BEFORE THE
NEW YORK STATE
PUBLIC SERVICE COMMISSION

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Proceeding on Motion of the Commission as to the
Rates, Charges, Rules and Regulations of
New York State Electric & Gas Corporation
for Electric Service — Case 19-E- ____

Proceeding on Motion of the Commission as to the
Rates, Charges, Rules and Regulations of
New York State Electric & Gas Corporation
for Gas Service — Case 19-G- ____

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DIRECT TESTIMONY OF DELIVERIES AND REVENUES / REVENUE DECOUPLING MECHANISM PANEL

(NEW YORK STATE ELECTRIC & GAS CORPORATION)

Margaret A. George
David L. Houlihan
Michael J. Purtell
Laura J. Wakefield
Shari M. Wells

May 20, 2019

DIRECT TESTIMONY OF NYSEG DELIVERIES AND REVENUES / REVENUE DECOUPLING MECHANISM PANEL

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DIRECT TESTIMONY OF NYSEG DELIVERIES AND REVENUES / REVENUE DECOUPLING MECHANISM PANEL

I. INTRODUCTION

Q. Please state the names of the members on this New York State Electric & Gas Corporation Deliveries and Revenues / Revenue Decoupling Mechanism Panel ("Panel").

A. We are Margaret A. George, David L. Houlihan, Michael J. Purtell, Laura J. Wakefield, and Shari M. Wells.

Q. Ms. George, please state your title and business address.

A. I am a Lead Analyst - Sales and Load Forecasting in the Rates and Regulatory Economics Department. My business address is 18 Link Drive, Binghamton, New York 13902.

Q. Please summarize your work experience and educational background.

A. My Curriculum Vitae ("CV") is set forth in Exhibit __ (NYSEGDRRDMP-1).

Q. Have you previously testified in other proceedings before the New York State Public Service Commission ("PSC" or the "Commission") or any other state or federal regulatory agency?

A. Yes. I testified in the most recent cases for New York State Electric & Gas Corporation ("NYSEG" or the "Company") and Rochester Gas and Electric Corporation ("RG&E" and together with NYSEG, the "Companies"), Cases 15-E-0283 et al. (the "2015 Rate Case").

Q. Mr. Houlihan, please state your title and business address.

A. I am a Lead Analyst in the Rates and Regulatory Economics Department. My business address is 18 Link Drive, Binghamton, New York 13902.

DIRECT TESTIMONY OF NYSEG DELIVERIES AND REVENUES / REVENUE DECOUPLING MECHANISM PANEL

Q. Please summarize your work experience and educational background.

A. My CV is set forth in Exhibit __ (NYSEGDRRDMP-1).

Q. Have you previously testified in other proceedings before the Commission or any other state or federal regulatory agency?

A. Yes. I testified in the 2015 Rate Case.

Q. Mr. Purtell, please state your title and business address.

A. I am the Manager of Sales and Load Forecasting in the Rates and Regulatory Economics Department. My business address is 18 Link Drive, Binghamton, New York 13902.

Q. Please summarize your educational background and work experience.

A. My CV is set forth in Exhibit __ (NYSEGDRRDMP-1).

Q. Have you previously testified in other proceedings before the Commission or any other state or federal regulatory agency?

A. Yes. I testified in Cases 03-E-0765 et al., 05-E-1222, 09-E-0715 et al., as well as the 2015 Rate Case. In addition, I was a witness for Central Maine Power Company in Dockets No. 2013-00168 and 2018-00194 and I was a witness for Maine Natural Gas in Docket No. 2015-00005 before the Maine Public Utilities Commission.

Q. Ms. Wakefield, please state your title and business address.

A. I am a Lead Analyst in the Rates and Regulatory Economics Department. My business address is 18 Link Drive, Binghamton, New York 13902.

Q. Please summarize your work experience and educational background.

A. My CV is set forth in Exhibit __ (NYSEGDRRDMP-1).

DIRECT TESTIMONY OF NYSEG DELIVERIES AND REVENUES / REVENUE DECOUPLING MECHANISM PANEL

Q. Have you previously testified in other proceedings before the Commission or any other state or federal regulatory agency?

A. No.

Q. Ms. Wells, please state your title and business address.

A. I am a Lead Analyst in the Rates and Regulatory Economics Department. My business address is 18 Link Drive, Binghamton, New York 13904.

Q. Please summarize your work experience and educational background.

A. My CV is set forth in Exhibit __ (NYSEGDRRDMP-1).

Q. Have you previously testified in other proceedings before the Commission or any other state or federal regulatory agency?

A. Yes. I testified before the Commission in Cases 09-G-0716 and the 2015 Rate Case.

Q. What is the overall purpose of the Panel's testimony?

A. The Panel discusses five topics in our testimony. First, we will present NYSEG's forecast of monthly electric deliveries and customers for the period April 1, 2020 through March 31, 2021 (the "Rate Year"). The second topic of our testimony is electric revenues. Specifically, the Panel will present the electric delivery revenue forecast for the Rate Year based on currently effective base delivery rates, establish a link between the historical Test Year (i.e., the twelve months ending December 31, 2018) and the Rate Year (i.e., the twelve months ending March 31, 2021), and explain the revenue adjustments. Third, the Panel will present the Company's forecast of monthly natural gas deliveries and customers for the Rate Year. The fourth topic of our testimony is natural gas revenues. Specifically, we will present the natural gas delivery revenue forecast for

the Rate Year based on currently effective delivery rates, establish a link between the Test Year and the Rate Year, and explain the revenue adjustments. Additionally, the Panel will discuss the Company's electric and gas Revenue Decoupling Mechanisms ("RDMs") and Gas Enhancement Performance Incentive.

Q. Please summarize how the current economic conditions have affected NYSEG's deliveries.

A. The territories NYSEG serves have, in general, rebounded from the 2008 recession. Annual Electric Deliveries, weather-normalized, in 2018 were 15.7 GWhs. Deliveries did not recover to 2008 levels until 2013. Based on Moody's Analytics' projection for Total Upstate Real Gross State Product, the Upstate New York economy will grow modestly over the next decade. The Electric Deliveries forecast also reflects the positive impact of State Policy goals on expanding energy efficiency, reducing customer demand and growing Distributed Energy Resources ("DER"). Due to overall energy efficiency improvements and customer behind the meter photovoltaic ("PV") installations, Electric Deliveries are forecasted to decrease slightly over the next few years.

II. IDENTIFICATION AND SUMMARY OF EXHIBITS

Q. Is this Panel sponsoring any exhibits?

A. Yes. This Panel sponsors the following exhibits:

1) Exhibit __ (NYSEGDRRDMP-1) contains the CVs of the Panel witnesses;
2) Exhibit __ (NYSEGDRRDMP-2) includes a table showing historical Test Year sales by Account Determination ID ("AD ID") as well as the Panel's forecast for the Rate Year;

3) Exhibit __ (NYSEGDRRDMP-3) illustrates NYSEG's electric customer and deliveries forecasts. The deliveries and customer schedules include both, actual and weather normalized, historical billed deliveries data from January 1, 2017 through December 31, 2018, and forecasted data from January 1, 2019 through March 31, 2021. Forecasted adjustments based on NYSEG's Energy Efficiency Transition and Implementation Plans ("ETIP") targets, and adjustments for forecasted Net Metered ("NM") PV interconnections are in this exhibit. The exhibit also includes a chart with historical and forecasted PV interconnections;

4) Exhibit __ (NYSEGDRRDMP-4) shows the electric model specifications and the results of NYSEG's validation tests of the models used to develop the forecasts of monthly electric deliveries and customers;

5) Exhibit __ (NYSEGDRRDMP-5) presents historical electric delivery revenue data for 2016, 2017, and the Test Year, and projected electric delivery revenue data for the Rate Year at current rates;

6) Exhibit __ (NYSEGDRRDMP-6) provides information about the Company's Electric RDM;

7) Exhibit __ (NYSEGDRRDMP-7) illustrates NYSEG's natural gas customer and deliveries forecasts. The deliveries and customer schedules include both, actual and weather normalized, historical billed deliveries data from January 1, 2016 through December 31, 2018, forecasted data from January 1, 2019 through March 31, 2021, and forecasted adjustments based on ETIP targets;

8) Exhibit __ (NYSEGDRRDMP-8) shows the natural gas model specifications and the results of NYSEG's validation tests of the models used to develop the forecasts of monthly gas deliveries and customers;

9) Exhibit __ (NYSEGDRRDMP-9) presents historical gas delivery revenue data for 2016, 2017, and the Test Year, and projected natural gas delivery revenue data for the Rate Year at current rates;

10) Exhibit __ (NYSEGDRRDMP-10) sets out NYSEG's Gas RDM; and

11) Exhibit __ (NYSEGDRRDMP-11) provides an index of the Panel's workpapers. A copy of the workpapers will be provided to the New York State Department of Public Service Staff ("Staff").

