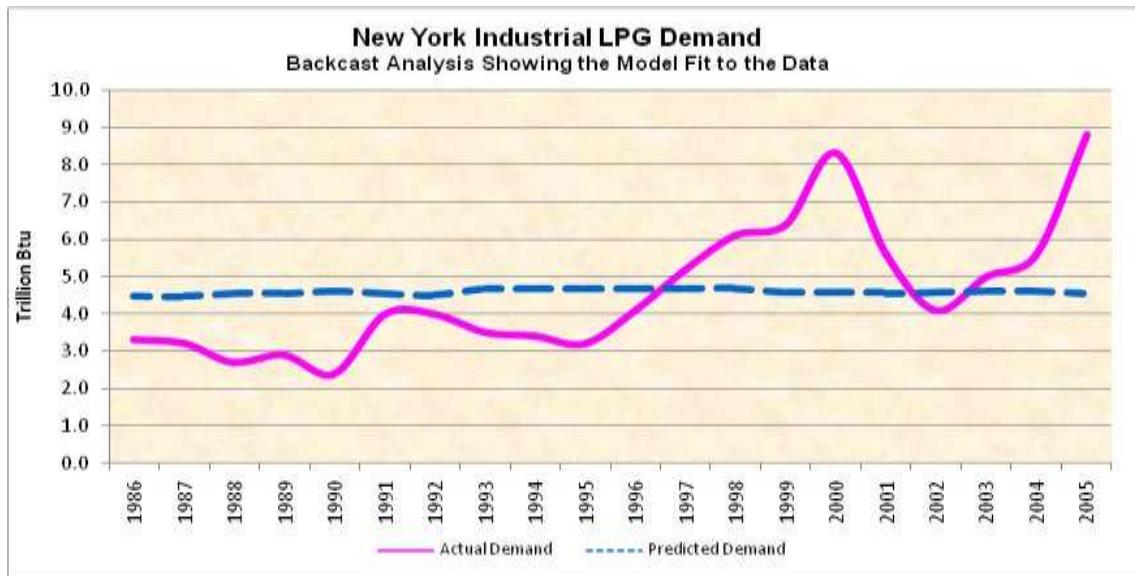
Table 136. Statistical Results of Industrial LPG Demand

	Coefficients	SE	t Stat	P-value	R Square	DW-Stat	DF-Stat		
							Constant	No-constant	Time-trend
Intercept	4.80	1.38	3.46	0.003	0.00	0.53	-5.73	-14.86	-6.25
Mid. Atl. Demand	-0.01	0.05	-0.16	0.878					

Statistical Analysis Table header spans the top of the table.

Table 137. Backcast Results of Industrial LPG Demand

Year	Actual Demand	Predicted Demand	Error	Absolute Error	Absolute Percent Error
1986	3.3	4.5	-1.2	1.19	36%
1987	3.2	4.5	-1.3	1.27	40%
1988	2.7	4.5	-1.8	1.85	68%
1989	2.9	4.6	-1.7	1.65	57%
1990	2.4	4.6	-2.2	2.22	92%
1991	4.0	4.5	-0.5	0.55	14%
1992	4.0	4.5	-0.5	0.51	13%
1993	3.5	4.7	-1.2	1.16	33%
1994	3.4	4.7	-1.3	1.27	37%
1995	3.2	4.7	-1.5	1.47	46%
1996	4.1	4.7	-0.6	0.57	14%
1997	5.2	4.7	0.5	0.54	10%
1998	6.1	4.7	1.4	1.42	23%
1999	6.4	4.6	1.8	1.82	28%
2000	8.3	4.6	3.7	3.72	45%
2001	5.6	4.6	1.0	1.04	19%
2002	4.1	4.6	-0.5	0.47	12%
2003	5.0	4.6	0.4	0.40	8%
2004	5.6	4.6	1.0	1.00	18%
2005	8.8	4.5	4.3	4.25	48%
Mean				1.44	33%

Note: A 10-year average is used to forecast Industrial LPG Demand because of the disconnection between the New York and Mid-Atlantic data series.

