

RegLOC – Enhanced Calculation of the Desired MW at LMP Ramp Rate Limited

Michael Olaleye
Real-Time Market Operations
Regulation Market Design Senior Task Force
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1.

RegLOC Schedule

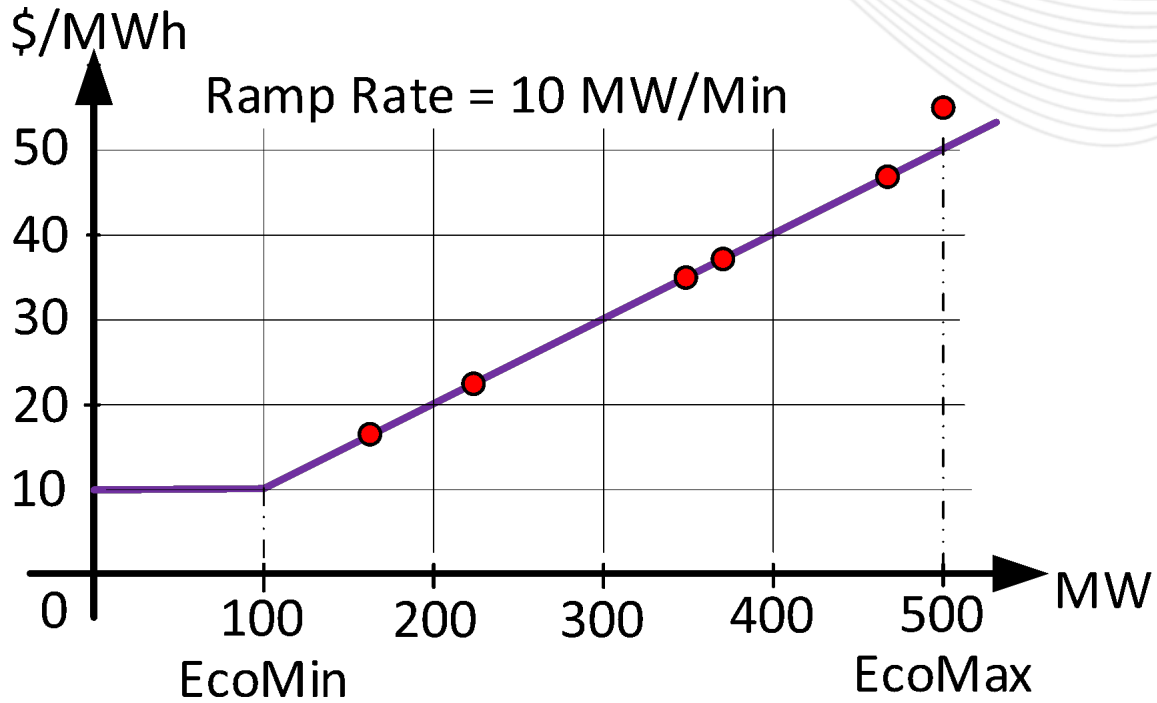
*= Least { available price_based energy schedule,
greatest (available cost_based energy schedule) }*

- Proposed to use a schedule the unit is running on (online) or the cheaper of the available scheduled for currently offline unit

2. Use of unit Desired MW @ LMP vs. Desired MW @ LMP Ramp Limited

- Currently, RTSCED calculates Dispatch MW for a dispatchable unit using the following submitted parameters:
 - Incremental Energy Schedule (Price/MW pairs);
 - Energy Ramp Rate (Up/Down);
 - Initial MW
- RTSCED Dispatch MW, also known as Basepoint, is the MW output expected of a dispatchable unit for the target interval :
 - The Dispatch MW is ramp limited for 5 min target interval.

