Manual 19 Changes

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M-19 Changes

- First read
- Extensive revisions to incorporate changes to the load forecast model to:
  - Add variables to account for trends in equipment/appliance saturation and efficiency
  - Revise weather variables
  - Add distributed solar generation into the historical load data and apply a separate solar forecast to adjust load forecasts.

M-19 Changes

- Updated economic areas and weather stations assigned to some zones
  - Virginia now used for DOM zone economics
- Revised weather normalization procedure

Equipment Saturation and Efficiency

End-Use Trends:

Measures of the stock and efficiency of various electrical equipment and appliances used in residential and commercial settings are included in the forecast models, grouped by heating, cooling, and other. End-use variables for each PJM zone are applied by Census Division, as presented in Exhibit 3. End-use variables are weighted by the Residential and Commercial sales of each zone, per FERC Form 1 filings.

Revised Weather Variables

Weather Data:

Weather is included in the models using different variables for heating, cooling and shoulder seasons. Weather variables are specified as splines over defined ranges. For the heating season (December, January and February), the Winter Weather Parameter is defined as:

- Splines are customized for each zone for each season, allowing for different load response along different ranges of the weather distribution.

Distributed Solar Generation

~~For the non-coincident models, zonal~~ Hhourly metered load data are supplemented with estimated load drops (as outlined in Attachment A) and estimated distributed solar generation to obtain unrestricted hourly loads. For the non-coincident models, t~~T~~he maximum value for each day is used in the regressions. For the coincident models, the zone's contribution to the daily RTO/LDA unrestricted peak load is used in the regressions. For the net energy models, the sum of each day's hourly loads is used in the regressions.

The total amount of behind-the-meter solar generation will be forecasted separately from the load forecast model. This forecasted amount will be used to adjust the unrestricted load of each zone.

- The difference between total solar and the amount in the forecast will be published in a table in the forecast report.

Weather Normalization Procedure

For non-coincident weather-normalized seasonal peaks, daily zonal peak loads on non-holiday weekdays for a three-year period (the study year and two prior years) are regressed against a seasonal weather variable. The seasonal weather variables are those used in the load forecast model (as described in Section 3.2). Regressions only include days in the heating/cooling range (summer > 74 WTHI, winter < 45 WWP). A binary adjustment is applied for each of the two earlier years, to allow for load growth. The resulting regression equation is solved at each zone's weather standard, which is the average of the extreme seasonal weather variable values on non-holiday weekdays for a period consistent with the load forecast.

To determine coincident zonal weather-normalized seasonal peaks, the results of the non-coincident process described above are adjusted by each zone's average annual diversity to the PJM RTO seasonal peak over available history. The zonal values are summed to determine the PJM RTO seasonal weather-normalized peak.

- This procedure has already been used to provide normalized peaks to review results from the new load forecast model.