Q. Please summarize the historical Test Year sales by AD ID as well as the Panel's forecast for the Rate Year.

A. Exhibit __ (NYSEGDRRDMP-2) shows NYSEG's electric billed deliveries (MWh) and electric customers by AD ID for the Test Year and Rate Year.

III. ELECTRIC DELIVERIES AND CUSTOMERS

A. Electric Deliveries Forecast

Q. How did the Panel forecast monthly electric billed deliveries?

A. We used an econometric modeling methodology to estimate the relationship between certain explanatory, or independent, variables and the dependent variable, which, in this case, is the monthly billed electric deliveries by customer class. We examined various functional forms of the models, including linear, log-linear, semi-log linear, and log-log. The log-log form of the models produced the best model results. Best model results were

selected by evaluating the fit of the sample as determined by the model's summary statistics, and also the ability of the model to forecast well as demonstrated in ex-post testing.

Q. What is econometric modeling?

A. Econometric modeling applies statistical techniques, such as linear regression, to estimate the relationship between certain explanatory, or independent variables, and the dependent variable, which, in this case, is monthly deliveries data. An econometric model, also known as a linear regression model, is an estimate of a best-fit line between one dependent variable and one or more explanatory variables. The term "best-fit" refers to the line with the lowest sum of squared errors.

Q. Has NYSEG employed such a methodology for electric deliveries forecasting in previous rate cases?

A. Yes. NYSEG most recently used econometric modeling for electric deliveries forecasting in the 2015 Rate Case.

Q. Did the Panel use the same econometric models for this case?

A. The general underlying assumptions with respect to the model specifications are the same with the following exceptions. In the commercial deliveries model, Commercial Customers was used in place of Upstate Population. In the industrial model, Real Gross Domestic Product-Manufacturing was used in place of Real Gross Domestic Product. Additionally, in the industrial model, the use of the number of Manufacturing Employees was eliminated. In the municipal model, Real Disposable Income was used in place of

Residential Customers per month. NYSEG made these changes because these variables proved to be more statistically significant.

Q. How did the Panel develop the econometric models?

A. We used a computer program called MetrixND to develop the econometric models. Itron, Inc. created this forecasting software specifically for utilities. More than 100 utilities and independent system operators use this software, including the New York Independent System Operator ("NYISO").

Q. Did the Panel make any out of model adjustments to the residential, commercial, industrial, and municipal deliveries forecasts?

A. Yes. An out of model adjustment was made to the econometric forecasts to account for factors that have an effect on projected sales which cannot be adequately accounted for within the econometric model. Out of model adjustments were made to account for NYSEG's ETIPs in the residential, commercial, industrial, and municipal deliveries forecasts. Because the expected decrease to load due to incremental ETIPs impacts is not reflected in the historical data used in our econometric models, it was necessary to make out of model adjustments to the forecasted residential, commercial, industrial, and municipal load.

Q. How did the Panel calculate the ETIP out of model adjustments?

A. NYSEG based the total out of model adjustments for ETIP in years 2019 and 2020 on the "System Energy Efficiency Plan" filed February 19, 2019 in Cases 18-M-0084 and 15-M-0252 ("SEEP"). The SEEP identified annual megawatt-hour reduction targets of 83,311 for 2019 and 89,262 for 2020. For years beyond 2020, we obtained estimates

from the NYSEG/RG&E Energy Efficiency group. The Energy Efficiency group also provided allocations of the targets by residential, commercial, industrial, and municipal revenue classes. A summary of the annual out of model adjustments by revenue class for years 2019 to 2021 can be found in Exhibit __ (NYSEGDRRDMP-3). The annual targets were then allocated on a monthly basis according to each revenue class's monthly load shape.

Q. Did the Panel make any other out of model adjustments to the residential, commercial, industrial, and municipal deliveries forecasts?

A. Yes. Out of model adjustments were made to account for the impact of new installations of customer-owned PV systems in the residential, commercial, and municipal deliveries forecasts. These installations operate "behind the meter" and reduce the deliveries to these customers. The impact of new PV installations is not captured in our econometric models, and thus, it is necessary to make out of model adjustments.

Q. Please explain how the Panel calculated the out of model adjustment for customer-owned PV systems.

A. First, the Panel developed a monthly megawatt capacity forecast of new installations beginning in January of 2019. The forecast included the following types of PV installations: NM, Community Distributed Generation ("CDG") and Remote Net Meter ("RNM"). For each of these categories, we considered current pending interconnection applications, recent historical rate of interconnections and 100% paid-up pending applications. While not all pending applications become interconnected, for purposes of the forecast, NYSEG assumed that all 100% paid-up applications would be

interconnected in 2019. We also used forecasts by the NYISO's 2018 Load and Capacity Data Report (p. 24) for years beyond the horizon of our current interconnection applications and established a "glide path" to meet NYSEG's share. Exhibit __ (NYSEGDRRDMP-3) includes a chart and summary of actual and forecasted PV interconnections for 2012 to 2030. After establishing the monthly capacity forecast, we converted that forecast to monthly megawatt hour output with software obtained from the National Renewable Energy Laboratory ("NREL"), using Binghamton, New York as a proxy location.

Q. How does each of the types of PV installations affect billed deliveries?

A. For NM PV installations, the output will reduce load on the customer meter and thus reduce billed kilowatt hour ("kWh") amounts to the customer. As a result, an out of model adjustment is required. For CDG and RNM PV installations, customers receive financial adjustments. Therefore, NYSEG did not include these type installations in the out of model adjustments.

Q. How did the Panel allocate the out of model adjustments to the residential, commercial, industrial, and municipal revenue classes?

A. The NYSEG/RG&E Interconnection Queue database identifies NM PV installations by residential and non-residential. We allocated residential NM PV installations to the residential class. Additionally, we allocated the non-residential NM PV installations 80% commercial and 20% municipal. The Company made no allocations to the industrial class. Monthly details of the out of model adjustments for PV are in Exhibit __ (NYSEGDRRDMP-3).

Q. What types of explanatory variables did the Panel use?

A. We used five categories of explanatory variables: economic variables; price variables; weather variables; binary variables (also known as "dummy variables"); and a demographic variable.

Q. Why did the Panel use these five categories of explanatory variables?

A. Our general underlying assumption was that monthly electric deliveries are a function of these types of variables. In our experience, we have found that these variables can explain and estimate commercial, industrial, and municipal electric sales forecasts.

Q. How much historical data was used in the database?

A. We used monthly historical data from January 1980 through December 2018 for each of the major deliveries class econometric models. This historical time period allowed for sufficient degrees of freedom and efficient estimates of econometric model coefficients. The use of monthly data also improves model stability, and more properly estimates the seasonal impact of sales. For the street lighting class, monthly historical data from January 2000 to December 2018 was used. For the Interdepartmental and Borderline classes, the last 12 months of actual usage was used as the forecast.

