

Uplift (Operating Reserve Clarification)

MIC

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Uplift

- **Uplift payments are made to units that operate as directed by PJM.**
- **Goal is to ensure that units recover their costs (offers) when they operate at PJM's direction, and energy and ancillary market revenues do not cover offers.**
- **Goal is to provide incentive to follow PJM's direction.**

Uplift Issues

- **PJM does not have an accurate metric to define whether a resource follows PJM's dispatch direction.**
- **PJM does not have a consistent process to determine whether a resource follows PJM's dispatch direction.**
- **The current approach results in the payment of uplift to units that are not following dispatch.**
- **The current approach results in an incentive for inflexible operation rather than flexible operation.**

Status Quo (Metrics)

- **Currently PJM calculates how well a unit follows dispatch using three metrics: Dispatch Signal, Ramp Limited Desired and LMP Desired.**
- **The Dispatch Signal, also known as Basepoint, is the MW value calculated by RT SCED and sent to generators.**
- **The Ramp Limited Desired is the MW value that the unit should have achieved between Dispatch Signals.**
- **The LMP Desired is the MW level on the incremental offer curve where the Dispatch Run LMP intersects the offer curve.**

Status Quo (Metrics)

- **These three metrics are calculated individually for each interval. These metrics are useful to determine how well a unit followed in each interval, but they are not useful to measure how well a unit followed consecutive instructions. The Dispatch Signal and the Ramp Limited Desired are derived from the actual generation (actual generation is the starting point). When a unit does not follow dispatch, the Dispatch Signal and the Ramp Limited Desired do not reflect where the unit should have been over time.**
- **The LMP Desired is not ramp limited. For units with slow ramp rates, 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.**

Status Quo (Eligibility)

- **PJM relies heavily on dispatchers' log for uplift eligibility.**
- **Dispatchers typically log units as running for PJM (eligible for uplift) or running for company (ineligible for uplift).**
- **Units running for PJM are assumed to follow dispatch.**
 - **If dispatchers identify that a unit running for PJM is not following dispatch, a conversation may occur in order to: make the unit follow dispatch; or log the unit as running for company.**
 - **This is an inefficient and incomplete method for identifying units not eligible to receive uplift.**

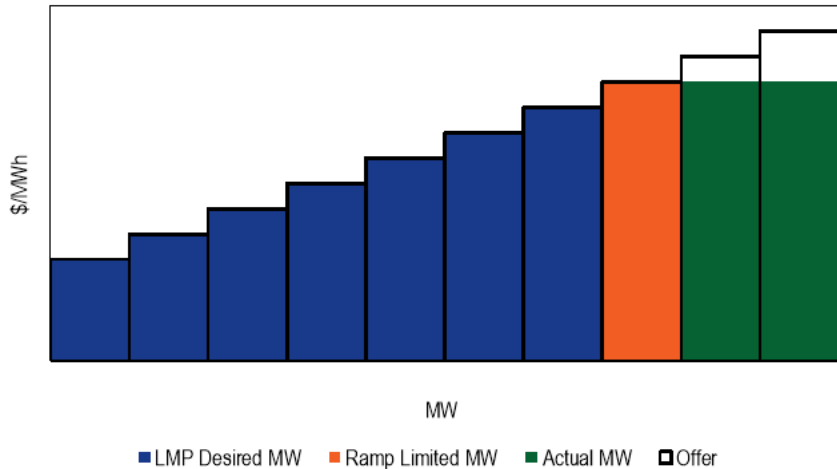
Status Quo

- If a unit eligible for uplift fails to follow dispatch, the uplift compensation only gets reduced when the current metrics identify the behavior.
- The compensation is affected in two ways:
 - Reducing the MW.
 - Reducing the offered price.
- Uplift impact from overgeneration:

