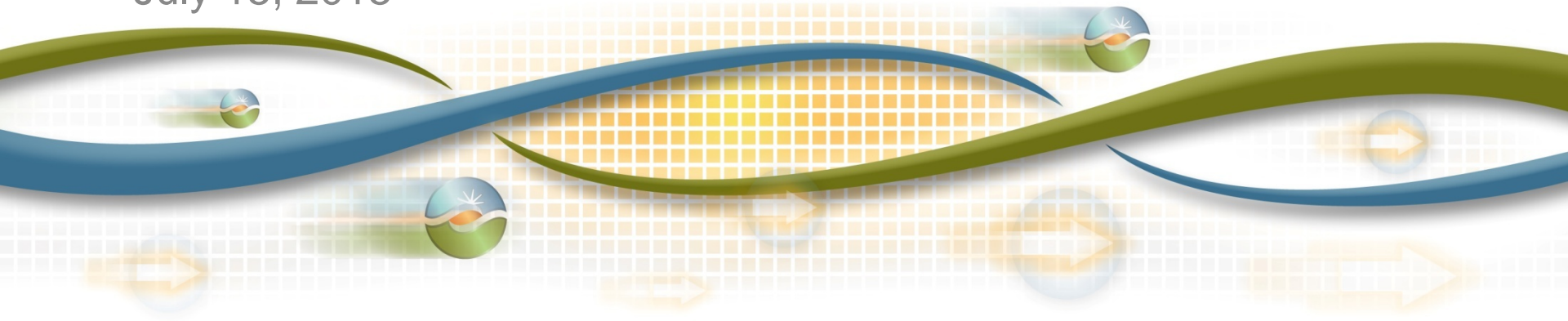# Briefing on commitment cost opportunity cost methodology

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Market Surveillance Committee Meeting

General Session

July 15, 2015

# Background

- Opportunity cost model portion of CCE2 was postponed to CCE3

- Use-limited resources cannot be fully optimized by the ISO's commitment processes due to operational limitations set by statutes, regulatory, ordinances, court orders, or design considerations

- Model calculates opportunity costs for limitations as stated in ISO accepted use-limitation plans

- The ISO will run the model for the limitation period (i.e., a calendar year) prior to the start of that limitation period.
  - As the year progresses, there will also be scheduled re-runs of the model to reflect updated market conditions, including gas prices.

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# Prototype Model Developments

- ISO has developed and continues to test two prototype models
  - Testing SC selected resources in both models
  - Methodology and results to be discussed at upcoming technical workshop on July 20, 2015.
- The ISO has identified methodology questions to discuss with MSC.
  1. Day-ahead or 15 minute LMPs to use in the model
  2. Triggering impromptu re-runs to capture unanticipated pricing events
  3. Adjusting limits in the model for scheduled re-runs during the year
  4. Translating emission or fuel burn limits

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# 1. Estimated LMP stream: day-ahead or fifteen minute

- Estimated prices are currently based on fifteen minute real time prices.
  - Most Use-limited resources are committed in the real time market.
  - A few resources are committed in the day-ahead market due to long start times
  - Day-ahead prices tend to be slightly higher ($1-$2/MWh) than fifteen minute prices, but less volatile
- Issue: Should the ISO continue to only use estimated fifteen minute prices in the model or also estimate day-ahead prices for the long start resources?

# 2. Impromptu re-runs

- The ISO intends to have scheduled re-runs of the opportunity costs to reflect updated market conditions, such as gas prices.

- Changes in congestion patterns or unanticipated gas price spikes will not be reflected in the model

- Issue: What triggers, if any, should the ISO consider to prompt a re-run? Would more scheduled re-runs, i.e. monthly instead of quarterly, minimize this concern?
    - Consider how the ISO may have been able to incorporate the unforeseen congestion during the summer of 2014 into the model

# 3. Updating limits during scheduled re-runs

- During re-runs throughout the year, the limits used in the model need to be updated to reflect how the resource has been used during the year to date.

- Issue: What is the most effective way to update the limit while maintaining an unbiased opportunity cost?

- Three potential options. For illustrative purposes assume:
  - Resource with 400 starts per calendar year.
  - Initial model run for full year estimated 15 starts in first three months of the year.
  - Resource actually was started 20 times in first three months of the year.

# 3. Updating limits during scheduled re-runs: con't

- Option #1: Re-run the model for April – December adjusting the limit by actual usage (380 starts).
  - Issue: Incentive to bid the resource in such a way to run through starts at the beginning of year and increase opportunity cost in the latter part of the year.

- Option #2: Re-run the model for April – December adjusting the limit by estimated usage (385 starts).
  - Issue: Unanticipated market conditions may have warranted starting the resource more often than the model estimated, therefore should have a higher opportunity cost.

- Option #3: Re-run the model January – December with the full limit using actual LMPs for the months past and estimated LMPs for the remaining months.
  - Issue: Assumes resources are bidding around marginal cost and resources are committed solely based on LMPs (i.e. no other market constraints/conditions commit resource).

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# 4. Translating permits to limits

- The model calculates opportunity costs for start, run-hour, and energy limitations.

- The ISO has noticed several use-limitation plans have permits that are emission or fuel usage based and/or applied to a rolling 12 month period.

- Issue: what would be an acceptable method for SCs to translate emission or fuel burn limits to start, run hour, or energy limits? How should the ISO model limitations that are on a rolling 12 month period?