

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 that PJM consider adding load to the APS, ATSI, PENELEC, and METED zonal forecasts to recognize the growth in natural gas processing plants in those areas. This was an update to a forecast adjustment that has been in place in some form beginning with the 2014 Load Forecast Report.

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.

FirstEnergy stated that their internal forecasts have been increased to reflect the load adjustment they are requesting, and supplied a list of projects including primarily compressor stations and processing plants related to increasing fracking-related services. All future projects are outside of the metropolitan areas used to define the economic footprint of the APS territory (indeed, most projects are in unincorporated counties). As a result, this activity is not captured in the economic forecast used for APS. PJM determined that the loads are significantly large to warrant investigation.

Loads related to ATSI, PENELEC and METED zones are not considered significant enough to warrant any load forecast adjustments, with the majority of the fracking industry load having already come online.

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)

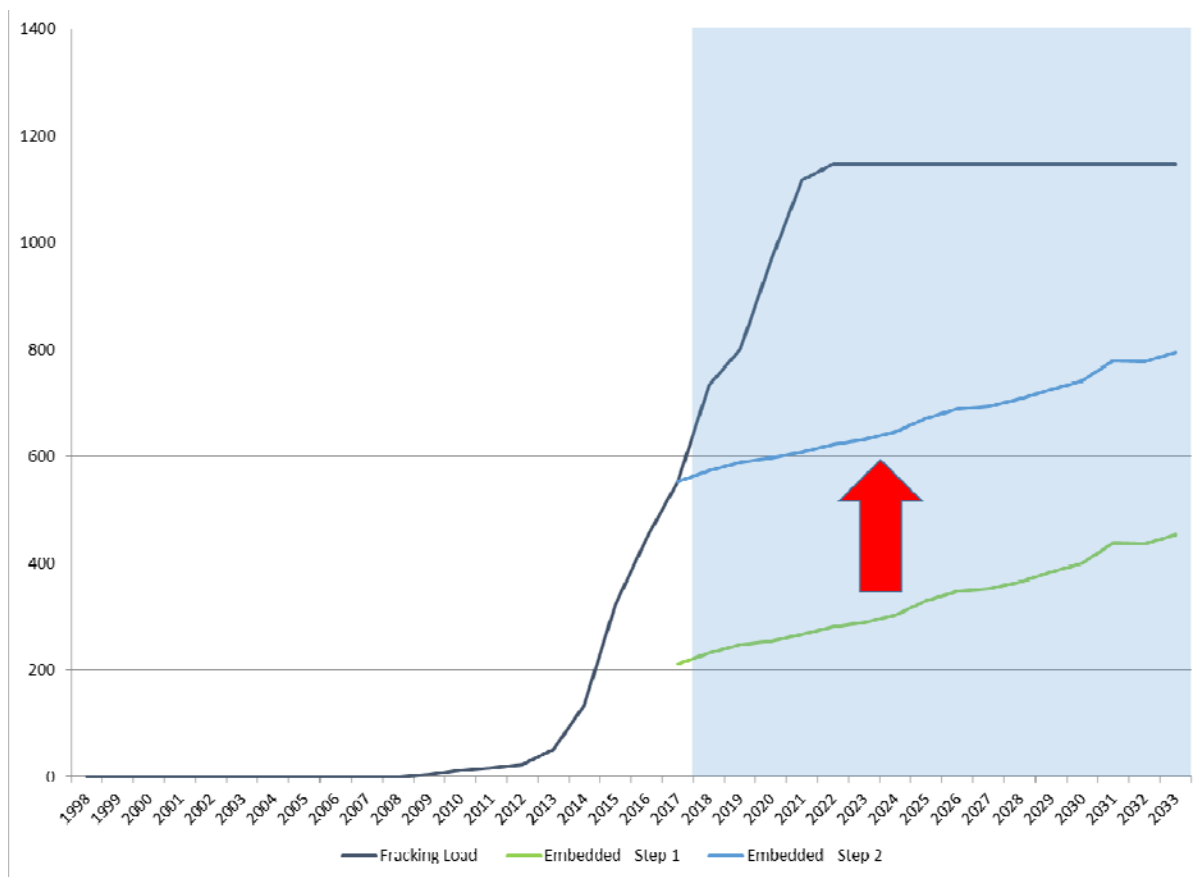
Acquire any contracted amounts of load changes

For any after-the-fact adjustments, review the zone's forecast model's residual pattern

