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November 9, 2016

The Board of Commissioners of Public Utilities
Prince Charles Building
120 Torbay Road, P.O. Box 21040
St. John's, NL A1A 5B2

**Attention:** **Ms. Cheryl Blundon**
**Director Corporate Services & Board Secretary**

Dear Ms. Blundon:

**Re:** **Newfoundland and Labrador Hydro - the Board's Investigation and Hearing into Supply Issues and Power Outages on the Island Interconnected System – Semi-annual Report – November 2016**

Further to the Board's correspondence of October 13, 2016, wherein Hydro is required to provide the Board with "Semi-annual reports on its load forecasting tools (Nostradamus) to be filed each year on May 15 and November 15 with the first report commencing on November 15, 2016", please find enclosed the original plus 12 copies of Hydro's report entitled *Accuracy of Nostradamus Load Forecasting at Newfoundland and Labrador Hydro Semi-annual Report: November 2016.*

We trust the foregoing is satisfactory. If you have any questions or comments, please contact the undersigned.

Yours truly,

***NEWFOUNDLAND AND LABRADOR HYDRO***

Kyle B. Tucker, M. Eng., P. Eng.
Manager, Regulatory Engineering

KT/bs

cc: Gerard Hayes – Newfoundland Power
Paul Coxworthy – Stewart McKelvey Stirling Scales
Sheryl Nisenbaum – Praxair Canada Inc.
ecc: Roberta Frampton Benefiel – Grand Riverkeeper Labrador
Thomas Johnson – Consumer Advocate
Thomas O' Reilly – Cox & Palmer
Danny Dumaresque

# Accuracy of Nostradamus Load Forecasting at Newfoundland and Labrador Hydro

# May to October 2016

Newfoundland and Labrador Hydro

November 9, 2016

**Table of Contents**

# 1 NOSTRADAMUS LOAD FORECASTING

## 1.1 Nostradamus

Newfoundland and Labrador Hydro (Hydro) uses software called Nostradamus, by Ventyx, for short-term load forecasting with a time frame of seven days. "The Nostradamus Neural Network Forecasting system is a flexible neural network based forecasting tool developed specifically for utility demand forecasting. Unlike conventional computing processes, which are programmed, neural networks use sophisticated mathematical techniques to train a network of inputs and outputs. Neural networks recognize and learn the joint relationships (linear or non-linear) between the ranges of variables considered. Once the network learns these intricate relationships, this knowledge can then easily be extended to produce accurate forecasts." (Nostradamus User Guide, Release 8.2, Ventyx, an ABB Company, May 2014).

The Nostradamus model is trained using a sequence of continuous historic periods of hourly weather and demand data, then forecasts system demand using predictions of those same weather parameters for the next seven days.

## 1.2 Short-Term Load Forecasting

Hydro uses its short-term load forecast to manage the power system and ensure adequate generating resources are available to meet customer demand.

### 1.2.1 Utility Load

Hydro contracts Amec Foster Wheeler (Amec) to provide the weather parameters in the form of twice daily hourly weather forecasts for a seven-day period. At the same time as the weather forecast data are provided, Amec also provides recent observed data at the same locations. The forecast and actual data are automatically retrieved from Amec and input to the Nostradamus database.

Nostradamus can use a variety of weather parameters for forecasting as long as a historical record is available for training. Hydro currently uses: air temperature, wind speed, and cloud cover. Nostradamus can use each variable more than once, for example both the current and forecast air temperatures are used in forecasting load. Wind chill is not used explicitly as the neural network function of Nostradamus will form its own relationships between load, wind and temperature, which should be superior to the one formula used by Environment Canada to derive wind chill.

Weather data for three locations are used in Nostradamus: St. John's, Gander and Deer Lake. Data from August 1, 2013 to June 30, 2016 are being used for training and verification purposes. The training and verification periods are selected to provide a sufficiently long period to ensure that a range of weather parameters are included, e.g., high and low temperatures, but short enough that the historic load is still representative of loads that can be expected in the future.

In addition to the weather and demand data, a parameter that indicates daylight hours each day is input to Nostradamus.

Demand data for the Avalon Peninsula alone and for the Island Interconnected System as a whole are input to Nostradamus automatically each hour. Only total utility load (conforming), Newfoundland Power's and Hydro's, is input in the Nostradamus model. Industrial load (non-conforming), which is not a function of weather, is forecast outside the Nostradamus program and added to the forecasts from Nostradamus to derive the total load forecast.

During the process of training the Nostradamus model, it creates separate submodels for weekdays, weekends and holidays to account for the variation in customer use of electricity. Nostradamus has separate holiday groups for statutory holidays and also for

days that are known to have unusual loads, for instance the days between Christmas and New Year's and the school Easter break.

### 1.2.2 Industrial Load

Industrial load tends to be almost constant, as industrial processes are independent of weather. Under the current procedure, the power-on-order for each Industrial Customer, plus the expected owned generation from Corner Brook Pulp and Paper (CBPP), is used as the industrial load forecasts unless System Operations engineers modify the forecast based on some knowledge of customer loads, for instance a decrease due to reduced production at CBPP or a ramp up in the load expected at Vale. Engineers can change the expected load in one or more cells of a seven by twenty-four hour grid, or can change the default value to be used indefinitely.

### 1.2.3 Supply and Demand Status Reporting

Hydro has submitted monthly reports on the accuracy of Nostradamus load forecasting in relation to the Board of Commissioners of Public Utilities (the Board's) Investigation and Hearing into Supply Issues and Power Outages on the Island Interconnected System since December 2014. Directions further to the Board's Phase One Report provided on October 13, 2016 indicated that the reporting frequency should change to semi-annually, commencing in November 2016.

The forecast peak reported to the Board on the daily Supply and Demand Status Report is the forecast peak as of 7:20 am. The weather forecast for the next seven days and the observed weather data for the previous day are input at approximately 5:00 am. Nostradamus is then run every hour of the day and the most recent forecast is available for reference by System Operations engineers and the Energy Control Centre operators for monitoring and managing available spinning reserves. The within day forecast updates are used by operators to decide if additional spinning reserve is required in advance of forecast system peaks.

### 1.3 Potential Sources of Variance

As with any forecasting there will be discrepancies between the forecast and the actual values. Typical sources of variance in the load forecasting are as follows:

- Differences in the industrial load forecast due to unexpected changes in customer loads;
- Inaccuracies in the weather forecast, particularly temperature, wind speed or cloud cover; and
- Non-uniform customer behaviour which results in unpredictability.

## 2 FORECAST ACCURACY SUMMARY

### 2.1 Analysis

This report examines the accuracy of the Newfoundland and Labrador Hydro (Hydro) forecasting process for May through October 2016. Table 1 presents the daily forecast peak, the observed peak, and the available system capacity, as included in Hydro's daily Supply and Demand Status Reports submitted to the Board. The data are also presented in Figure 1.

This reporting period covers the late spring, summer and early fall. The total peak load during the period varied between 720 MW and 1165 MW. The available generation varied from 1035 MW to 1640 MW; reserves were sufficient throughout. In late spring and early fall peak loads are a function of heating load. In summer there is little or no heating load, and there is not yet sufficient air conditioning in the province to see a significant increase in load as temperature increases.

Table 2 presents error statistics for the total peak forecasts for the forecast period. Figure 2 is a plot of the forecast and actual peaks, as shown in Figure 1, but with the addition of a bar chart showing the difference between the two data series, in MW. In both the tables and the figures, a positive error is an overestimate; a negative error is an underestimate.

Figure 2 clearly shows that the forecasting process consistently overestimates the peak of the total load. This is usually because of an overestimate in the industrial load forecast; often CBPP.

Table 3 presents error statistics for the peak utility forecast, i.e. the portion of the forecast actually determined by the Nostradamus model. The industrial forecast is not included in the values of this table. Figure 3 plots the data and error for the utility peak. Examination of the utility forecast focusses more clearly on the accuracy of Nostradamus; error in the industrial forecast introduces error to the total forecast which makes the total forecast look worse, or at times better, than it is.

## 2.2 Days of High Error

Shaded dates in Tables 2 and 3 indicate the days of higher error in the load forecast that were examined in more detail in the monthly Nostradamus Accuracy Reports. The analysis for the months of May through September will not be repeated here. No monthly report was required for October, so a further examination of October 11, 20 and 30, three days of reduced forecast accuracy, is provided below.

## 2.3 October Data Adjustment

On October 5 at 9:00 am the RTU at Cat Arm was off for maintenance purposes so the generation at Cat Arm plant was not available to be included in the calculation of total load. The calculated load imported into Nostradamus was therefore corrected to include the 65 MW of known generation.

## 2.4 October 11, 2016

On October 11, the forecast peak at 7:20 am, as reported to the Board, was 1040 MW; the actual reported peak was 985 MW. The absolute difference was 55 MW, 5.6% of the actual peak. Figure 4 includes an hourly plot of the load forecast for October 11 as well

as several charts which examine components of the load forecast to assist in determining the sources of the differences between actual and forecast loads.

Figure 4(a) shows the hourly distribution of the load forecast compared to the actual load. The hourly forecast predicted a 5:00 pm peak of 1039 MW; the peak was actually at 7:00 pm, and was 980 MW.

Figure 4(b) shows the hourly distribution of the utility load forecast only, i.e., the load forecast with the industrial component removed. The forecast utility load was much closer to the actual utility load because the CBPP load was up to 70 MW below forecast on October 11.

The discrepancy between actual and forecast load for October 11 was a result of errors in the industrial load forecast. An overestimate of the load results in more than enough reserve being available. The updates during the day improved the forecast somewhat; by mid afternoon the error was within 5%.

## 2.5 October 20, 2016

On October 20, the forecast peak at 7:20 am, as reported to the Board, was 1070 MW; the actual reported peak was 1005 MW. The absolute difference was 65 MW, 6.5% of the actual load. Figure 5 includes an hourly plot of the load forecast for October 20 as well as several charts which examine components of the load forecast to assist in determining the sources of the differences between actual and forecast loads.

Figure 5(a) shows the hourly distribution of the load forecast compared to the actual load. The forecast overestimated the load for the whole day. The forecast was for a 5:00 pm peak of 1068 MW; the actual peak occurred at 8:00 pm and was only 1002 MW.

Figure 5(b) shows the hourly distribution of the utility load forecast only. The error in the forecast of the utility load was as high as the error in the forecast of total load.

Figures 5(c) through 5(d) shows the actual temperature, wind and cloud cover in St. John's compared to the forecasts. The actual temperature during the middle of the day was higher than forecast, then from mid afternoon onwards was lower than forecast. The wind speed forecast was similar to the temperature forecast – the wind speed was higher than forecast during the morning but lower than forecast for the remainder of the day. Neither fully explains the consistent overestimate of the load. The actual cloud cover was similar to forecast for the morning but less than forecast for the afternoon.

It is difficult to know why the forecast was erroneous on October 20. Some of the error may have resulted from the weather forecast, but factors not modelled by Nostradamus must have also influenced the result. An overestimate of the load results in more than enough reserve being available. Forecast updates during the day improved the forecast significantly; by the afternoon, the forecast had improved and was only 2% higher than actual.

## 2.6 October 30, 2016

On October 30, the forecast peak at 7:20 am, as reported to the Board, was 1045 MW; the actual reported peak was 940 MW. The absolute difference was 105 MW, 11.1% of the actual load. Figure 5 includes an hourly plot of the load forecast for October 30 as well as several charts which examine components of the load forecast to assist in determining the sources of the differences between actual and forecast loads.

Figure 6(a) shows the hourly distribution of the load forecast compared to the actual load. The forecast was reasonably accurate for the first half of the day, but Nostradamus predicted the peak for the day to be in the early evening, when, in fact,

the evening peak was smaller than the morning peak. The forecast was for a 6:00 pm peak of 1046 MW; the actual peak occurred at 10:00 am and was only 932 MW.

Figure 6(b) shows the hourly distribution of the utility load forecast only. The utility forecast was better in the morning, but later in the day the error in the forecast of the utility load was almost as high as the error in the forecast of total load.

Figures 6(c) through 6(d) shows the actual temperature, wind and cloud cover in St. John's compared to the forecasts. The weather forecasts were all quite accurate through the whole day.

It is difficult to know why the forecast was erroneous on October 30. Factors not modelled by Nostradamus must have influenced the result. An overestimate of the load results in more than enough reserve being available. Forecast updates during the day improved the forecast; by mid afternoon, the forecast had improved and was 4% higher than actual.

# 3 FORECAST ACCURACY REVIEW

Table 4 summarizes the average and maximum error in the peak of the utility load forecast by month for the six months of the reporting period. The average error varied between 1.8% and 2.8% with an average of 2.3%. There does not appear to be any trend with time. The maximum absolute error varied between 6.2% and 13.9%. The maximum error was low during July and August, which could be a result of the higher temperature and overall lower loads. The average and maximum errors are all positive, i.e., the forecast overestimates the load. Overestimate of the load results in a conservative calculation of required reserve.

Table 5 summarizes the error at the ten highest loads during the reporting period. The highest loads in this reporting period all occurred in May and early June. Five of the ten

maximum loads were overestimated; five were underestimated. The average error was marginally positive (0.7%). The absolute percent error varied from 0.5% to 7.3%, with an average of 2.1%. This confirms that the forecasting error is not necessarily high at higher loads.

Table 6 summarizes the result of the investigations into instances of high forecast error in the monthly reports submitted to the Board. Most errors occur as a result of errors in the weather forecast, most significantly errors in the temperature forecast, or as a result of errors in the industrial load forecast. Some errors remain unexplained – they result from customer behavior not modelled by Nostradamus.

Table 6 also includes explanations of times when Nostradamus was unable to provide a forecast. In both instances it was an issue with the database server, rather than with the Nostradamus software itself.

# TABLES AND FIGURES

**Table 1 - Load Forecasting Data**

| Date | Forecast Total Peak, MW | Actual Total Peak, MW | Available Island Supply, MW | Forecast Reserve, MW |
|---|---|---|---|---|
| 1-May-16 | 1040 | 1012 | 1580 | 540 |
| 2-May-16 | 1095 | 1065 | 1585 | 490 |
| 3-May-16 | 1115 | 1105 | 1560 | 445 |
| 4-May-16 | 1100 | 1116 | 1555 | 455 |
| 5-May-16 | 1085 | 1107 | 1570 | 485 |
| 6-May-16 | 1125 | 1150 | 1580 | 455 |
| 7-May-16 | 930 | 939 | 1465 | 535 |
| 8-May-16 | 850 | 872 | 1615 | 765 |
| 9-May-16 | 885 | 873 | 1590 | 705 |
| 10-May-16 | 990 | 984 | 1590 | 600 |
| 11-May-16 | 1060 | 1042 | 1575 | 515 |
| 12-May-16 | 1095 | 1079 | 1570 | 475 |
| 13-May-16 | 1160 | 1160 | 1595 | 435 |
| 14-May-16 | 1010 | 1004 | 1580 | 570 |
| 15-May-16 | 940 | 900 | 1570 | 630 |
| 16-May-16 | 1015 | 1012 | 1550 | 535 |
| 17-May-16 | 1025 | 1013 | 1570 | 545 |
| 18-May-16 | 1035 | 1025 | 1585 | 550 |
| 19-May-16 | 965 | 941 | 1535 | 570 |
| 20-May-16 | 860 | 849 | 1465 | 605 |
| 21-May-16 | 810 | 804 | 1470 | 660 |
| 22-May-16 | 930 | 835 | 1475 | 545 |
| 23-May-16 | 855 | 835 | 1475 | 620 |
| 24-May-16 | 815 | 820 | 1470 | 655 |
| 25-May-16 | 820 | 800 | 1490 | 670 |
| 26-May-16 | 985 | 933 | 1350 | 365 |
| 27-May-16 | 1010 | 996 | 1425 | 415 |
| 28-May-16 | 1005 | 1038 | 1410 | 405 |
| 29-May-16 | 1020 | 1035 | 1365 | 345 |
| 30-May-16 | 970 | 965 | 1475 | 505 |
| 31-May-16 | 960 | 965 | 1460 | 500 |
| Minimum | 810 | 800 | 1350 | 345 |
| Average | 986 | 977 | 1521 | 535 |
| Maximum | 1160 | 1160 | 1615 | 765 |
| 1-Jun-16 | 980 | 1007 | 1325 | 345 |
| 2-Jun-16 | 1040 | 1072 | 1345 | 305 |
| 3-Jun-16 | 950 | 953 | 1335 | 385 |

| | | | | |
|---|---|---|---|---|
| 4-Jun-16 | 870 | 903 | 1470 | 600 |
| 5-Jun-16 | 900 | 919 | 1475 | 575 |
| 6-Jun-16 | 930 | 950 | 1320 | 390 |
| 7-Jun-16 | 880 | 854 | 1305 | 425 |
| 8-Jun-16 | 955 | 977 | 1315 | 360 |
| 9-Jun-16 | 1000 | 992 | 1300 | 300 |
| 10-Jun-16 | 940 | 955 | 1310 | 370 |
| 11-Jun-16 | 905 | 891 | 1300 | 395 |
| 12-Jun-16 | 800 | 797 | 1310 | 510 |
| 13-Jun-16 | 945 | 1024 | 1450 | 505 |
| 14-Jun-16 | 890 | 881 | 1425 | 535 |
| 15-Jun-16 | 855 | 805 | 1415 | 560 |
| 16-Jun-16 | 870 | 854 | 1440 | 570 |
| 17-Jun-16 | 915 | 903 | 1300 | 385 |
| 18-Jun-16 | 950 | 966 | 1310 | 360 |
| 19-Jun-16 | 790 | 816 | 1320 | 530 |
| 20-Jun-16 | 785 | 778 | 1320 | 535 |
| 21-Jun-16 | 780 | 783 | 1320 | 540 |
| 22-Jun-16 | 785 | 799 | 1245 | 460 |
| 23-Jun-16 | 785 | 777 | 1335 | 550 |
| 24-Jun-16 | 790 | 797 | 1325 | 535 |
| 25-Jun-16 | 745 | 754 | 1305 | 560 |
| 26-Jun-16 | 740 | 738 | 1325 | 585 |
| 27-Jun-16 | 790 | 789 | 1335 | 545 |
| 28-Jun-16 | 750 | 759 | 1365 | 615 |
| 29-Jun-16 | 790 | 793 | 1335 | 545 |
| 30-Jun-16 | 780 | 771 | 1415 | 635 |
| Minimum | 740 | 738 | 1245 | 300 |
| Average | 863 | 869 | 1347 | 484 |
| Maximum | 1040 | 1072 | 1475 | 635 |
| 1-Jul-16 | 765 | 740 | 1270 | 505 |
| 2-Jul-16 | 750 | 705 | 1250 | 500 |
| 3-Jul-16 | 780 | 745 | 1245 | 465 |
| 4-Jul-16 | 790 | 764 | 1260 | 470 |
| 5-Jul-16 | 790 | 727 | 1275 | 485 |
| 6-Jul-16 | 860 | 832 | 1240 | 380 |
| 7-Jul-16 | 880 | 866 | 1245 | 365 |
| 8-Jul-16 | 860 | 828 | 1195 | 335 |
| 9-Jul-16 | 765 | 736 | 1210 | 445 |
| 10-Jul-16 | 785 | 791 | 1220 | 435 |
| 11-Jul-16 | 865 | 894 | 1230 | 365 |
| 12-Jul-16 | 875 | 875 | 1195 | 320 |
| 13-Jul-16 | 860 | 862 | 1190 | 330 |

| | | | | |
|---|---|---|---|---|
| 14-Jul-16 | 815 | 781 | 1075 | 260 |
| 15-Jul-16 | 785 | 776 | 1035 | 250 |
| 16-Jul-16 | 750 | 720 | 1115 | 365 |
| 17-Jul-16 | 740 | 712 | 1205 | 465 |
| 18-Jul-16 | 780 | 781 | 1200 | 420 |
| 19-Jul-16 | 765 | 753 | 1155 | 390 |
| 20-Jul-16 | 750 | 736 | 1135 | 385 |
| 21-Jul-16 | 770 | 737 | 1170 | 400 |
| 22-Jul-16 | 760 | 748 | 1145 | 385 |
| 23-Jul-16 | 720 | 724 | 1215 | 495 |
| 24-Jul-16 | 735 | 723 | 1225 | 490 |
| 25-Jul-16 | 765 | 752 | 1170 | 405 |
| 26-Jul-16 | 760 | 762 | 1185 | 425 |
| 27-Jul-16 | 770 | 737 | 1180 | 410 |
| 28-Jul-16 | 780 | 774 | 1190 | 410 |
| 29-Jul-16 | 765 | 760 | 1190 | 425 |
| 30-Jul-16 | 730 | 733 | 1210 | 480 |
| 31-Jul-16 | 720 | 720 | 1215 | 495 |
| Minimum | 720 | 705 | 1035 | 250 |
| Average | 783 | 768 | 1195 | 411 |
| Maximum | 880 | 894 | 1275 | 505 |
| 1-Aug-16 | 740 | 740 | 1195 | 455 |
| 2-Aug-16 | 765 | 747 | 1210 | 445 |
| 3-Aug-16 | 755 | 734 | 1190 | 435 |
| 4-Aug-16 | 755 | 739 | 1180 | 425 |
| 5-Aug-16 | 765 | 750 | 1205 | 440 |
| 6-Aug-16 | 750 | 755 | 1170 | 420 |
| 7-Aug-16 | 760 | 733 | 1205 | 445 |
| 8-Aug-16 | 770 | 722 | 1205 | 435 |
| 9-Aug-16 | 755 | 745 | 1215 | 460 |
| 10-Aug-16 | 750 | 730 | 1175 | 425 |
| 11-Aug-16 | 760 | 745 | 1185 | 425 |
| 12-Aug-16 | 765 | 733 | 1385 | 620 |
| 13-Aug-16 | 720 | 687 | 1405 | 685 |
| 14-Aug-16 | 750 | 705 | 1395 | 645 |
| 15-Aug-16 | 745 | 740 | 1350 | 605 |
| 16-Aug-16 | 760 | 694 | 1365 | 605 |
| 17-Aug-16 | 765 | 719 | 1345 | 580 |
| 18-Aug-16 | 765 | 745 | 1235 | 470 |
| 19-Aug-16 | 765 | 745 | 1230 | 465 |
| 20-Aug-16 | 745 | 707 | 1240 | 495 |
| 21-Aug-16 | 730 | 698 | 1240 | 510 |
| 22-Aug-16 | 755 | 731 | 1240 | 485 |

| | | | | |
|---|---|---|---|---|
| 23-Aug-16 | 760 | 758 | 1250 | 490 |
| 24-Aug-16 | 755 | 756 | 1210 | 455 |
| 25-Aug-16 | 760 | 737 | 1135 | 375 |
| 26-Aug-16 | 755 | 758 | 1275 | 520 |
| 27-Aug-16 | 750 | 738 | 1395 | 645 |
| 28-Aug-16 | 740 | 716 | 1440 | 700 |
| 29-Aug-16 | 775 | 776 | 1275 | 500 |
| 30-Aug-16 | 880 | 817 | 1380 | 500 |
| 31-Aug-16 | 795 | 780 | 1300 | 505 |
| Minimum | 720 | 687 | 1135 | 375 |
| Average | 760 | 738 | 1265 | 505 |
| Maximum | 880 | 817 | 1440 | 700 |
| 1-Sep-16 | 780 | 751 | 1320 | 540 |
| 2-Sep-16 | 785 | 799 | 1345 | 560 |
| 3-Sep-16 | 835 | 747 | 1325 | 490 |
| 4-Sep-16 | 820 | 794 | 1330 | 510 |
| 5-Sep-16 | 765 | 760 | 1355 | 590 |
| 6-Sep-16 | 755 | 776 | 1345 | 590 |
| 7-Sep-16 | 775 | 756 | 1335 | 560 |
| 8-Sep-16 | 815 | 797 | 1340 | 525 |
| 9-Sep-16 | 795 | 793 | 1330 | 535 |
| 10-Sep-16 | 845 | 765 | 1305 | 460 |
| 11-Sep-16 | 790 | 785 | 1265 | 475 |
| 12-Sep-16 | 805 | 759 | 1380 | 575 |
| 13-Sep-16 | 760 | 747 | 1345 | 585 |
| 14-Sep-16 | 780 | 772 | 1120 | 340 |
| 15-Sep-16 | 890 | 830 | 1375 | 485 |
| 16-Sep-16 | 830 | 822 | 1365 | 535 |
| 17-Sep-16 | 750 | 740 | 1405 | 655 |
| 18-Sep-16 | 755 | 768 | 1385 | 630 |
| 19-Sep-16 | 920 | 872 | 1370 | 450 |
| 20-Sep-16 | 860 | 851 | 1185 | 325 |
| 21-Sep-16 | 790 | 783 | 1170 | 380 |
| 22-Sep-16 | 745 | 737 | 1250 | 505 |
| 23-Sep-16 | 785 | 790 | 1170 | 385 |
| 24-Sep-16 | 810 | 807 | 1285 | 475 |
| 25-Sep-16 | 860 | 846 | 1270 | 410 |
| 26-Sep-16 | 930 | 912 | 1240 | 310 |
| 27-Sep-16 | 900 | 905 | 1255 | 355 |
| 28-Sep-16 | 915 | 925 | 1280 | 365 |
| 29-Sep-16 | 925 | 962 | 1300 | 375 |
| 30-Sep-16 | 945 | 954 | 1340 | 395 |
| Minimum | 745 | 737 | 1120 | 310 |

| | | | | |
|---|---|---|---|---|
| Average | 824 | 810 | 1303 | 479 |
| Maximum | 945 | 962 | 1405 | 655 |
| 1-Oct-16 | 805 | 807 | 1300 | 495 |
| 2-Oct-16 | 840 | 829 | 1285 | 445 |
| 3-Oct-16 | 1030 | 1001 | 1445 | 415 |
| 4-Oct-16 | 1030 | 1000 | 1440 | 410 |
| 5-Oct-16 | 925 | 925 | 1455 | 530 |
| 6-Oct-16 | 865 | 828 | 1420 | 555 |
| 7-Oct-16 | 830 | 800 | 1450 | 620 |
| 8-Oct-16 | 890 | 881 | 1515 | 625 |
| 9-Oct-16 | 865 | 880 | 1530 | 665 |
| 10-Oct-16 | 915 | 920 | 1525 | 610 |
| 11-Oct-16 | 1040 | 985 | 1485 | 445 |
| 12-Oct-16 | 1045 | 1011 | 1455 | 410 |
| 13-Oct-16 | 955 | 948 | 1485 | 530 |
| 14-Oct-16 | 895 | 862 | 1325 | 430 |
| 15-Oct-16 | 1015 | 996 | 1350 | 335 |
| 16-Oct-16 | 1000 | 1030 | 1515 | 515 |
| 17-Oct-16 | 1015 | 989 | 1415 | 400 |
| 18-Oct-16 | 1085 | 1063 | 1445 | 360 |
| 19-Oct-16 | 1090 | 1071 | 1430 | 340 |
| 20-Oct-16 | 1070 | 1005 | 1435 | 365 |
| 21-Oct-16 | 1110 | 1099 | 1430 | 320 |
| 22-Oct-16 | 965 | 986 | 1480 | 515 |
| 23-Oct-16 | 875 | 834 | 1460 | 585 |
| 24-Oct-16 | 965 | 954 | 1515 | 550 |
| 25-Oct-16 | 1035 | 1002 | 1510 | 475 |
| 26-Oct-16 | 1075 | 1085 | 1580 | 505 |
| 27-Oct-16 | 1135 | 1138 | 1615 | 480 |
| 28-Oct-16 | 1165 | 1181 | 1600 | 435 |
| 29-Oct-16 | 1145 | 1113 | 1640 | 495 |
| 30-Oct-16 | 1045 | 940 | 1600 | 555 |
| 31-Oct-16 | 1030 | 981 | 1605 | 575 |
| Minimum | 805 | 800 | 1285 | 320 |
| Average | 992 | 972 | 1475 | 484 |
| Maximum | 1165 | 1181 | 1640 | 665 |

**Table 2 - Analysis of Total Forecast Error**

| Date | Actual Total Peak, MW | Forecast Total Peak, MW | Error, MW | Absolute Error, MW | Percent Error | Absolute Percent Error | Actual/ Forecast |
|---|---|---|---|---|---|---|---|
| 1-May-16 | 1012 | 1040 | 28 | 28 | 2.8% | 2.8% | 2.7% |
| 2-May-16 | 1065 | 1095 | 30 | 30 | 2.8% | 2.8% | 2.7% |
| 3-May-16 | 1105 | 1115 | 10 | 10 | 0.9% | 0.9% | 0.9% |
| 4-May-16 | 1116 | 1100 | -16 | 16 | -1.4% | 1.4% | -1.5% |
| 5-May-16 | 1107 | 1085 | -22 | 22 | -2.0% | 2.0% | -2.0% |
| 6-May-16 | 1150 | 1125 | -25 | 25 | -2.2% | 2.2% | -2.2% |
| 7-May-16 | 939 | 930 | -9 | 9 | -1.0% | 1.0% | -1.0% |
| 8-May-16 | 872 | 850 | -22 | 22 | -2.5% | 2.5% | -2.6% |
| 9-May-16 | 873 | 885 | 12 | 12 | 1.4% | 1.4% | 1.4% |
| 10-May-16 | 984 | 990 | 6 | 6 | 0.6% | 0.6% | 0.6% |
| 11-May-16 | 1042 | 1060 | 18 | 18 | 1.7% | 1.7% | 1.7% |
| 12-May-16 | 1079 | 1095 | 16 | 16 | 1.5% | 1.5% | 1.5% |
| 13-May-16 | 1160 | 1160 | 0 | 0 | 0.0% | 0.0% | 0.0% |
| 14-May-16 | 1004 | 1010 | 6 | 6 | 0.6% | 0.6% | 0.6% |
| 15-May-16 | 900 | 940 | 40 | 40 | 4.4% | 4.4% | 4.3% |
| 16-May-16 | 1012 | 1015 | 3 | 3 | 0.3% | 0.3% | 0.3% |
| 17-May-16 | 1013 | 1025 | 12 | 12 | 1.2% | 1.2% | 1.2% |
| 18-May-16 | 1025 | 1035 | 10 | 10 | 1.0% | 1.0% | 1.0% |
| 19-May-16 | 941 | 965 | 24 | 24 | 2.6% | 2.6% | 2.5% |
| 20-May-16 | 849 | 860 | 11 | 11 | 1.3% | 1.3% | 1.3% |
| 21-May-16 | 804 | 810 | 6 | 6 | 0.7% | 0.7% | 0.7% |
| 22-May-16 | 835 | 930 | 95 | 95 | 11.4% | 11.4% | 10.2% |
| 23-May-16 | 835 | 855 | 20 | 20 | 2.4% | 2.4% | 2.3% |
| 24-May-16 | 820 | 815 | -5 | 5 | -0.6% | 0.6% | -0.6% |
| 25-May-16 | 800 | 820 | 20 | 20 | 2.5% | 2.5% | 2.4% |
| 26-May-16 | 933 | 985 | 52 | 52 | 5.6% | 5.6% | 5.3% |
| 27-May-16 | 996 | 1010 | 14 | 14 | 1.4% | 1.4% | 1.4% |
| 28-May-16 | 1038 | 1005 | -33 | 33 | -3.2% | 3.2% | -3.3% |
| 29-May-16 | 1035 | 1020 | -15 | 15 | -1.4% | 1.4% | -1.5% |
| 30-May-16 | 965 | 970 | 5 | 5 | 0.5% | 0.5% | 0.5% |
| 31-May-16 | 965 | 960 | -5 | 5 | -0.5% | 0.5% | -0.5% |
| Minimum | 800 | 810 | -33 | 0 | -3.2% | 0.0% | -3.3% |
| Average | 977 | 986 | 9 | 19 | 1.1% | 2.0% | 1.0% |
| Maximum | 1160 | 1160 | 95 | 95 | 11.4% | 11.4% | 10.2% |
| 1-Jun-16 | 1007 | 980 | -27 | 27 | -2.7% | 2.7% | -2.8% |
| 2-Jun-16 | 1072 | 1040 | -32 | 32 | -3.0% | 3.0% | -3.1% |
| 3-Jun-16 | 953 | 950 | -3 | 3 | -0.3% | 0.3% | -0.3% |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 4-Jun-16 | 903 | 870 | -33 | 33 | -3.7% | 3.7% | -3.8% |
| 5-Jun-16 | 919 | 900 | -19 | 19 | -2.1% | 2.1% | -2.1% |
| 6-Jun-16 | 950 | 930 | -20 | 20 | -2.1% | 2.1% | -2.2% |
| 7-Jun-16 | 854 | 880 | 26 | 26 | 3.0% | 3.0% | 3.0% |
| 8-Jun-16 | 977 | 955 | -22 | 22 | -2.3% | 2.3% | -2.3% |
| 9-Jun-16 | 992 | 1000 | 8 | 8 | 0.8% | 0.8% | 0.8% |
| 10-Jun-16 | 955 | 940 | -15 | 15 | -1.6% | 1.6% | -1.6% |
| 11-Jun-16 | 891 | 905 | 14 | 14 | 1.6% | 1.6% | 1.5% |
| 12-Jun-16 | 797 | 800 | 3 | 3 | 0.4% | 0.4% | 0.4% |
| 13-Jun-16 | 1024 | 945 | -79 | 79 | -7.7% | 7.7% | -8.4% |
| 14-Jun-16 | 881 | 890 | 9 | 9 | 1.0% | 1.0% | 1.0% |
| 15-Jun-16 | 805 | 855 | 50 | 50 | 6.2% | 6.2% | 5.8% |
| 16-Jun-16 | 854 | 870 | 16 | 16 | 1.9% | 1.9% | 1.8% |
| 17-Jun-16 | 903 | 915 | 12 | 12 | 1.3% | 1.3% | 1.3% |
| 18-Jun-16 | 966 | 950 | -16 | 16 | -1.7% | 1.7% | -1.7% |
| 19-Jun-16 | 816 | 790 | -26 | 26 | -3.2% | 3.2% | -3.3% |
| 20-Jun-16 | 778 | 785 | 7 | 7 | 0.9% | 0.9% | 0.9% |
| 21-Jun-16 | 783 | 780 | -3 | 3 | -0.4% | 0.4% | -0.4% |
| 22-Jun-16 | 799 | 785 | -14 | 14 | -1.8% | 1.8% | -1.8% |
| 23-Jun-16 | 777 | 785 | 8 | 8 | 1.0% | 1.0% | 1.0% |
| 24-Jun-16 | 797 | 790 | -7 | 7 | -0.9% | 0.9% | -0.9% |
| 25-Jun-16 | 754 | 745 | -9 | 9 | -1.2% | 1.2% | -1.2% |
| 26-Jun-16 | 738 | 740 | 2 | 2 | 0.3% | 0.3% | 0.3% |
| 27-Jun-16 | 789 | 790 | 1 | 1 | 0.1% | 0.1% | 0.1% |
| 28-Jun-16 | 759 | 750 | -9 | 9 | -1.2% | 1.2% | -1.2% |
| 29-Jun-16 | 793 | 790 | -3 | 3 | -0.4% | 0.4% | -0.4% |
| 30-Jun-16 | 771 | 780 | 9 | 9 | 1.2% | 1.2% | 1.2% |
| Minimum | 754 | 745 | -79 | 3 | -7.7% | 0.1% | -8.4% |
| Average | 880 | 874 | -6 | 18 | -0.5% | 1.9% | -0.6% |
| Maximum | 1072 | 1040 | 50 | 79 | 6.2% | 7.7% | 5.8% |
| 1-Jul-16 | 740 | 765 | 25 | 25 | 3.4% | 3.4% | 3.3% |
| 2-Jul-16 | 705 | 750 | 45 | 45 | 6.4% | 6.4% | 6.0% |
| 3-Jul-16 | 745 | 780 | 35 | 35 | 4.7% | 4.7% | 4.5% |
| 4-Jul-16 | 764 | 790 | 26 | 26 | 3.4% | 3.4% | 3.3% |
| 5-Jul-16 | 727 | 790 | 63 | 63 | 8.7% | 8.7% | 8.0% |
| 6-Jul-16 | 832 | 860 | 28 | 28 | 3.4% | 3.4% | 3.3% |
| 7-Jul-16 | 866 | 880 | 14 | 14 | 1.6% | 1.6% | 1.6% |
| 8-Jul-16 | 828 | 860 | 32 | 32 | 3.9% | 3.9% | 3.7% |
| 9-Jul-16 | 736 | 765 | 29 | 29 | 3.9% | 3.9% | 3.8% |
| 10-Jul-16 | 791 | 785 | -6 | 6 | -0.8% | 0.8% | -0.8% |
| 11-Jul-16 | 894 | 865 | -29 | 29 | -3.2% | 3.2% | -3.4% |
| 12-Jul-16 | 875 | 875 | 0 | 0 | 0.0% | 0.0% | 0.0% |
| 13-Jul-16 | 862 | 860 | -2 | 2 | -0.2% | 0.2% | -0.2% |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 14-Jul-16 | 781 | 815 | 34 | 34 | 4.4% | 4.4% | 4.2% |
| 15-Jul-16 | 776 | 785 | 9 | 9 | 1.2% | 1.2% | 1.1% |
| 16-Jul-16 | 720 | 750 | 30 | 30 | 4.2% | 4.2% | 4.0% |
| 17-Jul-16 | 712 | 740 | 28 | 28 | 3.9% | 3.9% | 3.8% |
| 18-Jul-16 | 781 | 780 | -1 | 1 | -0.1% | 0.1% | -0.1% |
| 19-Jul-16 | 753 | 765 | 12 | 12 | 1.6% | 1.6% | 1.6% |
| 20-Jul-16 | 736 | 750 | 14 | 14 | 1.9% | 1.9% | 1.9% |
| 21-Jul-16 | 737 | 770 | 33 | 33 | 4.5% | 4.5% | 4.3% |
| 22-Jul-16 | 748 | 760 | 12 | 12 | 1.6% | 1.6% | 1.6% |
| 23-Jul-16 | 724 | 720 | -4 | 4 | -0.6% | 0.6% | -0.6% |
| 24-Jul-16 | 723 | 735 | 12 | 12 | 1.7% | 1.7% | 1.6% |
| 25-Jul-16 | 752 | 765 | 13 | 13 | 1.7% | 1.7% | 1.7% |
| 26-Jul-16 | 762 | 760 | -2 | 2 | -0.3% | 0.3% | -0.3% |
| 27-Jul-16 | 737 | 770 | 33 | 33 | 4.5% | 4.5% | 4.3% |
| 28-Jul-16 | 774 | 780 | 6 | 6 | 0.8% | 0.8% | 0.8% |
| 29-Jul-16 | 760 | 765 | 5 | 5 | 0.7% | 0.7% | 0.7% |
| 30-Jul-16 | 733 | 730 | -3 | 3 | -0.4% | 0.4% | -0.4% |
| 31-Jul-16 | 720 | 720 | 0 | 0 | 0.0% | 0.0% | 0.0% |
| Minimum | 705 | 720 | -29 | 0 | -3.2% | 0.0% | -3.4% |
| Average | 768 | 783 | 16 | 19 | 2.1% | 2.5% | 2.0% |
| Maximum | 894 | 880 | 63 | 63 | 8.7% | 8.7% | 8.0% |
| 1-Aug-16 | 740 | 740 | 0 | 0 | 0.0% | 0.0% | 0.0% |
| 2-Aug-16 | 747 | 765 | 18 | 18 | 2.4% | 2.4% | 2.4% |
| 3-Aug-16 | 734 | 755 | 21 | 21 | 2.9% | 2.9% | 2.8% |
| 4-Aug-16 | 739 | 755 | 16 | 16 | 2.2% | 2.2% | 2.1% |
| 5-Aug-16 | 750 | 765 | 15 | 15 | 2.0% | 2.0% | 2.0% |
| 6-Aug-16 | 755 | 750 | -5 | 5 | -0.7% | 0.7% | -0.7% |
| 7-Aug-16 | 733 | 760 | 27 | 27 | 3.7% | 3.7% | 3.6% |
| 8-Aug-16 | 722 | 770 | 48 | 48 | 6.6% | 6.6% | 6.2% |
| 9-Aug-16 | 745 | 755 | 10 | 10 | 1.3% | 1.3% | 1.3% |
| 10-Aug-16 | 730 | 750 | 20 | 20 | 2.7% | 2.7% | 2.7% |
| 11-Aug-16 | 745 | 760 | 15 | 15 | 2.0% | 2.0% | 2.0% |
| 12-Aug-16 | 733 | 765 | 32 | 32 | 4.4% | 4.4% | 4.2% |
| 13-Aug-16 | 687 | 720 | 33 | 33 | 4.8% | 4.8% | 4.6% |
| 14-Aug-16 | 705 | 750 | 45 | 45 | 6.4% | 6.4% | 6.0% |
| 15-Aug-16 | 740 | 745 | 5 | 5 | 0.7% | 0.7% | 0.7% |
| 16-Aug-16 | 694 | 760 | 66 | 66 | 9.5% | 9.5% | 8.7% |
| 17-Aug-16 | 719 | 765 | 46 | 46 | 6.4% | 6.4% | 6.0% |
| 18-Aug-16 | 745 | 765 | 20 | 20 | 2.7% | 2.7% | 2.6% |
| 19-Aug-16 | 745 | 765 | 20 | 20 | 2.7% | 2.7% | 2.6% |
| 20-Aug-16 | 707 | 745 | 38 | 38 | 5.4% | 5.4% | 5.1% |
| 21-Aug-16 | 698 | 730 | 32 | 32 | 4.6% | 4.6% | 4.4% |
| 22-Aug-16 | 731 | 755 | 24 | 24 | 3.3% | 3.3% | 3.2% |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 23-Aug-16 | 758 | 760 | 2 | 2 | 0.3% | 0.3% | 0.3% |
| 24-Aug-16 | 756 | 755 | -1 | 1 | -0.1% | 0.1% | -0.1% |
| 25-Aug-16 | 737 | 760 | 23 | 23 | 3.1% | 3.1% | 3.0% |
| 26-Aug-16 | 758 | 755 | -3 | 3 | -0.4% | 0.4% | -0.4% |
| 27-Aug-16 | 738 | 750 | 12 | 12 | 1.6% | 1.6% | 1.6% |
| 28-Aug-16 | 716 | 740 | 24 | 24 | 3.4% | 3.4% | 3.2% |
| 29-Aug-16 | 776 | 775 | -1 | 1 | -0.1% | 0.1% | -0.1% |
| 30-Aug-16 | 817 | 880 | 63 | 63 | 7.7% | 7.7% | 7.2% |
| 31-Aug-16 | 780 | 795 | 15 | 15 | 1.9% | 1.9% | 1.9% |
| Minimum | 687 | 720 | -5 | 0 | -0.7% | 0.0% | -0.7% |
| Average | 738 | 760 | 22 | 23 | 3.0% | 3.1% | 2.9% |
| Maximum | 817 | 880 | 66 | 66 | 9.5% | 9.5% | 8.7% |
| 1-Sep-16 | 751 | 780 | 29 | 29 | 3.9% | 3.9% | 3.7% |
| 2-Sep-16 | 799 | 785 | -14 | 14 | -1.8% | 1.8% | -1.8% |
| 3-Sep-16 | 747 | 835 | 88 | 88 | 11.8% | 11.8% | 10.5% |
| 4-Sep-16 | 794 | 820 | 26 | 26 | 3.3% | 3.3% | 3.2% |
| 5-Sep-16 | 760 | 765 | 5 | 5 | 0.7% | 0.7% | 0.7% |
| 6-Sep-16 | 776 | 755 | -21 | 21 | -2.7% | 2.7% | -2.8% |
| 7-Sep-16 | 756 | 775 | 19 | 19 | 2.5% | 2.5% | 2.5% |
| 8-Sep-16 | 797 | 815 | 18 | 18 | 2.3% | 2.3% | 2.2% |
| 9-Sep-16 | 793 | 795 | 2 | 2 | 0.3% | 0.3% | 0.3% |
| 10-Sep-16 | 765 | 845 | 80 | 80 | 10.5% | 10.5% | 9.5% |
| 11-Sep-16 | 785 | 790 | 5 | 5 | 0.6% | 0.6% | 0.6% |
| 12-Sep-16 | 759 | 805 | 46 | 46 | 6.1% | 6.1% | 5.7% |
| 13-Sep-16 | 747 | 760 | 13 | 13 | 1.7% | 1.7% | 1.7% |
| 14-Sep-16 | 772 | 780 | 8 | 8 | 1.0% | 1.0% | 1.0% |
| 15-Sep-16 | 830 | 890 | 60 | 60 | 7.2% | 7.2% | 6.7% |
| 16-Sep-16 | 822 | 830 | 8 | 8 | 1.0% | 1.0% | 1.0% |
| 17-Sep-16 | 740 | 750 | 10 | 10 | 1.4% | 1.4% | 1.3% |
| 18-Sep-16 | 768 | 755 | -13 | 13 | -1.7% | 1.7% | -1.7% |
| 19-Sep-16 | 872 | 920 | 48 | 48 | 5.5% | 5.5% | 5.2% |
| 20-Sep-16 | 851 | 860 | 9 | 9 | 1.1% | 1.1% | 1.0% |
| 21-Sep-16 | 783 | 790 | 7 | 7 | 0.9% | 0.9% | 0.9% |
| 22-Sep-16 | 737 | 745 | 8 | 8 | 1.1% | 1.1% | 1.1% |
| 23-Sep-16 | 790 | 785 | -5 | 5 | -0.6% | 0.6% | -0.6% |
| 24-Sep-16 | 807 | 810 | 3 | 3 | 0.4% | 0.4% | 0.4% |
| 25-Sep-16 | 846 | 860 | 14 | 14 | 1.7% | 1.7% | 1.6% |
| 26-Sep-16 | 912 | 930 | 18 | 18 | 2.0% | 2.0% | 1.9% |
| 27-Sep-16 | 905 | 900 | -5 | 5 | -0.6% | 0.6% | -0.6% |
| 28-Sep-16 | 925 | 915 | -10 | 10 | -1.1% | 1.1% | -1.1% |
| 29-Sep-16 | 962 | 925 | -37 | 37 | -3.8% | 3.8% | -4.0% |
| 30-Sep-16 | 954 | 945 | -9 | 9 | -0.9% | 0.9% | -1.0% |
| Minimum | 737 | 745 | -37 | 2 | -3.8% | 0.3% | -4.0% |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Average | 810 | 824 | 14 | 21 | 1.8% | 2.7% | 1.6% |
| Maximum | 962 | 945 | 88 | 88 | 11.8% | 11.8% | 10.5% |
| 1-Oct-16 | 807 | 805 | -2 | 2 | -0.3% | 0.3% | -0.3% |
| 2-Oct-16 | 829 | 840 | 11 | 11 | 1.3% | 1.3% | 1.3% |
| 3-Oct-16 | 1001 | 1030 | 29 | 29 | 2.9% | 2.9% | 2.8% |
| 4-Oct-16 | 1000 | 1030 | 30 | 30 | 3.0% | 3.0% | 3.0% |
| 5-Oct-16 | 925 | 925 | 0 | 0 | 0.0% | 0.0% | 0.0% |
| 6-Oct-16 | 828 | 865 | 37 | 37 | 4.5% | 4.5% | 4.3% |
| 7-Oct-16 | 800 | 830 | 30 | 30 | 3.8% | 3.8% | 3.6% |
| 8-Oct-16 | 881 | 890 | 9 | 9 | 1.0% | 1.0% | 1.0% |
| 9-Oct-16 | 880 | 865 | -15 | 15 | -1.7% | 1.7% | -1.7% |
| 10-Oct-16 | 920 | 915 | -5 | 5 | -0.6% | 0.6% | -0.6% |
| 11-Oct-16 | 985 | 1040 | 55 | 55 | 5.6% | 5.6% | 5.3% |
| 12-Oct-16 | 1011 | 1045 | 34 | 34 | 3.4% | 3.4% | 3.3% |
| 13-Oct-16 | 948 | 955 | 7 | 7 | 0.8% | 0.8% | 0.8% |
| 14-Oct-16 | 862 | 895 | 33 | 33 | 3.8% | 3.8% | 3.6% |
| 15-Oct-16 | 996 | 1015 | 19 | 19 | 2.0% | 2.0% | 1.9% |
| 16-Oct-16 | 1030 | 1000 | -30 | 30 | -2.9% | 2.9% | -3.0% |
| 17-Oct-16 | 989 | 1015 | 26 | 26 | 2.6% | 2.6% | 2.6% |
| 18-Oct-16 | 1063 | 1085 | 22 | 22 | 2.1% | 2.1% | 2.1% |
| 19-Oct-16 | 1071 | 1090 | 19 | 19 | 1.8% | 1.8% | 1.7% |
| 20-Oct-16 | 1005 | 1070 | 65 | 65 | 6.5% | 6.5% | 6.1% |
| 21-Oct-16 | 1099 | 1110 | 11 | 11 | 1.0% | 1.0% | 1.0% |
| 22-Oct-16 | 986 | 965 | -21 | 21 | -2.1% | 2.1% | -2.2% |
| 23-Oct-16 | 834 | 875 | 41 | 41 | 5.0% | 5.0% | 4.7% |
| 24-Oct-16 | 954 | 965 | 11 | 11 | 1.1% | 1.1% | 1.1% |
| 25-Oct-16 | 1002 | 1035 | 33 | 33 | 3.3% | 3.3% | 3.2% |
| 26-Oct-16 | 1085 | 1075 | -10 | 10 | -0.9% | 0.9% | -0.9% |
| 27-Oct-16 | 1138 | 1135 | -3 | 3 | -0.2% | 0.2% | -0.2% |
| 28-Oct-16 | 1181 | 1165 | -16 | 16 | -1.4% | 1.4% | -1.4% |
| 29-Oct-16 | 1113 | 1145 | 32 | 32 | 2.9% | 2.9% | 2.8% |
| 30-Oct-16 | 940 | 1045 | 105 | 105 | 11.1% | 11.1% | 10.0% |
| 31-Oct-16 | 981 | 1030 | 49 | 49 | 5.0% | 5.0% | 4.7% |
| Minimum | 800 | 805 | -30 | 0 | -2.9% | 0.0% | -3.0% |
| Average | 972 | 992 | 20 | 26 | 2.1% | 2.7% | 2.0% |
| Maximum | 1181 | 1165 | 105 | 105 | 11.1% | 11.1% | 10.0% |

