

15 Minute Scheduling Customer Technical Conference

April 15, 2014



Agenda

Time	Topic	Presenter
9:00	Introduction	
9:05	Update on Project and Implementation Timelines	Will Rimmer
9:10	Overview of Business Practice Changes	Transmission Policy Team
9:45	15-Minute Scheduling Congestion Management Protocols	Kevin Johnson
10:35	Questions? - CAISO 15' Market Interactions	BPA Team
10:55	Closing Comments	Will Rimmer

Project Update and Implementation Timeline

William Rimmer

Project Update

- Business Practice updates moving through draft to legal to public comment
- Internal systems development still on pace
- Software vendor internal milestone delayed
 - Assessing impact on dependencies

15-Minute Scheduling Revisions to Business Practices

BPA Transmission Policy Team

Redispatch and Curtailment

- Primary revisions will include:
 - Clarification that the procedures will apply to all managed paths (removal of term “flowgate”)
 - Because the new procedures will apply to all managed paths, there is no need to distinguish North of Echo Lake from other managed paths.
 - Substitution of the term “schedule period” for “hour”
 - Appropriate distinctions in procedure for future-period versus within-period curtailments

Energy/Generation Imbalance

- Charged at the shortest scheduling interval requested during the hour. For example:
 - One 30 minute schedule requested for the hour means EI/GI/PD will be assessed on TWO thirty minute intervals
 - Two 15 minute schedules requested for the hour means EI/GI/PD will be assessed on FOUR 15 minute intervals
 - One 15 minute schedules requested for the hour means EI/GI/PD will be assessed on FOUR 15 minute intervals

Committed Scheduling

- Out for Comment – April 24, 2014
- Customer Call – April 14, 2014
- Changes for 40/15 and 30/15 Scheduling
 - Metrics – Capacity, Energy, Accumulation
 - Failure Provisions (rolling 30 calendar days)
 - Four unwaived failures for Capacity and Energy
 - Two unwaived failures for Accumulation

Failure to Comply

- Failure to shed load or modify generator output in response to a dispatch order
- Challenges with 15 MS
 - 10 minute response time
 - Ramping between periods
- Substitution of the term “schedule period” for “hour”

Failure to Comply

- 10 minute response time
 - Dispatch Orders issued prior to the start of the hour have 10 minutes after the start of the hour to comply
 - Dispatch Orders issued during the hour have 10 minutes to comply
- These rules will remain unchanged

Failure to Comply

- Ramping between periods
 - Hourly and 30 MS
 - 20 minute ramp at the top of the hour
 - 10 minute ramp at the bottom of the hour
 - 15 MS has a 20 minute ramp at the top of the hour and three 10 minute ramps during the hour
 - Intervals A and D are continuous ramp periods
 - Intervals B and C each have a 5 minute flat period

Failure to Comply

- **Current Ramping Rules**
 - When the next hour schedule is higher than the modified schedule
 - FTC for the last 10 minutes is based on the ramp
 - When the next hour schedule is lower than the modified schedule
 - FTC for the last 10 minutes is based on the modified schedule
 - For consecutive hour Dispatch Orders
 - the 10 minute period after the start of the hour does not apply

Failure to Comply

- Possible 15 MS Ramping Rules
 - Alternative #1
 - Status Quo
 - Alternative #2
 - Higher of the current interval or next interval schedule

Failure to Comply

- Possible 15 MS Ramping Rules (cont.)
 - Alternative #3
 - Higher of the current interval or next interval schedule when ramping up and lower of current interval or next interval when ramping down
 - Alternative #4
 - Apply FTC on its own ramping rule such as a half ramp time period or step ramps where half period ramps or steps over the ramp period

Next Steps

- Customer Comments
 - Please send comments on the alternatives to techforum@bpa.gov
 - Due by 4:30 on April, 25, 2014

- Review Intra-Hour Scheduling BP

BP Change Process

- BP's will be released late summer
- Normal Customer Comment period (20 Business Days)
- Normal Response and Posting Periods

15-Minute Scheduling Congestion Management Protocols

Kevin Johnson

Agenda

- Flowgate vs. Path Curtailments
- North of Echo Lake Overview
- Flowgate Flow Forecasting
- Curtailment Intervals
- Flowgate Curtailment Example

Congestion Management

Flowgate Curtailments

- Next interval curtailments
 - To be expanded to all flowgates.
 - Pro-rata within curtailment priority and schedule-based
 - Trigger is when next interval forecasted flows exceed the next interval System Operating Limit (SOL).
- Within-interval curtailments
 - Pro-rata within curtailment priority, schedule-based
 - Trigger is when actual flows exceed the SOL.

External Path Curtailments

- NERC priority will be preserved through preemption (not first come, first served)
- Next interval curtailments
 - Pro-rata within curtailment priority since January 2014.
 - Schedule-based once 15-minute scheduling goes live.
 - Trigger is when next interval schedules exceed the next interval SOL.
- Within-interval curtailments
 - Pro-rata within curtailment priority
 - Schedule-based
 - Trigger is when actual flows exceed the SOL.