Q. Please describe the economic variables category.

A. This category represents the fiscal health of the economy of the Upstate New York area. Among the economic variables used by NYSEG are variables for Income and Upstate New York Manufacturing and Non-Manufacturing Gross Domestic Product ("GDP").

Q. How did the Panel obtain the economic variable data?

A. Moody's Analytics provided all the data.

Q. What is Moody's Analytics?

A. Moody's Analytics (formerly known as Moodys-Economy.com) is a nationally recognized independent provider of economic analysis, data, and forecasting services. It has over 500 clients in 50 countries, including governments at all levels, utilities, commercial and investment banks, insurance companies, financial services firms, manufacturers, money managers, and industrial and technology constituents. Among its vast clientele are the major New York utilities, the NYISO, ISO New England, Inc., and numerous federal governmental bodies.

Q. When were the economic forecasts provided by Moody's Analytics that were used to prepare the Company's electric deliveries forecasts released?

A. We used January 2019 forecasts from Moody's Analytics.

Q. What are price variables?

A. Price variables are electric prices. The electric prices used by this Panel are the actual average retail sales prices (sales revenues divided by sales units) for each customer class during the period January 1980 through December 2018, adjusted by specific price indices or deflators. In particular, electric prices are deflated by the Consumer Price Index for the residential class, adjusted by the GDP implicit price deflator for the commercial and municipal classes, and the Producer Price Index for the industrial class.

Q. What are weather variables?

A. Weather variables measure monthly heating and cooling degree days, and variations from normal monthly heating and cooling degree days. The term "normal degree days" is defined as a rolling 10-year normal (2009-2018) of degree days ending with the last

complete calendar year of actual data. Using a 10-year normal weather period is consistent with the U.S. Department of Energy's Energy Information Administration ("EIA") which now uses a 10-year average to define normal weather for forecasting purposes. The same approach is reflected in the Commission's Order Adopting Recommended Decision with Modifications, issued June 22, 2009 in Central Hudson's Cases 08-E-0887 et al., as well as the Companies' Joint Proposal adopted in the Order Establishing Rate Plan issued September 21, 2010 in Cases 09-E-0715 et al. (the "2010 Rate Order") and the Joint Proposal adopted in the June 15, 2016 Order Approving Electric and Gas Rate Plans in Accord with Joint Proposal in the 2015 Rate Case ("2016 Rate Order").

Q. How did the Panel obtain the weather variables?

A. Heating and cooling degree days were obtained from the National Weather Service for the Binghamton, Buffalo, Syracuse, Albany, and Burlington, Vermont weather stations. A composite weather variable was constructed by using a weighted average that reflects billed deliveries in each area.

Q. Did the Panel use any other form of weather variable?

A. Yes. In the residential model, a trended weather variable was created using the Billing Month Cooling Degree Day variations from normal weather and a yearly trend variable.

Q. What is the purpose of using this trended weather variable?

A. This trended weather variable was used in the model to represent the increasing use of electric air conditioning by NYSEG's residential customers. This variable was calculated

by multiplying the Billing Month Cooling Degree Day variations from normal weather by an integer that increased by one every fourth year.

Q. What are binary variables?

A. Binary variables take a value of "1" when a condition is present and assume a value of "0" when the condition is not present. For example, a variable called "January" takes a value of "1" in January and "0" in any other month. Binary variables are merely shape variables and do not represent any underlying trends. Monthly binary variables were used in the models to reflect the seasonality of billed electric deliveries.

Q. Did the Panel use any other types of binary variables?

A. Yes. In the commercial model, we used specific year-month binary variables for the months of March 2006 and April 2006 to correct for a billing issue between those two months. The industrial model included two binary variables to correct for apparent billing issues occurring in March 2006 and April 2006. Similarly, the municipal model included binary variables for March 2006 and April 2006, and April 2007 and May 2007 to also correct for billing issues occurring in those months. Additionally, 13 specific year-month binary variables, from the period between October 2003 and April 2014, were used in the street lighting model to correct for anomalous data points resulting from apparent billing issues.

Q. What demographic variables did the Panel use?

A. The residential model used one demographic variable: the number of Residential Customers per month. The commercial model used the number of Commercial Customers per month.

Q. Please identify the explanatory variables that the Panel used from these five categories to develop the total electric deliveries forecast for the residential class.

A. We used variables representing the number of residential customers, Upstate New York Real Disposable Personal Income, Real Residential Price, Billing Month Heating-Degree Day variations from normal weather, trended Cooling Degree Day variations from normal weather, monthly binary variables, and the number of billing days in the month. Our dataset consisted of monthly historical data from January 1980 through December 2018.

Q. What is the average annualized growth rate for the residential class total deliveries for the forecast period?

A. The average annualized growth rate for residential billed deliveries between the Test Year, weather-normalized, and the Rate Year is -0.1%. The Rate Year forecast includes an out of model adjustment of -40,495 MWh resulting from ETIPs, and an out of model adjustment of -15,550 MWh resulting from new PV installations. Without the impact of ETIPs and PV, the expected growth rate would be 0.2%.

Q. What was the next step after the residential billed deliveries forecast was created?

A. The residential deliveries were then allocated between service classifications ("SCs") based on historical distributions of monthly deliveries. As discussed later in this testimony, the SC units are then used to calculate the forecasted delivery revenues at existing rates.

Q. What specific variables are used in the historical monthly database to develop the total electric billed deliveries forecast for the commercial class?

A. The database contained variables representing the number of commercial customers, Upstate New York Real Non-Manufacturing GDP, Real Commercial Price, Billing Month Heating and Cooling Degree Day variations from normal weather, monthly binary variables, and the number of billing days in the month. The Panel's dataset consisted of monthly historical data from January 1980 through December 2018

Q. What is the commercial class deliveries growth rate for the forecast period?

A. The average annualized growth rate between the Test Year, weather-normalized, and the Rate Year is -1.1%. The Rate Year forecast includes an out of model adjustment of -101,475 MWh resulting from ETIPs, and an out of model adjustment of -10,419 MWh resulting from new PV installations. Without the impact of ETIPs and PV, the expected average annualized growth rate would be 0.0%.

Q. What did the Panel do after determining the commercial class deliveries forecast?

A. We then allocated the commercial deliveries units among the SCs using the historical distribution of monthly deliveries to calculate revenues.

Q. What particular variables did the Panel include in the historical monthly database to develop the total electric billed deliveries forecast for the industrial class?

A. The database consists of variables for Upstate New York Real Manufacturing GDP, Real Industrial Price, monthly binary variables, and the number of billing days in the month.

Q. What is the industrial class deliveries growth rate over the forecast period?

A. The average annualized growth rate between the Test Year, weather-normalized, and the Rate Year is -0.2%. The Rate Year forecast includes an out of model adjustment of -42,018 MWh resulting from ETIPs. Without the impact of ETIPs, the expected average annualized growth rate would be 0.4%. There was no out of model PV adjustment for the industrial class deliveries.

Q. How did the Panel allocate deliveries once it determined the industrial class deliveries forecast?

A. We allocated deliveries among the industrial SCs using historical monthly deliveries distributions for revenue calculations.

Q. What specific explanatory variables did the Panel use to develop the total electric deliveries forecast for the municipal class?

A. We used the following variables: Real Disposable Personal Income; Real Municipal Price; Billing Month Heating and Cooling Degree Day variations from normal weather; and monthly binary variables; a yearly binary variable representing the loss of a major customer; a yearly binary variable representing the implementation of the State of New York Local Property Tax Cap ("Tax Cap") in 2012; and the number of billing days in the month. The Panel's dataset consisted of monthly historical data from January 1980 through December 2018.

