Schedule Selection

MRC

June 27, 2024

IMM

Monitoring Analytics

Schedule Selection

- **FERC rejected PJM's schedule selection filing based on the market power mitigation concern identified by the IMM.**
  - **PJM filing used a formula to select the offer schedule.**
- **There were two other packages discussed. Both packages resolve the market power issue:**
  - **GT Power Group / PJM**
  - **GT Power Group / IMM**

GT Power Group / PJM Proposal

- **Protects market power mitigation**
- **Ensures commitment to a cost offer when a resource fails the TPS test, but it may not be the most economic cost offer.**
- **Issues:**
  - **Relies on the rejected PJM formula to select schedule for resources with multiple cost offers, which results in unreasonable outcomes in some cases.**
  - **For dual fuel units on days with large natural gas cost changes, the wrong fuel type will be chosen in some circumstances.**

Dual Fuel Unit Problem

- The GT Power Group/PJM proposal will result in incorrect schedule commitment for a dual fuel unit on a day when the economics of gas and oil switch.
- Example
  - Gas day 1: gas is the more economic fuel.
  - Gas day 2: oil is the more economic fuel.
  - The PJM formula only evaluates the highest cost hours based on the minimum run time, so it will only evaluate based on gas day 2, when fuel costs are higher.
  - Even during gas day 1, when gas is less expensive, PJM will only consider commitment of the unit on oil.

GT Power Group / IMM Proposal

- **Protects market power mitigation**
- **Ensures commitment to a cost offer when a resource fails the TPS test.**
- **Key differences**
  - **Instead of a formula, market sellers choose among their cost based offers.**
- **The IMM recommends that the MRC consider and approve the GT Power Group / IMM proposal.**

Hourly Gas/Oil Schedules

- In cases when the more economic fuel type changes during the course of the operating day, cost based offers may include different fuels by hour.
  - This is a current practice for many generators.
  - