

Estimated Impacts of COVID-19 on ISO New England Demand

Analysis through 7/26/2020



ISO New England Operations Forecast



Overview

- ISO is producing a weekly analysis of the impact that the response to COVID-19 is having on system demand
 - Impact on system demand was first observed in the third week of March when the pandemic response began
 - Loads were trending lower than would be expected through May. Percentages will fluctuate from week to week as shown in the following slides
 - Air conditioning load in June and July, combined with limited expansion of re-opening policies, are resulting in higher loads than would be expected absent COVID-19 response
- This report will be updated on a weekly basis on Tuesdays for data up to the prior Sunday
 - <https://www.iso-ne.com/markets-operations/system-forecast-status/estimated-impacts-of-covid-19-on-demand/>



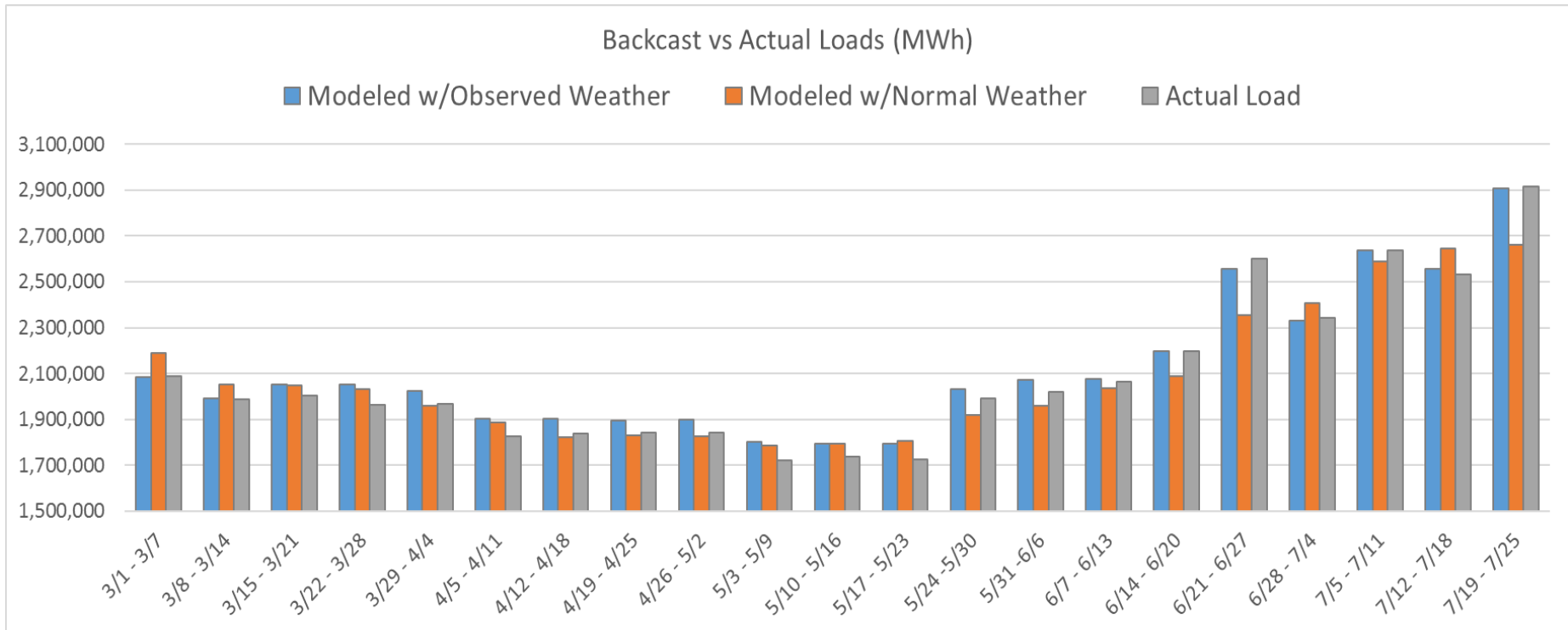
Backcast Analysis

- Using load forecast models trained only with load and weather from prior to COVID-19 outbreak to produce 2 sets of modeled load data
 - Replaced forecasted weather with **observed weather** to produce a backcast of expected load, absent the impacts of COVID-19
 - Replaced forecasted weather with a **10-year average weather** to compute “Normal Weather” loads, absent the impacts of COVID-19
- Output from both models is compared to the actual hourly loads



