

# SPP Ramp Product

## Ramp Product Focus Group Q&A

- 1. Did we look at other markets other than MISO? MISO was just a conceptual starting point. I believe we discussed other markets and have been discussing looking at other market for many months but I think it's time to dig a little deeper. I think this could include Cal ISO and New England ISO.**

**SPP Response:** Conceptually, MISO and CAISO have similar definitions and formulations for addressing near term variability (both forecast and uncertain). Some details of the implementation should be different. The ISO-NE April 2015 presentation indicated that the formulation is similar, but the requirement is on a longer time horizon and does not include uncertainty. The group could look to include either or both (simultaneously) in SPP, depending on what specific issues the group would like to address with the ramp product. SPP has a unique design for dealing with ramp shortages which may guide the ramp product design.

- 2. How does product substitution work with a Ramping product? Does MISO use product substitution? The answer is no but what does a co-optimization scenario look like with a ramping product.**

**SPP Response:** This depends on the MWG's and the focus group's implementation desire. If the MISO design is followed, there is no product substitution. The ramp product reserves capacity for potential use in a future dispatch interval; energy and reserve products are being cleared for use in the next dispatch interval. However, depending on the operational issues that need to be addressed at SPP, it is possible that this could change.

- 3. In MISO when forecasting the upcoming ramp uncertainty the look forward is for a short period of time. How is the uncertainty calculation for this period of time determined?**

**SPP Response:** In MISO, the Real-Time ramp product requirement is calculated as the forecasted change in demand for the variable generation (load forecast, DVERs forecast, interchange) plus a desired level of uncertainty (e.g., 95% or 99%)

for X minutes beyond the RTBM dispatch target. The anticipated change comes from forecast data, and the uncertainty level comes from statistical analysis of historic data to determine the level of uncertainty in the forecast data which has been observed in Real-Time. For the MISO Day-Ahead Market, the requirement is calculated based on the anticipated RT ramp requirement.

**4. What would the actual ramp requirement look like RT and DA? How is it calculated?**

**SPP Response:** See response to previous question for MISO. We would need to evaluate the ramp needs per Operating Day based on a prior day with forecast consideration. An evaluation will need to be done with Mid-term Load Forecast/SCUC to determine the gaps we have with the hourly study vs RTBM. For SPP, it depends on the objective, but it is most likely that it is Real-Time uncertainty that SPP would want to manage and Day-Ahead Market analysis would be included for consistency such as reserves which clear in the Day-Ahead Market to provide a forward position, but are not deployed based on the Day-Ahead Market. Finding the Day-Ahead Market requirement would require looking at the expected operating conditions for tomorrow.

**5. Could there be various types of ramp products with different values? For example, QSR's that can be on-line in 5-10 minutes and Resources already on line with fast ramp capability, or capacity that isn't already on line but can be on line in 15 minutes, 30 minutes etc.? For example, in addition to QSR's and already on-line Resources is there value with capacity that could come in the form of a ramp product vs. receiving just RUC.**

**SPP Response:** Having additional products on top of a ramp product will need to be studied. Here are some more thoughts:

- If there are multiple operational problems we need to address (or the same problem on different time scales), it is possible to have multiple ramp products, such as multiple products as a difference in parameters "X" and maybe also the "level of uncertainty" described in response to question #3. However, each product adds complexity, the group should investigate the benefit of each one before adding it.
- SPP staff expected the goal of the focus group to be on addressing operational problems, not types of resources. However, if there is a system problem related to 30 minutes in the future, it seems reasonable to anticipate that currently offline resources which can be online in 30 minutes could participate (to the extent that operations is confident in their starting ability).

- If offline resources can provide the ramp product, we will need to come up with a way that offline ramp is “deployed” and how the associated costs are considered. For example, if the ramp demand curve is \$5 (like MISO) the startup and no load costs would have to be pretty small to make it a viable option for clearing. Offline clearing of ramp, except QSRs in their offline RTBM dispatch, could be much more complex than if limited to online resources.
  - If the problem that needs to be solved is of a time frame that offline resources are important, we should consider it in the cost benefit analysis, i.e., options with and without offline contributions.
- 6. Cost benefit of a Ramping Product would need to be done at some stage. There would be an initial cost then the benefit is in perpetuity in addition to incentivizing the right technology in the future. So, I’m not certain how will tackle this one but it need to be addressed.**

**SPP Response:** SPP suggests the group consider creating a Cost Benefit Task Force to evaluate the need. It may be possible to perform a quick evaluation of the ramp scarcity events SPP has experienced to-date, and how many MWs lacked per interval such that an understanding for how much ramp is lacking, prior to spending a lot of effort evaluating a new product. The group could start with identifying the problem we are experiencing today, and the cost associated with that issue.

