

BEFORE THE  
STATE OF NEW YORK  
PUBLIC SERVICE COMMISSION

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In the Matter of  
Consolidated Edison Company of New York, Inc.  
Case 07-E-0523  
September 2007

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Prepared Exhibits of:

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**Exhibit \_\_\_\_ (AL-1)**

**ANPING LIU**

**List of Staff Information Requests**

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Company Name: Con Edison  
Case Description: Electric Rate Filing  
Case: 07-E-0523

Response to DPS Interrogatories – Set Staff2  
Date of Response: 06/28/2007  
Responding Witness: Forecasting Panel

Question No. :11.1

Subject: Model for Electric Sales Volume Forecast Define dummy variables D200504 and D2005603, separately, and explain why those variables should be included in the SC 1 model (Forecasting Panel (FP) Workpapers p. 2 of 39).

Response:

D200504 takes on value of 1 in the 4<sup>th</sup> quarter of 2005 and zero in all other periods. This dummy is included to capture the effect of the large increase in real electric price in the 4<sup>th</sup> quarter of 2005, as well as the unusually warm weather in September and October. D2005603 takes on value of 1 in both the 3<sup>rd</sup> quarter of 2005 and the 3<sup>rd</sup> quarter of 2006, and value of zero in all other periods. This dummy is included to capture the effects on SC 1 sales of the unusually warm summer in 2005 and the unusually hot days in August 2006.

Company Name: Con Edison  
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Response to DPS Interrogatories – Set Staff2  
Date of Response: 06/28/2007  
Responding Witness: Forecasting Panel

Question No. :11.2

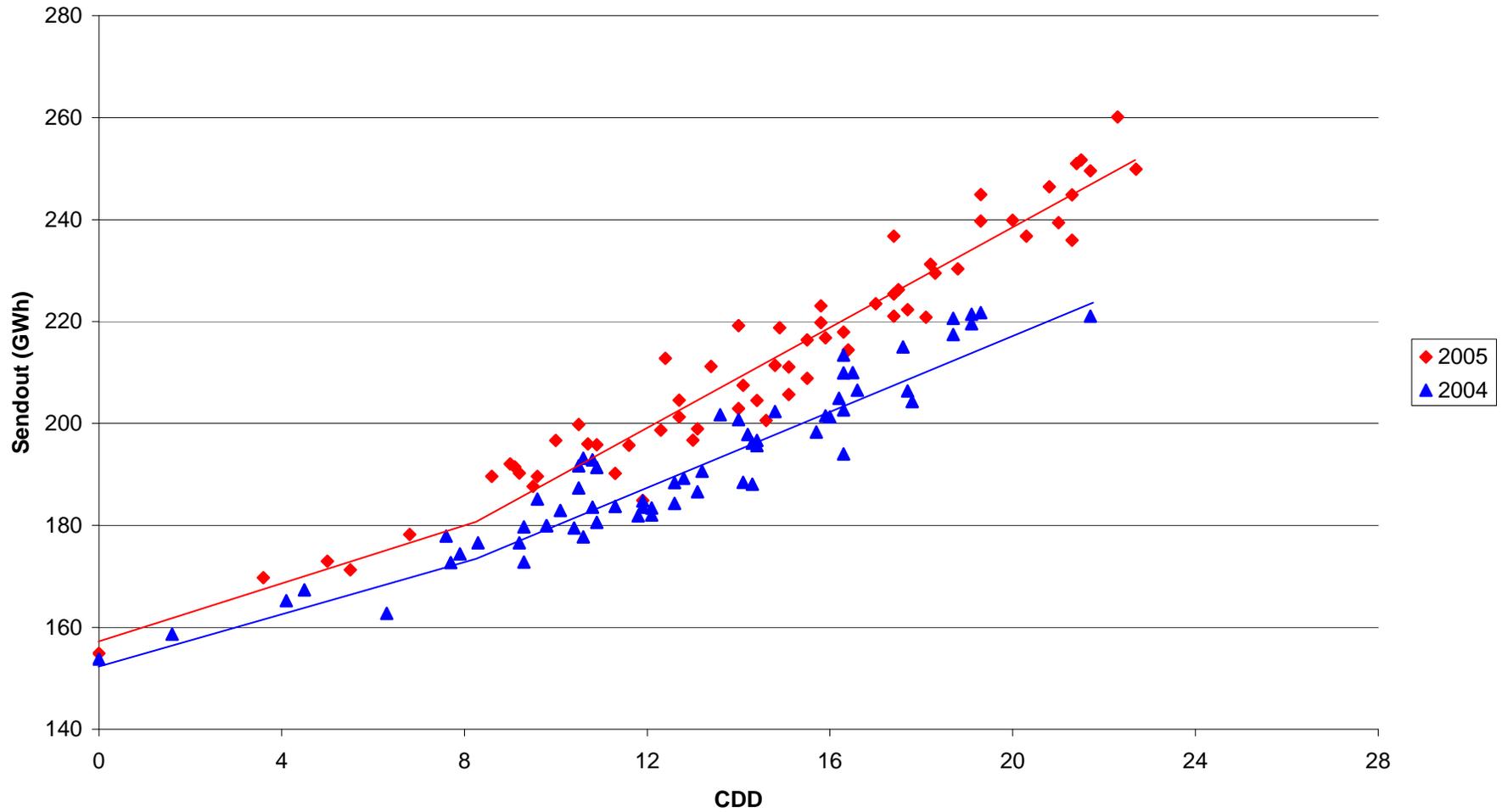
Subject: Model for Electric Sales Volume Forecast Provide documentation for any special events that the Forecasting Panel attempted to capture by using dummy variables D200504 and D2005603.

Response:

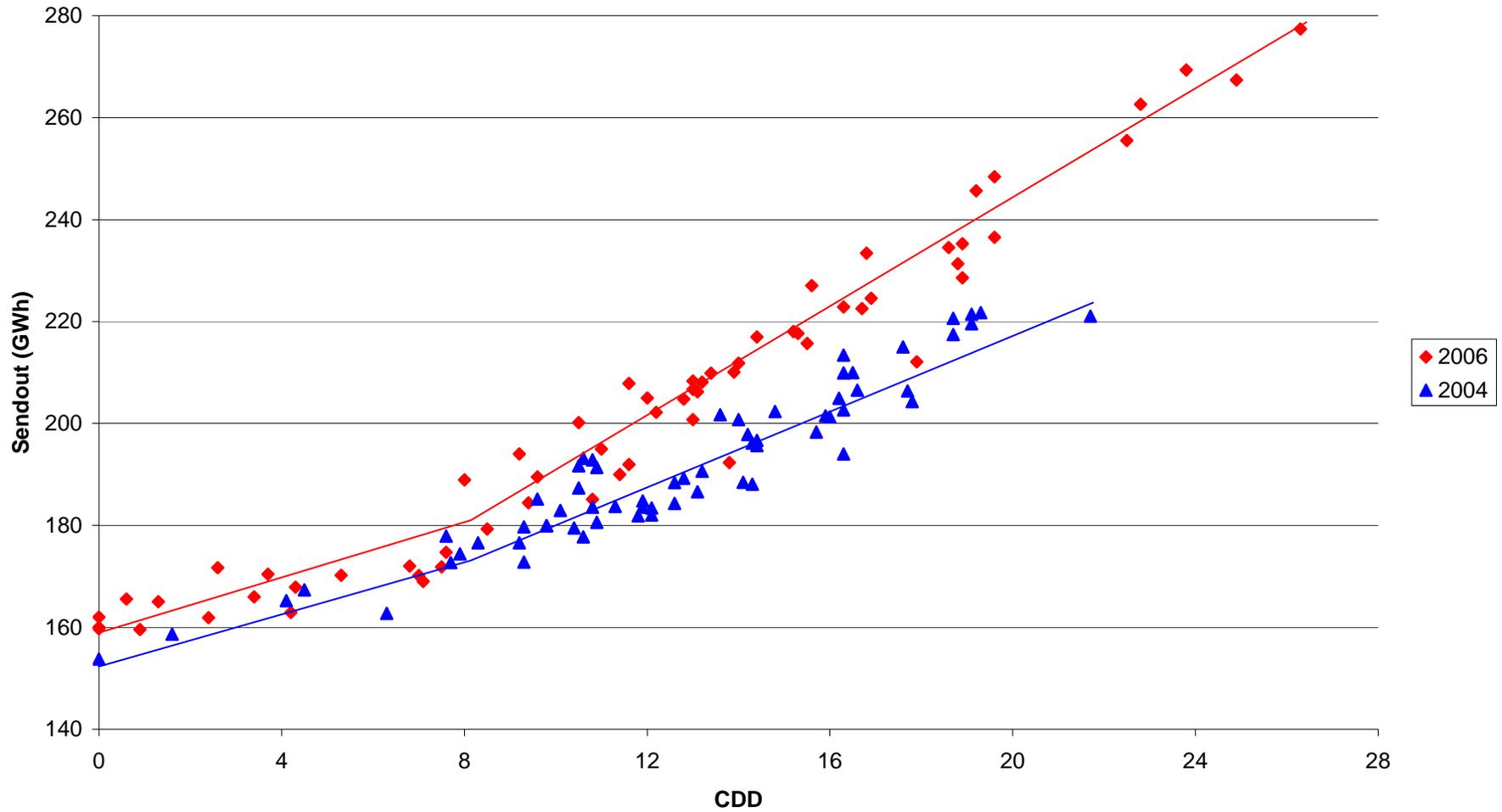
The data provided in our work papers show that PRICE01 increased by 23.4% in the 4<sup>th</sup> quarter of 2005 over the 4<sup>th</sup> quarter of 2004. Applying the estimated SC 1 price elasticity of -0.134418, the forecasting model for SC 1 predicts that such an increase in price will lead to a 4.0% decrease in SC 1 sales. That weather normalized SC 1 sales actually increased in the 4<sup>th</sup> quarter of 2005 reflects the fact that customers did not respond to this large increase in price. If not accounted for, the resulting large residual would distort the forecast.

The attached file, DPS-11 Q2.pdf, show charts of daily weekday sendout against the number of cooling degree days in the July through September periods of 2005 and 2006. For comparison, these charts are plotted alongside the chart for 2004, which had a relatively normal year for summer CDD. These charts show the presence of days with very high CDD in 2005 and 2006, which significantly increases the slope of the relationship between sendout and CDD. The additional reaction of sendout and sales to the presence of high-CDD days is not captured by the weather variables in the quarterly forecast models.

### July - September 2004 and 2005 Actual Daily Sendout vs. CDD Weekdays Only



### July - September 2004 and 2006 Actual Daily Sendout vs. CDD Weekdays Only



Company Name: Con Edison  
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Response to DPS Interrogatories – Set Staff2  
Date of Response: 06/28/2007  
Responding Witness: Forecasting Panel

Question No. :13.2

Subject: Forecast of Electric Sales Volume Provide historical data for air conditioning and other appliance saturation for the residential sector in the Con Edison service area for the last 10 years.

Response:

The Company objects to the timeframe requested. Attached is the requested information for 2004-2006.

**CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.**  
**CASE 07-E-0523**  
**Staff IR Set 02 - DPS-13 - Q2**

| Appliance                      | Historical Saturation |             |             |
|--------------------------------|-----------------------|-------------|-------------|
|                                | <u>2004</u>           | <u>2005</u> | <u>2006</u> |
| Refrigerators                  | 112%                  | 108%        | 108%        |
| Freezers                       | 13%                   | 15%         | 17%         |
| Televisions/Electronics        | 410%                  | 459%        | 459%        |
| Primary Room Air Conditioner   | 80%                   | 80%         | 80%         |
| Secondary Room Air Conditioner | 46%                   | 46%         | 49%         |
| Tertiary Room Air Conditioner  | 25%                   | 33%         | 35%         |
| Central Air Conditioner        | 10%                   | 11%         | 11%         |
| Attic Fans                     | 10%                   | 12%         | 12%         |
| Computers                      | 73%                   | 75%         | 77%         |
| Dishwashers                    | 31%                   | 36%         | 36%         |
| Dryers                         | 30%                   | 38%         | 38%         |
| Ranges                         | 30%                   | 30%         | 30%         |
| Microwave Ovens                | 78%                   | 83%         | 83%         |
| Washing Machines               | 78%                   | 52%         | 52%         |
| Hot Water Heaters              | 3%                    | 3%          | 3%          |
| Lighting                       | 1190%                 | 1225%       | 1225%       |