Notes:

Shading means further examination of the hourly forecast was provided in the monthly reports

**Table 3 - Analysis of Utility Forecast Error**

| Date | Actual Utility Peak, MW | Forecast Utility Peak, MW | Error, MW | Absolute Error, MW | Percent Error | Absolute Percent Error | Actual/ Forecast |
|---|---|---|---|---|---|---|---|
| 1-May-16 | 875 | 860 | -15 | 15 | -1.7% | 1.7% | -1.7% |
| 2-May-16 | 930 | 907 | -23 | 23 | -2.5% | 2.5% | -2.5% |
| 3-May-16 | 950 | 935 | -15 | 15 | -1.6% | 1.6% | -1.6% |
| 4-May-16 | 940 | 952 | 12 | 12 | 1.3% | 1.3% | 1.3% |
| 5-May-16 | 885 | 950 | 65 | 65 | 7.3% | 7.3% | 6.8% |
| 6-May-16 | 965 | 992 | 27 | 27 | 2.8% | 2.8% | 2.7% |
| 7-May-16 | 770 | 784 | 14 | 14 | 1.9% | 1.9% | 1.8% |
| 8-May-16 | 690 | 711 | 21 | 21 | 3.1% | 3.1% | 3.0% |
| 9-May-16 | 725 | 715 | -10 | 10 | -1.4% | 1.4% | -1.4% |
| 10-May-16 | 830 | 836 | 6 | 6 | 0.7% | 0.7% | 0.7% |
| 11-May-16 | 890 | 885 | -5 | 5 | -0.5% | 0.5% | -0.6% |
| 12-May-16 | 925 | 919 | -6 | 6 | -0.6% | 0.6% | -0.6% |
| 13-May-16 | 990 | 995 | 5 | 5 | 0.5% | 0.5% | 0.5% |
| 14-May-16 | 845 | 849 | 4 | 4 | 0.5% | 0.5% | 0.5% |
| 15-May-16 | 775 | 741 | -34 | 34 | -4.4% | 4.4% | -4.6% |
| 16-May-16 | 845 | 856 | 11 | 11 | 1.3% | 1.3% | 1.2% |
| 17-May-16 | 860 | 864 | 4 | 4 | 0.4% | 0.4% | 0.4% |
| 18-May-16 | 865 | 864 | -1 | 1 | -0.1% | 0.1% | -0.1% |
| 19-May-16 | 800 | 786 | -14 | 14 | -1.7% | 1.7% | -1.8% |
| 20-May-16 | 695 | 694 | -1 | 1 | -0.2% | 0.2% | -0.2% |
| 21-May-16 | 640 | 640 | 0 | 0 | 0.0% | 0.0% | 0.0% |
| 22-May-16 | 760 | 670 | -90 | 90 | -11.9% | 11.9% | -13.5% |
| 23-May-16 | 690 | 677 | -13 | 13 | -1.9% | 1.9% | -1.9% |
| 24-May-16 | 645 | 662 | 17 | 17 | 2.6% | 2.6% | 2.5% |
| 25-May-16 | 650 | 636 | -14 | 14 | -2.2% | 2.2% | -2.2% |
| 26-May-16 | 815 | 773 | -42 | 42 | -5.1% | 5.1% | -5.4% |
| 27-May-16 | 845 | 842 | -3 | 3 | -0.4% | 0.4% | -0.4% |
| 28-May-16 | 840 | 867 | 27 | 27 | 3.2% | 3.2% | 3.1% |
| 29-May-16 | 855 | 879 | 24 | 24 | 2.8% | 2.8% | 2.7% |
| 30-May-16 | 800 | 793 | -7 | 7 | -0.8% | 0.8% | -0.8% |
| 31-May-16 | 795 | 802 | 7 | 7 | 0.8% | 0.8% | 0.8% |
| Minimum | 640 | 636 | -90 | 0 | -11.9% | 0.0% | -13.5% |
| Average | 819 | 817 | -2 | 17 | -0.3% | 2.1% | -0.4% |
| Maximum | 990 | 995 | 65 | 90 | 7.3% | 11.9% | 6.8% |
| 1-Jun-16 | 817 | 836 | 18 | 18 | 2.2% | 2.2% | 2.2% |
| 2-Jun-16 | 880 | 895 | 15 | 15 | 1.8% | 1.8% | 1.7% |
| 3-Jun-16 | 791 | 794 | 3 | 3 | 0.4% | 0.4% | 0.4% |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 4-Jun-16 | 709 | 747 | 38 | 38 | 5.3% | 5.3% | 5.1% |
| 5-Jun-16 | 740 | 747 | 7 | 7 | 0.9% | 0.9% | 0.9% |
| 6-Jun-16 | 770 | 775 | 5 | 5 | 0.7% | 0.7% | 0.7% |
| 7-Jun-16 | 721 | 699 | -22 | 22 | -3.1% | 3.1% | -3.2% |
| 8-Jun-16 | 795 | 847 | 52 | 52 | 6.6% | 6.6% | 6.2% |
| 9-Jun-16 | 838 | 843 | 5 | 5 | 0.6% | 0.6% | 0.6% |
| 10-Jun-16 | 779 | 794 | 15 | 15 | 1.9% | 1.9% | 1.9% |
| 11-Jun-16 | 743 | 749 | 6 | 6 | 0.7% | 0.7% | 0.7% |
| 12-Jun-16 | 640 | 647 | 7 | 7 | 1.1% | 1.1% | 1.1% |
| 13-Jun-16 | 782 | 891 | 109 | 109 | 13.9% | 13.9% | 12.2% |
| 14-Jun-16 | 729 | 733 | 4 | 4 | 0.6% | 0.6% | 0.6% |
| 15-Jun-16 | 698 | 687 | -11 | 11 | -1.5% | 1.5% | -1.5% |
| 16-Jun-16 | 710 | 711 | 1 | 1 | 0.1% | 0.1% | 0.1% |
| 17-Jun-16 | 755 | 765 | 9 | 9 | 1.2% | 1.2% | 1.2% |
| 18-Jun-16 | 789 | 803 | 14 | 14 | 1.8% | 1.8% | 1.8% |
| 19-Jun-16 | 628 | 651 | 24 | 24 | 3.8% | 3.8% | 3.6% |
| 20-Jun-16 | 624 | 628 | 4 | 4 | 0.6% | 0.6% | 0.6% |
| 21-Jun-16 | 618 | 622 | 4 | 4 | 0.6% | 0.6% | 0.6% |
| 22-Jun-16 | 623 | 632 | 9 | 9 | 1.5% | 1.5% | 1.5% |
| 23-Jun-16 | 626 | 628 | 2 | 2 | 0.3% | 0.3% | 0.3% |
| 24-Jun-16 | 630 | 634 | 4 | 4 | 0.6% | 0.6% | 0.6% |
| 25-Jun-16 | 585 | 587 | 2 | 2 | 0.3% | 0.3% | 0.3% |
| 26-Jun-16 | 570 | | -- | -- | -- | -- | -- |
| 27-Jun-16 | 630 | | -- | -- | -- | -- | -- |
| 28-Jun-16 | 603 | | -- | -- | -- | -- | -- |
| 29-Jun-16 | 629 | 626 | -3 | 3 | -0.6% | 0.6% | -0.6% |
| 30-Jun-16 | 620 | 619 | -1 | 1 | -0.1% | 0.1% | -0.1% |
| Minimum | 585 | 587 | -22 | 1 | -3.1% | 0.1% | -3.2% |
| Average | 714 | 726 | 12 | 15 | 1.6% | 2.0% | 1.5% |
| Maximum | 880 | 895 | 109 | 109 | 13.9% | 13.9% | 12.2% |
| 1-Jul-16 | 602 | 577 | -25 | 25 | -4.2% | 4.2% | -4.4% |
| 2-Jul-16 | 591 | 555 | -36 | 36 | -6.2% | 6.2% | -6.6% |
| 3-Jul-16 | 616 | 612 | -3 | 3 | -0.6% | 0.6% | -0.6% |
| 4-Jul-16 | 630 | 621 | -9 | 9 | -1.4% | 1.4% | -1.4% |
| 5-Jul-16 | 626 | 596 | -30 | 30 | -4.8% | 4.8% | -5.0% |
| 6-Jul-16 | 697 | 721 | 25 | 25 | 3.5% | 3.5% | 3.4% |
| 7-Jul-16 | 729 | 736 | 7 | 7 | 1.0% | 1.0% | 0.9% |
| 8-Jul-16 | 697 | 703 | 6 | 6 | 0.9% | 0.9% | 0.9% |
| 9-Jul-16 | 601 | 582 | -19 | 19 | -3.1% | 3.1% | -3.2% |
| 10-Jul-16 | 624 | 632 | 8 | 8 | 1.3% | 1.3% | 1.2% |
| 11-Jul-16 | 704 | 738 | 34 | 34 | 4.8% | 4.8% | 4.6% |
| 12-Jul-16 | 713 | 705 | -8 | 8 | -1.2% | 1.2% | -1.2% |
| 13-Jul-16 | 698 | 694 | -4 | 4 | -0.6% | 0.6% | -0.6% |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 14-Jul-16 | 653 | 643 | -10 | 10 | -1.5% | 1.5% | -1.5% |
| 15-Jul-16 | 622 | 624 | 2 | 2 | 0.3% | 0.3% | 0.3% |
| 16-Jul-16 | 584 | 569 | -15 | 15 | -2.5% | 2.5% | -2.6% |
| 17-Jul-16 | 495 | | -- | -- | -- | -- | -- |
| 18-Jul-16 | 526 | | -- | -- | -- | -- | -- |
| 19-Jul-16 | 602 | 599 | -3 | 3 | -0.4% | 0.4% | -0.4% |
| 20-Jul-16 | 589 | 586 | -2 | 2 | -0.4% | 0.4% | -0.4% |
| 21-Jul-16 | 606 | 590 | -17 | 17 | -2.7% | 2.7% | -2.8% |
| 22-Jul-16 | 597 | 592 | -5 | 5 | -0.8% | 0.8% | -0.8% |
| 23-Jul-16 | 559 | 563 | 3 | 3 | 0.6% | 0.6% | 0.6% |
| 24-Jul-16 | 572 | 565 | -6 | 6 | -1.1% | 1.1% | -1.1% |
| 25-Jul-16 | 600 | 601 | 1 | 1 | 0.1% | 0.1% | 0.1% |
| 26-Jul-16 | 597 | 591 | -6 | 6 | -1.0% | 1.0% | -1.0% |
| 27-Jul-16 | 603 | 604 | 2 | 2 | 0.3% | 0.3% | 0.3% |
| 28-Jul-16 | 611 | 613 | 2 | 2 | 0.3% | 0.3% | 0.3% |
| 29-Jul-16 | 595 | 608 | 13 | 13 | 2.2% | 2.2% | 2.1% |
| 30-Jul-16 | 595 | 608 | 13 | 13 | 2.2% | 2.2% | 2.1% |
| 31-Jul-16 | 561 | 567 | 6 | 6 | 1.1% | 1.1% | 1.1% |
| Minimum | 559 | 555 | -36 | 1 | -6.2% | 0.1% | -6.6% |
| Average | 623 | 621 | -3 | 11 | -0.5% | 1.8% | -0.5% |
| Maximum | 729 | 738 | 34 | 36 | 4.8% | 6.2% | 4.6% |
| 1-Aug-16 | 593 | 573 | -21 | 21 | -3.5% | 3.5% | -3.6% |
| 2-Aug-16 | 588 | 596 | 9 | 9 | 1.5% | 1.5% | 1.4% |
| 3-Aug-16 | 600 | 587 | -14 | 14 | -2.3% | 2.3% | -2.4% |
| 4-Aug-16 | 585 | 584 | -2 | 2 | -0.3% | 0.3% | -0.3% |
| 5-Aug-16 | 638 | 594 | -44 | 44 | -6.8% | 6.8% | -7.3% |
| 6-Aug-16 | 577 | 583 | 6 | 6 | 1.0% | 1.0% | 1.0% |
| 7-Aug-16 | 579 | 593 | 15 | 15 | 2.5% | 2.5% | 2.5% |
| 8-Aug-16 | 618 | 602 | -17 | 17 | -2.7% | 2.7% | -2.7% |
| 9-Aug-16 | 592 | 587 | -5 | 5 | -0.9% | 0.9% | -0.9% |
| 10-Aug-16 | 578 | 582 | 4 | 4 | 0.7% | 0.7% | 0.7% |
| 11-Aug-16 | 595 | 590 | -4 | 4 | -0.8% | 0.8% | -0.8% |
| 12-Aug-16 | 583 | 597 | 14 | 14 | 2.4% | 2.4% | 2.3% |
| 13-Aug-16 | 538 | 552 | 14 | 14 | 2.6% | 2.6% | 2.5% |
| 14-Aug-16 | 550 | 580 | 30 | 30 | 5.4% | 5.4% | 5.1% |
| 15-Aug-16 | 586 | 578 | -9 | 9 | -1.5% | 1.5% | -1.5% |
| 16-Aug-16 | 584 | 589 | 5 | 5 | 0.8% | 0.8% | 0.8% |
| 17-Aug-16 | 573 | 589 | 15 | 15 | 2.7% | 2.7% | 2.6% |
| 18-Aug-16 | 577 | 589 | 12 | 12 | 2.0% | 2.0% | 2.0% |
| 19-Aug-16 | 592 | 597 | 5 | 5 | 0.8% | 0.8% | 0.8% |
| 20-Aug-16 | 556 | 578 | 22 | 22 | 3.9% | 3.9% | 3.8% |
| 21-Aug-16 | 541 | 562 | 21 | 21 | 3.8% | 3.8% | 3.7% |
| 22-Aug-16 | 591 | 588 | -3 | 3 | -0.4% | 0.4% | -0.4% |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 23-Aug-16 | 604 | 590 | -14 | 14 | -2.3% | 2.3% | -2.4% |
| 24-Aug-16 | 598 | 587 | -12 | 12 | -1.9% | 1.9% | -2.0% |
| 25-Aug-16 | 598 | 592 | -6 | 6 | -0.9% | 0.9% | -1.0% |
| 26-Aug-16 | 600 | 588 | -12 | 12 | -2.0% | 2.0% | -2.1% |
| 27-Aug-16 | 589 | 582 | -6 | 6 | -1.1% | 1.1% | -1.1% |
| 28-Aug-16 | 565 | 572 | 7 | 7 | 1.3% | 1.3% | 1.3% |
| 29-Aug-16 | 626 | 605 | -21 | 21 | -3.3% | 3.3% | -3.5% |
| 30-Aug-16 | 661 | 710 | 49 | 49 | 7.5% | 7.5% | 6.9% |
| 31-Aug-16 | 625 | 624 | -2 | 2 | -0.3% | 0.3% | -0.3% |
| Minimum | 538 | 552 | -44 | 2 | -6.8% | 0.3% | -7.3% |
| Average | 590 | 591 | 1 | 13 | 0.3% | 2.3% | 0.2% |
| Maximum | 661 | 710 | 49 | 49 | 7.5% | 7.5% | 6.9% |
| 1-Sep-16 | 611 | 613 | 1 | 1 | 0.2% | 0.2% | 0.2% |
| 2-Sep-16 | 634 | 616 | -18 | 18 | -2.9% | 2.9% | -3.0% |
| 3-Sep-16 | 592 | 669 | 76 | 76 | 12.9% | 12.9% | 11.4% |
| 4-Sep-16 | 626 | 650 | 24 | 24 | 3.9% | 3.9% | 3.7% |
| 5-Sep-16 | 593 | 598 | 5 | 5 | 0.9% | 0.9% | 0.9% |
| 6-Sep-16 | 606 | 586 | -20 | 20 | -3.3% | 3.3% | -3.4% |
| 7-Sep-16 | 609 | 608 | -1 | 1 | -0.2% | 0.2% | -0.2% |
| 8-Sep-16 | 648 | 649 | 1 | 1 | 0.1% | 0.1% | 0.1% |
| 9-Sep-16 | 678 | 628 | -50 | 50 | -7.4% | 7.4% | -8.0% |
| 10-Sep-16 | 604 | 675 | 70 | 70 | 11.6% | 11.6% | 10.4% |
| 11-Sep-16 | 628 | 623 | -4 | 4 | -0.7% | 0.7% | -0.7% |
| 12-Sep-16 | 606 | 636 | 30 | 30 | 4.9% | 4.9% | 4.7% |
| 13-Sep-16 | 602 | 591 | -11 | 11 | -1.8% | 1.8% | -1.8% |
| 14-Sep-16 | 616 | 614 | -2 | 2 | -0.4% | 0.4% | -0.4% |
| 15-Sep-16 | 672 | 721 | 50 | 50 | 7.4% | 7.4% | 6.9% |
| 16-Sep-16 | 666 | 663 | -3 | 3 | -0.4% | 0.4% | -0.4% |
| 17-Sep-16 | 585 | 581 | -4 | 4 | -0.7% | 0.7% | -0.7% |
| 18-Sep-16 | 619 | 589 | -31 | 31 | -5.0% | 5.0% | -5.2% |
| 19-Sep-16 | 729 | 750 | 21 | 21 | 2.9% | 2.9% | 2.8% |
| 20-Sep-16 | 714 | 714 | 0 | 0 | 0.0% | 0.0% | 0.0% |
| 21-Sep-16 | 639 | 642 | 3 | 3 | 0.4% | 0.4% | 0.4% |
| 22-Sep-16 | 620 | 601 | -20 | 20 | -3.2% | 3.2% | -3.3% |
| 23-Sep-16 | 640 | 624 | -16 | 16 | -2.5% | 2.5% | -2.6% |
| 24-Sep-16 | 664 | 648 | -16 | 16 | -2.4% | 2.4% | -2.5% |
| 25-Sep-16 | 705 | 701 | -4 | 4 | -0.6% | 0.6% | -0.6% |
| 26-Sep-16 | 770 | 768 | -1 | 1 | -0.2% | 0.2% | -0.2% |
| 27-Sep-16 | 756 | 752 | -4 | 4 | -0.5% | 0.5% | -0.5% |
| 28-Sep-16 | 780 | 767 | -13 | 13 | -1.7% | 1.7% | -1.7% |
| 29-Sep-16 | 820 | 775 | -44 | 44 | -5.4% | 5.4% | -5.7% |
| 30-Sep-16 | 806 | 799 | -7 | 7 | -0.9% | 0.9% | -0.9% |
| Minimum | 585 | 581 | -50 | 0 | -7.4% | 0.0% | -8.0% |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Average | 661 | 663 | 2 | 19 | 0.2% | 2.8% | 0.0% |
| Maximum | 820 | 799 | 76 | 76 | 12.9% | 12.9% | 11.4% |
| 1-Oct-16 | 652 | 656 | 4 | 4 | 0.6% | 0.6% | 0.6% |
| 2-Oct-16 | 693 | 680 | -13 | 13 | -1.8% | 1.8% | -1.9% |
| 3-Oct-16 | 842 | 862 | 20 | 20 | 2.4% | 2.4% | 2.4% |
| 4-Oct-16 | 862 | 864 | 2 | 2 | 0.2% | 0.2% | 0.2% |
| 5-Oct-16 | 771 | 758 | -13 | 13 | -1.7% | 1.7% | -1.7% |
| 6-Oct-16 | 702 | 699 | -4 | 4 | -0.5% | 0.5% | -0.5% |
| 7-Oct-16 | 643 | 657 | 14 | 14 | 2.2% | 2.2% | 2.1% |
| 8-Oct-16 | 722 | 718 | -4 | 4 | -0.5% | 0.5% | -0.5% |
| 9-Oct-16 | 678 | 628 | -50 | 50 | -7.4% | 7.4% | -8.0% |
| 10-Oct-16 | 763 | 741 | -22 | 22 | -2.9% | 2.9% | -3.0% |
| 11-Oct-16 | 865 | 867 | 2 | 2 | 0.2% | 0.2% | 0.2% |
| 12-Oct-16 | 872 | 872 | 0 | 0 | 0.0% | 0.0% | 0.0% |
| 13-Oct-16 | 784 | 784 | 1 | 1 | 0.1% | 0.1% | 0.1% |
| 14-Oct-16 | 718 | 721 | 2 | 2 | 0.3% | 0.3% | 0.3% |
| 15-Oct-16 | 833 | 842 | 9 | 9 | 1.1% | 1.1% | 1.1% |
| 16-Oct-16 | 859 | 826 | -33 | 33 | -3.9% | 3.9% | -4.0% |
| 17-Oct-16 | 841 | 842 | 2 | 2 | 0.2% | 0.2% | 0.2% |
| 18-Oct-16 | 890 | 914 | 24 | 24 | 2.7% | 2.7% | 2.7% |
| 19-Oct-16 | 729 | 750 | 21 | 21 | 2.9% | 2.9% | 2.8% |
| 20-Oct-16 | 835 | 900 | 65 | 65 | 7.8% | 7.8% | 7.2% |
| 21-Oct-16 | 946 | 944 | -2 | 2 | -0.2% | 0.2% | -0.2% |
| 22-Oct-16 | 821 | 798 | -23 | 23 | -2.8% | 2.8% | -2.9% |
| 23-Oct-16 | 675 | 706 | 31 | 31 | 4.7% | 4.7% | 4.4% |
| 24-Oct-16 | 791 | 795 | 5 | 5 | 0.6% | 0.6% | 0.6% |
| 25-Oct-16 | 825 | 865 | 40 | 40 | 4.9% | 4.9% | 4.6% |
| 26-Oct-16 | 929 | 908 | -21 | 21 | -2.3% | 2.3% | -2.3% |
| 27-Oct-16 | 978 | 968 | -10 | 10 | -1.0% | 1.0% | -1.0% |
| 28-Oct-16 | 1004 | 998 | -5 | 5 | -0.5% | 0.5% | -0.5% |
| 29-Oct-16 | 969 | 977 | 8 | 8 | 0.9% | 0.9% | 0.9% |
| 30-Oct-16 | 790 | 877 | 87 | 87 | 11.0% | 11.0% | 9.9% |
| 31-Oct-16 | 837 | 859 | 22 | 22 | 2.7% | 2.7% | 2.6% |
| Minimum | 643 | 628 | -50 | 0 | -7.4% | 0.0% | -8.0% |
| Average | 810 | 815 | 5 | 18 | 0.6% | 2.3% | 0.5% |
| Maximum | 1004 | 998 | 87 | 87 | 11.0% | 11.0% | 9.9% |

