

## Delay in Posting Real Time Prices

During normal operations, a large volume of real time data is sent to various systems for posting to external participants or internally within PJM for processing by other system including the Market Settlements System (MSS) and the Market Monitoring Unit (MMU). One of the major components of this real time data is the Locational Marginal Prices (LMP). These are the resulting prices associated with a given 5 minute period of time. The LMP values are posted to the PJM external web, eData, and eDataFeed once calculated and are available to participant within 10 minutes of their calculation. While these systems experience a high level of availability, there are often times when the data they display is not up-to-date and current. Each system has various methods to notify participants that the data is not updating. For instance, the Operational Data Page will display the message “Application or data issues are causing a delay in updating values, please stand by” while the eData system will display a pop-up stating “The eData client has not received information for 15 minutes”. In each case there are only a handful of reasons that the real time prices are delayed. Below is a summary of reasons why prices are not updated to the various posting systems.

- **Insufficient Data** – The real time pricing program uses a set of input data to provide a snapshot of the transmission system, generator outputs, load demand, and many other system aspects. In order for the real time prices to be accurate, this must be a comprehensive set of input data all relevant for the same period of time. If for any reason, some piece of the input data set is missing or incomplete, the pricing program will not send the results of the calculation to participants. Because there is missing or stale data, the results may not accurately reflect system conditions.
- **Computer Problems** – While the availability is extremely high for the computers that execute the LMP calculation, there are other systems including the network, routers, and various security measures that could cause a failure of the LMP calculation. While rare, problems with the computer system can occur and cause the LMP not to update.
- **Suspect Results** – PJM strives to post accurate data to the external web through the various posting systems. In an effort to ensure accurate results from the LMP calculation, certain programs will check the results of the LMP calculation to ensure they are consistent with the input data. These checks will look at the results compared to the input data and also ensure the results are within a certain tolerance range. If any of the checks are violated, the results are suspect and not posted to the external participants. It is PJMs intent to not post suspect results due to the fact that they may not be reflective of the true system conditions or the eventual accounting quality data.



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PJM has and will continue to work towards minimizing the situations that prevent the posting of real time pricing. By providing the pricing results to the Operational Data Page and eData, there are now two separate systems within PJM providing real time pricing results. This gives participant two options for obtaining real time pricing data and allows results to be posted even if computer problems are being experienced with one of the systems. However, it has been found that as the load increases, prices increase, constraints increase, and at times the rate of delay in posting real time pricing also increases. This is an unfortunate result of the fact that as the number of constraints increase, the probability that some inconsistency is found in the results also increases. PJM is continuing their efforts to find ways of minimizing these delays, with special attention given to ways of improving the consistency of the results during high load, high constraint periods.