NOEL Overview

- North of Echo Lake (NOEL) flowgate, along with South of Custer (SOC) were added February 2013 to address Puget Sound Area operational issues and comply with NERC ATC Standards.
- Prior to NOEL, BPA protected for the Puget Sound Area using the following mitigation protocols:
 - The Northern Intertie SOL nomogram was affected by Puget Sound Area generation, outages and load.
 - Puget Sound Area and Northern Intertie (PSANI) Curtailment Calculator that curtailed Puget Sound Area tags prior to the hour.
 - Operational Support Generation contract with the Puget Sound Area parties that called upon an increase in local generation up to 3 hours prior to the operating interval if flows were expected to exceed the SOL.
- When NOEL was added, the above mitigation protocols were changed to:
 - NOEL and SOC nomograms are affected by Puget Sound Area generation, outages and load instead of the Northern Intertie.
 - Prior to hour NOEL curtailments if forecasted flows exceed forecasted SOL.

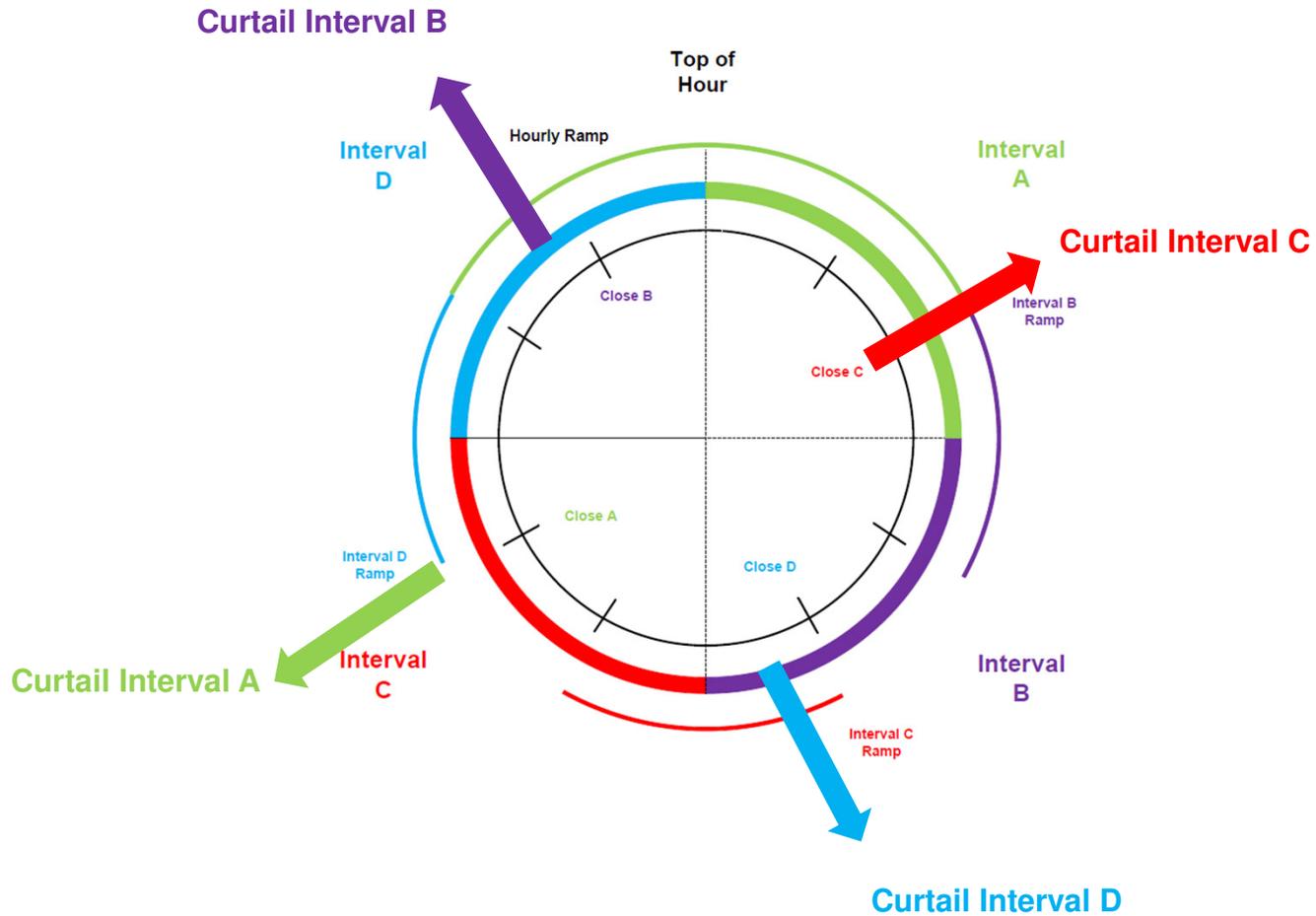
Flowgate Flow Forecasting

- BPA is using a simple feed forward method using impacts of tags across the flowgate compared to actual flows and feeding the delta forward to the next hour.
 - Next Interval Flow forecast = Impact of Next Interval Schedules + Delta
 - Delta = Current Actual flow – Impact of Current Schedules
- Dispatch and Real-time scheduling have requested that a forecast be produced for up to the next 2 hours.
- BPA will begin using these forecasts to assess a need for next interval curtailments on all network flowgates upon implementation of 15-Minute Scheduling.
- BPA will be comparing forecasts to actuals and making adjustments to the forecasting methodology as appropriate to improve accuracy.