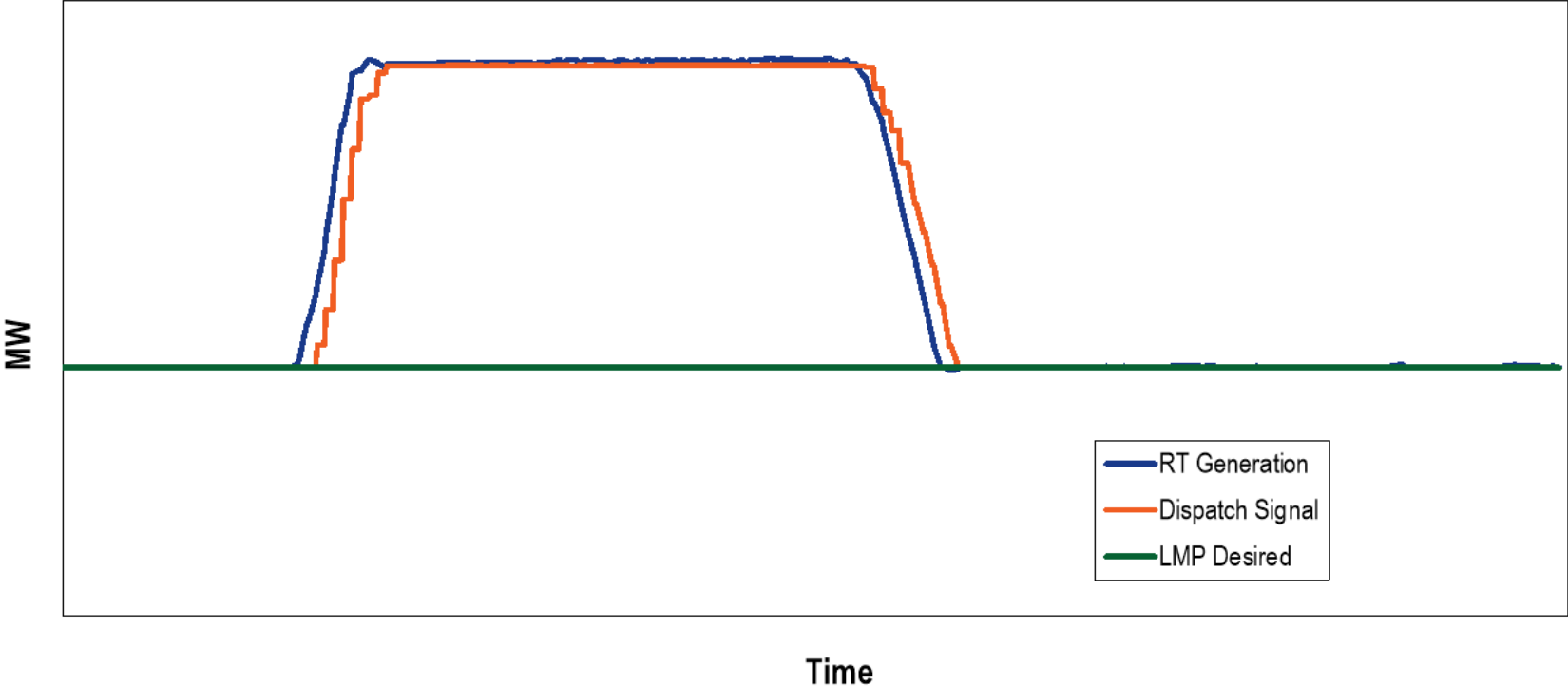
| Overgeneration Percent | MW | Offer Curve |
|------------------------|--|---|
| 0 to 10% | Actual MW | Capped at offer at Ramp Limited Desired MW or Dispatch Signal MW |
| 10 to 20% | Ramp Limited Desired MW or Dispatch Signal MW | Capped at offer at Ramp Limited Desired MW or Dispatch Signal MW |
| Above 20% | LMP Desired MW | Capped at offer at LMP Desired MW |

Status Quo

- A unit that overgenerates between 0 and 10% gets made whole for the areas shaded blue, orange and green.
- A unit that overgenerates between 10 and 20% gets made whole for the areas shaded blue and orange.
- A unit that overgenerates above 20% gets made whole for the area shaded blue.