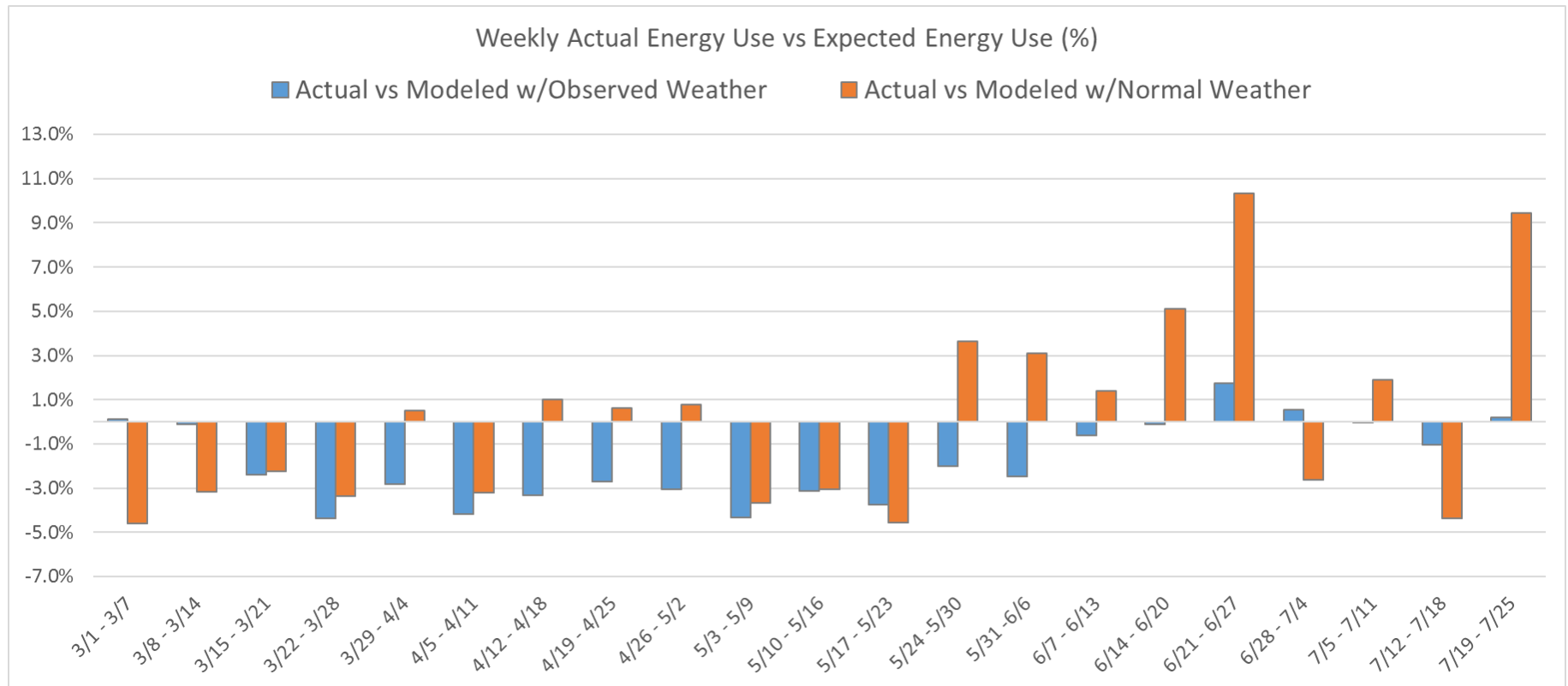
Backcast Load Analysis

- ISO New England Backcast models showing Weekly Energy trends using Normal and Observed Weather.