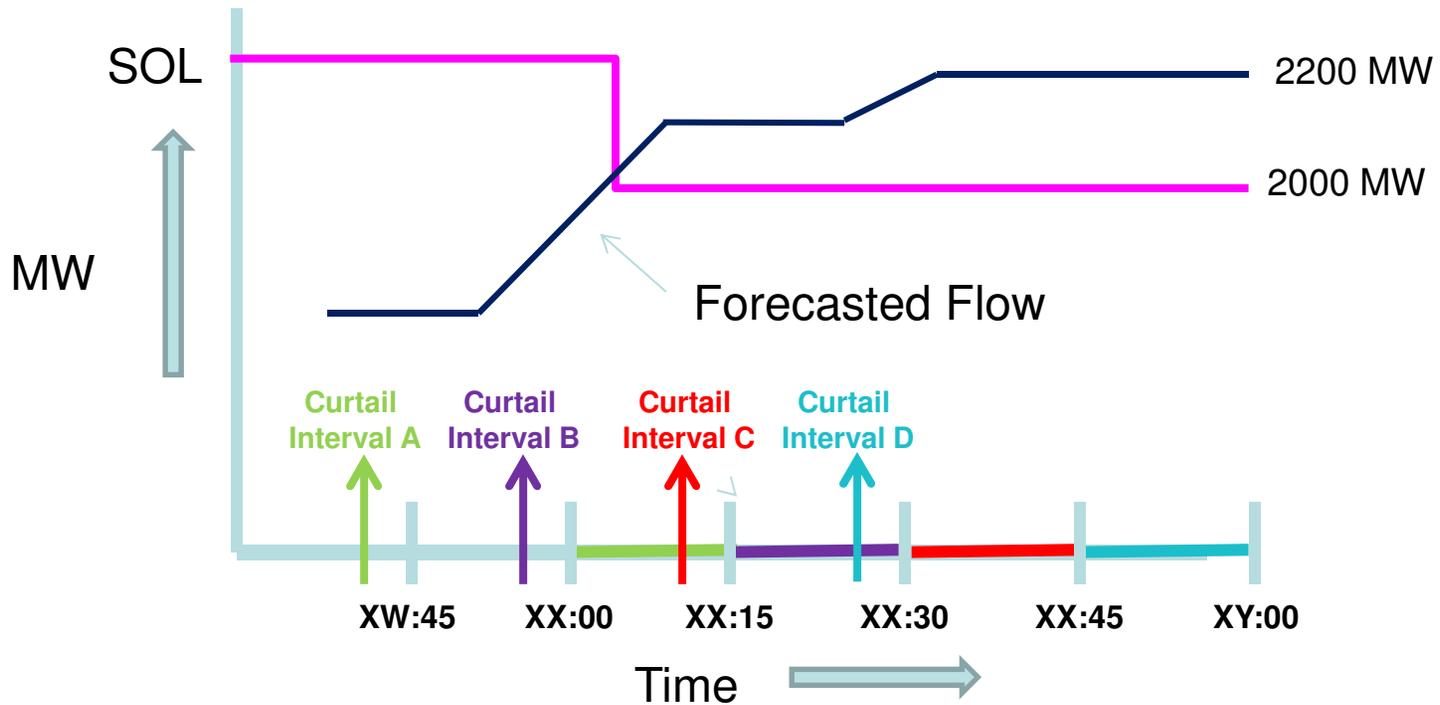
Curtailment Intervals

- BPA has decided to curtail only closed intervals (15-minute blocks) when actual or forecasted flows exceed the actual or forecasted System Operating Limit (SOL) on a path.
- Curtailing closed intervals
 - Ensures curtailments are done in curtailment priority order.
 - Less likely to cut intervals unnecessarily or deeper than necessary.
 - Lessens likelihood of multiple curtailments.
 - Ensures curtailments are done pro-rata for all schedules in the closed interval.
- BPA realizes this curtailment method deviates from the WECC Task Force Recommendation, which is to curtail to the end of the hour.

15 Min Scheduling – Curtailments



Flowgate Curtailment Example



	Interval A	Interval B	Interval C	Interval D
SOL	2000	2000	2000	2000
Flow Forecast	2100	2100	2200	2200
Margin	(-100)	(-100)	(-200)	(-200)

Questions?

