

## Chapter 3 – Appendix A

### Weather Normalized Energy Models<sup>1</sup>

#### Residential Weather Normalization Energy Model Coefficients

| Variable                  | Coefficient | StdErr    | T-Stat | P-Value |
|---------------------------|-------------|-----------|--------|---------|
| CONST                     | 85,700,308  | 1,517,563 | 56.47  | 0.00%   |
| DOWBinary.Monday          | -1,256,806  | 174,389   | -7.21  | 0.00%   |
| DOWBinary.Tuesday         | -1,336,864  | 173,663   | -7.70  | 0.00%   |
| DOWBinary.Wednesday       | -1,341,647  | 173,922   | -7.71  | 0.00%   |
| DOWBinary.Thursday        | -1,099,169  | 173,950   | -6.32  | 0.00%   |
| DOWBinary.Friday          | -1,270,938  | 173,646   | -7.32  | 0.00%   |
| DOWBinary.Saturday        | -813,685    | 173,512   | -4.69  | 0.00%   |
| MonthBinary.Jan           | 4,192,363   | 250,786   | 16.72  | 0.00%   |
| MonthBinary.Feb           | 2,895,109   | 244,202   | 11.86  | 0.00%   |
| MonthBinary.Mar           | 595,084     | 218,883   | 2.72   | 0.66%   |
| MonthBinary.Apr           | -1,516,018  | 222,981   | -6.80  | 0.00%   |
| MonthBinary.May           | -2,613,550  | 202,746   | -12.89 | 0.00%   |
| MonthBinary.Jul           | 171,024     | 215,885   | 0.79   | 42.83%  |
| MonthBinary.Aug           | 469,794     | 208,125   | 2.26   | 2.41%   |
| MonthBinary.Sep           | -2,240,379  | 205,853   | -10.88 | 0.00%   |
| MonthBinary.Oct           | -2,836,788  | 214,164   | -13.25 | 0.00%   |
| MonthBinary.Dec           | 3,329,992   | 240,769   | 13.83  | 0.00%   |
| ResSplines.AvgT           | -2,191,475  | 176,333   | -12.43 | 0.00%   |
| ResSplines.XColdAvgT      | 1,294,509   | 180,481   | 7.17   | 0.00%   |
| ResSplines.CoolAvgT       | 314,987     | 25,206    | 12.50  | 0.00%   |
| ResSplines.MILDAvgT       | 558,889     | 51,893    | 10.77  | 0.00%   |
| ResSplines.WarmAvgT       | 888,623     | 70,102    | 12.68  | 0.00%   |
| ResSplines.HotAvgT        | 679,190     | 48,032    | 14.14  | 0.00%   |
| ResSplines.ShoulderWarm   | -350,582    | 70,208    | -4.99  | 0.00%   |
| US_Holidays.RES_HolidaysX | 2,019,324   | 259,774   | 7.77   | 0.00%   |

Note: One of the explanatory variables was retained in the model despite being only marginally statistically significant (p-value>.05). The direction and magnitude of the coefficient are reasonable, the standard error is consistent with other variables, and the interpretation of all of the weather variables is cleaner with the inclusion of this variable.

<sup>1</sup> 20 CSR 4240-22.030(2)(C)3

**Residential Weather Normalization Energy Models Statistics**

| <b>Model Statistic</b>    | <b>Value of the Statistic</b> |
|---------------------------|-------------------------------|
| Adjusted Observations     | 2,375                         |
| Deg. of Freedom for Error | 2,350                         |
| R-Squared                 | 0.95                          |
| Adjusted R-Squared        | 0.95                          |
| F-Statistic               | 2,036                         |
| Prob (F-Statistic)        | 0                             |
| Mean Abs. % Err. (MAPE)   | 4.86%                         |
| Durbin-Watson Statistic   | 1.01                          |

## Commercial SGS Weather Normalization Energy Model Coefficients

| Variable                        | Coefficient | StdErr  | T-Stat | P-Value |
|---------------------------------|-------------|---------|--------|---------|
| CONST                           | 14,078,603  | 106,468 | 132.23 | 0.00%   |
| DOWBinary.MonFri                | 674,803     | 81,275  | 8.30   | 0.00%   |
| DOWBinary.TWT                   | 817,465     | 80,585  | 10.14  | 0.00%   |
| MonthBinary.Feb                 | 102,597     | 46,350  | 2.21   | 2.69%   |
| MonthBinary.Mar                 | -174,961    | 46,065  | -3.80  | 0.02%   |
| MonthBinary.May                 | -262,136    | 43,542  | -6.02  | 0.00%   |
| MonthBinary.Jun                 | -257,868    | 40,637  | -6.35  | 0.00%   |
| MonthBinary.Oct                 | -379,606    | 46,357  | -8.19  | 0.00%   |
| MonthBinary.Nov                 | 21,071      | 50,960  | 0.41   | 67.93%  |
| COMSGSSplines.AvgT              | -141,098    | 2,440   | -57.83 | 0.00%   |
| COMSGSSplines.CoolAvgT          | 36,736      | 6,674   | 5.50   | 0.00%   |
| COMSGSSplines.MildAvgT          | 108,315     | 10,182  | 10.64  | 0.00%   |
| COMSGSSplines.WarmAvgT          | 118,473     | 13,114  | 9.03   | 0.00%   |
| COMSGSSplines.HotAvgT           | 118,238     | 10,354  | 11.42  | 0.00%   |
| COMSGSSplines.WkndAvgT          | -10,365     | 1,273   | -8.14  | 0.00%   |
| COMSGSSplines.ShoulderAvgT      | -6,630      | 786     | -8.44  | 0.00%   |
| US_Holidays.ComSGS_HolidayX     | -1,149,597  | 64,074  | -17.94 | 0.00%   |
| MonthBinary.COVID_April_May2020 | -1,052,094  | 73,810  | -14.25 | 0.00%   |

Note: One of the explanatory variables was retained in the model despite being only marginally statistically significant (p-value>.05). The direction and magnitude of the coefficient are reasonable, the standard error is consistent with other variables, and the interpretation of all of the weather variables is cleaner with the inclusion of this variable.

## ComSGS Weather Normalization Energy Models Statistics

| Model Statistic           | Value of the Statistic |
|---------------------------|------------------------|
| Adjusted Observations     | 2,375                  |
| Deg. of Freedom for Error | 2,357                  |
| R-Squared                 | 0.91                   |
| Adjusted R-Squared        | 0.91                   |
| F-Statistic               | 1,429                  |
| Prob (F-Statistic)        | 0                      |
| Mean Abs. % Err. (MAPE)   | 4.77%                  |
| Durbin-Watson Statistic   | 0.83                   |

## ComLGS Weather Normalization Energy Model Coefficients

| Variable                    | Coefficient | StdErr  | T-Stat | P-Value |
|-----------------------------|-------------|---------|--------|---------|
| CONST                       | 23,230,419  | 200,227 | 116.02 | 0.00%   |
| DOWBinary.Monday            | 2,609,220   | 74,474  | 35.04  | 0.00%   |
| DOWBinary.TWT               | 2,771,467   | 64,095  | 43.24  | 0.00%   |
| DOWBinary.Friday            | 2,414,882   | 74,018  | 32.63  | 0.00%   |
| DOWBinary.Saturday          | 639,237     | 64,942  | 9.84   | 0.00%   |
| MonthBinary.May             | 941,155     | 81,184  | 11.59  | 0.00%   |
| MonthBinary.Jun             | -886,626    | 67,451  | -13.15 | 0.00%   |
| MonthBinary.Oct             | 753,144     | 73,833  | 10.20  | 0.00%   |
| COMLGSSplines.AvgT          | -193,914    | 6,062   | -31.99 | 0.00%   |
| COMLGSSplines.CoolAvgT      | 28,090      | 8,490   | 3.31   | 0.10%   |
| COMLGSSplines.WarmAvgT      | 226,192     | 8,288   | 27.29  | 0.00%   |
| COMLGSSplines.HotAvgT       | 224,797     | 8,827   | 25.47  | 0.00%   |
| COMLGSSplines.SummerAvgT    | 24,001      | 1,205   | 19.91  | 0.00%   |
| COMLGSSplines.WkdayWarmAvgT | 43,941      | 3,538   | 12.42  | 0.00%   |
| US_Holidays.July4thHol      | -3,115,087  | 322,830 | -9.65  | 0.00%   |
| US_Holidays.MemorialDay     | -3,127,172  | 328,456 | 9.52   | 0.00%   |
| US_Holidays.LaborDay        | -3,058,271  | 324,696 | -9.42  | 0.00%   |
| US_Holidays.Thanksgiving    | -3,296,267  | 347,108 | -9.50  | 0.00%   |
| MonthBinary.Yr2021_Shift    | -59,736     | 39,359  | -1.52  | 12.92%  |

Note: One of the explanatory variables was retained in the model despite being only marginally statistically significant (p-value>.05). The direction and magnitude of the coefficient are reasonable, the standard error is consistent with other variables, and the interpretation of all of the weather variables is cleaner with the inclusion of this variable.

## ComLGS Weather Normalization Energy Models Statistics

| Model Statistic           | Value of the Statistic |
|---------------------------|------------------------|
| Adjusted Observations     | 2,375                  |
| Deg. of Freedom for Error | 2,356                  |
| R-Squared                 | 0.90                   |
| Adjusted R-Squared        | 0.90                   |
| F-Statistic               | 1,208                  |
| Prob (F-Statistic)        | 0                      |
| Mean Abs. % Err. (MAPE)   | 3.57%                  |
| Durbin-Watson Statistic   | 0.59                   |

## ComSPS Weather Normalization Energy Model Coefficients

| Variable                    | Coefficient | StdErr | T-Stat | P-Value |
|-----------------------------|-------------|--------|--------|---------|
| CONST                       | 7,877,281   | 63,725 | 123.61 | 0.00%   |
| DOWBinary.Friday            | -66,470     | 18,235 | -3.65  | 0.03%   |
| DOWBinary.Saturday          | -550,026    | 18,333 | -30.00 | 0.00%   |
| DOWBinary.Sunday            | -665,929    | 18,325 | -36.34 | 0.00%   |
| COMSPSSplines.AvgT          | -38,130     | 1,631  | -23.38 | 0.00%   |
| COMSPSSplines.CoolAvgT      | 39,790      | 2,452  | 16.23  | 0.00%   |
| COMSPSSplines.MildAvgT      | 50,461      | 8,113  | 6.22   | 0.00%   |
| COMSPSSplines.WarmAvgT      | 24,142      | 8,267  | 2.92   | 0.35%   |
| COMSPSSplines.SummerAvgT    | 1,277       | 491    | 2.60   | 0.94%   |
| US_Holidays.ComSPS_HolidayX | -361,402    | 25,317 | -14.28 | 0.00%   |
| MonthBinary.Jan             | 166,393     | 29,015 | 5.74   | 0.00%   |
| MonthBinary.Feb             | 148,954     | 28,601 | 5.21   | 0.00%   |
| MonthBinary.Apr             | 65,401      | 25,110 | 2.61   | 0.92%   |
| MonthBinary.May             | 22,935      | 28,521 | 0.80   | 42.14%  |
| MonthBinary.Jul             | 252,513     | 29,801 | 8.47   | 0.00%   |
| MonthBinary.Aug             | 122,459     | 29,097 | 4.21   | 0.00%   |
| MonthBinary.Sep             | 105,536     | 29,929 | 3.53   | 0.04%   |
| MonthBinary.Nov             | 90,295      | 25,899 | 3.49   | 0.05%   |

Note: One of the explanatory variables was retained in the model despite being only marginally statistically significant ( $p\text{-value} > .05$ ). The direction and magnitude of the coefficient are reasonable, the standard error is consistent with other variables, and the interpretation of all of the weather variables is cleaner with the inclusion of this variable.