11.4 **Kerosene Demand Regression Analysis**

*Figure 54. New York Residential Kerosene Demand (TBtu)*
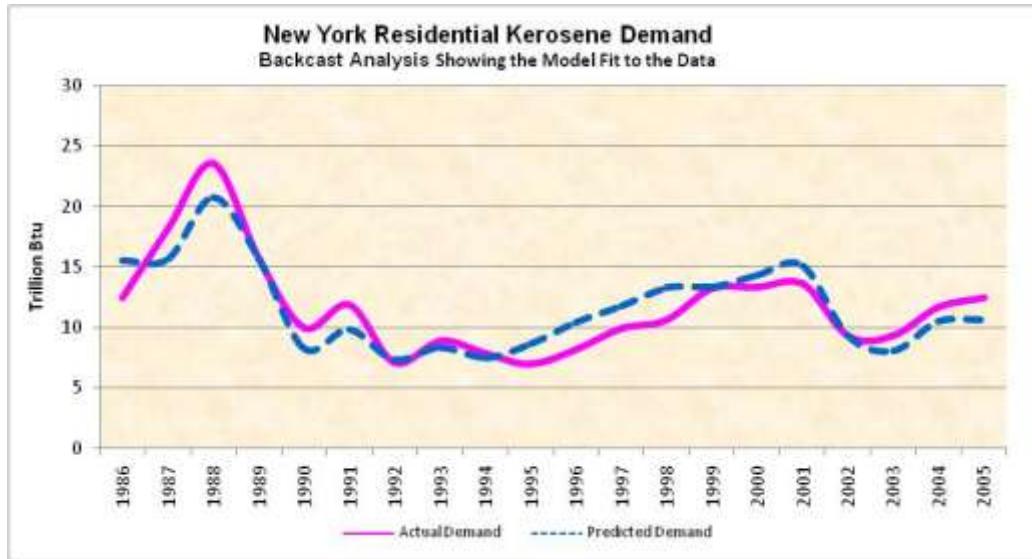
Table 138. Statistical Results of Residential Kerosene Demand

Statistical Analysis Table								
	Coefficients	**SE**	**t Stat**	**P-value**	**R Square**	**DW-Stat**	**DF-Stat**	
							Constant	**No-constant**	**Time-trend**
Intercept	-2.07	1.64	-1.26	0.224	0.81	1.08			
Mid. Atl. Demand	0.53	0.06	8.65	0.001			-7.28	-15.98	-6.82

Table 139. Backcast Results of Residential Kerosene Demand

Year	Actual Demand	Predicted Demand	Error	Absolute Error	Absolute Percent Error
1986	12.5	15.5	-3.0	3.03	24%
1987	18.2	15.7	2.5	2.53	14%
1988	23.6	20.7	2.9	2.85	12%
1989	15.7	15.7	0.0	0.03	0%
1990	10.0	8.3	1.7	1.69	17%
1991	11.9	9.8	2.1	2.09	18%
1992	7.1	7.3	-0.2	0.22	3%
1993	8.9	8.3	0.6	0.57	6%
1994	7.9	7.5	0.4	0.38	5%
1995	7.0	8.6	-1.6	1.62	23%
1996	8.2	10.4	-2.2	2.25	27%
1997	9.9	11.8	-1.9	1.85	19%
1998	10.6	13.3	-2.7	2.67	25%
1999	13.2	13.4	-0.2	0.18	1%
2000	13.3	14.3	-1.0	1.04	8%
2001	13.6	15.1	-1.5	1.50	11%
2002	9.3	9.3	0.0	0.02	0%
2003	9.3	8.1	1.2	1.18	13%
2004	11.7	10.5	1.2	1.20	10%
2005	12.5	10.6	1.9	1.86	15%
Mean				1.29	12%