Company Name: Con Edison  
Case Description: Electric Rate Filing  
Case: 07-E-0523

Response to DPS Interrogatories – Set Staff2  
Date of Response: 06/28/2007  
Responding Witness: Forecasting Panel

Question No. :13.6

Subject: Forecast of Electric Sales Volume Provide Con Edison's projection for the growth of air conditioning and other appliance saturation for the residential sector for 2007-2011, as assumed for the 2007-2016 peak load forecast in the 2007 Load & Capacity Data published by New York Independent System Operator.

Response:

See attached.

**CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.**  
**CASE 07-E-0523**  
**Staff IR Set 02 - DPS-13 - Q6**

| Appliance                      | <b>Projected Saturation</b> |             |
|--------------------------------|-----------------------------|-------------|
|                                | <u>2006</u>                 | <u>2011</u> |
| Refrigerators                  | 108%                        | 120%        |
| Freezers                       | 17%                         | 18%         |
| Televisions/Electronics        | 459%                        | 500%        |
| Primary Room Air Conditioner   | 80%                         | 82%         |
| Secondary Room Air Conditioner | 49%                         | 61%         |
| Tertiary Room Air Conditioner  | 35%                         | 43%         |
| Central Air Conditioner        | 11%                         | 12%         |
| Attic Fans                     | 12%                         | 13%         |
| Computers                      | 77%                         | 87%         |
| Dishwashers                    | 36%                         | 36%         |
| Dryers                         | 38%                         | 38%         |
| Ranges                         | 30%                         | 30%         |
| Microwave Ovens                | 83%                         | 88%         |
| Washing Machines               | 52%                         | 52%         |
| Hot Water Heaters              | 3%                          | 4%          |
| Lighting                       | 1225%                       | 1435%       |

Data is not available on an annual basis.

Company Name: Con Edison  
Case Description: Electric Rate Filing  
Case: 07-E-0523

Response to DPS Interrogatories – Set Staff9  
Date of Response: 07/17/2007  
Responding Witness: Forecasting Panel

Question No. :167

Subject: Electric Sales Volume Forecast - Follow-up to Con Edison response to Staff IR DPS-11(2). DPS-11(2) addressed the SC 1 model for which the dummy variable D2005603 was used. Provide analyses of the relationship between the daily sendout/usage for SC 1 and CDD, if feasible, similar to those as provided in the attachment to Con Edison response to Staff IR DPS-11(2).

Response:

Data on daily sendout/usage by service class are not available.

Company Name: Con Edison  
Case Description: Electric Rate Filing  
Case: 07-E-0523

Response to DPS Interrogatories – Set Staff9  
Date of Response: 07/17/2007  
Responding Witness: Forecasting Panel

Question No. :169

Subject: Electric Sales Volume Forecast - Provide a forecast for sales volume for SC 1 for calendar years 2007 and 2008 and rate years 2009-2011 (as appeared in Exhibit \_\_\_\_ (FP-2) and Exhibit \_\_\_\_ (FP-3)), but replacing the value of zero with the value of one for dummy variable D2005603 for the third quarter for the forecasting period (2007-2011).

Response:

See attached file, DPS-169.pdf.

**CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.**  
**CASE 07-E-0523**  
**Staff IR Set 09 - DPS-169**

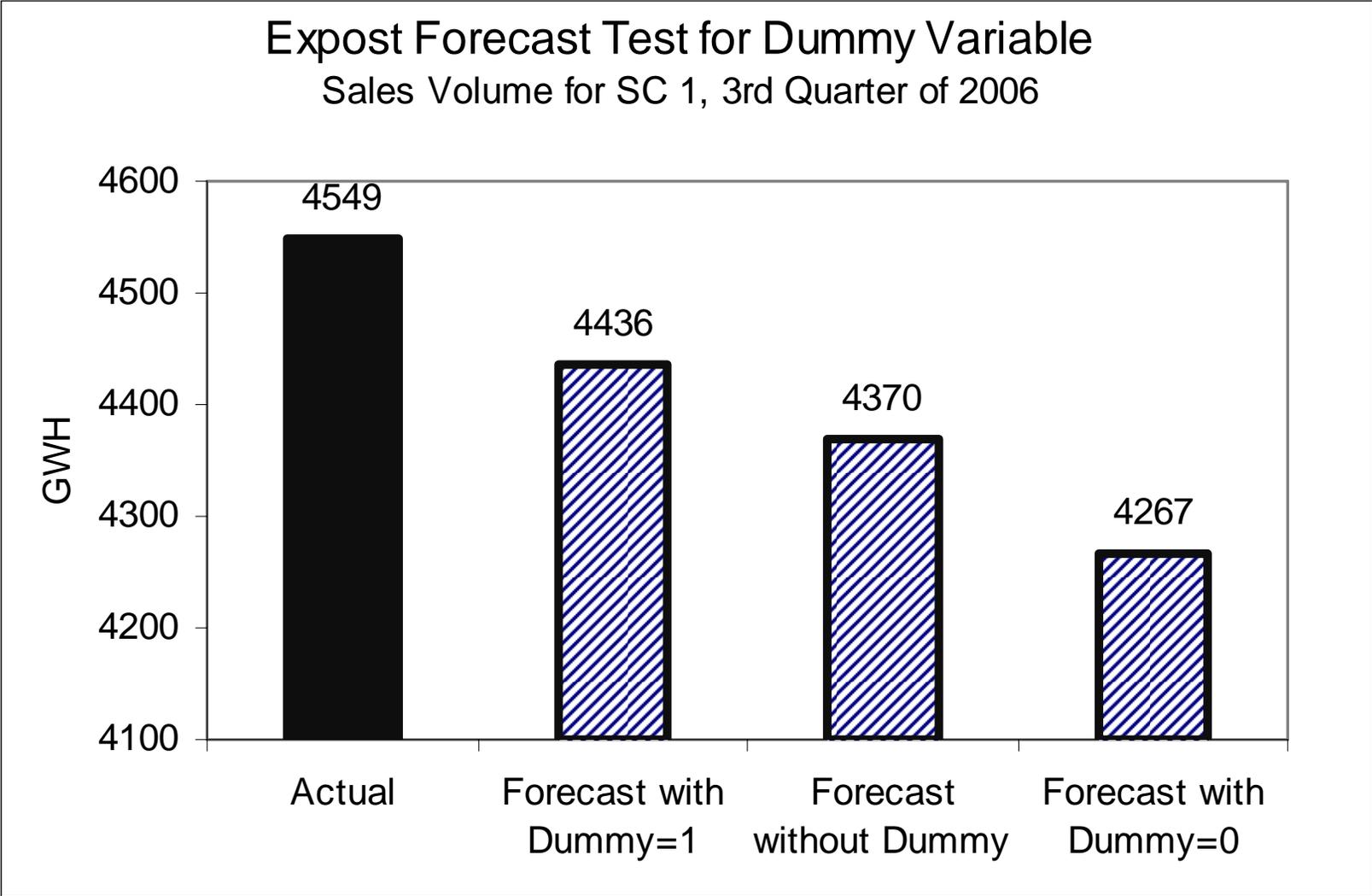
**Forecast of SC 1 Sales in GWh**

with D2005603 = 1 in 2007Q3, 2008Q3, 2009Q3, and 2010Q3.

| <u>Calendar Year</u> | <u>SC 1 Sales</u> |
|----------------------|-------------------|
| 2007                 | 13,860            |
| 2008                 | 14,123            |

| <u>Rate Year ending March 31</u> | <u>SC 1 Sales</u> |
|----------------------------------|-------------------|
| 2009                             | 14,196            |
| 2010                             | 14,365            |
| 2011                             | 14,557            |