## Com SPS Weather Normalization Energy Models Statistics

| Model Statistic           | Value of the Statistic |
|---------------------------|------------------------|
| Adjusted Observations     | 2,375                  |
| Deg. of Freedom for Error | 2,357                  |
| R-Squared                 | 0.83                   |
| Adjusted R-Squared        | 0.83                   |
| F-Statistic               | 688.59                 |
| Prob (F-Statistic)        | 0                      |
| Mean Abs. % Err. (MAPE)   | 3.53%                  |
| Durbin-Watson Statistic   | 0.57                   |

## Com LPS Weather Normalization Energy Model Coefficients

| Variable                        | Coefficient | StdErr  | T-Stat | P-Value |
|---------------------------------|-------------|---------|--------|---------|
| CONST                           | 3,577,204   | 68,097  | 52.53  | 0.00%   |
| DOWBinary.Saturday              | -157,349    | 26,046  | -6.04  | 0.00%   |
| DOWBinary.Sunday                | -179,711    | 26,088  | -6.89  | 0.00%   |
| MonthBinary.Jan                 | -141,128    | 40,193  | -3.51  | 0.05%   |
| MonthBinary.Jul                 | 125,597     | 38,513  | 3.26   | 0.11%   |
| MonthBinary.Aug                 | 180,158     | 36,313  | 4.96   | 0.00%   |
| MonthBinary.Oct                 | 99,098      | 34,807  | 2.85   | 0.45%   |
| MonthBinary.Dec                 | 124,215     | 36,934  | 3.36   | 0.08%   |
| MonthBinary.Apr2020             | -355,805    | 81,219  | -4.38  | 0.00%   |
| COMLPSSplines.AvgT              | 4,133       | 1,458   | 2.84   | 0.46%   |
| COMLPSSplines.HotAvgT           | 64          | 4,310   | 0.02   | 98.82%  |
| COMLPSSplines.WarmAvgT          | 32,792      | 3,174   | 10.33  | 0.00%   |
| US_Holidays.ComLPS_HolidayX     | -48,280     | 45,492  | -1.06  | 28.87%  |
| MonthBinary.Customer_Com_Outage | -686,667    | 101,362 | -6.77  | 0.00%   |

Note: Two of the explanatory variables were retained in the model despite being only marginally statistically significant (p-value>.05). The direction and magnitude of the coefficient are reasonable, the standard error is consistent with other variables, and the interpretation of all of the weather variables is cleaner with the inclusion of this variable.

## Com LPS Weather Normalization Energy Models Statistics

| Model Statistic           | Value of the Statistic |
|---------------------------|------------------------|
| Adjusted Observations     | 2,375                  |
| Deg. of Freedom for Error | 2,361                  |
| R-Squared                 | 0.57                   |
| Adjusted R-Squared        | 0.57                   |
| F-Statistic               | 242.852                |
| Prob (F-Statistic)        | 0                      |
| Mean Abs. % Err. (MAPE)   | 8.08%                  |
| Durbin-Watson Statistic   | 0.10                   |

## Ind SGS Weather Normalization Energy Model Coefficients

| Variable                    | Coefficient | StdErr | T-Stat | P-Value |
|-----------------------------|-------------|--------|--------|---------|
| CONST                       | 309,349     | 5,472  | 56.53  | 0.00%   |
| DOWBinary.Monday            | 98,073      | 2,641  | 37.14  | 0.00%   |
| DOWBinary.Tuesday           | 104,718     | 2,635  | 39.74  | 0.00%   |
| DOWBinary.Wednesday         | 101,229     | 2,637  | 38.39  | 0.00%   |
| DOWBinary.Thursday          | 101,271     | 2,641  | 38.35  | 0.00%   |
| DOWBinary.Friday            | 92,997      | 2,642  | 35.20  | 0.00%   |
| DOWBinary.Sunday            | -20,651     | 2,631  | -7.85  | 0.01%   |
| MonthBinary.Feb             | 6,531       | 3,109  | 2.10   | 3.58%   |
| MonthBinary.May             | -11,102     | 2,672  | -4.16  | 0.16%   |
| MonthBinary.Oct             | 44,041      | 2,794  | 15.76  | 0.00%   |
| MonthBinary.Nov             | 86,119      | 2,954  | 29.16  | 0.00%   |
| MonthBinary.Dec             | 42,178      | 2,967  | 14.22  | 0.00%   |
| INDSGSSplines.AvgT          | -3,667      | 121    | -30.23 | 0.00%   |
| INDSGSSplines.MILDavgT      | 2,889       | 229    | 12.64  | 0.00%   |
| INDSGSSplines.WarmAvgT      | 6,374       | 303    | 21.02  | 0.00%   |
| US_Holidays.IndSGS_HolidayX | -75,777     | 4,190  | -18.08 | 0.00%   |
| US_Holidays.July4thHol      | -26,581     | 13,675 | -1.94  | 5.20%   |
| MonthBinary.Jul_2020        | 4,717       | 6,326  | 0.75   | 45.59%  |
| MonthBinary.COVID_IndSGS    | -13,796     | 4,317  | -3.20  | 0.14%   |

Note: One of the explanatory variables was retained in the model despite being only marginally statistically significant ( $p\text{-value} > .05$ ). The direction and magnitude of the coefficient are reasonable, the standard error is consistent with other variables, and the interpretation of all of the weather variables is cleaner with the inclusion of this variable.

## Ind SGS Weather Normalization Energy Models Statistics

| Model Statistic           | Value of the Statistic |
|---------------------------|------------------------|
| Adjusted Observations     | 2,371                  |
| Deg. of Freedom for Error | 2,352                  |
| R-Squared                 | 0.78                   |
| Adjusted R-Squared        | 0.78                   |
| F-Statistic               | 460.78                 |
| Prob (F-Statistic)        | 0                      |
| Mean Abs. % Err. (MAPE)   | 13.18%                 |
| Durbin-Watson Statistic   | 1.08                   |

## Ind LGS Weather Normalization Energy Model Coefficients

| Variable                 | Coefficient | StdErr | T-Stat | P-Value |
|--------------------------|-------------|--------|--------|---------|
| CONST                    | 1,426,001   | 11,213 | 127.18 | 0.00%   |
| DOWBinary.TWT            | 773,703     | 11,275 | 68.62  | 0.00%   |
| DOWBinary.MonFri         | 634,180     | 12,468 | 50.86  | 0.00%   |
| MonthBinary.Jan          | 118,972     | 18,789 | 6.33   | 0.00%   |
| MonthBinary.Feb          | 56,982      | 19,303 | 2.95   | 0.32%   |
| MonthBinary.May          | 40,418      | 17,805 | 2.27   | 2.33%   |
| MonthBinary.Jun          | 81,701      | 19,849 | 4.12   | 0.00%   |
| MonthBinary.Jul          | 200,135     | 22,494 | 8.90   | 0.00%   |
| MonthBinary.Aug          | 155,906     | 20,250 | 7.70   | 0.00%   |
| MonthBinary.Sep          | 143,412     | 18,408 | 7.79   | 0.00%   |
| MonthBinary.Nov          | 131,490     | 19,991 | 6.58   | 0.00%   |
| INDLGSSplines.HotAvgT    | 20,591      | 1,869  | 11.02  | 0.00%   |
| US_Holidays.NYHol        | -931,322    | 93,727 | -9.94  | 0.00%   |
| US_Holidays.GoodFridays  | -836,871    | 86,250 | -9.70  | 0.00%   |
| US_Holidays.MemorialDay  | -1,063,251  | 87,262 | -12.19 | 0.00%   |
| US_Holidays.LaborDay     | -949,895    | 87,324 | -10.88 | 0.00%   |
| US_Holidays.WedB4Thanks  | -366,103    | 94,271 | -3.88  | 0.01%   |
| US_Holidays.Thanksgiving | -1,269,518  | 94,271 | -13.47 | 0.00%   |
| US_Holidays.FriAftThanks | -1,105,211  | 94,398 | -11.71 | 0.00%   |
| US_Holidays.SatAftThanks | -378,828    | 94,398 | -4.01  | 0.01%   |
| US_Holidays.XMasEve      | -723,847    | 92,785 | -7.80  | 0.00%   |
| US_Holidays.XMasHol      | -912,913    | 92,939 | -9.82  | 0.00%   |
| US_Holidays.XMASAft      | -477,365    | 38,771 | -12.31 | 0.00%   |
| US_Holidays.July4Total   | -1,023,104  | 77,044 | -13.28 | 0.00%   |

## Ind LGS Weather Normalization Energy Models Statistics

| Model Statistic           | Value of the Statistic |
|---------------------------|------------------------|
| Adjusted Observations     | 2,375                  |
| Deg. of Freedom for Error | 2,351                  |
| R-Squared                 | 0.74                   |
| Adjusted R-Squared        | 0.74                   |
| F-Statistic               | 297.30                 |
| Prob (F-Statistic)        | 0                      |
| Mean Abs. % Err. (MAPE)   | 9.46%                  |
| Durbin-Watson Statistic   | 0.69                   |

## Ind SPS Weather Normalization Energy Model Coefficients

| Variable                    | Coefficient | StdErr | T-Stat | P-Value |
|-----------------------------|-------------|--------|--------|---------|
| CONST                       | 3,246,490   | 22,408 | 144.88 | 0.00%   |
| DOWBinary.Tuesday           | 153,275     | 11,997 | 12.78  | 0.00%   |
| DOWBinary.Wednesday         | 155,178     | 12,015 | 12.92  | 0.00%   |
| DOWBinary.Thursday          | 155,472     | 12,010 | 9.61   | 0.00%   |
| DOWBinary.Saturday          | -502,337    | 12,014 | -41.81 | 0.00%   |
| DOWBinary.Sunday            | -663,098    | 12,022 | -55.16 | 0.00%   |
| MonthBinary.Feb             | 75,320      | 15,683 | 4.80   | 0.00%   |
| MonthBinary.May             | 64,593      | 15,352 | 4.21   | 0.00%   |
| MonthBinary.Jun             | 20,958      | 19,936 | 1.05   | 29.32%  |
| MonthBinary.Jul             | 71,197      | 21,923 | 3.25   | 0.12%   |
| MonthBinary.Aug             | 116,707     | 20,385 | 5.73   | 0.00%   |
| MonthBinary.Sep             | -2,106      | 17,436 | -0.12  | 90.39%  |
| INDSPSSplines.AvgT          | -1,816      | 437    | -4.15  | 0.00%   |
| INDSPSSplines.WarmAvgT      | 17,013      | 1,129  | 15.08  | 0.00%   |
| MonthBinary.COVIDSPS2       | -72,835     | 22,723 | -3.21  | 0.14%   |
| US_Holidays.IndSPS_HolidayX | 523,475     | 15,638 | -33.48 | 0.00%   |

Note: Two of the explanatory variables were retained in the model despite being only marginally statistically significant (p-value>.05). The direction and magnitude of the coefficient are reasonable, the standard error is consistent with other variables, and the interpretation of all of the weather variables is cleaner with the inclusion of this variable.