Q. Please explain the use of a yearly binary variable representing the loss of a major customer.

A. In late 2009, a single large municipal customer converted most of its load from NYSEG deliveries service to self-generation, significantly reducing its required deliveries load from NYSEG. The binary variable was used to identify the succeeding period, commencing January 2010, when this customer's conversion caused a notable reduction in NYSEG's total municipal load. The municipal model now includes 108 months (January 2010 to December 2018) of diminished total municipal deliveries, which reflects the time that this customer was self-generating and receiving significantly fewer loads delivered by NYSEG. The use of this yearly binary variable allows the model to distinguish between the time period when said customer's full load was delivered by NYSEG (identified in the model as before year 2010) and when NYSEG's delivered load to this customer was significantly curtailed, and thus the model reflects this change in the forecast.

Q. Please explain the use of a yearly binary variable representing the implementation of the Tax Cap in 2012.

A. This binary variable was used for years 2012 and after to account for the impact of the Tax Cap implementation on municipal electric use. The Tax Cap was implemented to limit property tax increases, and thus municipal entities have been forced to reduce controllable expenditures, such as electric use. By using this binary variable in the mode, this step change is reflected in the forecast.

Q. What is the municipal class deliveries growth rate over the forecast period?

A. The average annualized growth rate between the Test Year, weather-normalized, and the Rate Year is 0.6%. The Rate Year forecast includes an out of model adjustment of -14,221 MWh resulting from ETIPs and an out of model adjustment of -2,605 MWh resulting from new PV installations. Without the impact of ETIPs and PV, the expected average annualized growth rate would be 1.2%.

Q. What was the next step after determining the municipal class billed deliveries forecast?

A. The deliveries were then allocated among the municipal SCs based on historical monthly deliveries distributions for revenue calculations.

Q. Please describe the explanatory variables that the Panel used to develop the total electric deliveries forecast for the street lighting class.

A. The street lighting total deliveries forecast is based upon an econometric model that utilizes the average monthly burning hours, outlined in the Company's tariff, as the main explanatory variable. Additionally, monthly binary variables were used in the model specifications. Thirteen specific year-month binary variables, from the period between October 2003 and April 2014, were also used in the street lighting model to correct for anomalous data points resulting from apparent billing issues.

Q. What is the growth rate over the forecast period for the street lighting class?

A. The average annualized growth rate between the Test Year and the Rate Year is 0.2%. There were no out of model adjustments in the street lighting class.

Q. What methodology did the Panel use to develop the total electric deliveries forecast for NYSEG's Interdepartmental and Borderline classes?

A. The Interdepartmental and Borderline deliveries forecasts are set at the actual delivery levels from the historical data for the last 12 months of actual use.

Q. Please summarize the total electric billed deliveries forecast for the NYSEG service territory.

A. Based on the forecasts that we have described, NYSEG expects that the overall electric deliveries volume will decrease, on average, by -0.4% annualized between the Test Year, weather-normalized, and the Rate Year. The electric deliveries forecast is illustrated in Exhibit __ (NYSEGDRRDMP-3), Schedule A. Historical actual and weather-normalized deliveries from January 2017 through December 2018 and forecasted deliveries from January 2019 through March 2021 are presented in this exhibit. This electric deliveries forecast is based heavily on economic variables, and the forecast may need to be updated to reflect changes in economic conditions.

B. <u>Electric Customer Forecast</u>

Q. Please describe the development of the electric customer forecast for the residential customer class.

A. The number of residential customers is forecasted with an econometric model that uses Moody's Analytics' Upstate New York Households forecast as the main explanatory variable.

Q. Why is econometric modeling appropriate for the residential customer class?

A. For the residential customer class, the number of residential customers is highly correlated, and dependent upon, the Households in Upstate New York. This causal relationship can be very accurately estimated using econometric modeling. It follows that an accurate forecast of Upstate New York Households, as provided by Moody's Analytics, would then yield an accurate forecast of residential customers.

Q. What is the growth rate of residential customers over the forecast period?

A. The average annualized growth rate between the Test Year and the Rate Year is 0.25%.

Q. How did the Panel develop the electric customer forecasts for non-residential customer classes, including the commercial, industrial, municipal, and street lighting classes?

A. We developed those forecasts using exponential smoothing models for each of the non-residential customer classes.

Q. Why are exponential smoothing models appropriate for those classes?

A. An exponential smoothing model is a univariate, or one variable, forecasting method that is widely used in business forecasting. This methodology allows us to capture both trend and seasonal components that exist in the customer counts of these non-residential classes.

Q. What are the growth rates of the commercial, industrial, municipal (also known as public authority), and street lighting classes over the forecast period?

A. For the commercial class, the average annualized growth rate between the Test Year and the Rate Year is 0.37%. For the industrial class, the average annualized growth rate between the Test Year and the Rate Year is -3.19%. For the municipal class, the average

annualized growth rate between the Test Year and the Rate Year is -0.22%. Finally, for the street lighting class, the average annualized growth rate between the Test Year and the Rate Year is 0.46%.

Q. What are the overall results of the electric customer forecast?

A. The overall result of the electric customer forecast is illustrated in Exhibit __ (NYSEGDRRDMP-3), Schedule B. The historical actual number of customers from January 2017 through December 2018 and the forecasted number of customers from January 2019 through March 2021 are presented in the exhibit. Based on the forecasts we have described, NYSEG expects the overall number of electric customers to increase, on average, by 0.25% annually between the Test Year and the Rate Year.

C. Model Validation

Q. How did the Panel validate the models used to develop the forecasts of monthly electric deliveries and customers?

A. The Panel analyzed "Goodness of Fit" tests to determine what percentage of the variation in the dependent variable can be explained by the explanatory variables that we selected. In other words, these tests check a model's summary statistics that may explain how well the model fits or explains a dataset. The first test statistic is called the Coefficient of Determination, better known as the R-squared. An R-squared value of 1 means that the dependent variable is, on average, completely explained by the explanatory variables, while a value of 0 means that no explanatory relationship between the dependent variable and the independent variables can be estimated from the sample data. The second test statistic is called the Mean Absolute Percent Error ("MAPE"). The MAPE is the ratio of

the absolute value difference between the monthly forecast value derived from the model and the actual monthly value averaged over the entire dataset of actual values. The smaller the MAPE, the better. A model that results in a high R-squared value and a small MAPE is said to have strong summary statistics. One of the most common tests for checking if a model performs well is the Ex Post forecast test. For this test, a portion of the sample is withheld and the model is estimated on the remaining sample. An estimate or forecast of the withheld data is then generated by the model which is compared to the withheld dataset. Summary statistics are analyzed to see how well the model actually forecasts the withheld sample. The primary statistic analyzed for an Ex Post test is the MAPE. We have performed Ex Post forecast tests on all customer and billed unit models presented in this testimony for two- and four-year periods to demonstrate how well the models forecast two and four years out. Exhibit __ (NYSEGDRRDMP-4) summarizes the statistics for all the models.

Q. What are the results of the Panel's validation tests?

A. The test results and model specifications are shown in Exhibit __ (NYSEGDRRDMP-4). They establish that the econometric models used by NYSEG for electric forecasting have very strong summary statistics, fit the datasets, and generalize well.

IV. ELECTRIC DELIVERY REVENUE

Q. Please describe how the forecast of Electric Billed Delivery Revenue is calculated in Exhibit __ (NYSEGDRRDMP-5).

A. A four-step process is used to calculate the forecasted monthly Electric Billed Delivery Revenue for each customer class (e.g., residential and commercial) and service class.

Once the delivery revenues are calculated, they are summarized by customer class, as set forth in Exhibit __ (NYSEGDRRDMP-5).

