

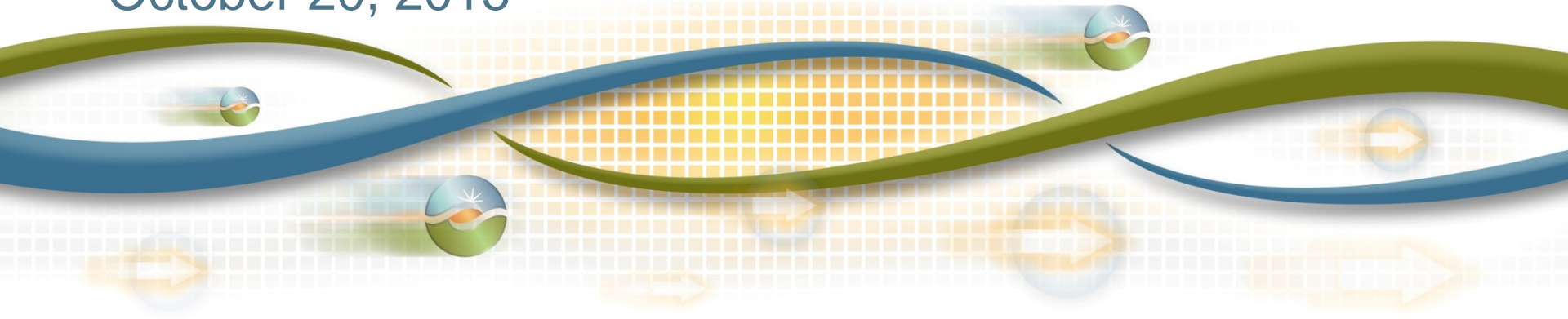


California ISO

Reactive Power Requirements and Financial Compensation Discussion

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General Session
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Goal of this initiative is to develop a requirement for asynchronous resources to provide reactive power.

- In 2010, ISO filed at FERC to require all asynchronous generators to have capability to provide reactive power
- FERC declined to impose this requirement; instead said ISO could not impose such requirement unless a study showed such a need on a case-by-case basis
- Circumstances have changed since 2010 and technology is now readily available and inexpensive

Revised straw proposal elements

- All asynchronous resources required to be able to provide reactive power
- Effective date is for resources in Cluster 9 and beyond (April 2016 forward)
 - Resources already in interconnection queue exempt
- Continue provision payments for dispatches outside of lead/lag range
- Not proposing any form of capability/capacity payment
- Create new provision payment for non-typical resources that would not have calculated opportunity costs

The ISO currently has reactive power requirements and a compensation mechanism.

- All synchronous generators are required to have reactive power equipment
- Asynchronous generators are required to have reactive power equipment if study shows need (about 75% of projects studied to date show a need)
- Provide compensation for provision of reactive power based on opportunity cost when generator is dispatched outside of its lead/lag range
- Costs are allocated to load and exports

The ISO is seeking the MSC's input on financial compensation.

- Provision payment within standard range was explored
 - Not feasible to easily and accurately identify when specific resources themselves are causing a need for reactive power or not
 - There are gaming concerns where a resource owner could manipulate its operation to garner payments
- No form of capability payment is proposed because ISO believes it is part of good utility practice to be able to provide reactive power

The ISO has created a new reactive power exceptional dispatch (ED) category.

- New ED category for resources providing reactive power with special equipment and non-typical situations
- New compensation method to address lack of opportunity cost based provision payment available under current provision payment structure
- Purpose is to utilize and compensate resources for providing reactive power support while not producing real power
- Intended to make resources whole for costs incurred so they are financially indifferent to responding to provide reactive power support

New reactive power ED category (continued)

- ISO will calculate payments for new ED category using LMPs and unit cost data that is included in Master File
- Proposal includes following costs in payment calculations:
 - Costs of real power consumed for purposes of station power, or otherwise needed to provide voltage support/reactive power paid at nodal LMP value
 - Minimum Load costs including fuel, variable O&M, or other opportunity costs
 - Start Up costs (if resource started under ED instruction)
 - Any other costs ISO should consider?

Next Steps

- Draft Final Proposal to be posted November 9
- MSC will provide an MSC opinion
- Proposal will be presented to ISO Board of Governors on Feb 3-4, 2016