

MARKET SURVEILLANCE COMMITTEE

System Market Power: HASP Based Mitigation Design Discussion

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WESTERN ENERGY IMBALANCE MARKET

Topics

- Testing System Market Power in HASP
- Testing for System Market Power in the Supply of RAMP
- Is There an Urgent Need to Develop and Implement a Test for Market Power in the Supply of Ramp?

Testing System Market Power in HASP

Testing for system market power in HASP will allow the pivotal supplier test to take account of all supply available to meet HASP load.

- Some of the resources evaluated in HASP will not be available to meet load in RTD, but that will be because they are higher cost than the resources that are used to meet load in RTD.
- Because the resources used to meet load in RTD cannot raise their offer prices after the HASP evaluation, resources scheduled in HASP cannot take advantage of the fact that some supply that was offered in HASP would not be available in RTD to exercise market power.

Market Power and HASP Supply

Testing for system market power in HASP avoids the high levels of false positives that would result from applying a pivotal supplier test for system market power in FMM or RTD. Example:

HASP Supply

2500MW supply cleared from 3 largest suppliers

3500MW uncleared fringe supply offers on ties

750MW uncleared internal fringe supply offers

500MW uncleared EIM fringe supply offers

This hour would pass the pivotal supplier test, 4750 MW available to replace 2500 MW.

Market Power and HASP Supply

The same hour with the same load could fail the three pivotal supplier test based on the supply available FMM, because there would be less uncleared fringe supply on the ties, yet the same resources would be available as in HASP to meet HASP load.

FMM Supply

- 2500MW Megawatt supply by 3 largest suppliers

- 250MW uncleared 15 minute fringe supply offers on ties

- 750MW uncleared internal fringe supply offers

- 500MW uncleared EIM fringe supply offers

This FMM interval would fail the pivotal supplier test by a wide margin, 1500 MW available to replace 2500 MW. Not only the three largest suppliers but many other suppliers might be spuriously found to be pivotal and subjected to mitigation. The FMM test would also differ in terms of the rampable supply within the time period, we focus on the change in supply available in this example.

System Market Power in Ramp

Because the pivotal supplier test in HASP would be applied based on HASP load and supply calculated based on an hour of ramp, the application of a pivotal supplier test in HASP would not necessarily identify the potential for the exercise of market power in ramp capability or in meeting higher than forecasted loads.

- Testing for market power in the supply of ramp by applying the 3 pivotal supplier test based on FMM or RTD load and supply would result in frequent spurious triggering of mitigation, even if FMM or RTD load were no higher than the load tested in HASP, and there were no ramp constraints, as illustrated in the example above.
- The potential for a high level of false positives could be avoided by applying a more complete and accurate set of pivotal supplier tests for higher load levels or the impact of ramp constraints in FMM and RTD.

System Market Power in Ramp

The potential for higher than forecasted load to allow the exercise of market power in FMM or RTD could be tested by applying the pivotal supplier test based on FMM net load and HASP supply. This would test whether the FMM or RTD interval would have passed the HASP pivotal supplier test even with the higher level of net load. This is illustrated using the prior example with an increase of 1000MW in net load.

HASP Supply

- 3000MW (+500MW) Megawatt supply by 3 largest suppliers

- 3250MW (-250MW) uncleared fringe supply offers on ties

- 500MW (-250MW) uncleared internal fringe supply offers

- 500MW uncleared EIM fringe supply offers

This FMM interval would still pass the pivotal supplier test, 3750 fringe MW available to replace 3000 MW of potentially pivotal supply, but it would fail if less supply was available.

System Market Power in Ramp

It might not be necessary to rerun HASP to apply the pivotal supplier test based on FMM and RTD net load. For a simpler implementation, the CAISO could apply the additional test by increasing the pivotal supply to be replaced by the difference between FMM or RTD net load and the net load tested in HASP.

