Inter-Interval Ramping Methodology for Post-April 1, 2009 Operations

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Agenda for Inter-Interval Ramping Methodology

- Simplified Ramping Method
- Fast v. Slow Ramp Method
  - Operational Impacts
  - Data Impacts
  - Tariff Impacts

Background

- MRTU will go-live with original tariff provisions and implementation rules for managing ramping capability of resource instead of the so-called “Simplified Ramping” proposed in the “bucket” tariff amendment filing

- The following describes the methodology that will be used for MRTU go-live for slow and fast ramping resources and related impacts

Simplified Ramping

- Simplified Ramping would eliminate the distinction between fast-ramping and slow ramping resources
- The simplified ramping approach would establish the degree to which operational ramping capability could be shared or not between energy and ancillary service products (Regulation, Spin, Non-Spin)
- More information on the "Simplified Ramping" Inter-interval ramping approach can be found in the following document posted on the CAISO website:
  - http://www.caiso.com/2354/2354107423420.pdf

Go-live "Original" Ramping Methodology: Fast-Ramping

Fast-Ramping Resources

- Fast-Ramping resources are those resources that are able to ramp from Pmin to Pmax within in 20 minutes
- Fast ramping resources will be able to provide ancillary services and energy schedule changes
- A fast-ramping resource will ramp from Pmin to schedule in up to 30 minutes after startup and ramp down to Pmin prior to shutdown within 10 minutes

Go-live "Original" Ramping Methodology: Slow-Ramping

Slow-Ramping Resources

- Slow ramping resource take more than twenty (20) minutes to ramp from PMin to PMax based on their Operational Ramp Rate

- Slow ramping resources taking longer than 20 minutes to ramp **up** from one hour's energy schedule to the next hour's energy schedule shall not be eligible to provide (in both hours):
  - ***Regulation Up***
  - ***Spinning Reserve***
  - ***Non-Spinning Reserve***

- Resources that self-provide ***Regulation Up, Spinning Reserve, or Non-Spinning Reserve*** in a given hour will have their energy schedules constrained, and if applicable, their energy self-schedules (except RMR) adjusted, so that this rule is not violated

Go-live "Original" Ramping Methodology: Slow-Ramping

- Slow ramping resources taking longer than 20 minutes to ramp **down** from one hour's energy schedule to the next hour's energy schedule shall not be eligible to provide ***Regulation Down*** in both hours

- Resources that self-provide ***Regulation Down*** in a given hour will have their energy schedules constrained, and if applicable, their energy self-schedules (except RMR) adjusted, so that this rule is not violated

- If a slow-ramping resource is awarded A/S, the resource will ramp from Pmin to schedule in up to 10 minutes after start-up and ramp down to Pmin prior to shutdown within 10 minutes

- If a slow-ramping resource is not awarded A/S, the resource will ramp from Pmin to schedule in up to 30 minutes after start-up and ramp down to Pmin prior to shutdown within 30 minutes

- If the slow ramping resource is awarded ***Regulation,*** the ISO will use the applicable regulating or operational ramp-rate

Go-live "Original" Ramping Methodology: General

- Use of Regulation vs Operational Ramp-Rate
  - The operational ramp rate is used to dispatch a resource across two consecutive DAM hours/RTUC intervals if the resource is not providing regulation service in either of the two intervals
  - The regulation ramp rate is used to dispatch a resource across two consecutive DAM hours/RTUC intervals if the resource is providing regulation service in either of the two intervals
  - If the regulation ramp-rate is greater than the operational ramp-rate, the market solution may result in a regulation award of a very small quantity in order to access the higher regulation ramp-rate available when the resource is providing regulation.

Ramp-Rate Use Scenarios : Go-live "Original" Ramping Methodology

Fast-ramping resource scenario 1	Hour T-1	Up to -30 min	Up to +30 min	Hour T	Up to -30 min	Up to +30 min	Hour T+1
	Reg award	Reg Ramp Rate	Reg Ramp Rate	No Reg award	Op Ramp Rate	Op Ramp Rate	No Reg award
Fast-ramping resource scenario 2	Hour T-1	Up to -30 min	Up to +30 min	Hour T	Up to -30 min	Up to +30 min	Hour T+1
	No Reg award	Reg Ramp Rate	Reg Ramp Rate	Reg award	Reg Ramp Rate	Reg Ramp Rate	No Reg award
Slow-ramping resource with spin or non-spin award	Hour T-1	-10 min	+10 min	Hour T	-10 min	+10 min	Hour T+1
	Reg award	Reg Ramp Rate	Reg Ramp Rate	No Reg award	Op Ramp Rate	Op Ramp Rate	No Reg award
Slow-ramping resource with no spin or non-spin award	Hour T-1	-10 min	+10 min	Hour T	-30 min	+30 min	Hour T+1
	Reg award	Reg Ramp Rate	Reg Ramp Rate	No Reg award	Op Ramp Rate	Op Ramp Rate	No Reg award

Data Impacts : Go-live Ramping Methodology

- Masterfile Adjustments
  - The ISO will accommodate changes to Masterfile for go-live related to operational and regulation ramp rates
  - All Masterfile changes must be submitted by end of day Friday, 3/6/09
  - ONLY Resource Operational and Regulation Ramp rate changes will be accepted

Tariff Impacts : Go-live Ramping Methodology

- CAISO will file a motion in the pending FERC proceeding to defer the effective date of its proposed simplified ramping changes.