Figure 55. New York Commercial Kerosene Demand (TBtu)
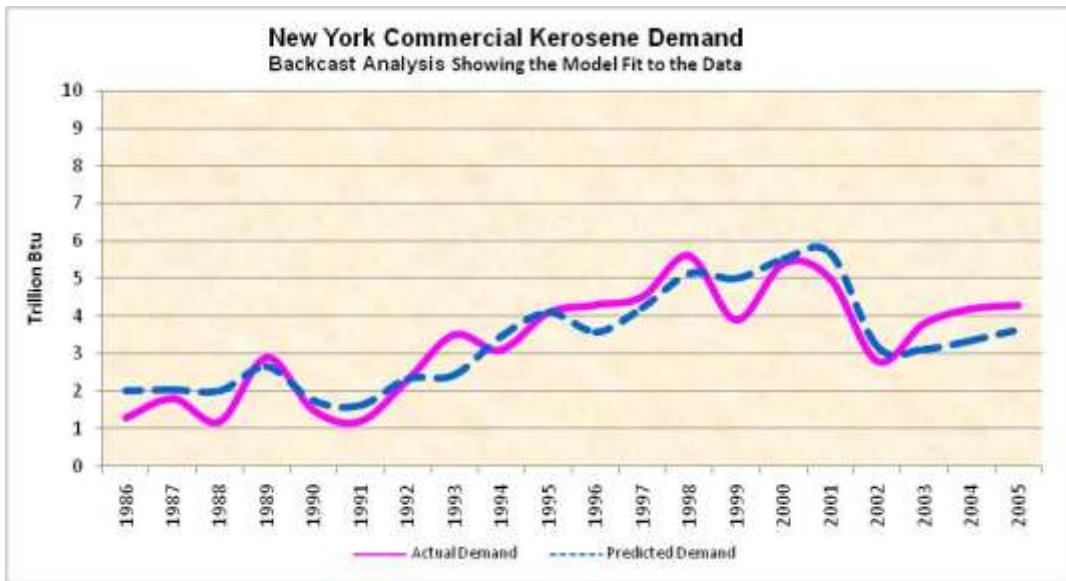
Table 140. Statistical Results of Commercial Kerosene Demand

Statistical Analysis Table									
	Coefficients	SE	t Stat	P-value	R Square	DW-Stat	DF-Stat		
							Constant	No-constant	Time-trend
Intercept	0.57	0.34	1.69	0.109	0.81	1.59	-8.05	-14.24	-6.92
Mid. Atl. Demand	0.34	0.04	8.88	0.001					

Table 141. Backcast Results of Commercial Kerosene Demand

Year	Actual Demand	Predicted Demand	Error	Absolute Error	Absolute Percent Error
1986	1.3	2.0	-0.7	0.69	53%
1987	1.8	2.0	-0.2	0.24	13%
1988	1.2	2.0	-0.8	0.82	68%
1989	2.9	2.6	0.3	0.25	9%
1990	1.5	1.7	-0.2	0.23	16%
1991	1.2	1.6	-0.4	0.41	35%
1992	2.3	2.3	0.0	0.02	1%
1993	3.5	2.4	1.1	1.08	31%
1994	3.1	3.5	-0.4	0.37	12%
1995	4.1	4.1	0.0	0.01	0%
1996	4.3	3.6	0.7	0.71	17%
1997	4.5	4.2	0.3	0.28	6%
1998	5.6	5.1	0.5	0.46	8%
1999	3.9	5.0	-1.1	1.08	28%
2000	5.4	5.5	-0.1	0.12	2%
2001	5.0	5.7	-0.7	0.67	13%
2002	2.8	3.2	-0.4	0.36	13%
2003	3.8	3.1	0.7	0.69	18%
2004	4.2	3.4	0.8	0.85	20%
2005	4.3	3.6	0.7	0.68	16%
Mean				0.51	17%

