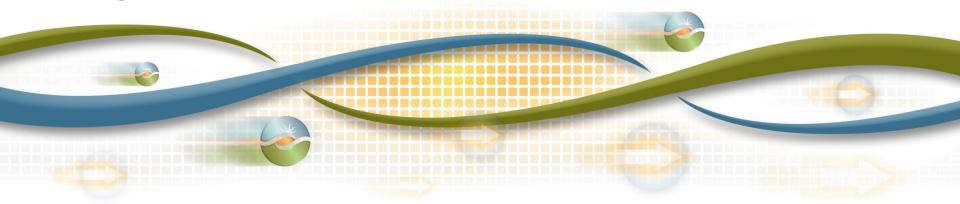


Decision on Flexible Ramping Constraint Compensation

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Flexible Ramping Constraint will address instances of insufficient upward dispatch capability in real-time.

- Constraint ensures sufficient upward dispatch capability.
- Constraint is enforced in real-time pre-dispatch and managed in real-time dispatch.
- Ramping needs met through market optimization versus out of market operator actions.



Opportunity costs can arise for resources that provide upward dispatch capability.

- Incremental ancillary services are awarded in real-time pre-dispatch.
- Enforcement of constraint could result in a resource not being awarded incremental ancillary service when economic to do so.
 - Results in opportunity cost: Example, \$5 ancillary service price, \$2 bid.
 resource set aside to provide upward dispatch incurs \$3 opportunity cost.



Compensation mechanism designed to recover opportunity costs.

- Resources compensated at a price that represents the marginal value of providing the ramping capability ("shadow price").
- Fully compensates generating units for any ancillaryservices opportunity cost incurred.
- Costs allocated to measured demand similar to ancillary services.



Stakeholders generally support the proposal, but some concerns remain.

- Generators support including a compensation mechanism
 operational needs should be procured via bid in products
- Load serving entities recognize the need for the constraint
 - Measured demand should not be allocated the full compensation costs
 - Potential unintended consequences need to be further analyzed
- Broad support for longer term solution of developing new market products.



Management requests Board approval to implement the flexible ramping constraint and proposed compensation.

- Implementation of flexible ramping constraint addresses an observed reliability concern.
- Compensation mechanism is appropriate given potential opportunity cost.
- Functionality will be fully tested through market simulation. ISO can make further adjustments after implementation.
- Comprehensive design initiative underway to evaluate new market products.