## Ind SPS Weather Normalization Energy Models Statistics

| Model Statistic           | Value of the Statistic |
|---------------------------|------------------------|
| Adjusted Observations     | 2,375                  |
| Deg. of Freedom for Error | 2,359                  |
| R-Squared                 | 0.81                   |
| Adjusted R-Squared        | 0.81                   |
| F-Statistic               | 653                    |
| Prob (F-Statistic)        | 0                      |
| Mean Abs. % Err. (MAPE)   | 4.51%                  |
| Durbin-Watson Statistic   | 0.79                   |

## Ind LPS Weather Normalization Energy Model Coefficients

| Variable                     | Coefficient | StdErr  | T-Stat | P-Value |
|------------------------------|-------------|---------|--------|---------|
| CONST                        | 6,059,866   | 58,845  | 102.98 | 0.00%   |
| DOWBinary.WeekEnd            | -325,504    | 43,122  | -7.55  | 0.00%   |
| DOWBinary.Monday             | -167,179    | 17,054  | -9.80  | 0.00%   |
| MonthBinary.Jan              | -303,033    | 29,541  | -10.26 | 0.00%   |
| MonthBinary.Feb              | -455,606    | 28,421  | -16.03 | 0.00%   |
| MonthBinary.Mar              | -215,284    | 25,573  | -8.42  | 0.00%   |
| MonthBinary.Apr              | 17,111      | 25,204  | 0.68   | 49.73%  |
| MonthBinary.Jun              | 25,301      | 28,735  | 0.88   | 37.87%  |
| MonthBinary.Jul              | 144,331     | 31,193  | 4.63   | 0.00%   |
| MonthBinary.Aug              | 189,947     | 28,975  | 6.56   | 0.00%   |
| MonthBinary.Sep              | -91,642     | 38,939  | -3.29  | 0.10%   |
| MonthBinary.Oct              | 36,721      | 24,854  | 1.48   | 13.97%  |
| MonthBinary.Nov              | 64,353      | 27,058  | 2.38   | 1.75%   |
| MonthBinary.Apr2020          | -654,724    | 58,488  | -11.20 | 0.00%   |
| INDLPSSplines.AvgT           | -6,640      | 1,333   | -4.98  | 0.00%   |
| INDLPSSplines.MildAvgT       | 12,464      | 2,185   | 5.71   | 0.00%   |
| INDLPSSplines.WarmAvgT       | 26,429      | 2,394   | 11.04  | 0.00%   |
| INDLPSSplines.WkndAvgT       | -2,162      | 680     | -3.18  | 0.15%   |
| MonthBinary.Customer_Idle    | 11,625      | 31,573  | 0.37   | 71.28%  |
| MonthBinary.LPS_Winter_Storm | -335,368    | 126,304 | -2.66  | 0.80%   |
| MonthBinary.Sept2020         | -31,796     | 59,282  | -0.54  | 59.18%  |
| MonthBinary.COVIDLPS         | 81,450      | 25,135  | 3.24   | 0.12%   |

Note: Some of the explanatory variables were retained in the model despite being only marginally statistically significant ( $p\text{-value} > .05$ ). The direction and magnitude of the coefficient are reasonable, the standard error is consistent with other variables, and the interpretation of all of the weather variables is cleaner with the inclusion of this variable.

**Ind LPS Weather Normalization Energy Models Statistics**

| <b>Model Statistic</b>    | <b>Value of the Statistic</b> |
|---------------------------|-------------------------------|
| Adjusted Observations     | 2,255                         |
| Deg. of Freedom for Error | 2,233                         |
| R-Squared                 | 0.72                          |
| Adjusted R-Squared        | 0.72                          |
| F-Statistic               | 277                           |
| Prob (F-Statistic)        | 0                             |
| Mean Abs. % Err. (MAPE)   | 3.67%                         |
| Durbin-Watson Statistic   | 0.52                          |

## Weather Normalized Peak Demand Models<sup>2</sup>

### Residential Weather Normalization Peak Model Coefficients

| Variable                  | Coefficient | StdErr  | T-Stat | P-Value |
|---------------------------|-------------|---------|--------|---------|
| CONST                     | 3,932,107   | 117,071 | 33.59  | 0.00%   |
| DOWBinary.Sunday          | 43,015      | 12,266  | 3.51   | 0.05%   |
| MonthBinary.Jan           | 33,160      | 19,770  | 1.68   | 9.36%   |
| MonthBinary.Feb           | -291        | 19,610  | -0.02  | 98.82%  |
| MonthBinary.Mar           | -115,497    | 18,346  | -6.30  | 0.08%   |
| MonthBinary.Apr           | -218,021    | 17,507  | -12.45 | 0.00%   |
| MonthBinary.May           | -202,257    | 16,142  | -12.53 | 0.00%   |
| MonthBinary.Sep           | -112,607    | 15,517  | -7.56  | 0.00%   |
| MonthBinary.Oct           | -263,784    | 17,781  | -14.84 | 0.00%   |
| MonthBinary.Nov           | -170,617    | 18,131  | -9.41  | 0.00%   |
| ResSplines.AvgT           | -81,264     | 12,004  | -6.77  | 0.00%   |
| ResSplines.MildAvgT       | 47,933      | 3,255   | 14.73  | 0.00%   |
| ResSplines.xColdAvgT      | 44,981      | 12,191  | 3.69   | 0.02%   |
| ResSplines.WarmAvgT       | 24,906      | 14,159  | 1.76   | 7.87%   |
| ResSplines.WkndMildAvgT   | 405         | 670     | 0.60   | 54.56%  |
| ResSplines.HotAvgT        | 46,858      | 12,355  | 3.79   | 0.02%   |
| MonthBinary.June2019      | -75,482     | 35,300  | -2.14  | 3.26%   |
| US_Holidays.RES_HolidaysX | 97,216      | 20,754  | 4.68   | 0.00%   |

Note: Two of the explanatory variables were retained in the model despite being only marginally statistically significant ( $p\text{-value} > .05$ ). The direction and magnitude of the coefficient are reasonable, the standard error is consistent with other variables, and the interpretation of all of the weather variables is cleaner with the inclusion of this variable.

<sup>2</sup> 20 CSR 4240-22.030(2)(C)3

## Residential Weather Normalization Peak Models Statistics

| Model Statistic           | Value of the Statistic |
|---------------------------|------------------------|
| Adjusted Observations     | 2,375                  |
| Deg. of Freedom for Error | 2,357                  |
| R-Squared                 | 0.91                   |
| Adjusted R-Squared        | 0.91                   |
| F-Statistic               | 1,361                  |
| Prob (F-Statistic)        | 0                      |
| Mean Abs. % Err. (MAPE)   | 7.10%                  |
| Durbin-Watson Statistic   | 1.42                   |

## Com SGS Weather Normalization Peak Model Coefficients

| Variable                       | Coefficient | StdErr | T-Stat | P-Value |
|--------------------------------|-------------|--------|--------|---------|
| CONST                          | 612,500     | 5,658  | 108.26 | 0.00%   |
| DOWBinary.TWT                  | 106,187     | 2,520  | 42.14  | 0.00%   |
| DOWBinary.MonFri               | 96,475      | 2,665  | 36.20  | 0.00%   |
| MonthBinary.Feb                | 8,316       | 3,302  | 2.52   | 1.19%   |
| MonthBinary.Mar                | -1,862      | 3,105  | -0.60  | 54.87%  |
| MonthBinary.May                | -20,815     | 2,975  | -7.00  | 0.00%   |
| MonthBinary.Jun                | -21,490     | 3,150  | -6.82  | 0.00%   |
| MonthBinary.Jul                | -4,561      | 3,314  | -1.38  | 16.89%  |
| COMSGSSplines.AvgT             | -5,870      | 125    | -47.06 | 0.00%   |
| COMSGSSplines.MildAvgT         | 5,945       | 712    | 8.35   | 0.00%   |
| COMSGSSplines.WarmAvgT         | 9,306       | 910    | 10.23  | 0.00%   |
| COMSGSSplines.HotAvgT          | 5,387       | 518    | 10.41  | 0.00%   |
| COMSGSSplines.WkndMildAvgT     | -2,203      | 148    | -14.92 | 0.00%   |
| COMSGSSplines.ShoulderMildAvgT | -2,629      | 325    | -8.09  | 0.00%   |
| US_Holidays.ComSGS_HolidayX    | -98,607     | 4,717  | -20.91 | 0.00%   |
| MonthBinary.April2020          | -80,916     | 7,095  | -11.41 | 0.00%   |

Note: Two of the explanatory variables were retained in the model despite being only marginally statistically significant ( $p\text{-value} > .05$ ). The direction and magnitude of the coefficient are reasonable, the standard error is consistent with other variables, and the interpretation of all of the weather variables is cleaner with the inclusion of this variable.

## Com SGS Weather Normalization Peak Models Statistics

| Model Statistic           | Value of the Statistic |
|---------------------------|------------------------|
| Adjusted Observations     | 2,375                  |
| Deg. of Freedom for Error | 2,359                  |
| R-Squared                 | 0.89                   |
| Adjusted R-Squared        | 0.89                   |
| F-Statistic               | 1,287                  |
| Prob (F-Statistic)        | 0                      |
| Mean Abs. % Err. (MAPE)   | 6.54%                  |
| Durbin-Watson Statistic   | 1.11                   |

## Com LGS Weather Normalization Peak Model Coefficients

| Variable                       | Coefficient | StdErr | T-Stat | P-Value |
|--------------------------------|-------------|--------|--------|---------|
| CONST                          | 1075,510    | 11,795 | 91.18  | 0.00%   |
| DOWBinary.MonFri               | 170,283     | 4,418  | 38.54  | 0.00%   |
| DOWBinary.TWT                  | 185,626     | 4,236  | 43.82  | 0.00%   |
| DOWBinary.Saturday             | 36,562      | 4,213  | 8.68   | 0.00%   |
| MonthBinary.Jan                | -47,368     | 6,558  | -7.22  | 0.00%   |
| MonthBinary.Feb                | -33,606     | 6,176  | -5.44  | 0.00%   |
| MonthBinary.Mar                | -19,669     | 5,064  | -3.88  | 0.01%   |
| MonthBinary.May                | 16,618      | 4,558  | 3.65   | 0.03%   |
| MonthBinary.Jul                | 35,679      | 5,126  | 6.96   | 0.00%   |
| MonthBinary.Aug                | 45,405      | 4,831  | 9.40   | 0.00%   |
| MonthBinary.Sep                | 64,192      | 4,713  | 13.62  | 0.00%   |
| MonthBinary.Nov                | -15,394     | 5,349  | -2.88  | 0.40%   |
| MonthBinary.Dec                | -29,064     | 6,319  | -4.60  | 0.00%   |
| COMLGSSplines.AvgT             | -8,267      | 213    | -38.79 | 0.00%   |
| COMLGSSplines.MildAvgT         | 14,938      | 471    | 31.70  | 0.00%   |
| COMLGSSplines.HotAvgT          | 12,050      | 626    | 19.25  | 0.00%   |
| COMLGSSplines.ShoulderMildAvgT | -2,014      | 516    | -3.90  | 0.01%   |
| COMLGSSplines.WkndMildAvgT     | -2,978      | 222    | -13.44 | 0.00%   |
| MonthBinary.March_10_2021      | -122,898    | 53,840 | -2.28  | 2.25%   |
| MonthBinary.Yr2021_Shift       | -220,237    | 2,593  | -0.09  | 93.23%  |

Note: One of the explanatory variables was retained in the model despite being only marginally statistically significant (p-value>.05). The direction and magnitude of the coefficient are reasonable, the standard error is consistent with other variables, and the interpretation of all of the weather variables is cleaner with the inclusion of this variable.

**Com LGS Weather Normalization Peak Models Statistics**

| <b>Model Statistic</b>    | <b>Value of the Statistic</b> |
|---------------------------|-------------------------------|
| Adjusted Observations     | 2,227                         |
| Deg. of Freedom for Error | 2,207                         |
| R-Squared                 | 0.89                          |
| Adjusted R-Squared        | 0.89                          |
| F-Statistic               | 983                           |
| Prob (F-Statistic)        | 0                             |
| Mean Abs. % Err. (MAPE)   | 4.51%                         |
| Durbin-Watson Statistic   | 0.87                          |

**Com SPS Weather Normalization Peak Model Coefficients**

| <b>Variable</b>             | <b>Coefficient</b> | <b>StdErr</b> | <b>T-Stat</b> | <b>P-Value</b> |
|-----------------------------|--------------------|---------------|---------------|----------------|
| CONST                       | 313,149            | 3,899         | 80.31         | 0.00%          |
| DOWBinary.Monday            | 42,900             | 1,173         | 36.58         | 0.00%          |
| DOWBinary.TWT               | 44,828             | 953           | 47.05         | 0.00%          |
| DOWBinary.Friday            | 39,138             | 1,166         | 33.58         | 0.00%          |
| DOWBinary.Saturday          | 6,703              | 1,163         | 5.76          | 0.00%          |
| MonthBinary.Feb             | 2,602              | 1,350         | 1.93          | 5.39%          |
| MonthBinary.May             | -7,564             | 1,510         | -5.01         | 0.00%          |
| MonthBinary.Jun             | -7,097             | 1,287         | -5.51         | 0.00%          |
| MonthBinary.Sep             | -960               | 1,402         | -0.69         | 49.36%         |
| MonthBinary.Oct             | -3,547             | 1,707         | -2.08         | 3.78%          |
| COMSPSSplines.ColdAvgT      | 710                | 164           | 4.33          | 0.00%          |
| COMSPSSplines.AvgT          | -1,354             | 134           | -10.10        | 0.00%          |
| COMSPSSplines.HotAvgT       | 1,488              | 184           | 8.07          | 0.00%          |
| COMSPSSplines.WarmAvgT      | 3,012              | 167           | 18.03         | 0.00%          |
| COMSPSSplines.WinterAvgT    | -220               | 32            | -6.81         | 0.00%          |
| COMSPSSplines.ShoulderAvgT  | -94                | 28            | -3.36         | 0.08%          |
| MonthBinary.COVIDSPS        | -12,926            | 1,272         | -10.16        | 0.00%          |
| US_Holidays.ComSPS_HolidayX | -20,018            | 1,277         | -15.67        | 0.00%          |

Note: Two of the explanatory variables were retained in the model despite being only marginally statistically significant ( $p\text{-value} > .05$ ). The direction and magnitude of the coefficient are reasonable, the standard error is consistent with other variables, and the interpretation of all of the weather variables is cleaner with the inclusion of this variable.

**Com SPS Weather Normalization Peak Models Statistics**

| Model Statistic           | Value of the Statistic |
|---------------------------|------------------------|
| Adjusted Observations     | 2,375                  |
| Deg. of Freedom for Error | 2,357                  |
| R-Squared                 | 0.84                   |
| Adjusted R-Squared        | 0.84                   |
| F-Statistic               | 750                    |
| Prob (F-Statistic)        | 0                      |
| Mean Abs. % Err. (MAPE)   | 3.77%                  |
| Durbin-Watson Statistic   | 0.80                   |

**Com LPS Weather Normalization Peak Model Coefficients**

| Variable                        | Coefficient | StdErr | T-Stat | P-Value |
|---------------------------------|-------------|--------|--------|---------|
| CONST                           | 158,690     | 1,375  | 115.41 | 0.00%   |
| MonthBinary.Feb                 | 2,091       | 2,003  | 1.04   | 29.64%  |
| MonthBinary.Mar                 | 7,501       | 1,935  | 3.88   | 0.01%   |
| MonthBinary.May                 | 11,395      | 2,143  | 5.32   | 0.00%   |
| MonthBinary.Jun                 | 9,002       | 2,695  | 3.34   | 0.09%   |
| MonthBinary.Jul                 | 16,786      | 2,873  | 5.84   | 0.00%   |
| MonthBinary.Aug                 | 18,370      | 2,739  | 6.71   | 0.00%   |
| MonthBinary.Sep                 | 19,229      | 2,438  | 7.89   | 0.00%   |
| MonthBinary.Oct                 | 16,229      | 2,022  | 8.03   | 0.00%   |
| MonthBinary.Dec                 | 13,195      | 2,356  | 5.60   | 0.00%   |
| DOWBinary.WeekEnd               | -12,058     | 853    | -14.13 | 0.00%   |
| COMLPSSplines.WarmAvgT          | 1,682       | 83     | 20.28  | 0.00%   |
| COMLPSSplines.ShoulderAvgT      | 189         | 31     | 6.17   | 0.00%   |
| MonthBinary.Dec15_Jan1          | -3,004      | 2,644  | -1.14  | 25.59%  |
| US_Holidays.ComLPS_HolidayX     | -5,062      | 1,998  | -2.53  | 1.13%   |
| MonthBinary.Customer_Com_Outage | -25,492     | 6,105  | -4.18  | 0.00%   |

Note: Two of the explanatory variables were retained in the model despite being only marginally statistically significant ( $p\text{-value} > .05$ ). The direction and magnitude of the coefficient are reasonable, the standard error is consistent with other variables, and the interpretation of all of the weather variables is cleaner with the inclusion of this variable.

**Com LPS Weather Normalization Peak Models Statistics**

| <b>Model Statistic</b>    | <b>Value of the Statistic</b> |
|---------------------------|-------------------------------|
| Adjusted Observations     | 2,375                         |
| Deg. of Freedom for Error | 2,359                         |
| R-Squared                 | 0.61                          |
| Adjusted R-Squared        | 0.60                          |
| F-Statistic               | 241                           |
| Prob (F-Statistic)        | 0                             |
| Mean Abs. % Err. (MAPE)   | 7.95%                         |
| Durbin-Watson Statistic   | 0.16                          |

**Ind SGS Weather Normalization Peak Model Coefficients**

| Variable                     | Coefficient | StdErr | T-Stat | P-Value |
|------------------------------|-------------|--------|--------|---------|
| CONST                        | 17523       | 508    | 34.50  | 0.00%   |
| DOWBinary.Monday             | 8908        | 267    | 33.42  | 0.00%   |
| DOWBinary.Tuesday            | 9053        | 266    | 34.16  | 0.00%   |
| DOWBinary.Wednesday          | 9038        | 263    | 34.30  | 0.00%   |
| DOWBinary.Thursday           | 9108        | 266    | 34.30  | 0.00%   |
| DOWBinary.Friday             | 8701        | 266    | 32.67  | 0.00%   |
| DOWBinary.Sunday             | -2261       | 263    | -8.61  | 0.00%   |
| MonthBinary.Feb              | -278        | 308    | -0.90  | 36.59%  |
| MonthBinary.Mar              | -441        | 298    | -1.48  | 13.93%  |
| MonthBinary.Jun              | -678        | 386    | -1.76  | 7.87%   |
| MonthBinary.Jul              | 634         | 416    | 1.52   | 12.76%  |
| MonthBinary.Aug              | -440        | 391    | -1.13  | 25.99%  |
| MonthBinary.Sep              | -133        | 359    | -0.37  | 71.10%  |
| MonthBinary.Oct              | 2517        | 376    | 6.70   | 0.00%   |
| MonthBinary.Nov              | 4677        | 321    | 14.58  | 0.00%   |
| INDSGSSplines.AvgT           | -170        | 11     | -15.02 | 0.00%   |
| INDSGSSplines.MildAvgT       | 211         | 44     | 4.76   | 0.00%   |
| INDSGSSplines.WarmAvgT       | 237         | 48     | 4.97   | 0.00%   |
| INDSGSSplines.SummerAltAvgT  | -21         | 7      | -3.11  | 0.19%   |
| INDSGSSplines.Mild_Shoulder  | -80         | 44     | -1.82  | 6.89%   |
| MonthBinary.CovidPeak_IndSGS | -3754       | 442    | -8.49  | 0.00%   |

Note: Some of the explanatory variables were retained in the model despite being only marginally statistically significant ( $p\text{-value} > .05$ ). The direction and magnitude of the coefficients are reasonable, the standard error is consistent with other variables, and the interpretability of the weather variables is cleaner with the inclusion of this variable.

**Ind SGS Weather Normalization Peak Models Statistics**

| Model Statistic           | Value of the Statistic |
|---------------------------|------------------------|
| Adjusted Observations     | 2,294                  |
| Deg. of Freedom for Error | 2,273                  |
| R-Squared                 | 0.70                   |
| Adjusted R-Squared        | 0.69                   |
| F-Statistic               | 260                    |
| Prob (F-Statistic)        | 0                      |
| Mean Abs. % Err. (MAPE)   | 18.68%                 |
| Durbin-Watson Statistic   | 1.00                   |

**Ind LGS Weather Normalization Peak Model Coefficients**

| Variable                          | Coefficient | StdErr | T-Stat | P-Value |
|-----------------------------------|-------------|--------|--------|---------|
| CONST                             | 70,708      | 704    | 101.51 | 0.00%   |
| DOWBinary.Mon                     | 38,325      | 801    | 47.83  | 0.00%   |
| DOWBinary.TWT                     | 41,963      | 615    | 68.19  | 0.00%   |
| DOWBinary.Fri                     | 30,548      | 801    | 38.12  | 0.00%   |
| MonthBinary.Jan                   | 2,855       | 985    | 2.90   | 0.38%   |
| MonthBinary.Apr                   | -1,433      | 1,002  | -1.43  | 15.27%  |
| MonthBinary.May                   | -230        | 1,193  | -0.19  | 84.71%  |
| MonthBinary.Jun                   | -5,220      | 915    | -5.70  | 0.00%   |
| MonthBinary.Oct                   | -1,432      | 1,085  | -1.32  | 18.72%  |
| US_Holidays.NYHol                 | -31,432     | 999    | -31.46 | 0.00%   |
| INDLGSSplines.SummerAvgT          | 91          | 18     | 5.15   | 0.00%   |
| INDLGSSplines.WkdayWarmAvgT       | 1,732       | 275    | 6.31   | 0.00%   |
| INDLGSSplines.SummerWkdayWarmAvgT | -1,094      | 279    | -3.92  | 0.01%   |
| INDLGSSplines.HotAvgT             | 57          | 38     | 1.48   | 14.01%  |

Note: Some of the explanatory variables were retained in the model despite being only marginally statistically significant (p-value>.05). The direction and magnitude of the coefficients are reasonable, the standard error is consistent with other variables, and the interpretability of the weather variables is cleaner with the inclusion of this variable.

**Ind LGS Weather Normalization Peak Models Statistics**

| Model Statistic           | Value of the Statistic |
|---------------------------|------------------------|
| Adjusted Observations     | 2,375                  |
| Deg. of Freedom for Error | 2,361                  |
| R-Squared                 | 0.78                   |
| Adjusted R-Squared        | 0.77                   |
| F-Statistic               | 626                    |
| Prob (F-Statistic)        | 0                      |
| Mean Abs. % Err. (MAPE)   | 10.09%                 |
| Durbin-Watson Statistic   | 1.046                  |

**Ind SPS Weather Normalization Peak Model Coefficients**

| Variable                    | Coefficient | StdErr | T-Stat | P-Value |
|-----------------------------|-------------|--------|--------|---------|
| CONST                       | 112,609     | 1,408  | 80.00  | 0.00%   |
| DOWBinary.Monday            | 40,406      | 717    | 56.39  | 0.00%   |
| DOWBinary.Tuesday           | 46,093      | 716    | 64.37  | 0.00%   |
| DOWBinary.Wednesday         | 46,010      | 716    | 64.23  | 0.00%   |
| DOWBinary.Thursday          | 43,635      | 716    | 60.90  | 0.00%   |
| DOWBinary.Friday            | 39,943      | 716    | 55.75  | 0.00%   |
| DOWBinary.Saturday          | 8,331       | 716    | 11.64  | 0.00%   |
| MonthBinary.Feb             | 2,094       | 874    | 2.40   | 1.66%   |
| MonthBinary.Mar             | -3,093      | 821    | -3.77  | 0.02%   |
| MonthBinary.Apr             | -604        | 757    | -0.80  | 42.49%  |
| MonthBinary.Aug             | 4,193       | 720    | 5.82   | 0.00%   |
| MonthBinary.Nov             | -1,461      | 828    | -1.76  | 7.79%   |
| MonthBinary.Dec             | -3,510      | 876    | -4.01  | 0.01%   |
| INDSPSSplines.AvgT          | -46         | 30     | -1.54  | 12.45%  |
| INDSPSSplines.WarmAvgT      | 848         | 117    | 7.25   | 0.00%   |
| INDSPSSplines.MildAvgT      | 37          | 108    | 0.35   | 72.89%  |
| US_Holidays.IndSPS_Holidays | -25,246     | 852    | -29.64 | 0.00%   |

Note: Some of the explanatory variables were retained in the model despite being only marginally statistically significant ( $p\text{-value} > .05$ ). The direction and magnitude of the coefficients are reasonable, the standard error is consistent with other variables, and the interpretability of the weather variables is cleaner with the inclusion of this variable.

**Ind SPS Weather Normalization Peak Models Statistics**

| Model Statistic           | Value of the Statistic |
|---------------------------|------------------------|
| Adjusted Observations     | 2,375                  |
| Deg. of Freedom for Error | 2,358                  |
| R-Squared                 | 0.83                   |
| Adjusted R-Squared        | 0.83                   |
| F-Statistic               | 712                    |
| Prob (F-Statistic)        | 0                      |
| Mean Abs. % Err. (MAPE)   | 5.02%                  |
| Durbin-Watson Statistic   | 1.06                   |

## Ind LPS Weather Normalization Peak Model Coefficients

| Variable                                   | Coefficient | StdErr | T-Stat | P-Value |
|--------------------------------------------|-------------|--------|--------|---------|
| CONST                                      | 244,198     | 1,089  | 224.20 | 0.00%   |
| DOWBinary.Monday                           | -7,114      | 777    | -9.16  | 0.00%   |
| DOWBinary.WeekEnd                          | -12,787     | 1,996  | -6.41  | 0.00%   |
| MonthBinary.Feb                            | -10,553     | 1,157  | -9.12  | 0.00%   |
| MonthBinary.Mar                            | -2,656      | 1,139  | -2.33  | 0.00%   |
| MonthBinary.Apr                            | 4,565       | 1,111  | 4.11   | 0.00%   |
| MonthBinary.Jul                            | 9,144       | 1,137  | 8.04   | 0.00%   |
| MonthBinary.Aug                            | 10,514      | 1,067  | 9.86   | 0.00%   |
| MonthBinary.Oct                            | 5,321       | 1,081  | 4.92   | 0.00%   |
| MonthBinary.Nov                            | 5,917       | 1,134  | 5.22   | 0.00%   |
| MonthBinary.Apr2020                        | -24,584     | 2,527  | -9.73  | 0.00%   |
| MonthBinary.Sept2020                       | -529        | 2,392  | -0.22  | 82.49%  |
| INDLPSSplines.ColdAvgT                     | -146        | 57     | -2.57  | 1.04%   |
| INDLPSSplines.MildAvgT                     | 1,162       | 90     | 12.90  | 0.00%   |
| INDLPSSplines.WarmAvgT                     | 564         | 132    | 4.28   | 0.00%   |
| INDLPSSplines.WkndAvgT                     | -136        | 32     | -4.30  | 0.00%   |
| MonthBinary.GM_Idle_Expansion_ChipShortage | 663         | 1,466  | 0.45   | 65.10%  |
| US_Holidays.XMasAft                        | -30,985     | 2,227  | -13.91 | 0.00%   |
| US_Holidays.XMasHol                        | -42,915     | 5,266  | -8.15  | 0.00%   |
| US_Holidays.Jul4thHol                      | -38,106     | 4,931  | -7.73  | 0.00%   |
| US_Holidays.DAJuly4th                      | -24,675     | 4,930  | -5.01  | 0.00%   |

Note: Some of the explanatory variables were retained in the model despite being only marginally statistically significant ( $p\text{-value} > .05$ ). The direction and magnitude of the coefficients are reasonable, the standard error is consistent with other variables, and the interpretability of the weather variables is cleaner with the inclusion of this variable.

## Ind LPS Weather Normalization Peak Models Statistics

| Model Statistic           | Value of the Statistic |
|---------------------------|------------------------|
| Adjusted Observations     | 2,375                  |
| Deg. of Freedom for Error | 2,354                  |
| R-Squared                 | 0.71                   |
| Adjusted R-Squared        | 0.71                   |
| F-Statistic               | 292                    |
| Prob (F-Statistic)        | 0                      |
| Mean Abs. % Err. (MAPE)   | 4.09%                  |
| Durbin-Watson Statistic   | 0.63                   |

## Energy Sales and Customer Forecast Models<sup>3</sup>

Note: The F-Statistic and associated probability cannot be computed in a regression model, such as the usual SAE specification, that does not include an intercept. Therefore, F-Statistic and associated probability were not reported whenever an SAE model was developed for forecasting purpose or an intercept was not included in the model.

### Residential Energy Sales Forecast Model Coefficients

| Variable                      | Coefficient | StdErr | T-Stat | P-Value |
|-------------------------------|-------------|--------|--------|---------|
| ResidentialVars_Billed.XHeat  | 1.12        | 0.02   | 50.91  | 0.00%   |
| ResidentialVars_Billed.XCool  | 0.86        | 0.01   | 61.09  | 0.00%   |
| ResidentialVars_Billed.XOther | 0.93        | 0.02   | 40.35  | 0.00%   |

### Residential Energy Sales Forecast Model Statistics

| Model Statistic           | Value of the Statistic |
|---------------------------|------------------------|
| Adjusted Observations     | 109                    |
| Deg. of Freedom for Error | 106                    |
| R-Squared                 | 0.97                   |
| Adjusted R-Squared        | 0.97                   |
| F-Statistic               | #NA                    |
| Prob (F-Statistic)        | #NA                    |
| Mean Abs. % Err. (MAPE)   | 2.73%                  |
| Durbin-Watson Statistic   | 1.28                   |

<sup>3</sup> 20 CSR 4240-22.030(3)(B)

**Residential Customer Count Forecast Model Coefficients**

| Variable            | Coefficient | StdErr   | T-Stat | P-Value |
|---------------------|-------------|----------|--------|---------|
| Econ_Wtd.Households | 1,127.2     | 21.06    | 53.53  | 0.00%   |
| BinaryVars.Jan      | 734.6       | 402.05   | 1.83   | 7.04%   |
| BinaryVars.Feb      | 1,062.6     | 461.09   | 2.31   | 2.31%   |
| BinaryVars.Mar      | 1,130.1     | 415.73   | 2.72   | 0.76%   |
| BinaryVars.May      | -819.7      | 434.99   | -1.88  | 6.22%   |
| BinaryVars.Jun      | -1,104.4    | 569.81   | -1.94  | 5.52%   |
| BinaryVars.Jul      | -1,008.0    | 637.24   | -1.58  | 11.66%  |
| BinaryVars.Aug      | -1,035.9    | 658.19   | -1.57  | 11.84%  |
| BinaryVars.Sep      | -1,282.7    | 637.22   | -2.01  | 4.66%   |
| BinaryVars.Oct      | -1,774.6    | 569.78   | -3.12  | 0.24%   |
| BinaryVars.Nov      | -1,683.1    | 434.97   | -3.87  | 0.02%   |
| BinaryVars.Covid_On | 3,194.5     | 1,527.69 | 2.09   | 3.88%   |
| AR(1)               | 1.0         | 0.01     | 94.14  | 0.00%   |

**Residential Customer Count Forecast Model Statistics**

| Model Statistic           | Value of the Statistic |
|---------------------------|------------------------|
| Adjusted Observations     | 110                    |
| Deg. of Freedom for Error | 99                     |
| R-Squared                 | 1.00                   |
| Adjusted R-Squared        | 1.00                   |
| F-Statistic               | #NA                    |
| Prob (F-Statistic)        | #NA                    |
| Mean Abs. % Err. (MAPE)   | 0.06%                  |
| Durbin-Watson Statistic   | 1.42                   |

**Commercial SGS Energy Sales Forecast Model Coefficients**

| Variable                             | Coefficient | StdErr | T-Stat | P-Value |
|--------------------------------------|-------------|--------|--------|---------|
| CommercialVars_Billing.SGS_XHeat     | 36,734      | 1,415  | 25.96  | 0.00%   |
| CommercialVars_Billing.SGS_XCool     | 18,024      | 699    | 25.78  | 0.00%   |
| CommercialVars_Billing.SGS_XOther    | 885         | 12     | 71.62  | 0.00%   |
| BinaryVars.Covid_Months_Weighted_SGS | -16,658     | 3,767  | -4.42  | 0.00%   |