11.5 **Natural Gas Demand Regression Analysis**

Figure 56. New York Residential Natural Gas Demand (TBtu)
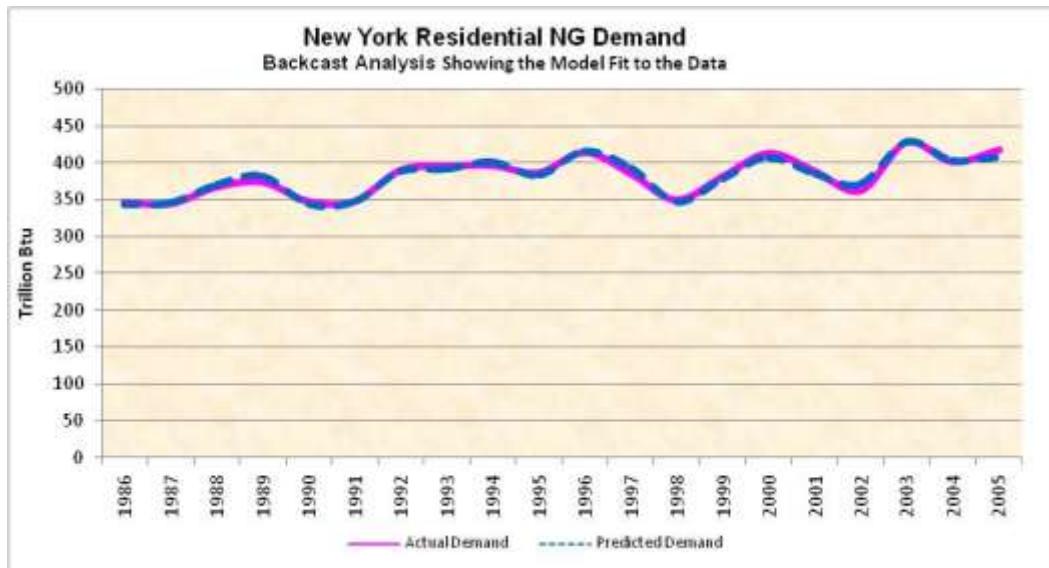
Table 142. Statistical Results of Residential Natural Gas Demand

Statistical Analysis Table									
	Coefficients	SE	t Stat	P-value	R Square	DW-Stat	DF-Stat		
Intercept	-2.89	17.30	-0.17	0.869	0.96	1.92	Constant	No-constant	Time-trend
Mid. Atl. Demand	0.45	0.02	22.27	0.001			-7.22	-58.23	-7.89

Table 143. Backcast Results of Residential Natural Gas Demand

Year	Actual Demand	Predicted Demand	Error	Absolute Error	Absolute Percent Error
1986	345.6	343.8	1.8	1.77	1%
1987	344.3	346.1	-1.8	1.81	1%
1988	367.1	370.2	-3.1	3.14	1%
1989	374.3	381.9	-7.6	7.56	2%
1990	347.7	344.2	3.5	3.49	1%
1991	347.8	347.4	0.4	0.36	0%
1992	389.3	387.4	1.9	1.86	0%
1993	394.8	391.1	3.7	3.70	1%
1994	395.8	401.3	-5.5	5.53	1%
1995	386.2	382.8	3.4	3.38	1%
1996	413.7	416.0	-2.3	2.32	1%
1997	385.5	393.1	-7.6	7.59	2%
1998	349.3	347.0	2.3	2.33	1%
1999	381.1	378.3	2.8	2.79	1%
2000	412.9	406.9	6.0	5.96	1%
2001	388.4	384.9	3.5	3.45	1%
2002	362.9	371.4	-8.5	8.50	2%
2003	428.0	428.9	-0.9	0.86	0%
2004	400.5	402.7	-2.2	2.15	1%
2005	417.4	407.0	10.4	10.38	2%
Mean				4.19	1%

