

Stakeholder Process: Flexible Ramping Product **Summary of Submitted Comments**

Stakeholders submitted eighteen rounds of written comments to the ISO on the following dates:

- Round one, 11/14/11
- Round two, 12/12/11
- Round three, 01/19/12
- Round four, 03/21/12
- Round five, 03/29/12
- Round six, 04/16/12
- Round seven, 04/24/12
- Round eight, 07/24/12
- Round nine, 08/23/12
- Round ten, 09/25/12
- Round eleven, 10/09/12
- Round twelve, 06/23/14
- Round thirteen, 09/03/14
- Round fourteen, 10/14/14
- Round fifteen, 01/02/15
- Round sixteen, 07/01/15
- Round seventeen, 12/02/15
- Round eighteen, 01/12/16

Stakeholder comments were received from:

Brookfield Renewable Energy Group, California Department of Water Resources, California Energy Storage Alliance, California Municipal Utilities Association, California Public Utilities Commission, California Wind Energy Association, Calpine, Center for Energy Efficiency and Renewable Technologies, Department of Market Monitoring, Dynegy, Energy Curtailment Specialists, GenOn Energy Inc., Iberdrola, Independent Energy Producers, J.P. Morgan, Large-scale Solar Association, NRG Energy Inc., Pacific Gas & Electric, PacifiCorp, Powerex Corp., San Diego Gas & Electric, Sempra US Gas and Power, Southern California Edison, Viasyn, Wärtsilä, Wellhead, and Western Power Trading Forum.

Stakeholder comments are posted at:

<http://www.caiso.com/Pages/documentsbygroup.aspx?GroupID=49027DBE-83C3-44EF-8E93-24AC285F7AA6>

Other stakeholder efforts include:

- Meeting, 11/07/11
- Meeting, 12/05/11
- Meeting, 01/12/12
- Meeting, 03/14/12
- Workshop, 05/25/12
- Conference call, 07/02/12
- Meeting, 07/17/12
- Meeting, 08/16/12
- Technical workshop, 09/18/12
- Technical workshop, 10/02/12
- Meeting, 10/30/12
- Conference call, 04/21/14
- Meeting, 06/09/14
- Meeting, 08/20/14
- Conference call, 12/11/14
- Conference call, 04/21/15
- Technical workshop, 06/17/15
- Technical workshop, 11/18/15
- Conference call, 01/05/16

	Management Proposal: Prioritize market design elements needed to replace the current flexible ramping constraint.				
	Compensate all ramping capability	Procuring only in the real time market	Downward procurement	Explicit bidding not needed	Evaluate future need for more localized procurement
CDWR	Support	Support Recommends at least one year of operational experience before considering FRP in the day-ahead market.	Support	No comment	No comment
CESA	Support FRP will create a more efficient market solution.	Support	Support	No comment	No comment
LSA	Oppose Overly complex and opportunity-cost-based compensation is insufficient.	No comment	No comment	Oppose Lack of bidding results in compensation not covering costs for generators.	No comment
PG&E	Support	Support Building block to gaining operation experience for consideration of day-ahead market procurement.	Support	Support	Support Need for local requirements should be monitored
			Support	Support	Support

	Management Proposal: Prioritize market design elements needed to replace the current flexible ramping constraint.				
	Compensate all ramping capability	Procuring only in the real time market	Downward procurement	Explicit bidding not needed	Evaluate future need for more localized procurement
Powerex Corp	Support Sound conceptual framework that provides the appropriate price signals to minimize flexible ramping need.	Support Important step towards meeting challenges of balancing system but should consider day-ahead market procurement.			
SCE	Support	Support	Support	Support	Oppose Procure FRP through existing ancillary services (AS) regions.
WPTF	Support Inclusion of inertias to provide forecasted movement is a key aspect.	Oppose Should include day-ahead procurement	Support	Oppose Difficult to consider design a product when bidding is not allowed.	Support
Management Response	Management has worked closely with stakeholders over the past four years to develop the flexible ramping product. The design compensates all resources that provide ramping capability and charges resources that contribute to ramping needs. The proposed design also includes the downward procurement of the flexible ramping product which addresses the operational challenges of over-generation, and enhances the EIM resources sufficiency evaluation. A majority of stakeholders are in favor of replacing the current flexible ramping constraint with the goal of making incremental changes to the flexible ramping product as the ISO gains more operational experience. Management determined that the benefits of procuring the flexible ramping product in the day-ahead market were not significant enough to overcome the inefficiencies caused by different settlement and dispatch periods between the day-ahead and real-time market. Without day-ahead procurement, Management, DMM, and the MSC could not identify additional costs, which would require an explicit flexible ramping product bid, that are not already reflected in the energy bid. Management will procure the flexible ramping product within each balancing authority area in the EIM footprint. However, due to increased implementation complexity, Management does not propose to support locational procurement within a balancing authority area.				

	Management Proposal: Improve settlement of ramping capability by compensating both forecasted ramp and additional ramp to meet uncertainty in net load forecast. Better align cost allocation with those that drive the requirement and benefit from ramp procurement.				
	Separate settlement for forecasted ramp and uncertainty	Procure uncertainty through demand curve	Allocate cost for uncertainty monthly	FRP award deviations between RTPD and RTD by settling at RTD price	Rescission of double payment
CDWR	Support	Support	Support	Support	Support
CESA	Support	Support	Support	Support	Support
LSA	Oppose Generator schedules should be used to settle costs rather than ISO forecast.	No comment	No comment	No comment	No comment
NV Energy	No comment	Conditional Request ISO commitment to inform market participants of any calculation changes prior to making updates in the system, and to give notice of the timing of those updates.	No comment	No comment	No comment

PG&E	Support Results in more transparency for market participants on the drivers of FRP costs	Support Requests ISO to state criteria it will use to determine when it will revisit method to set demand curve.	Support	Support	Support
Powerex Corp	Support Requesting additional examples illustrating settlement of uncertainty.	Support Continue to fine tune approach as the ISO gains experience with FRP.	Support	Support	No comment
SCE	Conditional Supports settling the payment to resources and allocating the cost at the same time but not the grouping of uncertainty costs to on-peak and off-peak periods.	Support	Oppose No advantage gained from summing gross positive and gross negative uninstructed imbalance energy of each category over the on-peak and off-peak periods.	Support	Support
WPTF	Support	Do not oppose	Support Cost allocation is a fair balance between incentivizing individual behavior and cost causation.	Support	Support

Management Response

Management proposes that the flexible ramping product will be settled in two segments. The settlement of forecast ramp between market intervals will be directly settled between resources providing ramp and resources consuming ramp. Additional ramping capability procured to meet uncertainty of the net load forecast will be settled and allocated on a monthly basis. The cost allocation on a monthly basis is appropriate because it is procured based upon potential forecast differences and not the actual realization of forecast error in a given settlement interval. Over the course of a month, observed forecast errors should be consistent with how the requirement was calculated using historical information regarding forecast errors. In addition, having separate allocations for off-peak and on-peak hours is appropriate because the cost of procuring the flexible ramping product may differ and there are resources, such as solar, which cannot impact the requirement when unable to produce energy. Management will document the methodology for calculating the flexible ramping product requirement and demand curves in the business practice manuals. Any change to the methodology will follow the business practice manual change process, which allows for stakeholder input prior to the methodology change being implemented.