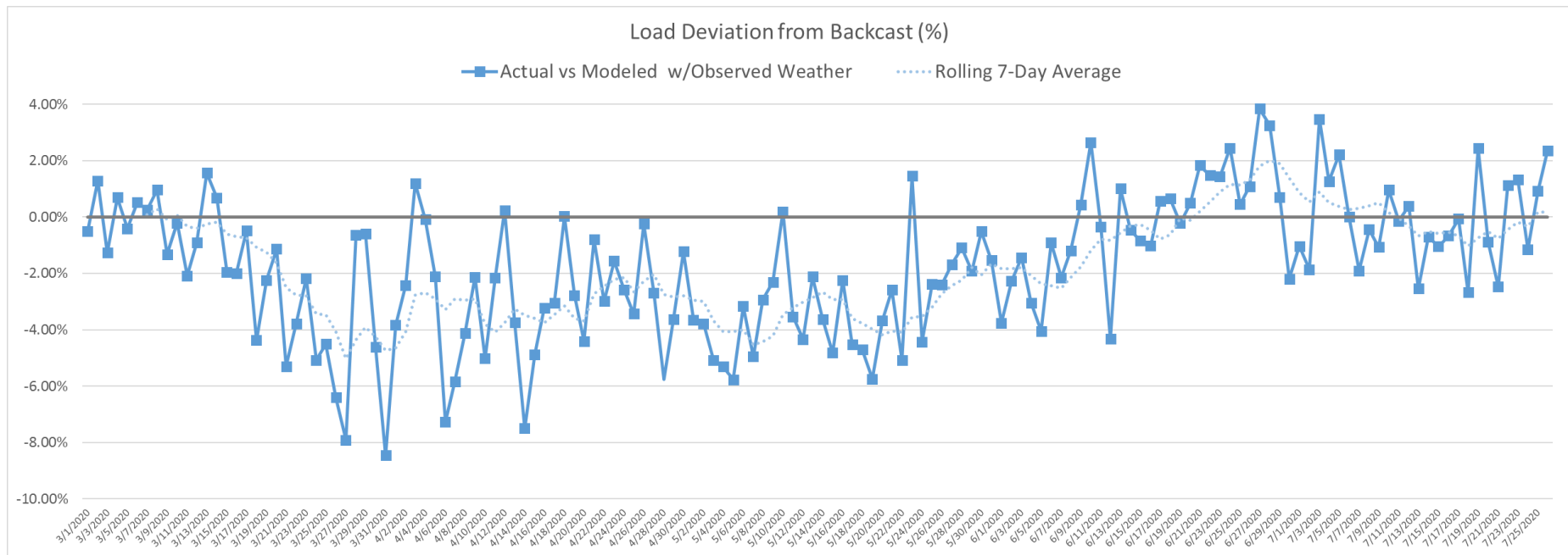
Backcast Load Analysis

- ISO New England actual load trends as states enacted shutdowns and restrictions.