Notes:

Shading means further examination of the hourly forecast was provided in the monthly reports

Dashes mean no Nostradamus forecast was produced and therefore no statistical analysis was possible

**Table 5 - Error in Ten Highest Utility Loads**

| Date | Actual Utility Peak, MW | Forecast Utility Peak, MW | Error, MW | Absolute Error, MW | Percent Error | Absolute Percent Error | Actual/ Forecast |
|---|---|---|---|---|---|---|---|
| 13-May-16 | 990 | 995 | 5 | 5 | 0.5% | 0.5% | 0.5% |
| 6-May-16 | 965 | 992 | 27 | 27 | 2.8% | 2.8% | 2.7% |
| 3-May-16 | 950 | 935 | -15 | 15 | -1.6% | 1.6% | -1.6% |
| 4-May-16 | 940 | 952 | 12 | 12 | 1.3% | 1.3% | 1.3% |
| 2-May-16 | 930 | 907 | -23 | 23 | -2.5% | 2.5% | -2.5% |
| 12-May-16 | 925 | 919 | -6 | 6 | -0.6% | 0.6% | -0.6% |
| 11-May-16 | 890 | 885 | -5 | 5 | -0.5% | 0.5% | -0.6% |
| 5-May-16 | 885 | 950 | 65 | 65 | 7.3% | 7.3% | 6.8% |
| 2-Jun-16 | 880 | 895 | 15 | 15 | 1.8% | 1.8% | 1.7% |
| 1-May-16 | 875 | 860 | -15 | 15 | -1.7% | 1.7% | -1.7% |
| Average | 923 | 929 | 6 | 19 | 0.7% | 2.1% | 0.6% |

**Table 6 - Summary of Forecast Issues**

| Date | Actual Utility Peak, MW | Forecast Utility Peak, MW | Error, MW | Absolute Error, MW | Absolute Percent Error | Explanation |
|---|---|---|---|---|---|---|
| 22-May-16 | 760 | 670 | -90 | 90 | 11.9% | Error in temperature forecast |
| 26-May-16 | 815 | 773 | -42 | 42 | 5.1% | Unusual temperature trend and errors in wind forecast |
| 13-Jun-16 | 782 | 891 | 109 | 109 | 13.9% | Error in temperature forecast |
| 15-Jun-16 | 698 | 687 | -11 | 11 | 1.5% | Error in industrial load forecast |
| 26-Jun-16 | 570 | -- | -- | -- | -- | Expired database password |
| 27-Jun-16 | 630 | -- | -- | -- | -- | |
| 28-Jun-16 | 603 | -- | -- | -- | -- | |
| 2-Jul-16 | 591 | 555 | -36 | 36 | 6.2% | Error in weather forecast and unknown factors |
| 5-Jul-16 | 626 | 596 | -30 | 30 | 4.8% | Error in weather forecast and unknown factors |
| 17-Jul-16 | 495 | -- | -- | -- | -- | Pi server issue |
| 18-Jul-16 | 526 | -- | -- | -- | -- | |
| 14-Aug-16 | 550 | 580 | 30 | 30 | 5.4% | Error in industrial load forecast and unknown factors |
| 30-Aug-16 | 661 | 710 | 49 | 49 | 7.5% | Error in weather forecast and unknown factors |
| 3-Sep-16 | 592 | 669 | 76 | 76 | 12.9% | Error in temperature and wind forecasts |
| 10-Sep-16 | 604 | 675 | 70 | 70 | 11.6% | Unusual temperature trend and unknown factors |
| 15-Sep-16 | 672 | 721 | 50 | 50 | 7.4% | Unusual temperature trend and unknown factors |
| 11-Oct-16 | 865 | 867 | 2 | 2 | 0.2% | Error in industrial load forecast |
| 20-Oct-16 | 835 | 900 | 65 | 65 | 7.8% | Error in weather forecast and unknown factors |
| 30-Oct-16 | 790 | 877 | 87 | 87 | 11.0% | Unknown factors |

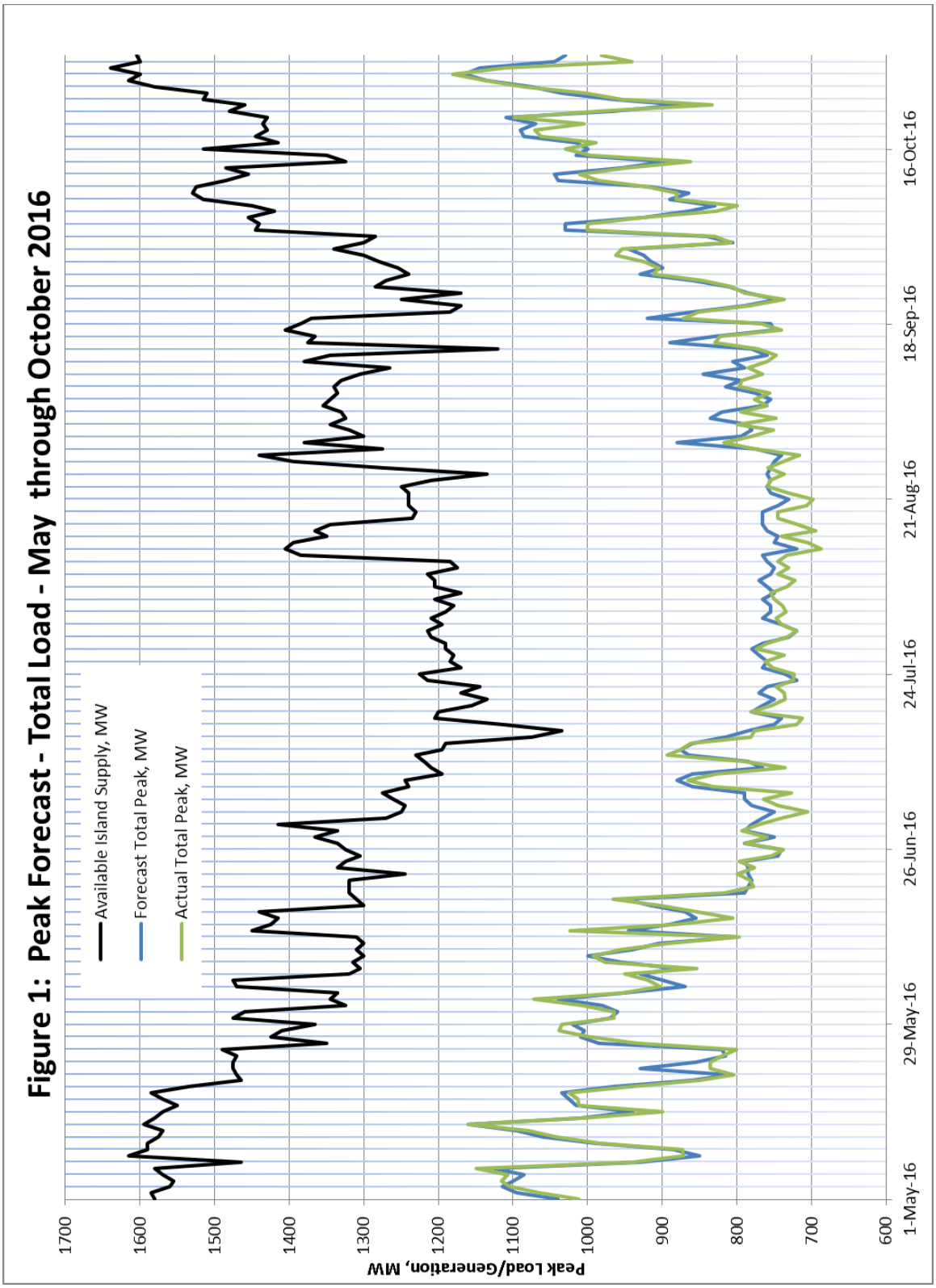
Figure 1: Peak Forecast - Total Load - May through October 2016
Available Island Supply, MW
Forecast Total Peak, MW
Actual Total Peak, MW
Peak Load/Generation, MW
1700
1600
1500
1400
1300
1200
1100
1000
900
800
700
600
1-May-16
29-May-16
26-Jun-16
24-Jul-16
21-Aug-16
18-Sep-16
16-Oct-16

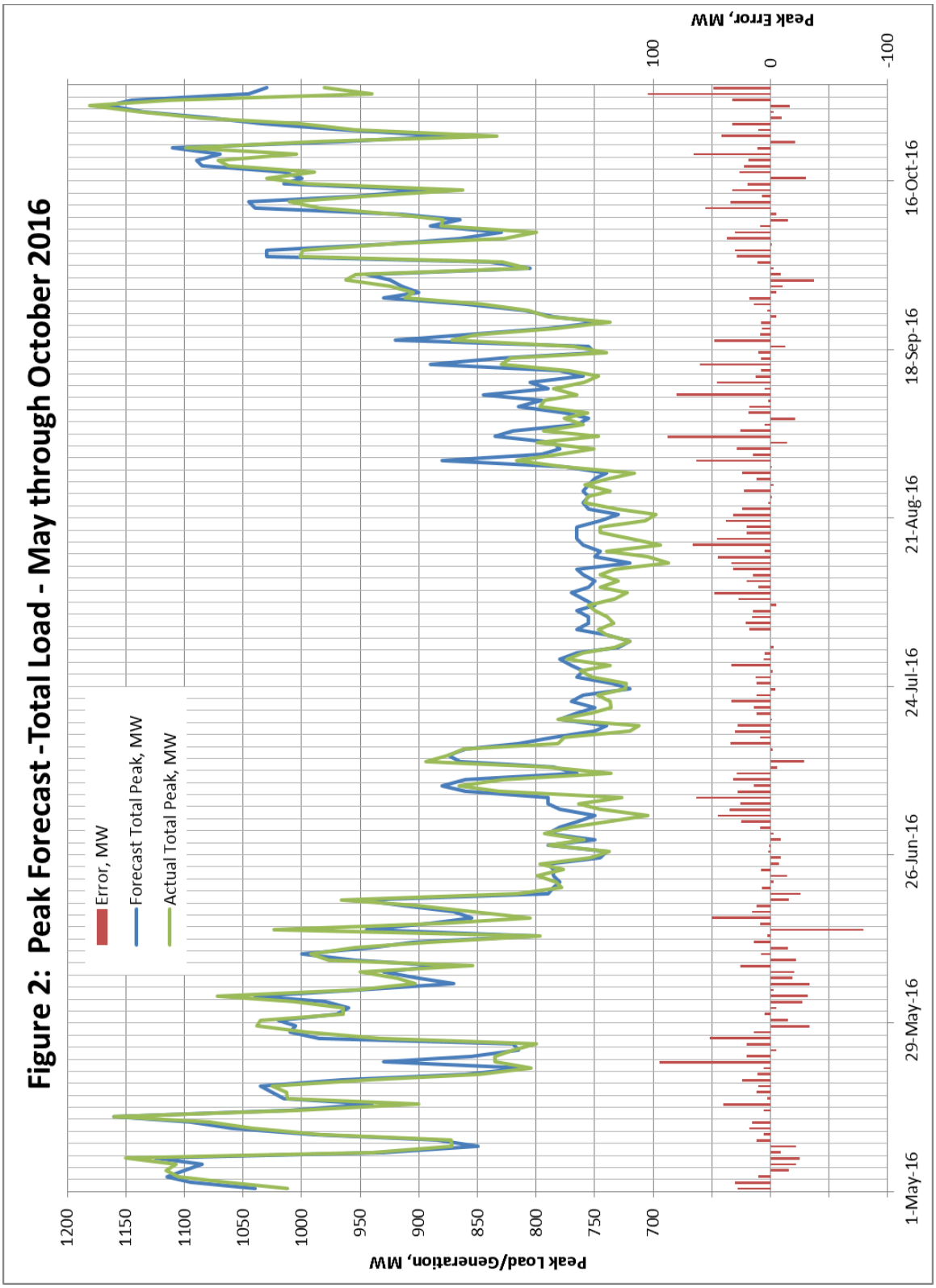
Figure 2: Peak Forecast -Total Load - May through October 2016
Peak Load/Generation, MW
Peak Error, MW
Error, MW
Forecast Total Peak, MW
Actual Total Peak, MW
1200
1150
1100
1050
1000
950
900
850
800
750
700
100
0
-100
1-May-16
29-May-16
26-Jun-16
24-Jul-16
21-Aug-16
18-Sep-16
16-Oct-16