The MISO cost/benefit analysis described the following:

- i. Benefit: RTBM benefits of ramp product with the existing commitment from Day-Ahead Market and RUC, net of payments for ramp product clearing.
  - ii. Benefit: Improved ramp flexibility of the Day-Ahead Market and RUC commitments to have the benefit of avoid un-served reserves and associated price spikes.
  - iii. Cost: Increased Day-Ahead Market and RUC costs for increased requirements
  - iv. Benefit: Reduced Combustion Turbine commitments by getting more ramp from fewer resources
  - v. Benefit: Operational actions, such as RTBM MW offset, to address ramp
- 7. Ramping could reduce Headroom and also help reduce anomalies to DA and RT financial discrepancies. Explain in further detail as additional benefits.**

**SPP Response:** Agree with this. SPP procures additional capacity often only for additional ramp. However, it may depend on the SPP ramp product parameters/definition.

If using a 10 minute ramp product like MISO, SPP may keep the same “Headroom” (serving the intra-hour load ramp capacity requirement as load forecast moves from average load in one hour to average load in the next hour). “Headroom” ramp response is over a 30 minute period. Headroom has to do with having enough capacity available to meet the peak load in the hour. The ramp product has to do with meeting load variability. Even at the peak 5-minute interval in the hour, there will be short-term variability which must be accounted for, e.g., SPP may not be able to be certain it is the peak until after the fact, or if at the end of the hour there will be variability in the upcoming intervals which will be accounted for in this hour’s RTBM. The result is that SPP will likely need both the headroom requirement and the ramp product requirement.

What anomalies to Day-Ahead and Real-Time financial discrepancies are being referred to? The group should learn would like to know more about this in order to consider it as part of the ramp design. Are these related to Headroom or a second independent issue?

The DA and RUC commitment related benefit for the MISO and CAISO ramp product is that the selected resources may be more flexible enabling for a more flexible Real-Time response with the same committed capacity.

**8. Why not look at a design that utilizes offer curves vs. opportunity cost?**

**SPP Response:** Agreed, the CBTF should look at this. The answer depends on the SPP product design. Almost any implementation will include opportunity cost automatically; it could be difficult to remove it. The question is whether non-zero ramp product offers should be allowed. MISO and CAISO stakeholders determined that there is no additional operational expense to provide ramp capability beyond those costs which were already incurred to be online and dispatchable. Since there are no costs to the resource and deployment of ramp happens economically in RTBM, they have determined that offer prices shall be zero. If the SPP product design identifies operational costs with providing that ramp product, it would be appropriate to consider ramp product offers. (Offline ramp clearing for non-QSRs could add much complexity here.)

9. Also, the MMU encouraged stakeholders to review the State of the Market Report in the area of ramping. It is pretty enlightening from their perspective. This should be folded into our next presentation to MWG.

**SPP Response:** Also, the RRs and TARRF of existing Real-Time offers should be assessed. Potential unintended consequence could be that having an additional ramp product may not increase ramping procurement at all, if only by a small margin, while increasing costs to the load. If there is more embedded in the Sprint 2015 SOM Report, I didn't get it. It looks like we have a few hours of ramp shortage each month.

Does the State of the Market Report include intervals when the reserve requirement is reduced because there is not enough ramp? Increased ramp allowing for less reserve requirement reduction would provide some benefit for the system, however, these benefits of increase reserve clearing in SPP is only a portion of the Real-Time dispatch benefits available in the MISO market design under similar conditions.

**Other SPP Thoughts:**

- 2015-2016 Effort to help SPP BA assess and Procure more ramp, including moving towards a required 20 minute ramp profile in the DA Market.
- 2015-2016 Effort to research further coupling the Ramp Reservation System as an option.
- STRUC study and QS logic will help reduce ramp scarcity.