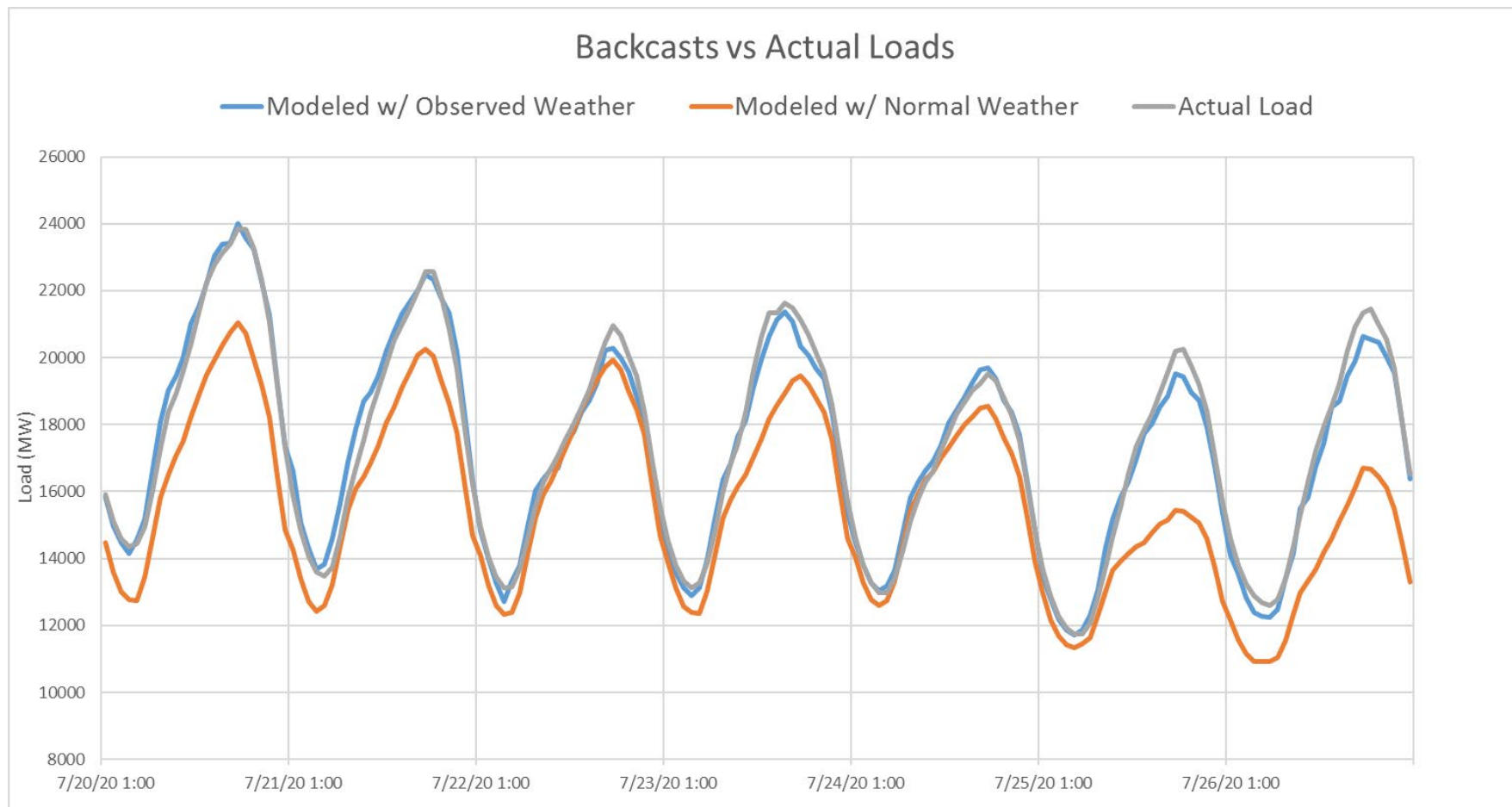
System Load Deviation

- ISO New England daily and rolling seven-day forecast load deviation trends.



Daily Backcast Model comparison

- Daily load variation showing volatility from BTM PV and Covid-19 impacts



Backcast Load Analysis

- Demand reductions start in third week of March and continue through the current week