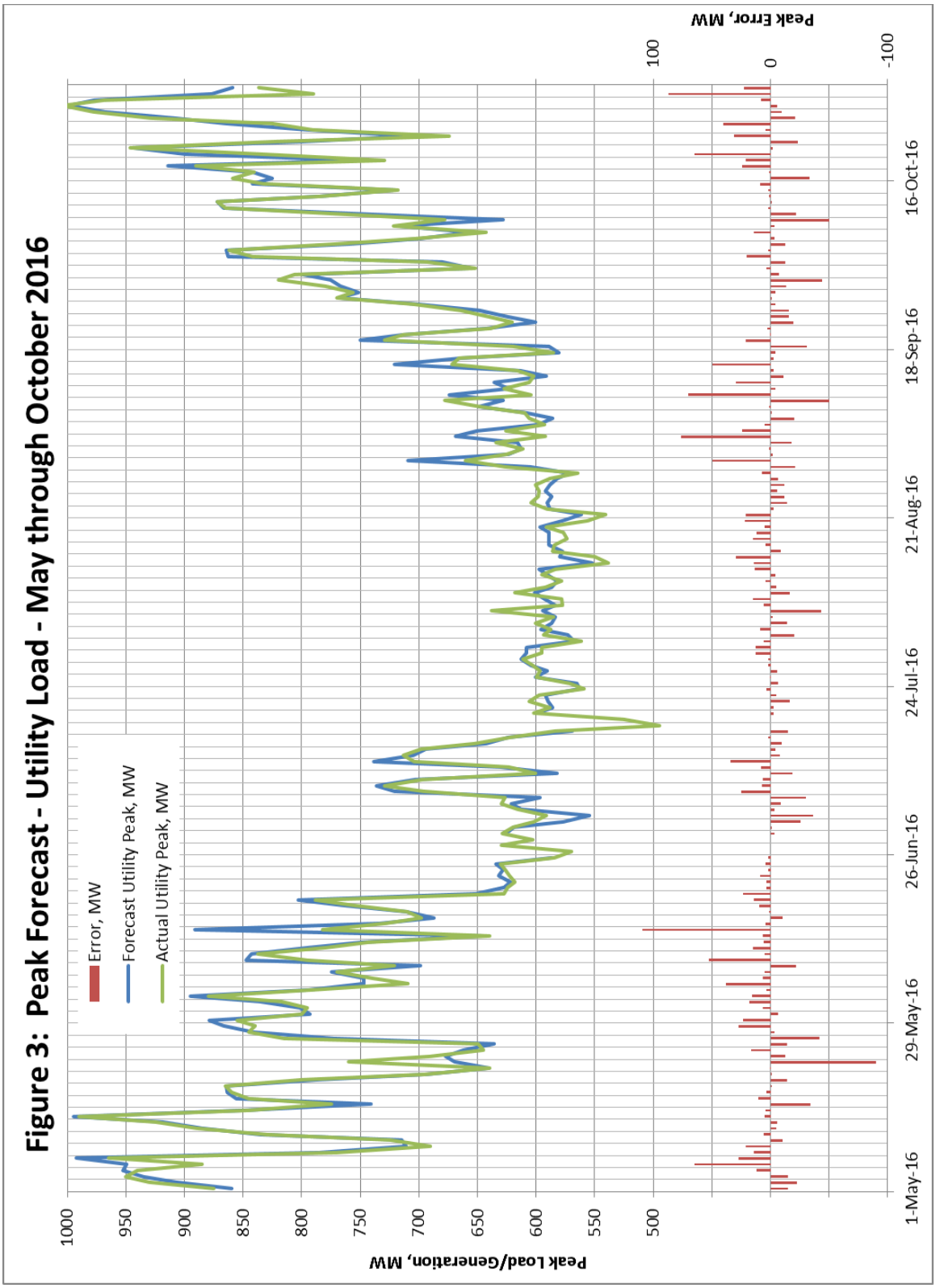
Figure 3: Peak Forecast - Utility Load - May through October 2016
Peak Load/Generation, MW
Peak Error, MW
Error, MW
Forecast Utility Peak, MW
Actual Utility Peak, MW
1000
950
900
850
800
750
700
650
600
550
500
100
0
-100
1-May-16
29-May-16
26-Jun-16
24-Jul-16
21-Aug-16
18-Sep-16
16-Oct-16

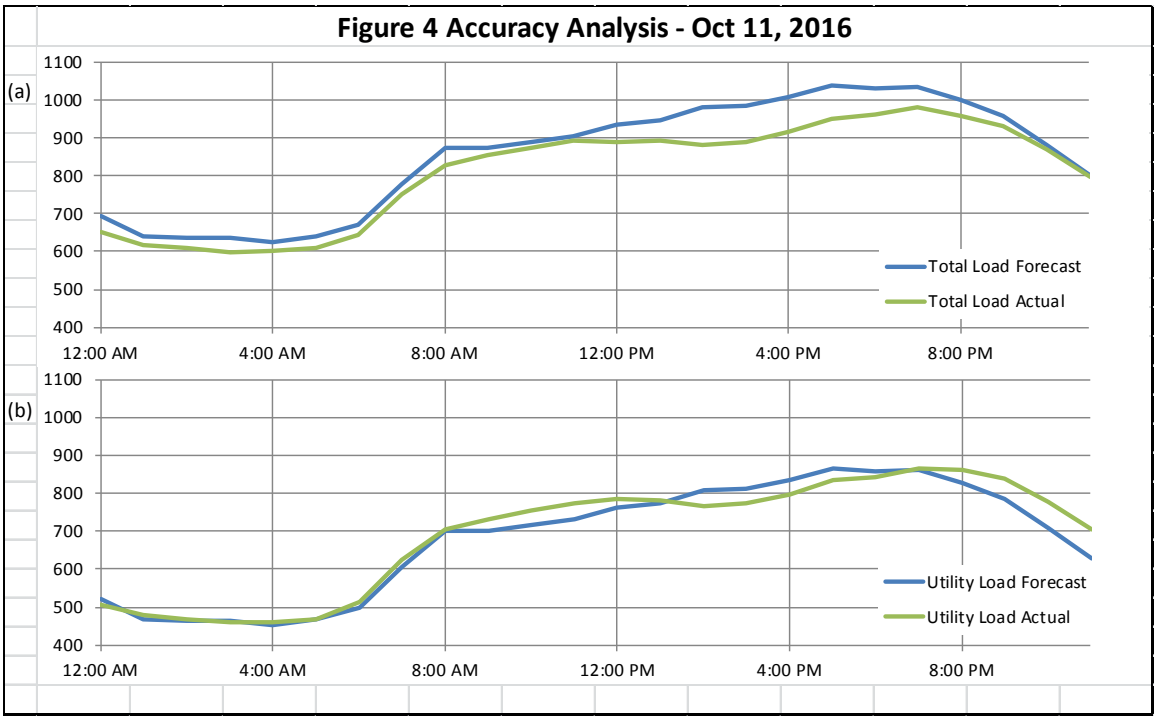
Figure 4 Accuracy Analysis - Oct 11, 2016
(a)
1100
1000
900
800
700
600
500
400
12:00 AM
4:00 AM
8:00 AM
12:00 PM
4:00 PM
8:00 PM
Total Load Forecast
Total Load Actual
(b)
1100
1000
900
800
700
600
500
400
12:00 AM
4:00 AM
8:00 AM
12:00 PM
4:00 PM
8:00 PM
Utility Load Forecast
Utility Load Actual

**Figure 5 Accuracy Analysis - Oct 20, 2016**

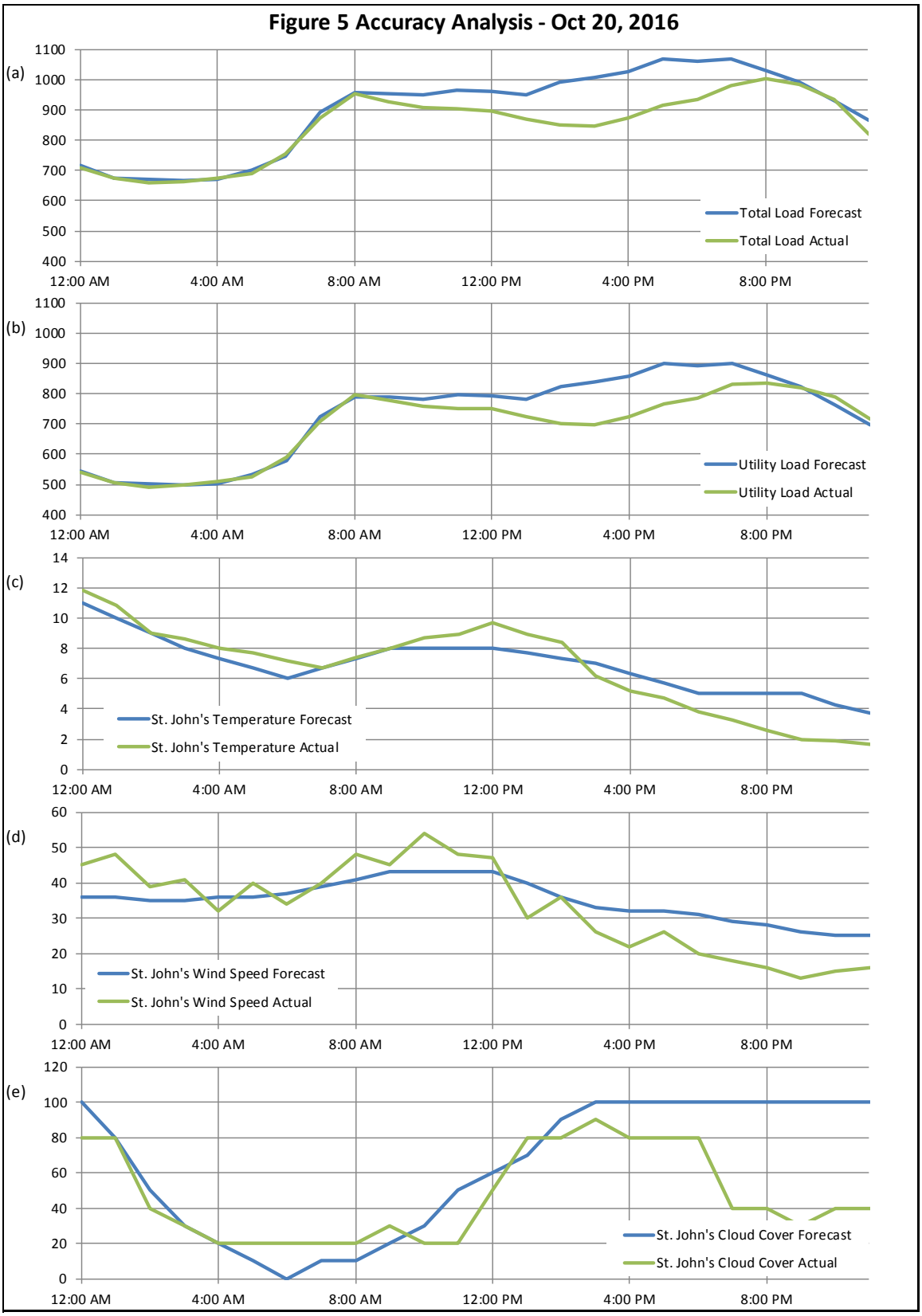

**Figure 6 Accuracy Analysis - Oct 30, 2016**