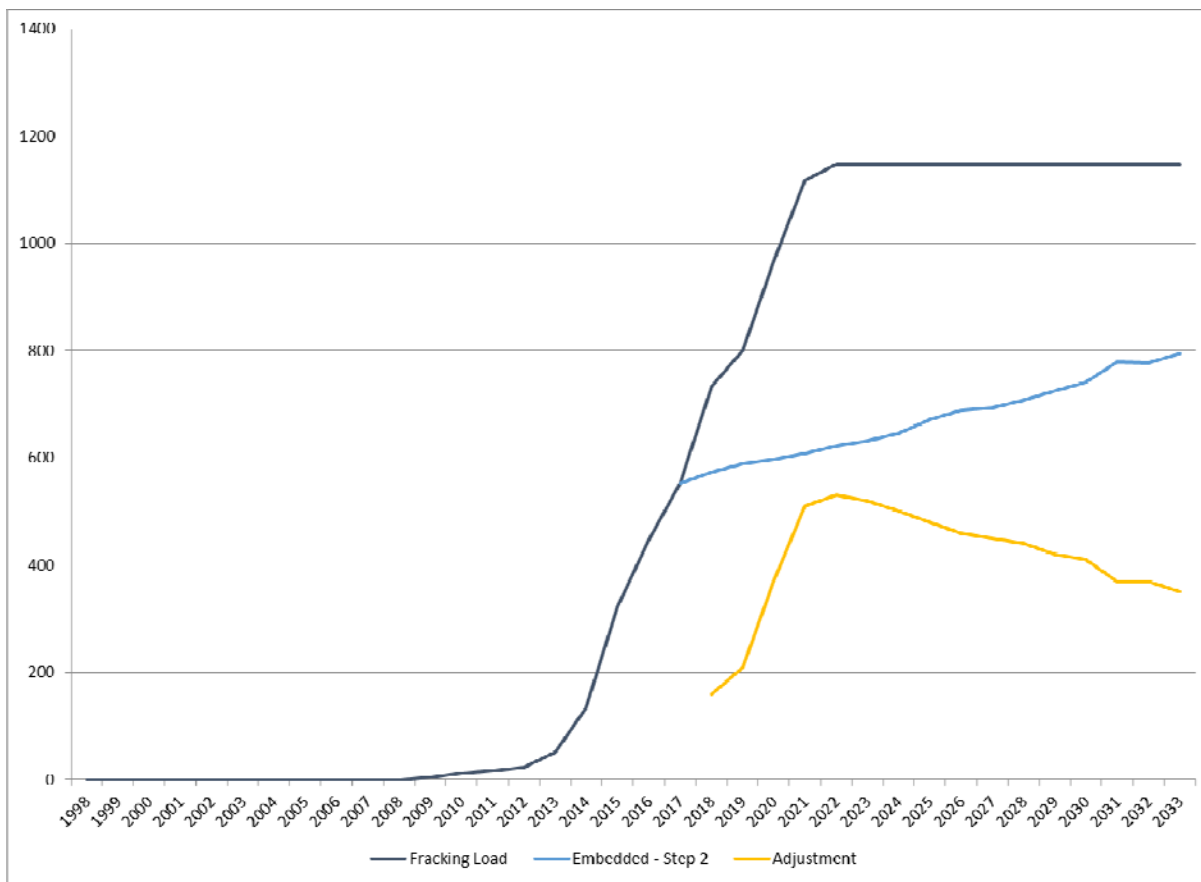
Review any available independent analysis of the impact of the load change.

First Energy provided historical and future fracking related loads out to 2022. These loads have reached over 500 MW as of 2017 and are forecast to amount to over 1,100 MW by 2022. Projections are not available after 2022, so the assumption was made to keep load flat thereafter.

In order to formulate an appropriate forecast adjustment, PJM first had to determine the amount already embedded in the forecast. To arrive at this amount, a forecast was run with fracking loads removed from the historical period and this was compared with a forecast with the fracking loads still in. The difference between these two forecasts provides the first take on an embedded amount (see green line in graph below). PJM then solved its forecast model for summer 2017 and compared it to weather-normalized loads, which did not show an appreciable difference. Due to this, fracking load existing before 2018 is considered already fully embedded. Future embedded amounts thus use existing fracking loads as the starting point (see light blue line in graph below). The idea behind this step is to avoid compounding any existing bias. This process is illustrated in the graph below.



The forecast adjustment is then determined as the difference of the forecasted amount and the embedded amount. The forecast adjustment grows to 530 MW in 2022 before gradually tapering through the forecast horizon.



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.

Because of the type of the load and the expected acceleration, PJM has determined it necessary to make a discrete forecast adjustment to the APS transmission zone load to account for this trend.

Year	2018	2019	2020	2021	2022	2023	2024	2025
Peak Adjustment (MW)	160	210	370	510	530	520	500	480
Year	2026	2027	2028	2029	2030	2031	2032	2033
Peak Adjustment (MW)	460	450	440	420	410	370	370	350