Figure 57. New York Commercial Natural Gas Demand (TBtu)
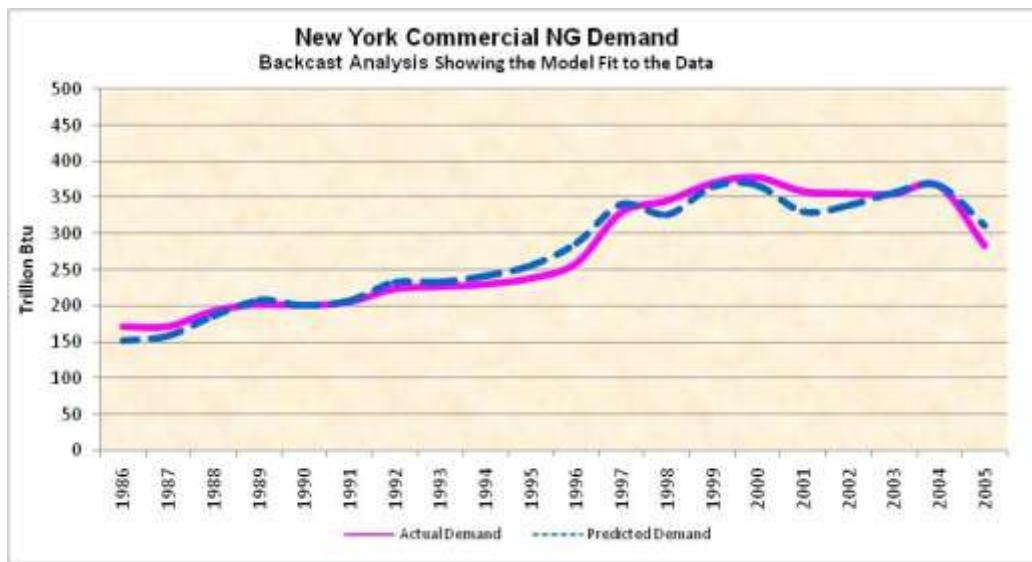
Table 144. Statistical Results of Commercial Natural Gas Demand

Statistical Analysis Table								
	Coefficients	SE	t Stat	P-value	R Square	DW-Stat	DF-Stat		
							Constant	No-constant	Time-trend
Intercept	-108.05	19.13	-5.65	0.001	0.96	0.76			
Mid. Atl. Demand	0.69	0.03	20.28	0.001			-13.49	-43.15	-3.90

Table 145. Backcast Results of Commercial Natural Gas Demand

Year	Actual Demand	Predicted Demand	Error	Absolute Error	Absolute Percent Error
1986	171.9	151.6	20.3	20.32	12%
1987	172.1	157.9	14.2	14.19	8%
1988	193.2	186.3	6.9	6.95	4%
1989	201.6	207.3	-5.7	5.74	3%
1990	200.6	200.3	0.3	0.29	0%
1991	204.9	206.8	-1.9	1.93	1%
1992	223.3	232.7	-9.4	9.37	4%
1993	226.8	233.3	-6.5	6.50	3%
1994	229.3	242.1	-12.8	12.76	6%
1995	238.3	256.1	-17.8	17.82	7%
1996	259.6	286.8	-27.2	27.18	10%
1997	329.3	339.9	-10.6	10.64	3%
1998	345.1	326.0	19.1	19.06	6%
1999	370.3	364.5	5.8	5.84	2%
2000	377.4	366.7	10.7	10.74	3%
2001	358.6	330.3	28.3	28.33	8%
2002	355.6	338.8	16.8	16.84	5%
2003	354.6	357.4	-2.8	2.75	1%
2004	366.1	366.4	-0.3	0.29	0%
2005	283.4	311.0	-27.6	27.56	10%
Mean				11.70	4%