Q. What is the first step?

A. The first step of the electric revenue forecasting process is to incorporate the monthly forecasted deliveries and electric customers by SC and customer class, by month, into a revenue model. The monthly forecasted kWh sales are allocated to on-peak, mid-peak, and off-peak for applicable SCs based on historical distributions. Additionally, the kilowatt ("kW") demand forecast for applicable SCs was developed by using a three-year historical ratio of kW to kWh, and then applying that ratio to the forecasted kWh units. Reactive ("rkvah") is also developed looking at a historical ratio of rkvah to kWh and allocating that ratio to the applicable SCs.

Q. Please describe the second step.

A. Once the deliveries and customers have been allocated to the appropriate SC by month, the current tariff base delivery rates are applied to the forecasted monthly billing determinants to develop the Gross Base Delivery revenue amounts by SC.

Q. What does the third step include?

A. The forecasted deliveries, where applicable, are multiplied by the forecasted rates for Clean Energy Fund ("CEF") Surcharge, Energy Efficiency ("EE") Surcharge, Dynamic Load Management ("DLM") Surcharge, and the Merchant Function Charge ("MFC").

Q. What is the final step in developing the electric revenues forecast?

A. The resulting tariff revenue amounts are then multiplied by the applicable state and local gross revenue tax ("GRT") to determine the total delivery revenue amounts, per month, per SC.

Q. Please list and describe briefly the SCs that were used by the Company in calculating the delivery revenue.

A. The SCs are as follows:

PSC No. 120 Service Classifications:

SC-1	Residential Regular
SC-1S	Residential Seasonal
SC-8	Residential Day-Night
SC-8S	Residential Day-Night Seasonal
SC-12	Residential Time of Use
SC-6	General Service Regular
SC-9	General Service Day-Night
SC-2	General Service-w/Demand
SC-3P	Primary Service
SC-3S	Subtransmission Service
SC-7-1	General Service-Time of Use
SC-7-2	Primary Service-Time of Use
SC-7-3	Subtransmission-Time of Use
SC-7-4	Transmission-Time of Use
SC-11	Standby Service
SC-5	Outdoor Lighting

PSC No. 121 Service Classifications:

SC-1	Street Lighting Service with contributory provisions (grandfathered)
SC-2	Street Lighting Service-Customer Owned Equipment
SC-3	Standard Street Lighting Service
SC-4	Street Lighting Service-Energy Only

Q. Please describe Exhibit __ (NYSEGDRRDMP-5).

A. Exhibit __ (NYSEGDRRDMP-5), Pages 1 through 3 of 5, show actual monthly delivery revenue for 2016, 2017, and the historical Test Year, respectively. Page 4 of 5 shows

forecasted monthly delivery revenue for the Rate Year. Lastly, page 5 of 5 shows a summary of the Test Year and Rate Year revenues.

Q. What is included in the line item Gross Base Delivery Charge?

A. Gross Base Delivery Charges consist of customer charges, volumetric (kWh) delivery charges, demand (kW) charges, and reactive charges. The rates used to calculate such charges incorporate the impact, effective October 1, 2018, of certain tax rate benefits associated with the Tax Cuts and Jobs Act of 2017, pursuant to the Commission's Order Determining Rate Treatment of Tax Charges, issued August 9, 2018 in Case 17-M-0815 ("Tax Order").

Q. Please describe how economic development rate discounts are addressed in the forecast.

A. Currently there are no customers enrolled in the economic development rate discount programs, therefore this was not forecasted in the Rate Year.

Q. Please explain the RDM Charge.

A. The RDM Charge represents the collection or refund of revenues that were either under-collected or over-collected for each service classification in the prior RDM year.

Q. Is an RDM Charge included in the Rate Year revenues?

A. No. The Rate Year forecast assumes there were no over- or under-collections in the prior RDM year.

Q. What is included in the line item MFC?

A. The MFC represents the revenue charged to full-service customers to recover their share of credit, collection, call center, and administrative costs associated with the Company's electric commodity program.

Q. What does the line item labeled Energy Efficiency represent?

A. This line item represents a surcharge (in the Test Year) and will be included in base delivery revenues in the Rate Year providing collection of mandated costs associated with the Company's and State's energy efficiency, conservation, renewable energy, and related programs. This line item also includes collections to fund heat pump incentives.

Q. What does the line item labeled CEF represent?

A. The CEF surcharge recovers from customers the Company's payments to the State Clean Energy Fund.

Q. Please explain the line item labeled DLM Surcharge.

A. The surcharge recovers the collection of costs associated with the Company's load management and reduction programs.

Q. What does the GRT Surcharge represent?

A. This line item represents a delivery revenue surcharge that collects gross revenue taxes from customers that are subsequently remitted by the Company to New York State and various municipalities.

Q. What is the Bill Issuance & Payment Processing Charge ("BIPP")?

A. BIPP is a charge per invoice to recover the cost of billing customers and processing their payments. BIPP was unbundled from the monthly customer charge in 2007, consistent with the Commission's Order Providing for Customer Choice of Billing Entity issued on March 22, 2000 in Case 99-M-0631 ("Customer Choice Order").

Q. Please explain the Purchase of Receivables ("POR") Charge.

A. The POR Charge represents the revenue charged to energy service companies ("ESCOs") through the POR discount rate to recover the credit, collection, and call center costs associated with the Company's purchased commodity receivables.

Q. Please explain the line item entitled Wholesale Transmission Revenues.

A. This line item represents the amount of transmission revenue that is embedded in delivery rates. Any difference between actual transmission revenues and the level embedded in Delivery rates is recovered or returned through the Non-Bypassable Wires Charge ("NBC").

Q. What are the primary items included in the line entitled Miscellaneous Revenue?

A. Miscellaneous Revenue consists primarily of reconnection and other service fees and building rental income.

Q. What does the line item labeled Damage and Third Party Payments represent?

A. This line item consists primarily of reimbursements for O&M expenditures related to make ready pole work, mutual aid services (Test Year only), and pole and property damage repair.

Q. What does the line item labeled Joint Use Property Rental represent?

A. This line item represents the pole attachment revenues from joint use poles.

Q. Does the Rate Year include similar revenues as the Test Year?

A. Yes.

Q. Please explain the revenue adjustments between the actual Test Year and the forecasted Rate Year revenues.

A. The total revenue adjustment between the Test Year and the Rate Year is a decrease of $47,833,000, which is attributed to the following:

a) Gross Base Delivery Revenues – $11,878,000 decrease primarily reflecting a full year of lower base rates delivery tariff rates for the Rate Year resulting from the Tax Cuts and Jobs Act of 2017, as compared to only three months of such lower rates in the Test Year.

b) RDM Charge – $7,133,000 decrease to eliminate the Test Year refund of prior year net over-collections. The Rate Year forecast assumes no over/under collections in the preceding RDM year.

c) CEF Surcharge – $4,915,000 decrease to incorporate the required level of collections in the Commission's Order Authorizing the Clean Energy Fund Framework, issued January 21, 2016 in Cases 14-M-0094 et al. ("CEF Order").

d) EE Tracker Surcharge – $2,869,000 decrease to incorporate the required level of collections in the Commission's Order Authorizing Utility-Administered Energy Efficiency Portfolio Budgets and Targets for 2019 – 2020, issued March 15, 2018 in Case 15-M-0252.

e) DLM – $2,216,000 increase to incorporate the required level of collections in the Commission's Order Directing Tariff Filings, issued April 19, 2018 in Cases 14-E-0423 et al.

f) GRT Surcharge – $220,000 increase to incorporate revenue levels identified above. In addition, the Test Year includes Transition Surcharge revenues, which were negative for certain SCs. The Rate Year does not include Transition Surcharges and, as a result, the Revenue Tax is calculated on higher revenues.

g) BIPP Charge – $11,000 increase to reflect the higher customer count in the Rate Year.

h) Late Payment Charge – $716,000 decrease reflecting the lower level of forecasted customer revenues in the rate year.

i) Wholesale Transmission Revenues – $4,261,000 decrease in transmission revenues, a five-year historical average was used to develop this forecast. See Table 1 for details of the Historical Revenues and the Rate Year Forecast.