- Thus, in the example, the supply available would still be 4750 MW, but the supply to be replaced would rise by 1000 to replace 3500 MW for the three largest suppliers.
- The available supply and pivotal supply would be different when testing the 4th, 5th etc largest suppliers but the test could still be applied by just raising the supply to be replaced by 1000MW.

This simplified test would not be completely accurate if there were congestion within the tested region in FMM and RTD.

System Market Power in Ramp

The potential for the reduced ramping time available in FMM or RTD to allow the exercise of market power in FMM or RTD could be tested by applying an additional pivotal supplier test based on the interval to interval change in FMM load and HASP supply.

Because the competitiveness of the energy market supply would have been tested based on HASP supply, this 2nd test would just test whether the interval to interval change in pivotal supply could be replaced with fringe rampable capacity.

System Market Power in Ramp

Example:

150 MW of pivotal generation dispatched up in FMM;

50 MW of fringe 15 minute import supply

300 MW of undispached rampable internal fringe supply

100 MW of undispached rampable EIM supply

450MW of rampable fringe supply available to replace 150MW of pivotal supplier output, passes test.

We know that this test would at times trigger additional mitigation as it would trigger mitigation in all of the intervals in which power balance violations occurred if these power balance violations were foreseen in the mitigation run. However, the price should be set by a penalty price in these instances in any case.

Need for Market Power Mitigation of Ramp

Is there a near term potential for the exercise of material system market power in the supply of ramp capability that warrants potentially delaying implementation of the core design in order to develop and implement these additional tests in FMM and RTD?

- DMM's analysis of the day-ahead market that led to this initiative did not appear to identify concerns with the exercise of market power in ramp capability as that analysis concerned the aggregate supply of energy in the day-ahead market.
- DMM's recent state of the market reports do not appear to identify concerns with the exercise of market power in ramp capability.
- Is the frequency of either load forecast error or materially binding ramp constraints sufficiently high, even during evening ramping hours, that it would be profitable for a supplier to economically withhold output in all of these hours in order to economically withhold output and increase prices in a small percentage of intervals?

Need for Market Power Mitigation of Ramp

In light of the large upward load bias adjustments typically applied in HASP, is there is a need to apply a test for system market power arising from higher load forecasts in FMM or RTD than tested in HASP?

- The frequency with which such a test would be applied could be examined empirically by calculating the number of FMM and RTD intervals with higher net load forecasts than used in HASP.
- The difference in net load could be plotted against the FMM or RTD price to see if there were a sufficiently material number of intervals with higher FMM or RTD net load and high prices to warrant applying an additional pivotal supplier test based on FMM or RTD net load.
- These data could also be calculated separately for the evening ramp hours.
- A further test would be to calculate how many of the intervals with higher FMM or RTD net load and high prices had LAP prices that differed by \$25 or more, indicating that local market power mitigation would have been triggered.

Need for Market Power Mitigation of Ramp

It appears less easy to test how often ramp constraints may have materially impacted FMM and RTD prices without undertaking complex calculations.

- One simple calculation would be to tabulate how often the FMM and RTD price materially exceeded the HASP price, then plot these price differences against the difference between the FMM or RTD load and the HASP load. It would be important to limit this calculation to the hours in which there was no material congestion between the LAPs that would have triggered local market power mitigation.
- This calculation could also be carried out separately for the evening ramp hours; could be limited to the hours in which the FMM or RTD price exceeded \$100, and could exclude the intervals with power balance violations in which prices should be set by penalty prices.
- These calculations would not specifically identify price increases due to ramp constraints but it would provide some indication of how often ramp constraints might have materially impacted FMM or RTD prices.

Need for Market Power Mitigation of Ramp

These analyses would shed some light on whether it is plausible that the need for applying system market power mitigation to the supply of ramp could be sufficiently material to warrant pushing back implementation of system market power mitigation in order to implement tests for system market power in ramp.

However, they would not resolve the core issue of whether there is any indication that there is currently a potential for the exercise of material system market power in the supply of ramp capability.