Exceptional Dispatch Mitigation in Real Time
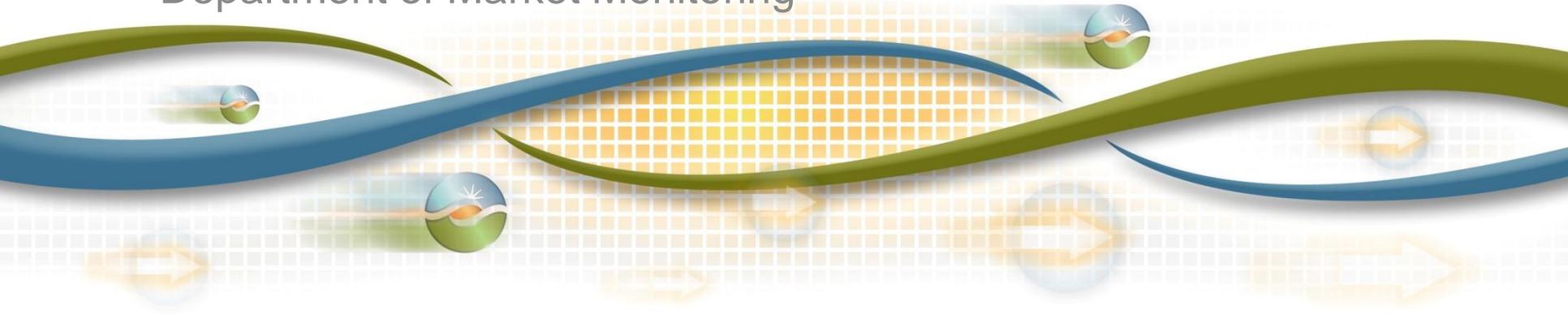
MSC Meeting

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# Background and Purpose of the Market Initiative

- Local Market Power Mitigation (LMPM) Phase 2 will replace existing Competitive Path Assessment (CPA) with Dynamic CPA (DCPA) and add an additional mitigation run in Real Time Unit Commitment

- Dynamic CPA may not provide path designation for Exceptional Dispatch (ExD) → Proposal to provide designations for ExD

- There is also a need to provide path designations to the LMPM process if the Dynamic CPA fails

- The proposal indicates
  - How path competitiveness will be determined for purposes of mitigating ExD
  - How to designate path competitiveness if the Dynamic CPA fails

Existing Procedure and Unfilled GAP from DCPA

- ExDs are subject to mitigation if their purpose is to address reliability requirements related to non-competitive transmission constraints

- The existing "static" CPA provides persistent list

- ***DCPA GAP:*** A designation is only available for intervals where there is a binding constraint (in the LMPM run)

- An ExD made to manage a modeled constraint may have the effect of relieving congestion

- No congestion → no DCPA evaluation → no basis on which to evaluate ExD for mitigation

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Historical Data Analysis of ExD

Exceptional Dispatch Category

Pie chart values: 25%, 15%, 29%, 11%, 6%, 14%
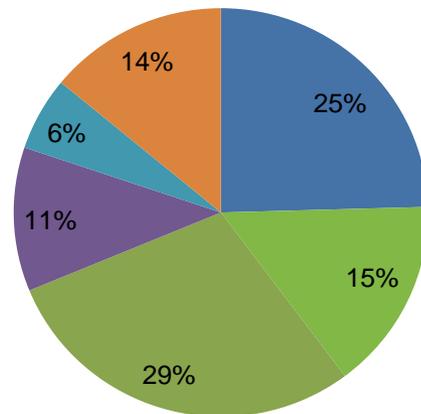
Legend:
- ■ TModel Competitive
- ■ TModel NonCompetitive
- ■ System Competitive
- ■ NonTModel at DPmin
- ■ NonTModel at Pmin
- ■ NonTModel Other

- TModel = modeled transmission constraint

- NonTModel = non-modeled constraint

- Modeled transmission constraints account for 40% of observed ExD.
- System energy and Non-modeled constraints (ExD to Pmin, dispatchable Pmin, software limitation and other), account for remaining 60%.
  - Non-modeled Other may be subject to mitigation if it is transmission related.

Data cover 12-month period 01Aug2011 – 31Jul2012

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Proposal

- General approach: Use historical dynamic designations to provide path designations for ExD. Need to be reasonably confident that transmission constraint is predominantly competitive.

- Details:
    - Historical designations from most recent 60 trading days
    - Updated daily
    - Separate processes for day ahead and real time
    - For ExD purposes, a transmission constraint is competitive if both of the following two thresholds pass:

    Option 1 (Fixed Thresholds)
    - Congested in 10 hours or more, and
    - Deemed competitive by DCPA 75% of time or more

Statistical Test (Option 2)

Option 2

- Apply a statistical test to recent historical designations to determine if reasonably confident that constraint is predominantly competitive.

- Specify the test that the historical designations indicate the constraint is predominantly competitive (75%) as

Null Hypothesis   Ho: $p^* \leq 0.75$
Alternate Hypothesis   Ha: $p^* > 0.75$

- This test is assessed using a binomial proportions test with a pre-determined confidence level. A 75% confidence level provides reasonable confidence that Ho is not rejected when it is true.

- This provides a "frontier" of observed competitive rates for different observed sample sizes.

- The same distinction between Path 15/26 and other constraints will be observed in Option 2

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Statistical Test (Option 2)

- At low sample size, uncertainty about estimate of competitive rate -> high variance -> need higher competitive rate to pass test.
- As sample size increases, uncertainty about estimate of competitive rate decreases and pass test closer to threshold of 75%.

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Impact of proposal on existing mitigation rules for ExD

- The proposal does not alter existing rules for mitigating ExD.

- Existing rules rely on having a path designation available.

- Proposal provides methodology to provide a path designation that leverages the dynamic in-line assessments and can be used by existing ExD mitigation rules.