CONCEPT OF OPERATION (COO)

RTS 10-minute GT Treatment

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1   INTRODUCTION

The NYISO proposes that the RTD dispatch be modified to allow 10-minute GTs not committed by RTC or RTD-CAM, and not under a minimum downtime constraint, to be scheduled and participate in real-time market price setting. The 10-minute GTs that are scheduled by RTD will be completely flexible in both the Ideal and Physical dispatches and will not be forced to meet minimum run time constraints.

The ISO System Operators would have a display that shows the available GTs' Ideal schedule from RTD for the forward periods of RTD. These 10-minute GTs will only be committed (i.e. started) if it is determined that the units are needed for a sufficient period of time as indicated by the forward look-ahead of RTD.

2   DISCUSSION

2.1   Background

Increased price volatility is occurring regularly in the Real-Time Market. This volatility is indicated by unpredictable and significant positive and negative Real-Time Market prices that are inconsistent with prevailing system conditions. Price volatility unrelated to underlying market conditions makes it difficult for parties that are exposed to real-time prices such as virtual traders and exports to participate in the NYISO market. The ISO Real-Time Market scheduling objective is to meet RTD demand by minimizing bid production cost through the efficient use of available resources. The SMD software was designed to achieve this objective through the optimal commitment of available resources. In practice, the SMD software may result in the suboptimal commitment of available resources in RTD due to uncertainties between the commitment (RTC) and dispatch (RTD) scheduling horizons.

Some Real-Time Market modeling uncertainties that exemplify the need for the commitment of quick start resources are:

- The load forecast will affect commitment of locational resources.
- PAR schedule changes significantly affect transmission constrained areas.
- External transaction (DNI) changes following the hourly checkout process or as a result of NERC TLR actions.
- Inconsistency between expected unit availability (commitment or dispatch) and actual unit performance.
- Unexpected loss of transmission capability due to contingency events.

Based on these findings, it was determined that additional resources need to be made available for RTD to address the consequences of a commitment decision made in RTC that does not align with actual conditions in RTD.

The proposed new RTD functionality would allow the scheduling of eligible 10-minute GTs in both the Ideal and Physical dispatch to reflect the availability of these resources in real-time. Identification of the RTD intervals that warrant the scheduling of eligible 10-minute GTs will result in Power System Operator actions to facilitate their commitment by means of modified operations procedures. The operations procedures may result in the commitment of specific 10-minute GTs via Fast-Start Management (FSM). The 10-minute GTs' schedules developed by RTD will not be passed to AGC, ICCP or OISR until the units are actually committed by Fast-Start Unit management.

2.2   Business Need

As noted in 2.1 above, the ISO Real-Time Market scheduling objective is to meet demand by minimizing bid production cost through the efficient use of available resources. The following three factors contribute to uncertainties between the commitment (RTC) and dispatch (RTD) horizons:

(1) *Load forecast uncertainty in the commitment horizon (30-60 minutes in advance of RTD pricing interval) is significant at ~1.0% of demand.*

(2) *Phase angle regulator flow changes between the RTC and RTD runs can result in the suboptimal commitment of generating resources to address transmission constraints.*

(3) *Other system events (e.g. unexpected loss of generation, or a forced transmission outage) may occur after the commitment horizon that can result in the suboptimal commitment of resources to meet demand.*

If such uncertainties result in a reliability-based event (criteria violation), then the ISO normally executes special modes of RTD operation identified as Corrective Action Mode (RTD-CAM). Under RTD-CAM operation, 10-minute GT's that have satisfied their minimum down-time requirements are available to be scheduled and included in both the Ideal and Physical dispatches.

Even if such forecasting uncertainties do not result in a reliability-based event (and the need for RTD-CAM), there is still a need to make available to RTD the most efficient set of resources to meet demand. This software enhancement provides consistent market outcomes for resolving both reliability and non-reliability based events. This software enhancement will provide for a commitment-like evaluation in the dispatch horizon to ensure the most efficient set of resources are available to meet demand.

2.3   System Impact

The proposed change affects the ABB vendor-supplied RTD dispatch software and several EMS operator displays.

3   DESCRIPTION

The RTD dispatch will be modified to allow 10-minute GTs not previously committed to be scheduled and participate in price setting. The 10-minute GTs that are scheduled by RTD will be completely flexible in both the Ideal and Physical dispatches, and will not be forced to meet minimum run time constraints or physical minimum generation requirements. These 10-minute GTs will only be committed if it is determined that they are needed for a sufficient period of time as indicated by the forward look-ahead capability of RTD.

10-minute GTs that are offline and have satisfied their minimum down-time requirements are eligible to be scheduled by this new functionality. This new functionality will treat eligible GTs in the following manner until committed by the Power System Operator:

1. An adjusted energy bid that approximates the unit commitment costs will be used by RTD and will be developed by summing the as bid energy offer and the quotient of the startup cost divided by the upper operating limit. This adjusted bid will be used in the Ideal and Physical dispatch until the unit is actually committed. After commitment, the unit will continue to participate in price-setting based only on its as bid energy offer.
2. The units will be available to be scheduled for 10 minute total reserve and the 30 minute reserve requirement.
3. They will not be subject to the hybrid dispatch.
4. The EMS statuses of the units will not be changed as a result of a non-zero schedule.

The offline 10 minute turbines selected by the physical dispatch will be displayed to the System Operators on a separate display, similar to the sample shown below.

GTs Committed in RTD Physical Dispatch							
Unit Name	Limits		Times Scheduled On				
	UOLn	UOLe	17:20	17:30	17:45	18:00	18:15
GT1	50	52	29	50	50	50	50
GT2	14	15	0	11	11	14	14
GT3	15	19	0	0	8	14	0
GT4	16	18	16	0	0	0	0
GT5	16	16	0	0	0	16	16

The Power System Operations protocol for commitment of a 10-minute GT will consider the RTD unit schedules and prevailing system conditions. The intent is to commit the scheduled GTs when there is a persistent need as indicated by the unit schedules in this RTD display.

4   ISSUES, POSITIONS, AND RESOLUTIONS

This software enhancement requires a tariff revision. Expedited approval is required to implement the change prior to the anticipated peak summer conditions of July and August 2005. The software vendor has indicated that it is capable of delivering this change to meet this objective and sufficient time has been planned for business unit testing and integration testing by the NYISO's QA department.

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