Regulation Market Incentive Payment: Problem Statement

Source of the Issue

The current PJM regulation market compensates all resources assigned to regulation the same. There is no compensation difference for resources that follow signals more accurately or are asked to move more often. Because of the compensation structure, the PJM regulation signal is currently the same for all resources and does not take advantage of the fact that some resource types can respond more quickly than others. PJM system operation would benefit from the ability to send more rapid regulation signals to more flexible resources. In addition to the current flexible hydro resources, the emergence of alternative technology resources provide additional opportunity to assign resources capable of near instantaneous responses to changes in output based on the control signal sent but lack the ability to sustain an output level for a significant period of time. These resources can be ideal for regulation but are better suited to follow a more volatile signal that fluctuates more consistently around the midpoint than the conventional regulation signal used today given their operational characteristics.

Additionally, all regulation resources, regardless of the signal received, have no incentive to perform at an above an average level once assigned as there are no metrics or market compensation schemes that reward more rapid and accurate performance.

Background

In response to the development of alternative technologies that are adept at responding to a more volatile signal that is shorter in duration, PJM has developed a more dynamic regulation signal based mostly on the frequency error of the RTO as opposed to the frequency and tie error like the conventional regulation signal is. The new, dynamic regulation signal capitalizes on the capabilities of the aforementioned alternative technology resources while providing operational benefits to PJM. The dynamic regulation signal is currently in use on a limited basis today and could be expanded to other resources if the compensation structure were enhanced to incent more accurate regulation response.

Deployment of this new regulation signal could either avoid increases in regulation requirements or lower the overall amount of regulation required. However, the lack of a compensation structure that is based on the amount and accuracy of movement in response to regulation signals prevents the deployment of this dynamic regulation signal. If PJM were to deploy the signal without compensation enhancements, dynamic resources would reduce their regulation offered because they would be asked to respond more but get paid that same as average responders.

Under the current market rules, the compensation for regulation is primarily to cover forgone energy revenue opportunity costs. An additional, performance-based compensation structure is needed to provide a response incentive. . PJM believes we can achieve operational benefits

and reduced costs by providing performance-based compensation which allows us to establish different performance requirements needed to follow each signal in addition to the increased volatility of the dynamic signal. To provide incentives to respond quickly and accurately to either signal, PJM proposes to create a regulation market incentive payment based on the amount a resource actually moves as a result of either regulation signal during the hour. Eligibility for the incentive payment will be based on the accuracy with which a resource follows either regulation signal.

PJM feels that better response to the existing conventional and new dynamic regulation signals will result in enhanced operational control for PJM Operators and be cost beneficial in the long run by allowing PJM to assign less regulation once operational experience with higher penetrations of resources following the dynamic signal and better performance to the conventional signal is gained.

Assigned to Which Group

The issue will be presented to the January 19, 2011 MRC where it may be assigned to a new Task Force reporting the MIC that provides updates and information to the OC and other relevant committees.

Key Areas for Activity

1) Define bright-line criteria for performance requirements for eligibility of an incentive payment. This includes the criteria for measurement and verification of performance.
2) Investigate enhancements to the fleet-based regulation structure to align with performance metrics.
3) Develop/revise regulation testing criteria for existing and new regulation signals.
4) Review current energy market and dispatch protocols for alignment with new regulation performance metrics.
5) Design a compensation mechanism that incentivizes accurate tracking to either regulation signal.

Expected Deliverables

1) A set of market rule changes to incorporate a regulation incentive payment based on resource performance to either regulation signal.
2) A set of metrics used to measure compliance with the regulation signal.

3) Any required changes to operational protocols needed to comply with the defined performance requirements.

Expected Overall Duration of Work:

There is no defined timeframe or due date for the work included. PJM believes that a limited number of resources currently exist in PJM that can follow the dynamic regulation signal but has engaged in numerous discussions with alternative technology resource investors about their perceived misalignment of incentives in the PJM regulation market. PJM is looking to properly realign these incentives to attract these new resource types, provide better operational performance and long-term cost benefits.