**Commercial SGS Energy Sales Forecast Model Statistics**

| Model Statistic           | Value of the Statistic |
|---------------------------|------------------------|
| Adjusted Observations     | 111                    |
| Deg. of Freedom for Error | 107                    |
| R-Squared                 | 0.89                   |
| Adjusted R-Squared        | 0.88                   |
| F-Statistic               | #NA                    |
| Prob (F-Statistic)        | #NA                    |
| Mean Abs. % Err. (MAPE)   | 3.23%                  |
| Durbin-Watson Statistic   | 1.26                   |

**Commercial SGS Customer Count Forecast Model Coefficients**

| Variable       | Coefficient | StdErr | T-Stat | P-Value |
|----------------|-------------|--------|--------|---------|
| BinaryVars.Jan | 152,024     | 456    | 333.2  | 0.00%   |
| BinaryVars.Feb | 152,110     | 456    | 333.4  | 0.00%   |
| BinaryVars.Mar | 152,107     | 456    | 333.4  | 0.00%   |
| BinaryVars.Apr | 151,937     | 510    | 297.9  | 0.00%   |
| BinaryVars.May | 152,098     | 510    | 298.2  | 0.00%   |
| BinaryVars.Jun | 152,250     | 510    | 298.5  | 0.00%   |
| BinaryVars.Jul | 152,320     | 510    | 298.6  | 0.00%   |
| BinaryVars.Aug | 152,309     | 510    | 298.6  | 0.00%   |
| BinaryVars.Sep | 152,361     | 510    | 298.7  | 0.00%   |
| BinaryVars.Oct | 152,450     | 510    | 298.9  | 0.00%   |
| BinaryVars.Nov | 152,361     | 510    | 298.7  | 0.00%   |
| BinaryVars.Dec | 152,595     | 510    | 299.2  | 0.00%   |

**Commercial SGS Customer Count Forecast Model Statistics**

| <b>Model Statistic</b>    | <b>Value of the Statistic</b> |
|---------------------------|-------------------------------|
| Adjusted Observations     | 51                            |
| Deg. of Freedom for Error | 39                            |
| R-Squared                 | 0.04                          |
| Adjusted R-Squared        | -0.23                         |
| F-Statistic               | #NA                           |
| Prob (F-Statistic)        | #NA                           |
| Mean Abs. % Err. (MAPE)   | 0.48%                         |
| Durbin-Watson Statistic   | 0.07                          |

**Commercial LGS Energy Sales Forecast Model Coefficients**

| <b>Variable</b>                      | <b>Coefficient</b> | <b>StdErr</b> | <b>T-Stat</b> | <b>P-Value</b> |
|--------------------------------------|--------------------|---------------|---------------|----------------|
| CommercialVars_Billing.LGS_XCool     | 28,481             | 1,242.8       | 22.92         | 0.00%          |
| CommercialVars_Billing.LGS_XHeat     | 18,402             | 531.8         | 34.61         | 0.00%          |
| CommercialVars_Billing.LGS_XOther    | 896                | 10.3          | 86.74         | 0.00%          |
| BinaryVars.Covid_Months_Weighted_LGS | -41,562            | 4,205.8       | -9.88         | 0.00%          |
| BinaryVars.Jul_Nov_23                | -17,646            | 6,859.8       | -2.57         | 1.15%          |
| BinaryVars.Jul_Nov_24                | -19,950            | 6,907.1       | -2.89         | 0.47%          |

**Commercial LGS Energy Sales Forecast Model Statistics**

| <b>Model Statistic</b>    | <b>Value of the Statistic</b> |
|---------------------------|-------------------------------|
| Adjusted Observations     | 111                           |
| Deg. of Freedom for Error | 105                           |
| R-Squared                 | 0.94                          |
| Adjusted R-Squared        | 0.94                          |
| F-Statistic               | #NA                           |
| Prob (F-Statistic)        | #NA                           |
| Mean Abs. % Err. (MAPE)   | 2.09%                         |
| Durbin-Watson Statistic   | 1.34                          |

**Commercial LGS Customer Count Forecast Model Coefficients**

| Variable                    | Coefficient | StdErr | T-Stat | P-Value |
|-----------------------------|-------------|--------|--------|---------|
| Econ_Trans.LGS_Output_Index | 171         | 80     | 2.13   | 3.95%   |
| BinaryVars.Jan              | 9,548       | 112    | 84.98  | 0.00%   |
| BinaryVars.Feb              | 9,495       | 112    | 84.21  | 0.00%   |
| BinaryVars.Mar              | 9,612       | 113    | 84.94  | 0.00%   |
| BinaryVars.Apr              | 9,526       | 112    | 85.11  | 0.00%   |
| BinaryVars.May              | 9,555       | 112    | 85.00  | 0.00%   |
| BinaryVars.Jun              | 9,523       | 113    | 84.38  | 0.00%   |
| BinaryVars.Jul              | 9,535       | 113    | 84.16  | 0.00%   |
| BinaryVars.Aug              | 9,563       | 114    | 84.11  | 0.00%   |
| BinaryVars.Sep              | 9,572       | 114    | 83.90  | 0.00%   |
| BinaryVars.Oct              | 9,587       | 114    | 83.76  | 0.00%   |
| BinaryVars.Nov              | 9,529       | 115    | 82.99  | 0.00%   |
| BinaryVars.Dec              | 9,563       | 115    | 83.01  | 0.00%   |

**Commercial LGS Customer Count Forecast Model Statistics**

| Model Statistic           | Value of the Statistic |
|---------------------------|------------------------|
| Adjusted Observations     | 51                     |
| Deg. of Freedom for Error | 38                     |
| R-Squared                 | 0.42                   |
| Adjusted R-Squared        | 0.23                   |
| F-Statistic               | #NA                    |
| Prob (F-Statistic)        | #NA                    |
| Mean Abs. % Err. (MAPE)   | 0.33%                  |
| Durbin-Watson Statistic   | 2.02                   |

**Commercial SPS Energy Sales Forecast Model Coefficients**

| Variable                             | Coefficient | StdErr  | T-Stat | P-Value |
|--------------------------------------|-------------|---------|--------|---------|
| CommercialVars_Billing.SPS_XHeat     | 12,266.7    | 515.6   | 23.79  | 0.00%   |
| CommercialVars_Billing.SPS_XCool     | 13,892.6    | 1,369.2 | 10.15  | 0.00%   |
| CommercialVars_Billing.SPS_XOther    | 681.1       | 82.7    | 8.24   | 0.00%   |
| BinaryVars.Covid_Months_Weighted_SPS | -227.5      | 1,987.9 | -0.11  | 90.91%  |
| BinaryVars.Mar23                     | -18,130.7   | 5,845.8 | -3.10  | 0.25%   |
| BinaryVars.Jul23                     | -17,250.7   | 5,921.5 | -2.91  | 0.44%   |
| BinaryVars.Oct23                     | -6,513.9    | 5,875.2 | -1.11  | 27.02%  |
| BinaryVars.Jul_Sep_24                | -10,775.6   | 3,668.5 | -2.94  | 0.41%   |
| BinaryVars.TimeTrend                 | 1.6         | 0.3     | 5.21   | 0.00%   |

**Commercial SPS Energy Sales Forecast Model Statistics**

| Model Statistic           | Value of the Statistic |
|---------------------------|------------------------|
| Adjusted Observations     | 111                    |
| Deg. of Freedom for Error | 102                    |
| R-Squared                 | 0.89                   |
| Adjusted R-Squared        | 0.88                   |
| F-Statistic               | #NA                    |
| Prob (F-Statistic)        | #NA                    |
| Mean Abs. % Err. (MAPE)   | 2.16%                  |
| Durbin-Watson Statistic   | 1.34                   |

**Commercial SPS Customer Count Forecast Model Coefficients**

| Variable       | Coefficient | StdErr | T-Stat | P-Value |
|----------------|-------------|--------|--------|---------|
| BinaryVars.Jan | 482         | 3.63   | 132.7  | 0.00%   |
| BinaryVars.Feb | 481         | 3.63   | 132.4  | 0.00%   |
| BinaryVars.Mar | 486         | 3.63   | 134.0  | 0.00%   |
| BinaryVars.Apr | 477         | 4.06   | 117.4  | 0.00%   |
| BinaryVars.May | 483         | 4.06   | 118.8  | 0.00%   |
| BinaryVars.Jun | 480         | 4.06   | 118.3  | 0.00%   |
| BinaryVars.Jul | 477         | 4.06   | 117.6  | 0.00%   |
| BinaryVars.Aug | 484         | 4.06   | 119.2  | 0.00%   |
| BinaryVars.Sep | 476         | 4.06   | 117.2  | 0.00%   |
| BinaryVars.Oct | 480         | 4.06   | 118.1  | 0.00%   |
| BinaryVars.Nov | 479         | 4.06   | 117.9  | 0.00%   |
| BinaryVars.Dec | 480         | 4.06   | 118.2  | 0.00%   |

**Commercial SPS Customer Count Forecast Model Statistics**

| Model Statistic           | Value of the Statistic |
|---------------------------|------------------------|
| Adjusted Observations     | 51                     |
| Deg. of Freedom for Error | 39                     |
| R-Squared                 | 0.15                   |
| Adjusted R-Squared        | -0.09                  |
| F-Statistic               | #NA                    |
| Prob (F-Statistic)        | #NA                    |
| Mean Abs. % Err. (MAPE)   | 1.09%                  |
| Durbin-Watson Statistic   | 2.29                   |

**Commercial LPS Energy Sales Forecast Model Coefficients**

| Variable                             | Coefficient | StdErr  | T-Stat | P-Value |
|--------------------------------------|-------------|---------|--------|---------|
| CommercialVars_Billing.LPS_XCool     | 15,699      | 730.6   | 21.49  | 0.00%   |
| CommercialVars_Billing.LPS_XOther    | 1,017       | 8.8     | 116.04 | 0.00%   |
| BinaryVars.Covid_Months_Weighted_LPS | -11,104     | 1,986.0 | -5.59  | 0.00%   |
| BinaryVars.Jun19                     | -12,348     | 6,206.4 | -1.99  | 4.93%   |
| BinaryVars.Second_Half_2021          | -5,623      | 2,417.8 | -2.23  | 2.77%   |
| BinaryVars.Jan22                     | -4,057      | 6,223.0 | -0.65  | 51.59%  |
| BinaryVars.Summer22                  | -7,941      | 2,703.7 | -2.94  | 0.41%   |
| BinaryVars.May24                     | 9,289       | 6,174.6 | 1.50   | 13.56%  |
| BinaryVars.Jun24                     | -9,831      | 6,213.1 | -1.58  | 11.67%  |
| BinaryVars.Nov24                     | 14,996      | 6,172.3 | 2.43   | 1.69%   |