Table 1: Wholesale Transmission Revenues

Wholesale Transmission Revenue in Delivery Rates		
Test Year	$	53,426
Historical Wholesale Transmission Revenue		
2014		56,779
2015		56,868
2016		47,594
2017		44,516
2018		40,071
5 Year Average	$	49,165
Rate Year Change	$	(4,261)

j) Damage and Third Party Payments – $12,196,000 decrease to reflect the removal of Puerto Rico mutual aid reimbursements from the Rate Year ($12,315,000), offset somewhat by the application of the general inflation factor to all other reimbursements to match the forecasts of the corresponding costs. See Table 2 for details of the Test Year Revenues and the Rate Year Forecast.

Table 2: Damage and Third Party Payments

G/L	Revenue Account	2018 Test Year	General Inflator	Rate Year	RY Change
759000160	Installation Modification Income	$ 2,574	4.89%	$ 2,699	$ 125
759000165	Installation Modification Income (Taxable)	1,185	4.89%	1,243	58
759000140	Third Party Damages	285	4.89%	299	14
759000190	Other Services to Third Parties	2,243	4.89%	2,352	109
759000190	Perry Fire Restoration Expense (One Time)	225	n/a	-	(225)
759000240	Studies & Engineering for Third Parties	125	4.89%	132	7
759000220	Maintenance Work for Third Parties	630	4.89%	660	30
759000220	Mutual Aid Puerto Rico (One Time)	12,315	n/a	-	(12,315)
		$ 19,581		$ 7,385	$ (12,196)

k) Joint Use Property Sales – $6,198,000 decrease reflecting the of the sale of interests in certain poles ($3,811,000) and the one-time payment of $2,500,000 in the Test Year for prior year billings, offset somewhat by an increase to pole counts. See Table 3 for details of Test Year Revenues and the Rate Year Forecast.

Table 3: Joint Use Property Sales

Pole Rental Revenue - Test Year	**$**	**10,650**
Test Year normalization adjustment:		
Prior Year billing		(2,500)
Normalized revenue - Test Year	$	8,150
Revenue Impact of sale of pole interests		(3,811)
Forecasted revenue impact of higher pole counts		113
Pole Rental Revenue - Rate Year	**$**	**4,452**
Change - Rate Year vs. Test Year	$	(6,198)

V. ELECTRIC RDM

Q. Please describe NYSEG's current electric RDM.

A. NYSEG's current electric RDM structure is outlined in Appendix U of the Joint Proposal approved in the Companies' 2010 Rate Order, as modified in Appendix Y of the Joint Proposal approved in the 2016 Rate Order. It consists of 11 separate RDM classes for reconciliation purposes.

Q. Is the Panel proposing any changes to NYSEG's electric RDM?

A. No.

Q. Did the Panel determine the proposed new RDM targets?

A. Yes, the new electric RDM unit and customer targets for the Rate Year are included in Exhibit __ (NYSEGDRRDMP-6), page 2 of 2. The new RDM revenue targets will be established upon settlement of new rates.

VI. NATURAL GAS DELIVERIES AND CUSTOMERS FORECAST

A. Natural Gas Deliveries Forecast

Q. How did the Panel forecast monthly natural gas billed deliveries?

A. Like the electric billed forecast, we also used an econometric modeling methodology to estimate the relationship between certain explanatory, or independent, variables and the dependent variable, which, in this case, is monthly billed natural gas deliveries by customer class. We also utilized econometric modeling to forecast the number of residential customers.

Q. Did the Panel estimate the economic relationships between natural gas usage and the explanatory variables using the same computer software used to develop the electric forecasting models?

A. Yes. We utilized the same MetrixND computer software.

Q. Did the Panel use the same source for demographic and economic variable data that was used to develop the electric forecasting models?

A. Yes. The demographic and economic variable forecasts are from Moody's Analytics released in January 2019.

Q. Did the Panel use the same categories of variables that were used to forecast monthly electric deliveries, as discussed above?

A. Yes, with two differences.

Q. What is the first difference?

A. For the residential class, we used a residential use per customer model. The forecasted number of residential customers is multiplied by the forecasted residential average use per customer to determine the forecasted monthly residential billed deliveries forecast. A demographic variable was not used in the use per customer model. A demographic variable was used in the model to forecast the number of residential customers.

Q. What is the second difference?

A. For the natural gas deliveries forecast, we used an empirical method of weather normalization. We employed this methodology to better analyze the historical data and calculate true growth rates. Using this method, the historical data is weather-normalized and subsequently brought into the model. For this reason, it is not necessary to include a weather variable in the model, and it allows consistency of application for each customer class. This methodology is consistent with prior rate case forecasts.

Q. Please describe the natural gas weather normalization methodology.

A. We used billing month weather for the residential, commercial, municipal, and industrial classes. The first step is to take the actual deliveries for each year and subtract the base load deliveries. The term "base load" is defined as the average of the non-weather-related deliveries during the two months having the lowest level of gas consumption observed during the calendar year. The second step is to divide the remaining (weather-

related) deliveries load by the actual billing month heating degree days ("HDDs"). This yields the actual weather response per HDD for the billing month. The third step was to multiply the quotient by the normal billing month HDDs. The term "normal degree days" in this context is defined as the 30-year rolling average (1989-2018) of degree days for any given calendar day as obtained from the National Oceanic and Atmospheric Administration. The last step is to add the base load that was originally removed.

Q. How much historical data was used in the models?

A. Monthly historical data from January 1993 through December 2018 was used for the residential econometric model. Monthly historical data from January 2000 through December 2018 was used for the non-residential econometric models. This data sample allows for efficient estimates of econometric model coefficients.

Q. Please explain the residential sales forecasting model.

A. The residential model relates weather normalized use per customer to price and a generic trend variable. Total residential deliveries are determined by multiplying the average use per customer by the estimated number of residential customers to determine the monthly residential billed deliveries forecast for the Rate Year.

Q. Why was an average use per customer model used instead of a billed deliveries model to estimate residential sales?

A. Within the natural gas industry, it is a generally accepted methodology to use average use per customer to estimate residential sales.

Q. What specific explanatory variables did the Panel employ in the average use per customer econometric model?

A. We used the following variables: real residential price; monthly binary variables; the number of billing days in the month; and a generic trend variable. In our experience, we have found that these variables can explain and estimate natural gas use per residential customer.

Q. What is the expected growth rate for the residential class?

A. The average annualized growth rate for the residential class between the Test Year, weather-normalized, and the Rate Year is -0.82%.

Q. How were the commercial, industrial, and municipal sales forecasts developed?

A. We used econometric modeling that relates monthly weather-normalized deliveries to economic and price related drivers.

Q. Please identify the explanatory variables that the Panel used to develop commercial, industrial, and municipal sales forecast.

A. The database for the weather-normalized total commercial class consisted of the following variables: real commercial price; upstate New York non-manufacturing employment; the number of billing days in the month; and monthly binary variables. The database for the weather-normalized industrial class consisted of the following variables: real industrial price; upstate New York employment manufacturing; and monthly binary variables. The database for the weather-normalized total municipal class consisted of the following variables: real municipal price; the number of NYSEG residential customers; a

generic trend variable; the number of billing days in the month; and monthly binary variables.

Q. Why did the Panel use these categories of explanatory variables?

A. In our experience, we have found that these variables can best explain and estimate commercial, industrial, and municipal natural gas sales forecasts.

Q. Why did the Panel use the number of residential customers for the municipal class?

A. The basis of the assumption is that a municipal customer, which includes town/village offices and schools, will grow or decline based on the population it serves. Its constituency is comprised, for the most part, of NYSEG's residential customers.