**Exhibit \_\_\_\_ (AL-2)**



## Annual Total Number of Cooling Degree Days Con Edison Forecast vs. 30-Year Average

|     |                                   |       |
|-----|-----------------------------------|-------|
| (1) | 30-Year Average (1976-2005)       | 1,572 |
| (2) | 30-Year Average (1977-2006)       | 1,576 |
| (3) | Con Edison Forecast for 2007-2009 | 1,549 |
| (4) | Difference from Average in (1)    | (23)  |
| (5) | Difference from Average in (2)    | (27)  |

### Number of Customers: Forecasts vs. Actual

Consolidated Edison Company of New York

|                  | <u>Jan-Mar 2007</u> |            |            |            | <u>Apr-Jun 2007</u> |            |            |            |
|------------------|---------------------|------------|------------|------------|---------------------|------------|------------|------------|
|                  | <u>SC1</u>          | <u>SC2</u> | <u>SC4</u> | <u>SC7</u> | <u>SC1</u>          | <u>SC2</u> | <u>SC4</u> | <u>SC7</u> |
| Actual*          | 2,725,142           | 354,193    | 2,125      | 16,884     | 2,728,796           | 355,904    | 2,223      | 16,946     |
| Company Forecast | 2,725,097           | 350,074    | 2,074      | 16,587     | 2,727,367           | 351,475    | 2,074      | 16,745     |
| Difference       | -45                 | -4,119     | -51        | -297       | -1,429              | -4,429     | -149       | -200       |
| Staff Forecast   | 2,724,576           | 352,215    | 2,125      | 16,883     | 2,727,614           | 353,493    | 2,125      | 16,948     |
| Difference       | -566                | -1,978     | 0          | -1         | -1,182              | -2,411     | -98        | 2          |

\* Responses to New York City IRs #73 and #190.

**Exhibit \_\_\_\_ (AL-3)**

**Electric Peak Load Forecast Methodology and Assumptions**

The electric peak load forecasting process involves a top-down as well as a bottom-up evaluation for each of the major sectors in the economy (commercial & residential) for the service area. The bottom-up process is reconciled with the top-down process to establish the service area peak load forecast growth. The governmental sector is forecasted using a bottom-up approach only. Since we need to allocate load growth by network area, any system load growth must be associated with a network area in order to plan for growth by area.

The three key drivers of the forecast are known projects, the economy, and consumer behavior. Since both processes are used to calculate the residential and commercial load growth, one may be the dominant process for deriving the sector load growth.

**Residential Sector**

***Consumer Behavior***

Appliance Saturation (Cooling Load comprises about 75% of the CECONY residential peak load.)

- **Room Air Conditioners:** There are about 5.6 million room air conditioners in Con Edison’s service territory as of the summer 2006. About 875,000 additional room air conditioners will be added to the CECONY service territory by the summer 2011 from the summer 2006 level. About 500,000 additional room air conditioners will be added from 2011 to 2016.
- **Central Air Conditioners:** There are about 385,000 central air conditioners in the Con Edison service territory. About 40,000 central air conditioners will be added by summer 2011. About 25,000 additional central air conditioners will be added from 2011 to 2016.

Saturation (the percentage of households with an appliance) of air conditioners increases at a slower rate in the latter five years of the forecast.

| <b><u>Saturation of Air Conditioning</u></b> |                    |                    |                    |
|--|--------------------|--------------------|--------------------|
|  | <b><u>(%)</u></b>  |                    |                    |
|  | <b><u>2006</u></b> | <b><u>2011</u></b> | <b><u>2016</u></b> |
| <b><u>Room AC</u></b>                        |                    |                    |                    |
| Primary                                      | 80                 | 82                 | 83                 |
| Secondary                                    | 49                 | 61                 | 66                 |
| Tertiary                                     | 35                 | 43                 | 48                 |
| <br>Central AC                               | <br>11             | <br>12             | <br>13             |

Assumptions used in 2007-2016 forecast

A lower amount of saturation growth is assumed in the latter five years of the residential forecast, which causes slower growth in the number of units and results in lower load growth in the latter years of the forecast.

**Conclusion:**

If the same rate of growth for additional room and central units is assumed for the period 2011 to 2016 as was used from 2006 to 2011, the result would be an additional 100 MW of residential load over the five year period (20 MW per year), with all other factors remaining unchanged.