Energy Dispatch – Status Quo: Example



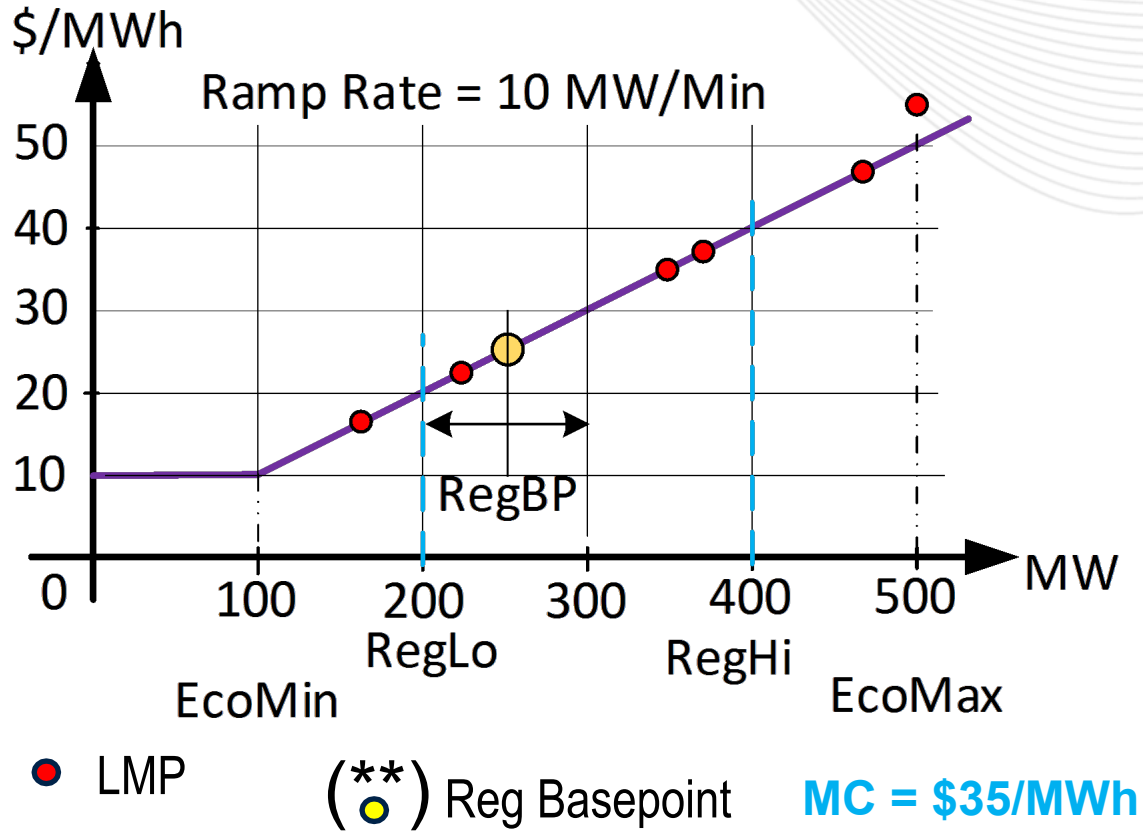
● LMP

* Not following dispatch

Initial MW	LMP	Desired MW @ Ramp Limited	Desired MW @ LMP
120	17	170	170
170	23	220	230
220	35	270	350
270	38	320	380
320	55	370	500
370	47	420	470

Initial MW	LMP	Desired MW @ Ramp Limited	Desired MW @ LMP
120	17	170	170
170	23	220	230
200*	35	250	350
230*	38	270	380
265*	55	315	500
265*	47	315	470

- The Desired MW at Ramp Limited is based on the Initial MW and the ramp capability of the unit:
 - When a unit does not follow the dispatch signal well, the Dispatch MW at Ramp Limited does not reflect where the unit should have been.
- The Desired MW at LMP is not ramp limited, and not based on the initial MW of the unit:
 - For units with slow ramp rate, this value does not measure how well the unit could have moved in response to consecutive signals if the unit had followed its ramp rate



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370	47	420	470

Initial MW	LMP	Desired MW @ Ramp Limited	Desired MW @ LMP	Total LOC @ LMP (\$)	Total LOC @ Ramp Limited (\$)	Total LOC @ Enhanced Ramp Limited (\$)
170	23	220	230	N/A	N/A	N/A
220	35	270	350	N/A	N/A	N/A
250**	38	300	380	390	150	210
250**	55	300	500	5000	1000	2400
250**	47	300	470	2640	600	2040

Total LOC (LMP) = |LMP – MC| x (Desired MW @ LMP – Initial MW)
 Total LOC (RL) = |LMP – MC| x (Desired MW @ RL – Initial MW)
 Total LOC (ERL) = |LMP – MC| x (Desired MW @ ERL – Initial MW)

- Desired MW at LMP could potentially over value RegLOC
 - This is the current logic
- Desired MW at LMP Ramp Limited (within target 5-min interval) could potentially under value RegLOC
 - The Desired MW at LMP Ramp Limited should account for the resource's pnode LMP profile and impact of the confined regulation range

- In order to account for how well a dispatchable unit followed dispatch during an entire commitment (run) period, it is necessary to develop a metric that incorporates consecutive market interval conditions.
- An Enhanced Desired MW at LMP Ramp Limited will incorporate consecutive market conditions to create the profile that units should have achieved if they had followed each dispatch signal based on their ramp rates.
 - This metric will calculate continuously from when a unit comes online, using its ramp rates, energy schedule, and independent of the initial MW at each interval.

- The Enhanced Desired MW at LMP Ramp Limited is work in progress.
- The idea is a collaborative effort between PJM and IMM and was first presented at the July 2022 MIC:

<https://www.pjm.com/-/media/committees-groups/committees/mic/2022/20220713/item-11b---new-desired-mw-metric.ashx>

- More details to be discussed:
 - Regulation and Reserves
 - Energy Uplift
 - Manual Dispatch

Facilitator:

Mike Herman, Michael.Herman@pjm.com

Secretary:

Wenzheng Qiu, Wenzheng.Qiu@pjm.com

SME/Presenter:

Michael Olaleye,
Michael.Olaleye@pjm.com

Regulation Market Design Senior Task Force



Member Hotline

(610) 666 – 8980

(866) 400 – 8980

custsvc@pjm.com

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