Q. What are the average annualized growth rates for the commercial, industrial, and municipal classes?

A. The average annualized growth rates between the Test Year and the Rate Year are 0.19% for the commercial class, 1.26% for the industrial class, and -0.26% for the municipal class. In total, the non-residential classes increased by 0.51%.

Q. What are the results of the total natural gas deliveries forecast?

A. Based on the forecasts that we have described, NYSEG expects that the overall natural gas deliveries volume will decrease by an average annualized percentage of 0.03% from the Test Year, weather-normalized deliveries, compared to the Rate Year. The natural gas deliveries forecast is shown in Exhibit __ (NYSEGDRRDMP-7), Schedule A. Historical weather-normalized deliveries from January 1, 2016 through December 31, 2018 and forecasted deliveries from January 1, 2019 through March 31, 2021 are presented in this exhibit.

Q. Did the Panel make any out of model adjustments to the natural gas deliveries forecasts?

A. Yes. An out of model adjustment is made to econometric forecasts to account for factors that have an effect on projected sales that cannot be accounted for within the econometric model itself. One out of model adjustment was made to account for the targets related to NYSEG's ETIP. Because the expected decrease in load due to NYSEG's incremental ETIP impact is not reflected in the historical data used in our econometric models, it was necessary to make out of model adjustments to the forecasted residential, commercial, industrial, and municipal load.

Q. Would the Panel please identify the adjustments for ETIP?

A. The Company based the total out of model adjustments for ETIP in years 2019 and 2020 on the SEEP. The SEEP identified annual Dth reduction targets of 116,003 for 2019 and 132,141 for 2020. For years beyond 2020, we obtained estimates from the NYSEG/RG&E Energy Efficiency group. A summary of the annual out of model adjustments by revenue class for years 2019 to 2021 can be found in Exhibit __ (NYSEGDRRDMP-7), Schedule B. NYSEG then allocated the annual targets on a monthly basis according to each revenue classes' monthly load shape. The average annualized growth rate between the Test Year and the Rate Year was -0.3% for the residential class and 0.59% for the total non-residential classes, prior to the ETIPs adjustment. The average total annualized growth rate between the Test Year and the Rate Year for total NYSEG gas deliveries prior to ETIPs adjustments was 0.23%.

B. Natural Gas Customer Forecast

Q. How did the Panel develop the natural gas customer forecast for the residential customer class?

A. The number of residential customers is forecasted with an econometric model that uses Moody's Analytics' forecast of the number of households in upstate New York as the main explanatory demographic variable, and monthly binary variables.

Q. Why is econometric modeling appropriate for the residential customer class?

A. In the case of residential customers, the number of residential customers is highly correlated, and dependent upon, the number of households in Upstate New York. This causal relationship can be accurately estimated using econometric modeling. It follows then that an accurate forecast of Upstate New York households, as provided by Moody's Analytics, would yield an accurate forecast of residential customers.

Q. What is the growth of residential customers over the forecast period compared to the Test Year?

A. The average annualized growth rate for the Test Year compared to the Rate Year is 0.22%.

Q. How did the Panel develop the natural gas customer forecast for commercial, industrial, and municipal classes?

A. We developed the natural gas customer forecast for these classes by applying the historical customer data to an exponential smoothing model. An exponential smoothing model is a univariate, or one variable, forecasting method that is widely used in business forecasting.

Q. What are the growth rates of the commercial, industrial, and municipal classes over the forecast period compared to the Test Year?

A. For the commercial class, the average annualized growth rate for the Test Year compared to the Rate Year is 0.19%. For the industrial class, the growth rate for the Rate Year compared to the Test Year is -3.48%. For the municipal class, the average rate for the Test Year compared to the Rate Year is 0.38%. For the non-residential classes, the total average annualized growth rate for the Test Year compared to the Rate Year is 0.14%.

Q. How many natural gas customers do the Companies forecast for the Rate Year?

A. The natural gas customer forecast is illustrated in Exhibit __ (NYSEGDRRDMP-7), Schedule C. The historical actual number of customers from January 1, 2016 through December 31, 2018 and the forecasted number of customers from January 1, 2019 through March 31, 2021 are presented in this exhibit.

C. Allocation of Forecasts Among Sales and Transportation Service Classes

Q. How did the Panel allocate its forecast of residential, commercial, industrial and municipal deliveries and customers to the sales and transportation service classes?

A. We allocated the forecasts to the sales and transportation service classes using historical monthly distributions and trends.

D. Model Validation

Q. Did the Panel validate the models used to develop the forecasts of monthly natural gas deliveries?

A. Yes. As with our models used to develop the forecasts of monthly electric deliveries and customers, we validated our natural gas models using the same "Goodness of Fit" tests

and MAPE statistics. Ex Post tests were performed where the MAPE statistic is also re-used to demonstrate how well the models forecast two years out.

Q. What are the results of the validation tests?

A. The results and model specifications are shown in Exhibit __ (NYSEGDRRDMP-8), Schedule A. They establish that the models used for natural gas forecasting have very strong summary statistics and generalize well.

VII. GAS DELIVERY REVENUES

Q. Please provide a brief description of the NYSEG gas service classes.

A. NYSEG has customers taking service under the following SCs:

PSC No. 87 Service Classifications:

SC-1S	Residential Service
SC-2S	General Service
SC-3S	Interruptible Sales Service
SC-5S	Seasonal Gas Cooling Service
SC-9S	Industrial Manufacturing or Processing Purposes (Binghamton Only)

PSC No. 88 Service Classifications:

SC-1T	Firm Transportation Service
SC-2T	Interruptible Transportation Service
SC-5T	Small Firm Transportation Service
SC-7T	Firm or Limited Firm Negotiated Transportation Service
SC-13T	Residential Firm Aggregation Transportation Service
SC-14T	Non-Residential Firm Aggregation Transportation Service
SC-16T	Non-Residential Distributed Generation Transportation

Q. Please describe how the Billed Gas Delivery Revenues are calculated in Exhibit __ (NYSEGDRRDMP-9).

A. A five-step process is used to calculate the forecasted monthly Billed Gas Delivery Revenues, as set forth in Exhibit __ (NYSEGDRRDMP-9).

Q. What is the first step?

A. The first step of the gas delivery revenue forecast is to incorporate the forecasted deliveries and customers for SC-1S, SC-2S, SC-5S, SC-9S, SC-1T, SC-5T, SC-13T, SC-14T and SC-16T into the Gas Revenue Model. The monthly forecasted delivery volumes are allocated to the gas rate blocks established in NYSEG's gas tariff based on distributions derived from block analyses covering June 2016 to October 2018. The individual month used for the block analysis was based on the month in the three-year period where the actual billing month HDD was closest to normal HDD. The forecasted deliveries by block are then multiplied by the current tariff rates, effective as of October 1, 2018, for the respective SCs, and the customer counts are multiplied by the fixed monthly customer charge for the respective SCs to derive forecasted base delivery revenues.

Q. What is the second step?

A. The forecasted sales for SC-3S, SC-2T, and SC-7T are multiplied by either average contract rates or average historical deliveries rates by rate area.

Q. What is the third step?

A. The calculated distribution revenues by SC are then allocated to Revenue Class based on the deliveries forecast data.

Q. What is the fourth step?

A. The forecasted deliveries, where applicable, are multiplied by the forecasted tariff rates to derive the forecasted revenue from the MFC/POR, CEF – NYSERDA Surcharge, and the

R&D Surcharge. The costs previously recovered through the former Energy Efficiency Surcharge will now be recovered through base rates.

Q. What is the fifth step in developing the Billed Gas Delivery Revenue forecast?

A. The fifth and final step is to apply the gross revenue tax rates to the delivery revenues using the actual revenue tax rates for service type (i.e., sales vs. transportation), and customer type (i.e., residential vs. non-residential).