**Commercial LPS Energy Sales Forecast Model Statistics**

| Model Statistic           | Value of the Statistic |
|---------------------------|------------------------|
| Adjusted Observations     | 111                    |
| Deg. of Freedom for Error | 101                    |
| R-Squared                 | 0.85                   |
| Adjusted R-Squared        | 0.83                   |
| F-Statistic               | #NA                    |
| Prob (F-Statistic)        | #NA                    |
| Mean Abs. % Err. (MAPE)   | 3.61%                  |
| Durbin-Watson Statistic   | 1.62                   |

**Commercial LPS Customer Count Forecast Model Coefficients**

| Variable                     | Coefficient | StdErr | T-Stat | P-Value |
|------------------------------|-------------|--------|--------|---------|
| Simple Exponential Smoothing | 0.319       | 0.104  | 3.065  | 0.004   |

## Commercial LPS Customer Count Forecast Model Statistics

| Model Statistic           | Value of the Statistic |
|---------------------------|------------------------|
| Adjusted Observations     | 51                     |
| Deg. of Freedom for Error | 50                     |
| R-Squared                 | 0.40                   |
| Adjusted R-Squared        | 0.40                   |
| F-Statistic               | #NA                    |
| Prob (F-Statistic)        | #NA                    |
| Mean Abs. % Err. (MAPE)   | 2.72%                  |
| Durbin-Watson Statistic   | 2.28                   |

## Industrial SGS Energy Sales Forecast Model Coefficients

| Variable                   | Coefficient | StdErr | T-Stat | P-Value |
|----------------------------|-------------|--------|--------|---------|
| CONST                      | 8,866.57    | 996.00 | 8.90   | 0.00%   |
| Weather_Trans.Billed_HDD   | 0.47        | 0.14   | 3.27   | 0.18%   |
| Weather_Trans.Billed_CDD   | 0.24        | 0.15   | 0.53   | 59.56%  |
| Econ_Trans.SGS_Index       | -73.65      | 30.57  | -2.41  | 1.92%   |
| Binary_Vars.Pandemic_Shift | -28.61      | 140.02 | -0.20  | 83.88%  |
| Binary_Vars.January        | -275.04     | 57.44  | -4.79  | 0.00%   |
| Binary_Vars.February       | -450.03     | 98.80  | -4.56  | 0.00%   |
| Binary_Vars.March          | -323.14     | 88.15  | -3.67  | 0.05%   |
| Binary_Vars.April          | -152.90     | 84.69  | -1.81  | 7.62%   |
| Binary_Vars.May            | -42.11      | 93.74  | -0.45  | 65.50%  |
| Binary_Vars.June           | 62.82       | 148.92 | 0.42   | 67.47%  |
| Binary_Vars.July           | 40.86       | 209.80 | 0.20   | 84.63%  |
| Binary_Vars.August         | -1.41       | 199.90 | -0.01  | 99.44%  |
| Binary_Vars.September      | 73.58       | 175.62 | 0.42   | 67.68%  |
| Binary_Vars.October        | 71.42       | 93.10  | 0.77   | 44.61%  |
| AR(1)                      | 0.96        | 0.02   | 41.32  | 0.00%   |

## Industrial SGS Energy Sales Forecast Model Statistics

| Model Statistic           | Value of the Statistic |
|---------------------------|------------------------|
| Adjusted Observations     | 74                     |
| Deg. of Freedom for Error | 58                     |
| R-Squared                 | 0.97                   |
| Adjusted R-Squared        | 0.97                   |
| F-Statistic               | #NA                    |
| Prob (F-Statistic)        | #NA                    |
| Mean Abs. % Err. (MAPE)   | 0.75%                  |
| Durbin-Watson Statistic   | 1.66                   |

## Industrial SGS Customer Count Forecast Model Coefficients

| Variable              | Coefficient | StdErr | T-Stat | P-Value |
|-----------------------|-------------|--------|--------|---------|
| Binary_Vars.January   | 2,092.3     | 244.13 | 8.57   | 0.00%   |
| Binary_Vars.February  | 2,098.9     | 244.27 | 8.59   | 0.00%   |
| Binary_Vars.March     | 2,105.4     | 244.37 | 8.62   | 0.00%   |
| Binary_Vars.April     | 2,111.8     | 244.43 | 8.64   | 0.00%   |
| Binary_Vars.May       | 2,118.1     | 244.46 | 8.66   | 0.00%   |
| Binary_Vars.June      | 2,124.4     | 244.46 | 8.69   | 0.00%   |
| Binary_Vars.July      | 2,130.6     | 244.42 | 8.72   | 0.00%   |
| Binary_Vars.August    | 2,136.7     | 244.35 | 8.74   | 0.00%   |
| Binary_Vars.September | 2,142.7     | 244.25 | 8.77   | 0.00%   |
| Binary_Vars.October   | 2,148.7     | 244.11 | 8.80   | 0.00%   |
| Binary_Vars.November  | 2,155.0     | 244.15 | 8.83   | 0.00%   |
| Binary_Vars.December  | 2,161.1     | 244.16 | 8.85   | 0.00%   |
| AR(1)                 | 1.0         | 0.01   | 175.67 | 0.00%   |

## Industrial SGS Customer Count Forecast Model Statistics

| Model Statistic           | Value of the Statistic |
|---------------------------|------------------------|
| Adjusted Observations     | 81                     |
| Deg. of Freedom for Error | 68                     |
| R-Squared                 | 1.00                   |
| Adjusted R-Squared        | 1.00                   |
| F-Statistic               | #NA                    |
| Prob (F-Statistic)        | #NA                    |
| Mean Abs. % Err. (MAPE)   | 0.12%                  |
| Durbin-Watson Statistic   | 2.11                   |

## Industrial LGS Energy Sales Forecast Model Coefficients

| Variable                    | Coefficient | StdErr | T-Stat | P-Value |
|-----------------------------|-------------|--------|--------|---------|
| CONST                       | 71879       | 261    | 275.34 | 0.00%   |
| Binary_Vars.March           | -382        | 448    | -0.85  | 39.68%  |
| Binary_Vars.May             | 364         | 471    | 0.77   | 44.19%  |
| Binary_Vars.July            | 364         | 471    | 0.77   | 44.19%  |
| Binary_Vars.August          | 364         | 471    | 0.77   | 44.19%  |
| Binary_Vars.September       | 364         | 471    | 0.77   | 44.19%  |
| Binary_Vars.Pandemic_Shift  | -9818       | 523    | -18.77 | 0.00%   |
| Binary_Vars.End_shift_2019  | -4791       | 385    | -12.43 | 0.00%   |
| Binary_Vars.Covid19LGS_2023 | 6635        | 696    | 9.54   | 0.00%   |

## Industrial LGS Energy Sales Forecast Model Statistics

| Model Statistic           | Value of the Statistic |
|---------------------------|------------------------|
| Adjusted Observations     | 87                     |
| Deg. of Freedom for Error | 5478                   |
| R-Squared                 | 0.95                   |
| Adjusted R-Squared        | 0.95                   |
| F-Statistic               | #NA                    |
| Prob (F-Statistic)        | #NA                    |
| Mean Abs. % Err. (MAPE)   | 1.29%                  |
| Durbin-Watson Statistic   | 0.50                   |

## Industrial LGS Customer Count Forecast Model Coefficients

| Variable              | Coefficient | StdErr | T-Stat | P-Value |
|-----------------------|-------------|--------|--------|---------|
| Binary_Vars.January   | 864.7       | 114.71 | 7.54   | 0.00%   |
| Binary_Vars.February  | 863.9       | 114.73 | 7.53   | 0.00%   |
| Binary_Vars.March     | 864.0       | 114.75 | 7.53   | 0.00%   |
| Binary_Vars.April     | 862.6       | 114.75 | 7.52   | 0.00%   |
| Binary_Vars.May       | 861.1       | 114.76 | 7.50   | 0.00%   |
| Binary_Vars.June      | 863.1       | 114.76 | 7.52   | 0.00%   |
| Binary_Vars.July      | 862.9       | 114.75 | 7.52   | 0.00%   |
| Binary_Vars.August    | 864.6       | 114.74 | 7.54   | 0.00%   |
| Binary_Vars.September | 865.8       | 114.72 | 7.55   | 0.00%   |
| Binary_Vars.October   | 865.0       | 114.70 | 7.54   | 0.00%   |
| Binary_Vars.November  | 865.1       | 114.71 | 7.54   | 0.00%   |
| Binary_Vars.December  | 863.7       | 114.71 | 7.53   | 0.00%   |
| AR(1)                 | 1.0         | 0.01   | 122.78 | 0.00%   |

## Industrial LGS Customer Count Forecast Model Statistics

| Model Statistic           | Value of the Statistic |
|---------------------------|------------------------|
| Adjusted Observations     | 141                    |
| Deg. of Freedom for Error | 128                    |
| R-Squared                 | 0.99                   |
| Adjusted R-Squared        | 0.99                   |
| F-Statistic               | #NA                    |
| Prob (F-Statistic)        | #NA                    |
| Mean Abs. % Err. (MAPE)   | 0.21%                  |
| Durbin-Watson Statistic   | 2.48                   |

## Industrial SPS Energy Sales Forecast Model Coefficients

| Variable                        | Coefficient | StdErr   | T-Stat | P-Value |
|---------------------------------|-------------|----------|--------|---------|
| Econ_Trans.SPS_Index            | -112.4      | 165.91   | -0.68  | 50.08%  |
| Binary_Vars.January             | 95,888.6    | 6,546.92 | 14.65  | 0.00%   |
| Binary_Vars.February            | 95,690.4    | 6,073.93 | 15.75  | 0.00%   |
| Binary_Vars.March               | 95,860.6    | 6,076.18 | 15.78  | 0.00%   |
| Binary_Vars.April               | 96,073.0    | 6,120.32 | 15.70  | 0.00%   |
| Binary_Vars.May                 | 96,241.0    | 6,116.43 | 15.74  | 0.00%   |
| Binary_Vars.June                | 96,500.9    | 6,233.23 | 15.48  | 0.00%   |
| Binary_Vars.July                | 96,647.1    | 6,213.01 | 15.56  | 0.00%   |
| Binary_Vars.August              | 96,703.8    | 6,085.80 | 15.89  | 0.00%   |
| Binary_Vars.September           | 96,927.2    | 6,174.04 | 15.70  | 0.00%   |
| Binary_Vars.October             | 97,014.7    | 6,097.07 | 15.91  | 0.00%   |
| Binary_Vars.November            | 97,171.3    | 6,112.66 | 15.90  | 0.00%   |
| Binary_Vars.December            | 97,513.4    | 6,369.38 | 15.31  | 0.00%   |
| Binary_Vars.COVID_Lockdowns_SPS | -17.4       | 497.98   | -0.04  | 97.22%  |
| Binary_Vars.End_Shift_2022      | 300.5       | 700.42   | 0.43   | 66.96%  |
| AR(1)                           | 1.0         | 0.02     | 52.16  | 0.00%   |

Note: One of the explanatory variables were retained in the model despite being only marginally statistically significant ( $p\text{-value} > .05$ ). The direction and magnitude of the coefficient are reasonable, the standard error is consistent with other variables, and the interpretation of all of the weather variables is cleaner with the inclusion of this variable.