**Number of Households**

One input into the residential end-use model is the number of households in the Con Edison service territory. From 2006 to 2011, the number of households grows an annual average growth rate of 0.4% per year, or about 14,000 households per year. From 2011 to 2016, the compounded annual growth rate in the number of households slows to 0.3% per year, or an average of 10,000 per year.

**Conclusion:**

If the growth in the number of households remained at 0.4% per year from 2011 to 2016, the residential load would have been 30 MW higher by 2016 (or 6 MW higher per year), all other factors remain unchanged.

**Air Conditioning Efficiency**

We use the government standard for appliance efficiency for air conditioners in our forecast. We assume 15% efficiency for room air conditioners and 30% efficiency for central air conditioners.

**Conclusion:**

If we did not utilize these efficiency standards in our forecast, it would result in an additional 450 MW of growth (45 MW per year) in the residential sector in the ten-year period from 2006 to 2016 (from the current 2016 forecast).

Note: If all changes were made simultaneously, it would result in a greater impact since the assumptions made impact the other factors in the model by design.

**Commercial Sector**

We forecast commercial load by utilizing a top-down and bottom-up process.

By looking at employment from the bottom perspective only, employment levels can be converted to load by making certain assumptions. We use private non-manufacturing employment in our forecasting process. If we take the level change in private non-manufacturing employment, we convert this number into load by estimating the amount of jobs in the office sector; assume an average square footage per employee; and assume an average number of watts per square foot per employee. The result gives an estimate of the load resulting from employment from a bottom-up perspective. Since we do not have as good of an idea about known commercial construction projects for the last five years of the forecast, if we assume that the growth in private non-manufacturing employment stays the same from 2011-2016 as it was from 2010 to 2011, we would get a new bottom-up estimate of growth from employment alone.

**Conclusion:**

If the employment growth rate from 2012 to 2016 is revised to the rate from 2010 to 2011, it results in an additional 55 MW of growth in the commercial sector from 2011 to 2016.

**Governmental Sector**

We use a bottom-up process to forecast the growth in governmental load. The current growth in governmental load declines in the latter five years of the forecast due to lack of information about governmental projects.

**Conclusion:**

If we assumed the same growth in the last five years of the forecast as in the first five years, the governmental forecast would increase by 90 MW over the current forecast for the years 2011-2016. However, we cannot assume governmental projects will just happen as they have in the past and where they will happen, so we use the best information available for this sector.

**SUMMARY CONCLUSION:**

**If all of the above assumptions were made in the forecast, the 10-year forecasted growth (from 2006-2016) would be higher by 725 MW.**

**Exhibit \_\_\_\_ (AL-4)**



## Question: How do I use the Consumer Price Index (CPI) for escalating contracts?

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**Answer:** The **CPI** measures the average change in the prices paid for a market basket of goods and services. These items are purchased for consumption by the two groups covered by the index: All Urban Consumers (CPI-U) and Urban Wage Earners and Clerical Workers, (CPI-W).

Escalation agreements often use the CPI—the most widely used measure of price change—to adjust payments for changes in prices. The most frequently used escalation applications are in private sector collective bargaining agreements, rental contracts, insurance policies with automatic inflation protection, and alimony and child support payments.

The following are general guidelines to consider when developing an escalation agreement using the CPI:

**DEFINE** clearly the base payment (rent, wage rate, alimony, child support, or other value) that is subject to escalation.

**IDENTIFY** precisely which CPI index series will be used to escalate the base payment. This should include: The population coverage (CPI-U or CPI-W), area coverage (U.S. City Average, West Region, Chicago, etc.), series title (all items, rent of primary residence, etc.), and index base period (1982-84=100).

**SPECIFY** a reference period from which changes in the CPI will be measured. This is usually a single month (the CPI does not correspond to a specific day or week of the month) or an annual average. There is about a 2-week lag from the reference month to the date on which the index is released (e.g., the CPI for May is released in mid-June). The CPI's for most metropolitan areas are not published as frequently as are the data for the U.S. City Average and the 4 regions. Indexes for the U.S. City Average, the 4 regions, 3 city-size classes, 10 region-by-size classes, and 3 major metropolitan areas (Chicago, Los Angeles, and New York) are published monthly. Indexes for the remaining 23 published metropolitan areas are available only on a bimonthly or semiannual basis. Contact the BLS address at the end of this fact sheet for information on the frequency of publication for the 26 metropolitan areas.