Q. Please describe Exhibit __ (NYSEGDRRDMP- 9).

A. Exhibit __ (NYSEGDRRDMP-9), pages 1 through 4 of 9 show actual monthly delivery revenues for 2016 and 2017, respectively. Pages 5 and 6 of 9 show actual monthly delivery revenue for the Test Year. Pages 7 and 8 of 9 show forecasted monthly delivery for the Rate Year. Page 9 of 9 shows a summary of the Test Year and the Rate Year.

Q. What does the line item labeled Gross Base Delivery Charges represent in Exhibit __ (NYSEGDRRDMP-9)?

A. The line item labeled Gross Base Delivery Charges represents fixed monthly customer charges and the volumetric block deliveries charges. The rates used to calculate such charges incorporate the impact, effective October 1, 2018, of certain tax rate benefits associated with the Tax Cuts and Jobs Act of 2017, pursuant to the Tax Order.

Q. What do the line items labeled Economic Development Discounts represent in Exhibit __ (NYSEGDRRDMP-9)?

A. The line items labeled Economic Development Discounts represent forecasted rate discounts for these programs, as discussed in the testimony of the Economic Development Panel.

Q. What does the MFC line item represent in Exhibit __ (NYSEGDRRDMP-9)?

A. The MFC represents the revenue charged to sales customers to recover their share of credit, collection, call center, and administrative costs associated with the Company's gas merchant activities.

Q. Please explain the RDM Surcharge.

A. The RDM Surcharge represents the collection or refund of revenues that were either under-collected or over-collected in the prior RDM year.

Q. Is the RDM Surcharge included in the Rate Year revenues?

A. No. The Rate Year forecast assumes there was no over- or under-collections in the prior RDM year.

Q. What does the line item labeled CEF – NYSERDA Surcharge represent?

A. The CEF – NYSERDA Surcharge recovers from customers the Company's payments to NYSERDA for the previously authorized EEPS 2 Gas Collections.

Q. Please explain the previous Energy Efficiency Surcharge.

A. The Energy Efficiency Surcharge was a surcharge that previously represented the revenue charged to all customers to recover the costs associated with Energy Efficiency. The charge is structured so that all forecasted Rate Year Energy Efficiency costs are recovered within the Rate Year. The Energy Efficiency Surcharge will be eliminated in this proceeding as the costs recovered through the mechanism are being rolled into base rates.

Q. What does the line item labeled R&D Surcharge represent?

A. The line item labeled R&D Surcharge represents the surcharge applied to all deliveries to recover R&D expenditures of $650,000 per year.

Q. What does the line item labeled GRT Surcharge represent in Exhibit __ (NYSEGDRRDMP-9)?

A. The line item labeled GRT Surcharge represents a delivery revenue surcharge that collects gross revenue taxes from customers that are subsequently remitted by the Company to New York State and various municipalities.

Q. What is the BIPP Charge?

A. The BIPP Charge is a per invoice charge to recover the cost of billing customers and processing their payment. It was unbundled from the monthly customer charge in 2007 consistent with the Customer Choice Order.

Q. Please explain the POR Charge.

A. The POR Charge represents the revenue charged to ESCOs through the POR discount rate to recover the credit, collection, and call center costs associated with the Company's purchased commodity receivables.

Q. What are the primary items included in the line entitled Miscellaneous Revenue?

A. Miscellaneous Revenue consists primarily of rental income and special service fees.

Q. What does the line labeled Damage and Third Party Payments represent?

A. The line item consists primarily of reimbursements for O&M expenditures related to damage, elevated pressure fees, meter relocations, meter upgrades, and mutual aid service (test year only).

Q. Does the Rate Year revenue include similar revenue as the Test Year?

A. Yes.

Q. Please explain the revenue adjustments in Exhibit __ (NYSEGDRRDMP-9), page 9 of 9, between the Test Year and the forecasted Rate Year.

A. The total delivery revenue adjustment between the Test Year and the Rate Year is a decrease of $5,970,000, which is attributed to the following:

a) A decrease of $65,000 due to a full year of lower base tariff rates for the Rate Year resulting from the Tax Cuts and Jobs Act of 2017, as compared to three months of lower rates in the Test Year.

b) A reduction in Economic Development Discounts of $20,000 to incorporate the lower proposed level of rate discounts for the Rate Year as discussed by the Revenue Allocation, Rate Design, Economic Development and Tariff Panel.

c) A decrease of $19,000 due to a reduction in MFC revenues to reflect only the administrative and procurement cost recovery in the Rate Year.

d) A decrease in RDM Charges of $368,000 to eliminate the Test Year refund of prior year net over-collections. The Rate Year forecast assumes no over or under-collections in the preceding RDM year.

e) A decrease of $3,051,000 to incorporate the required level of collections in the CEF Order.

f) A decrease of $884,000 to reflect the level of collections associated with the energy efficiency programs implemented by the Company, EE Tracker (Energy Efficiency

Surcharge). A separate Energy Efficiency Surcharge will be eliminated in this proceeding as these costs will be included in base rates.

g) A decrease of $65,000 to recover R&D expenditures of $650,000 per year.

h) A decrease of $12,000 in GRT to incorporate revenue levels identified above.

i) An increase in BIPP Charges of $9,000 to reflect the higher customer count in the Rate Year.

j) A decrease in the POR Charge of $476,000 to present the Rate Year amount, in combination with MFC Revenue, as the amount allowed in 2016 Rate Order.

k) A decrease in Late Payment Charges of $189,000 reflecting a forecasting process in which forecasted delivery revenues are multiplied by the three-year historical ratio of late payment charges to delivery revenues.

l) A decrease in Miscellaneous Revenue of $556,000 to reflect the use of a three-year normalized historical average to forecast the miscellaneous items where a specific forecast was not obtained.

m) An increase in Damage and Third Party Payments of $25,000 to reflect the application of the general inflation factor to all other reimbursements to match the forecasts of the corresponding costs.

Q. How is the Late Payment Charge Calculated for the Rate Year?

A. Three years of historical late payment charges are divided by billed revenues from the same time period to calculate a percentage that is applied against forecast billed revenues.

Q. How are Other Revenues determined for the Rate Year?

A. Damage and Special Fees represent a forecast provided by the respective departments. Otherwise, a normalized three-year average was used.

VIII. GAS RDM

Q. Please describe NYSEG's current gas RDM.

A. NYSEG's current gas RDM structure is outlined in Appendix U of the Joint Proposal approved in the Companies' 2010 Rate Order, as modified by the Commission's Order Modifying Gas Revenue Decoupling Mechanisms and Establishing Further Procedures, issued August 20, 2012 in Case 09-G-0718 and updated in Appendix Y of the Joint Proposal approved in the 2016 Rate Order.

Q. Is the Panel proposing any changes to NYSEG's gas RDM?

A. Yes, we are proposing two changes to NYSEG's gas RDM.

Q. What changes are you proposing to NYSEG's gas RDM?

A. We propose changing NYSEG's gas RDM from a Revenue per Customer ("RPC") RDM to a Total Revenues RDM, similar to NYSEG's electric RDM. We also propose to include the interruptible service classes (SC2T, SC3S) in the Non-Residential RDM category. We propose these changes to make the gas RDM more similar to the electric RDM methodology. Additionally, the change is consistent with the methodology that has been implemented at other New York gas utilities.

Q. Does the Panel have the proposed new RDM targets?

A. Yes. The new RDM billed unit and customer targets for the Rate Year are included in Exhibit __ (NYSEGDRRDMP-10), page 2 of 2. The new RDM revenue targets will be established upon settlement of new rates.

Q. Does the Panel propose to extend the Gas Enhancement Performance Incentive ("GEPI")?

A. No.

Q. Does this complete the Panel's testimony at this time?

A. Yes, it does.