



Overview of In-Scope Solution Options

Keyur Patel
Market Design
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- 1** Schedule selection based on a predefined formula (VII(A)1)
- 2** Consider only parameter-limited schedules during emergency conditions (VII(A)2)
- 3** One set of operating parameters, Start-Up and No-Load Costs (VII(A)3)
- 4** Allow only cost-based schedules with one set of parameters (VII(A)4)
- 5** Allow only parameter-limited schedules with one set of parameters (VII(A)5)
- 6** Create a “preferred schedule” from all available schedules (VII(A)6)

* Offer consists of energy components and operating parameters, which is also referred as schedule through out in this presentation.

Items remain as status-quo under this option

- Submission of three types of schedules (Price-based, price-based PLS, cost-based)
- Availability of schedules for commitment and dispatch purpose
- Eligibility of schedules for commitment and dispatch purpose

Schedule selection based on predefined formula

- Number of ways to determine the formula used for schedule selection for commitment and dispatch
- Formula may include any combination of incremental energy offer, EcoMin, EcoMax, Start-Up Cost, No-Load Cost, minimum run time, etc.

VII(A)1 – Schedule Selection Based on a Predefined Formula (cont.)

Similar to current RT market, the approach can have two components

- Schedule hourly cost(s) for each schedule
- Total cost for each schedule (depends upon schedule hourly cost(s))

Potential approaches to calculate Schedule hourly cost(s)

Schedule hourly cost(s) = Area under the bid-in-offer curve@EcoMin + No-Load Cost

Schedule hourly cost(s) = Area under the bid-in-offer curve@EcoMax + No-Load Cost

Schedule hourly cost(s) = Area under the bid-in-offer curve@ maximum of (EcoMax, last MW break point in offer curve) + No-Load Cost

Need to develop an approach about how to incorporate schedule hourly cost(s) in Total Cost

Approaches to calculate Total Cost

TOTAL COST =
sum of Schedule hourly cost(s) over
resource's Min Run Time + Start-Up Cost

TOTAL COST =
sum of Schedule hourly cost(s) over a
resource's Max Run Time + Start-Up Cost

Below approaches to calculate Total Cost same operating parameters on all schedules

TOTAL COST =
sum of schedule hourly cost(s) over a resource's Min Run Time* + Start-Up Cost

TOTAL COST =
sum of schedule hourly cost(s) over a resource's Max Run Time** + Start-Up Cost

*Min Run Time for the purpose of this formula is the maximum of Min Run Time of all eligible schedules.

**Max Run Time for the purpose of this formula is the minimum of Max Run Time of all eligible schedules.

Based on adopted approach to calculate Total Cost, the schedule that results in the lowest Total Cost can be used for commitment and dispatch purpose.

Configuration-based models

- Schedules are at configuration level.
- Different schedules may result as lowest cost schedule for each configuration.
- Need to select one particular schedule among available schedules, which will apply to all configurations for commitment and dispatch purpose.

This option is similar to VII(A)1 except price-based schedule will not be considered during emergency conditions as eligible schedules.

Same methodology needs to be used to determine single schedule for commitment and dispatch purpose as described in option VII(A)1.

VII(A)3 – Allow One Set of Operating Parameters, Start-Up, and No-Load Costs

<ul style="list-style-type: none">• One set of operating parameters for all schedules• One set of start-up and No-Load Costs for all schedules	<p>No crossing curves on incremental energy offers for all schedules</p> <p><i>Megawatt breakpoints on each schedule's incremental energy offer curve must be same.</i></p>	<p>Potential to have different schedule to be lowest cost in different hours due to hourly differentiated incremental energy offers of schedules.</p>	<p>Need an approach to determine single schedule to accommodate hourly differentiated incremental energy offers.</p>
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This option is similar to option VII(A)3 **except:**

- Only cost-based schedules are allowed with single set of operating parameters.
- No price-based and price-based PLS offers are allowed.
- Potential to have different schedule to be lowest cost in different hours due to hourly differentiated incremental energy offer of schedules.
- Need an approach to determine single schedule to accommodate hourly differentiated incremental energy offers.



VII(A)5 – Allow Only Parameter-Limited Schedules With One Set of Parameters

This option is similar to option VII(A)4 **except:**

- Only cost-based and price-based PLS schedules are allowed with single set of operating parameters.

This option removes the tie between economic components and operating parameters of a schedule.

A new preferred schedule will be created from available schedule for commitment and dispatch purpose.

Determination of *operating parameters* of offer for new schedule

- *The Min Run Time* will be the lowest of Min Run Time among available schedules.
- *The Max Run Time* will be larger Max Run Time among available schedules.
- *The Min Down Time* will be the lowest of Min Down Time among available schedules.

Determination of *operating parameters* of offer for new schedule (cont.)

- The notification time will be the lowest notification time among available schedules.
- The start-up time will be lowest start-up time among available schedules.
- The Maximum Daily Start will be the highest Maximum Daily Start among all schedules.
- Maximum Weekly Start will be the highest Maximum Weekly Start among all schedules.
- Turn Down Ratio will be the highest Turn Down Ratio among available schedules.

Determination of *economic components* of offer for new schedule (cont.)

- Start-Up Cost will be the minimum Start-Up Cost among available schedules.
- No-Load Cost will be the minimum No-Load Cost among available schedules.
- The Incremental energy offer curve will be the lowest Incremental energy offer price among available schedules at each megawatt break points.
 - *Megawatt breakpoints must be same on all available schedules*