## Industrial SPS Energy Sales Forecast Model Statistics

| Model Statistic           | Value of the Statistic |
|---------------------------|------------------------|
| Adjusted Observations     | 50                     |
| Deg. of Freedom for Error | 34                     |
| R-Squared                 | 0.83                   |
| Adjusted R-Squared        | 0.75                   |
| F-Statistic               | #NA                    |
| Prob (F-Statistic)        | #NA                    |
| Mean Abs. % Err. (MAPE)   | 1.61%                  |
| Durbin-Watson Statistic   | 0.91                   |

## Industrial SPS Customer Count Forecast Model Coefficients

| Variable              | Coefficient | StdErr | T-Stat | P-Value |
|-----------------------|-------------|--------|--------|---------|
| Binary_Vars.January   | 184.68      | 0.55   | 334.46 | 0.00%   |
| Binary_Vars.February  | 184.68      | 0.55   | 334.92 | 0.00%   |
| Binary_Vars.March     | 184.68      | 0.55   | 335.35 | 0.00%   |
| Binary_Vars.April     | 184.67      | 0.55   | 335.74 | 0.00%   |
| Binary_Vars.May       | 184.67      | 0.55   | 336.09 | 0.00%   |
| Binary_Vars.June      | 184.67      | 0.55   | 336.42 | 0.00%   |
| Binary_Vars.July      | 184.67      | 0.55   | 336.72 | 0.00%   |
| Binary_Vars.August    | 184.66      | 0.55   | 337.00 | 0.00%   |
| Binary_Vars.September | 184.66      | 0.55   | 337.25 | 0.00%   |
| Binary_Vars.October   | 184.66      | 0.55   | 337.48 | 0.00%   |
| Binary_Vars.November  | 184.66      | 0.55   | 336.35 | 0.00%   |
| Binary_Vars.December  | 184.66      | 0.55   | 335.33 | 0.00%   |
| AR(1)                 | 0.95        | 0.03   | 36.29  | 0.00%   |

## Industrial SPS Customer Count Forecast Model Statistics

| Model Statistic           | Value of the Statistic |
|---------------------------|------------------------|
| Adjusted Observations     | 141                    |
| Deg. of Freedom for Error | 128                    |
| R-Squared                 | 0.91                   |
| Adjusted R-Squared        | 0.90                   |
| F-Statistic               | #NA                    |
| Prob (F-Statistic)        | #NA                    |
| Mean Abs. % Err. (MAPE)   | 0.05%                  |
| Durbin-Watson Statistic   | 1.96                   |

**Industrial LPS Energy Sales Forecast Model Coefficients**

| Variable                            | Coefficient | StdErr | T-Stat | P-Value |
|-------------------------------------|-------------|--------|--------|---------|
| Econ_Trans.LPS_Index                | 5,873       | 42     | 139.98 | 0.00%   |
| Binary_Vars.April                   | 8,314       | 2,615  | 3.18   | 0.22%   |
| Binary_Vars.May                     | 9,443       | 2,715  | 3.48   | 0.09%   |
| Binary_Vars.June                    | 3,671       | 2,637  | 1.40   | 16.80%  |
| Binary_Vars.July                    | 3,588       | 2,543  | 1.41   | 16.25%  |
| Binary_Vars.August                  | 8,685       | 2,531  | 3.43   | 0.10%   |
| Binary_Vars.September               | 4,731       | 2,540  | 1.86   | 6.65%   |
| Binary_Vars.October                 | 7,640       | 2,533  | 3.02   | 0.35%   |
| Binary_Vars.November                | 6,790       | 2,535  | 2.68   | 0.91%   |
| Binary_Vars.COVID_Lockdowns         | -7,963      | 4,716  | -1.39  | 9.55%   |
| Binary_Vars.Flooding                | -5,732      | 4,734  | -1.21  | 22.98%  |
| Binary_Vars.Post_Pandemic_Shift_LPS | -5,152      | 1,359  | -3.79  | 0.03%   |

**Industrial LPS Energy Sales Forecast Model Statistics**

| Model Statistic           | Value of the Statistic |
|---------------------------|------------------------|
| Adjusted Observations     | 86                     |
| Deg. of Freedom for Error | 74                     |
| R-Squared                 | -3.23                  |
| Adjusted R-Squared        | -3.86                  |
| F-Statistic               | #NA                    |
| Prob (F-Statistic)        | #NA                    |
| Mean Abs. % Err. (MAPE)   | 2.20%                  |
| Durbin-Watson Statistic   | 1.65                   |

**Industrial LPS Customer Count Forecast Model Coefficients**

| Variable              | Coefficient | StdErr | T-Stat | P-Value |
|-----------------------|-------------|--------|--------|---------|
| Binary_Vars.January   | 32.36       | 2.72   | 11.92  | 0.00%   |
| Binary_Vars.February  | 32.40       | 2.72   | 11.93  | 0.00%   |
| Binary_Vars.March     | 32.43       | 2.72   | 11.94  | 0.00%   |
| Binary_Vars.April     | 32.46       | 2.72   | 11.95  | 0.00%   |
| Binary_Vars.May       | 32.49       | 2.72   | 11.96  | 0.00%   |
| Binary_Vars.June      | 32.52       | 2.72   | 11.97  | 0.00%   |
| Binary_Vars.July      | 32.56       | 2.72   | 11.99  | 0.00%   |
| Binary_Vars.August    | 32.59       | 2.72   | 12.00  | 0.00%   |
| Binary_Vars.September | 32.62       | 2.71   | 12.02  | 0.00%   |
| Binary_Vars.October   | 32.65       | 2.71   | 12.04  | 0.00%   |
| Binary_Vars.November  | 32.68       | 2.71   | 12.04  | 0.00%   |
| Binary_Vars.December  | 32.71       | 2.71   | 12.05  | 0.00%   |
| AR(1)                 | 0.99        | 0.01   | 76.33  | 0.00%   |

**Industrial LPS Customer Count Forecast Model Statistics**

| Model Statistic           | Value of the Statistic |
|---------------------------|------------------------|
| Adjusted Observations     | 141                    |
| Deg. of Freedom for Error | 128                    |
| R-Squared                 | 0.98                   |
| Adjusted R-Squared        | 0.98                   |
| F-Statistic               | #NA                    |
| Prob (F-Statistic)        | #NA                    |
| Mean Abs. % Err (MAPE)    | 0.22%                  |
| Durbin-Watson Statistic   | 1.99                   |

**Non-Coincident System Peak Model Coefficients**

| Variable         | Coefficient | StdErr   | T-Stat | P-Value |
|------------------|-------------|----------|--------|---------|
| Heating Variable | 41.21       | 3.74     | 11.02  | 0.00%   |
| Cooling Variable | 97.92       | 10.33    | 9.48   | 0.00%   |
| Base Variable    | 0.73        | 0.40     | 1.82   | 7.28%   |
| January          | 1,701.20    | 1,065.51 | 1.60   | 11.41%  |
| February         | 1,706.59    | 1,057.55 | 1.61   | 11.03%  |
| March            | 1,596.30    | 1,090.74 | 1.46   | 14.70%  |
| April            | 1,167.14    | 1,147.12 | 1.02   | 31.18%  |
| May              | 1,747.57    | 1,082.75 | 1.61   | 11.02%  |
| June             | 2,095.46    | 1,084.02 | 1.93   | 5.66%   |
| July             | 2,103.71    | 1,138.78 | 1.85   | 6.82%   |
| August           | 2,239.90    | 1,125.67 | 1.99   | 4.98%   |
| September        | 1,879.02    | 1,131.86 | 1.66   | 10.06%  |
| October          | 1,488.76    | 1,099.77 | 1.35   | 17.94%  |
| November         | 1,433.43    | 1,039.79 | 1.38   | 17.16%  |
| December         | 1,502.90    | 1,093.24 | 1.38   | 17.28%  |

Note: Some of the explanatory variables were retained in the model despite being only marginally statistically significant ( $p\text{-value} > .05$ ). The direction and magnitude of the coefficient are reasonable, the standard error is consistent with other variables, and the interpretation of all of the weather variables is cleaner with the inclusion of this variable.

**Non-Coincident System Peak Model Statistics**

| Model Statistic           | Value of the Statistic |
|---------------------------|------------------------|
| Adjusted Observations     | 100                    |
| Deg. of Freedom for Error | 85                     |
| R-Squared                 | 0.93                   |
| Adjusted R-Squared        | 0.91                   |
| F-Statistic               | #NA                    |
| Prob (F-Statistic)        | #NA                    |
| Mean Abs. % Err (MAPE)    | 3.74%                  |
| Durbin-Watson Statistic   | 1.97                   |

## Time of Use Adjustments

|                            | 2026   | 2027   | 2028   | 2029   | 2030   | 2031   | 2032   | 2033   | 2034   | 2035   | 2036   | 2037   | 2038   | 2039   | 2040   | 2041   | 2042   | 2043   | 2044   | 2045   | 2046   |
|----------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| TOU Evening/Morning Savers | 80.94% | 81.18% | 81.41% | 81.64% | 81.87% | 82.10% | 82.33% | 82.56% | 82.80% | 83.03% | 83.26% | 83.49% | 83.72% | 83.95% | 84.18% | 84.42% | 84.65% | 84.88% | 85.11% | 85.34% | 85.57% |
| TOU Overnight Savers       | 0.42%  | 0.50%  | 0.58%  | 0.66%  | 0.74%  | 0.82%  | 0.90%  | 0.98%  | 1.05%  | 1.13%  | 1.21%  | 1.29%  | 1.37%  | 1.45%  | 1.53%  | 1.61%  | 1.68%  | 1.76%  | 1.84%  | 1.92%  | 2.00%  |
| TOU Smart Savers           | 0.29%  | 0.35%  | 0.41%  | 0.47%  | 0.53%  | 0.59%  | 0.65%  | 0.71%  | 0.77%  | 0.84%  | 0.90%  | 0.96%  | 1.02%  | 1.08%  | 1.14%  | 1.20%  | 1.26%  | 1.32%  | 1.38%  | 1.44%  | 1.50%  |
| TOU Ultimate Savers        | 0.26%  | 0.32%  | 0.39%  | 0.45%  | 0.51%  | 0.57%  | 0.63%  | 0.69%  | 0.76%  | 0.82%  | 0.88%  | 0.94%  | 1.00%  | 1.07%  | 1.13%  | 1.19%  | 1.25%  | 1.31%  | 1.38%  | 1.44%  | 1.50%  |

## Abbreviations

|       |                            |
|-------|----------------------------|
| Res:  | Residential                |
| Com : | Commercial                 |
| Ind:  | Industrial                 |
| SGS:  | Small General Service      |
| LGS:  | Large General Service      |
| SPS:  | Small Primary Service      |
| LPS:  | Large Primary Service      |
| WN:   | Weather Normalized         |
| LTS:  | Large Transmission Service |

**Compliance References**

|                                 |       |
|---------------------------------|-------|
| 20 CSR 4240-22.030(2)(C)3 ..... | 1, 12 |
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