| Backcast vs Actual Loads (MWh) | 3/1 - 3/7 | 3/8 - 3/14 | 3/15 - 3/21 | 3/22 - 3/28 | 3/29 - 4/4 | 4/5 - 4/11 | 4/12 - 4/18 | 4/19 - 4/25 | 4/26 - 5/2 | 5/3 - 5/9 | 5/10 - 5/16 | 5/17 - 5/23 | 5/24 - 5/30 | 5/31 - 6/6 | 6/7 - 6/13 | 6/14 - 6/20 | 6/21 - 6/27 | 6/28 - 7/4 | 7/5 - 7/11 | 7/12 - 7/18 | 7/19 - 7/25 |
|--------------------------------|-----------|------------|-------------|-------------|------------|------------|-------------|-------------|------------|-----------|-------------|-------------|-------------|------------|------------|-------------|-------------|------------|------------|-------------|-------------|
| Modeled w/Observed Weather | 2,085,829 | 1,990,206 | 2,051,625 | 2,054,137 | 2,024,895 | 1,904,321 | 1,902,755 | 1,894,423 | 1,899,232 | 1,800,585 | 1,796,038 | 1,792,771 | 2,031,820 | 2,073,500 | 2,075,276 | 2,198,167 | 2,555,121 | 2,331,177 | 2,637,735 | 2,557,541 | 2,908,270 |
| Modeled w/Normal Weather | 2,189,017 | 2,053,459 | 2,048,462 | 2,033,440 | 1,958,375 | 1,885,873 | 1,821,355 | 1,831,988 | 1,827,282 | 1,787,795 | 1,794,733 | 1,808,218 | 1,921,100 | 1,961,313 | 2,034,583 | 2,088,937 | 2,356,220 | 2,407,507 | 2,587,188 | 2,646,456 | 2,662,591 |
| Actual Load | 2,088,378 | 1,987,982 | 2,002,463 | 1,964,684 | 1,968,097 | 1,825,006 | 1,839,585 | 1,843,156 | 1,841,494 | 1,722,430 | 1,739,679 | 1,725,598 | 1,991,305 | 2,021,913 | 2,062,865 | 2,195,885 | 2,599,377 | 2,343,821 | 2,636,541 | 2,530,756 | 2,913,748 |

| Percent Error in System Load | 3/1 - 3/7 | 3/8 - 3/14 | 3/15 - 3/21 | 3/22 - 3/28 | 3/29 - 4/4 | 4/5 - 4/11 | 4/12 - 4/18 | 4/19 - 4/25 | 4/26 - 5/2 | 5/3 - 5/9 | 5/10 - 5/16 | 5/17 - 5/23 | 5/24 - 5/30 | 5/31 - 6/6 | 6/7 - 6/13 | 6/14 - 6/20 | 6/21 - 6/27 | 6/28 - 7/4 | 7/5 - 7/11 | 7/12 - 7/18 | 7/19 - 7/25 |
|------------------------------|-----------|------------|-------------|-------------|------------|------------|-------------|-------------|------------|-----------|-------------|-------------|-------------|------------|------------|-------------|-------------|------------|------------|-------------|-------------|
| Modeled w/Observed Weather | 0.1% | -0.1% | -2.4% | -4.4% | -2.8% | -4.2% | -3.3% | -2.7% | -3.0% | -4.3% | -3.1% | -3.7% | -2.0% | -2.5% | -0.6% | -0.1% | 1.7% | 0.5% | 0.0% | -1.0% | 0.2% |

| Weekly Use vs Expected % | 3/1 - 3/7 | 3/8 - 3/14 | 3/15 - 3/21 | 3/22 - 3/28 | 3/29 - 4/4 | 4/5 - 4/11 | 4/12 - 4/18 | 4/19 - 4/25 | 4/26 - 5/2 | 5/3 - 5/9 | 5/10 - 5/16 | 5/17 - 5/23 | 5/24 - 5/30 | 5/31 - 6/6 | 6/7 - 6/13 | 6/14 - 6/20 | 6/21 - 6/27 | 6/28 - 7/4 | 7/5 - 7/11 | 7/12 - 7/18 | 7/19 - 7/25 |
|--------------------------------------|-----------|------------|-------------|-------------|------------|------------|-------------|-------------|------------|-----------|-------------|-------------|-------------|------------|------------|-------------|-------------|------------|------------|-------------|-------------|
| Actual vs Modeled w/Observed Weather | 0.1% | -0.1% | -2.4% | -4.4% | -2.8% | -4.2% | -3.3% | -2.7% | -3.0% | -4.3% | -3.1% | -3.7% | -2.0% | -2.5% | -0.6% | -0.1% | 1.7% | 0.5% | 0.0% | -1.0% | 0.2% |
| Actual vs Modeled w/Normal Weather | -4.6% | -3.2% | -2.2% | -3.4% | 0.5% | -3.2% | 1.0% | 0.6% | 0.8% | -3.7% | -3.1% | -4.6% | 3.7% | 3.1% | 1.4% | 5.1% | 10.3% | -2.6% | 1.9% | -4.4% | 9.4% |