**STATE** the frequency of adjustment. Adjustments are usually made at fixed time intervals, such as quarterly, semiannually, or, most often, annually.

**DETERMINE** the formula for the adjustment calculation. Usually the change in payments is directly proportional to the percent change in the CPI index between two specified time periods. Consider whether to make an allowance for a "cap" that places an upper limit to the increase in wages, rents, etc., or a "floor" that promises a minimum increase regardless of the percent change (up or down) in the CPI.

**PROVIDE** a built-in method for handling situations that may arise because of major CPI revisions or changes in the CPI index base period. The Bureau always provides timely notification of

upcoming revisions or changes in the index base.

**The CPI and escalation: Some points to consider**

The CPI is calculated for two population groups: All Urban Consumers (CPI-U) and Urban Wage Earners and Clerical Workers (CPI-W). The CPI-U represents about 87 percent of the total U.S. population and is based on the expenditures of *all* families living in urban areas. The CPI-W is a subset of the CPI-U and is based on the expenditures of families living in urban areas who meet additional requirements related to employment: more than one-half of the family's income has to be earned from clerical or hourly-wage occupations. The CPI-W represents about 32 percent of the total U.S. population.

There can be small differences in movement of the two indexes over short periods of time because differences in the spending habits of the two population groups result in slightly different weighting. The long-term movements in the indexes are similar. CPI-U and CPI-W indexes are calculated using measurement of price changes for goods and services with the same specifications and from the same retail outlets. The CPI-W is used for escalation primarily in blue-collar cost-of-living adjustments (COLA's). Because the CPI-U population coverage is more comprehensive, it is used in most other escalation agreements.

The 26 metropolitan areas for which BLS publishes separate index series are by-products of the U.S. City Average index. Metropolitan area indexes have a relatively small sample size and, therefore, are subject to substantially larger sampling errors. Metropolitan area and other sub-components of the national indexes (regions, size-classes) often exhibit greater volatility than the national index. BLS strongly recommends that users adopt the U.S. City Average CPI for use in escalator clauses.

The U.S. City Average CPI's are published on a seasonally adjusted basis as well as on an unadjusted basis. The purpose of seasonal adjustment is to remove the estimated effect of price changes that normally occur at the same time and in about the same magnitude every year (e.g., price movements due to the change in weather patterns, model change-overs, holidays, end-of-season sales, etc.). The primary use of seasonally adjusted data is for current economic analysis. In addition, the factors that are used to seasonally adjust the data are updated annually. Also, seasonally adjusted data that have been published earlier are subject to revision for up to 5 years after their original release. For these reasons, the use of seasonally adjusted data in escalation agreements is inappropriate.

Escalation agreements using the CPI usually involve changing the base payment by the percent change in the level of the CPI between the reference period and a subsequent time period. This is calculated by first determining the index point change between the two periods and then the percent change. The following example illustrates the computation of percent change:

|                                |             |
|--------------------------------|-------------|
| CPI for current period         | 136.0       |
| Less CPI for previous period   | 129.9       |
| Equals index point change      | 6.1         |
| Divided by previous period CPI | 129.9       |
| Equals                         | 0.047       |
| Result multiplied by 100       | 0.047 x 100 |
| Equals percent change          | 4.7         |

The Bureau of Labor Statistics neither encourages nor discourages the use of price adjustment

measures in contractual agreements. Also, while BLS can provide technical and statistical assistance to parties developing escalation agreements, we can neither develop specific wording for contracts nor mediate legal or interpretive disputes which might arise between the parties to the agreement.

For any additional information about the CPI, please call (202) 691-7000, or write to:

Bureau of Labor Statistics  
Office of Prices and Living Conditions  
2 Massachusetts Avenue, NE., Room 3615  
Washington, DC 20212-0001

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