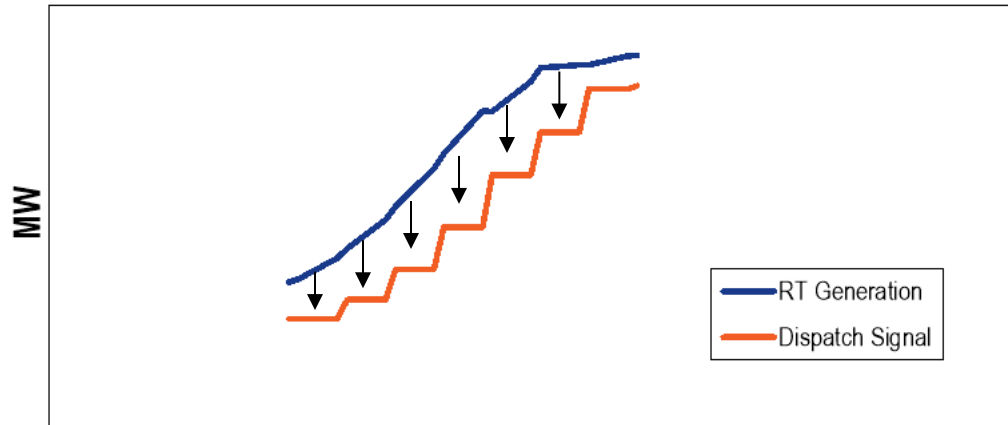


Example



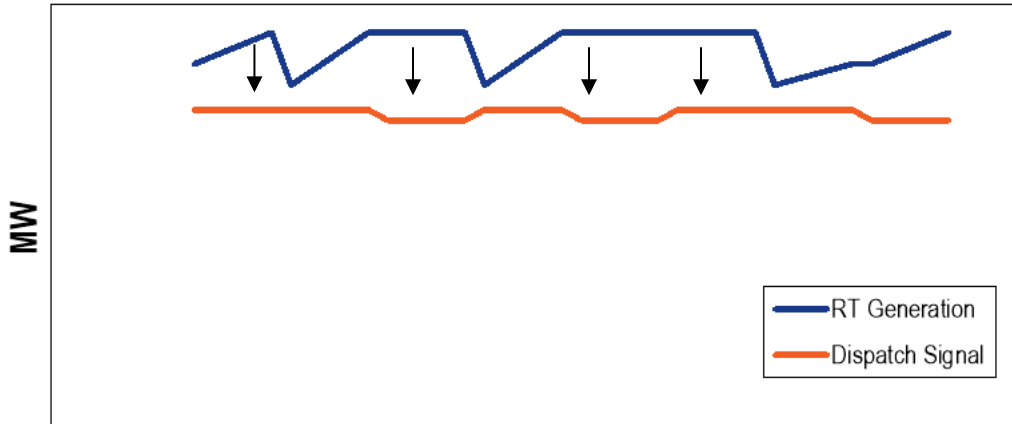
Example (Ramping Up Period)

- The unit decided to increase output without being instructed by PJM.
- At every moment, RTSCED is dispatching the unit down.
- Ramping up period:



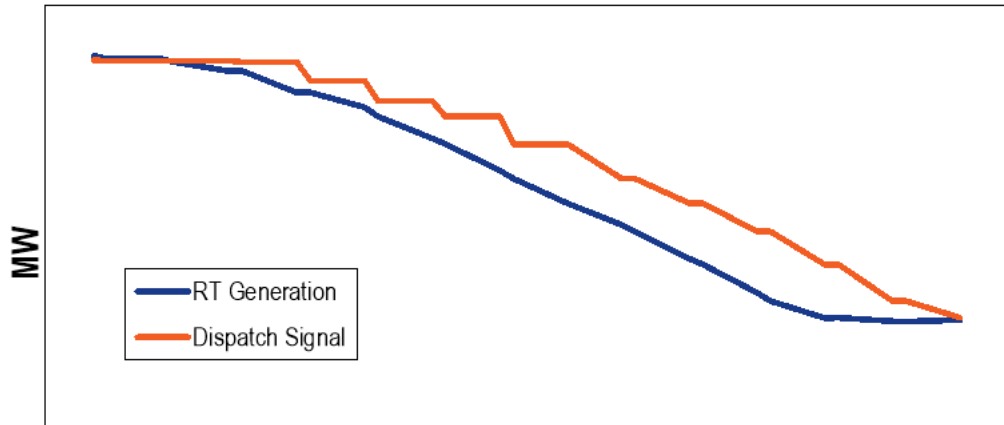
Example (Full Output Period)

- Once the unit achieved full output, it remained there.
- At every moment, RTSCED continues to dispatch the unit down.
- Full output period:



Example (Ramping Down Period)

- Later, the unit decided to decrease output without being instructed by PJM.
- At every moment, RTSCED is dispatching the unit down but the unit ramps faster than instructed.
- Ramping down period:



Example

- **At no point PJM's dispatch instructions or the LMP supported running the unit above minimum output.**
- **The current metrics failed to reflect the fact that the unit did not follow dispatch.**
- **They fail because:**
 - **The current metrics evaluate following dispatch for a single interval independently. The impact of a unit consistently not following over time is not considered in the determination of whether a unit is following dispatch or not.**
 - **The current rules include thresholds that benefit slow moving units.**

Conclusion

- **Problem:**
 - **The combination of having 1) thresholds for following dispatch and 2) a following dispatch metric that only looks at a single interval at a time, rather than how well a unit follows over a period of time, leads to an outcome where failure to follow dispatch is not identified.**
- **Goal:**
 - **Goal is to provide resources with incentives to follow dispatch by ensuring cost (offer) recovery based on how well they follow dispatch over the entire commitment period.**

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