Load Forecast Adjustment Guidelines

**Issue Identification**

PJM annually solicits information from its member Electric Distribution Companies (EDC) for large load shifts (either positive or negative) which are known to the EDC but may be unknown to PJM. PJM will send the request in mid-July with responses expected in time for any proposed adjustments to be reviewed with the Load Analysis Subcommittee in October/November.

FirstEnergy requested via e-mail that PJM consider adding load to the APS, ATSI, and PENLC zonal forecasts to recognize the growth in natural gas processing plants in those areas.

**Issue Verification – verify that identified issue is real and significant, using the following methods:**

- Determine if the load change has been publically acknowledged through the media, press release, regulatory process, etc.
- Verify that requesting EDC has adjusted its own financial/planning forecast
- Ascertain that the load shift is related to a single site or a limited number of related sites (not a systemic cause)
- Discuss with economic forecast vendor(s) whether or not the load shift is reflected in its/their economic forecast(s). Also, determine if the requested load adjustment’s load impact is consistent with its economic impact. Additionally, determine if the requested load adjustment is tied to any of the metro areas that PJM uses to define the economic variable of a zone.
- Verify that any behind-the-meter generation adjustment has complied with PJM’s behind-the-meter process.
- Determine adjustment’s significance, either by sheer magnitude or percentage of a zone’s load.

PJM reviewed publically available information which contained detailed information on the planned expansion and construction of facilities in the Marcellus and Utica shale plays.

FirstEnergy stated that their internal forecasts have been increased to reflect the load adjustment they are requesting. PJM verified that its own Transmission Planning group has been making adjustments to load flow studies consistent with increasing load in the affected area.

PJM determined that the load shift is all related to increased fracking-related services.

PJM requested and received feedback from Moody’s Analytics that the fracking-related activity was not sufficiently included in the metropolitan area forecasts used by PJM (since it is located in non-metro areas).

PJM determined that the requested adjustments for ATSI and PENLC zones were too small to be material, but that those in the APS zone were significant.

**Adjustment Estimation- for each identified and verified issue, estimate its impact on peak load using the following methods (which may be combined):**

- Acquire load history for the load that has/will change and produce analysis to isolate the impact (e.g., forecast runs with and without the load involved, trend analysis)
- Acquire any contracted amounts of load changes
- For any after-the-fact adjustments, review the zone’s forecast model’s residual pattern
- Review any available independent analysis of the impact of the load change.

PJM took the following steps to determine if an adjustment is warranted:

1) Compiled peak load (MW) history for all APS natural gas processing plants as provided by FirstEnergy.
2) Decremented forecasted “capacity” values using the supplied load factors by plant and aggregated to APS zone.

3) Compiled economics data on real output (GMP) of the “Chemicals, Energy, Plastics & Rubber” Industry (the industry that includes gas processing) for APS metro areas. This was done in four steps as this is not a series that Moody’s Analytics supplies, but it can be inferred.
   a. Gather employment in that industry in the metro areas and the state.
   b. Gather output in that industry in the state (it is available at the state level)
   c. Compute output-to-employment ratio (essentially productivity) at the state level
   d. Use state output-to-employment ratio to get metro output for the industry

4) Calculated embedded load by regressing history on time and then augmenting future embedded values by growth in the metro output series. For instance, in 2016, the output series is expected to have grown by 8% from 2015, thus the results from the regression should be 8% higher than they otherwise would have been.

5) Subtracted embedded from forecast to get the adjustment values. Rounded adjustment values to the nearest 10MWs.

Adjustment Details:

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**Adjustment Review** – Each proposed load forecast adjustment will be reviewed with the Load Analysis Subcommittee prior to inclusion in the load forecast. The final decision on any load adjustment is made by PJM.