Figure 58. New York Industrial Natural Gas Demand (TBtu)
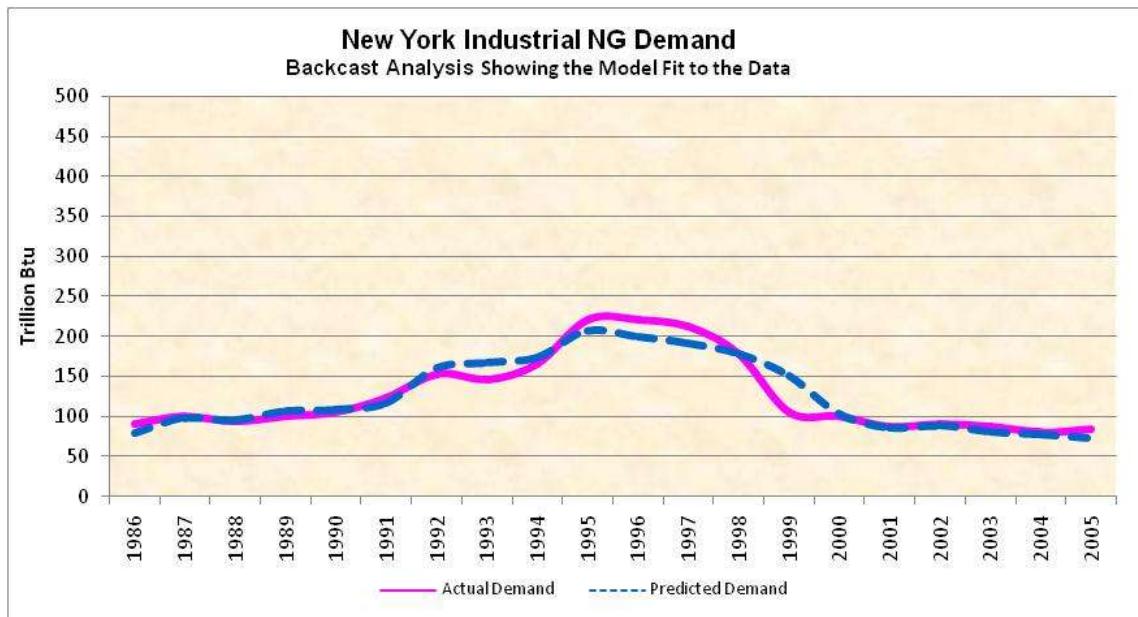
Table 146. Statistical Results of Industrial Natural Gas Demand

Statistical Analysis Table								
	Coefficients	SE	t Stat	P-value	R Square	DW-Stat	DF-Stat		
							Constant	No-constant	Time-trend
Intercept	-68.71	15.06	-4.56	0.001	0.91	1.39			
Mid. Atl. Demand	0.40	0.03	13.35	0.001			-9.17	-24.18	-9.46

Table 147. Backcast Results of Industrial Natural Gas Demand

Year	Actual Demand	Predicted Demand	Error	Absolute Error	Absolute Percent Error
1986	90.0	79.8	10.2	10.19	11%
1987	99.9	98.1	1.8	1.80	2%
1988	94.2	95.6	-1.4	1.35	1%
1989	100.0	106.8	-6.8	6.79	7%
1990	105.1	108.5	-3.4	3.42	3%
1991	123.2	116.9	6.3	6.35	5%
1992	152.7	160.7	-8.0	8.00	5%
1993	146.3	167.4	-21.1	21.08	14%
1994	166.1	173.6	-7.5	7.46	4%
1995	220.9	207.4	13.5	13.54	6%
1996	221.2	199.5	21.7	21.72	10%
1997	212.0	192.1	19.9	19.90	9%
1998	177.7	178.0	-0.3	0.35	0%
1999	105.1	150.4	-45.3	45.27	43%
2000	100.2	103.3	-3.1	3.09	3%
2001	87.8	86.1	1.7	1.69	2%
2002	91.4	89.0	2.4	2.36	3%
2003	87.3	81.0	6.3	6.28	7%
2004	80.5	78.0	2.5	2.49	3%
2005	83.7	73.2	10.5	10.48	13%
Mean				10.09	8%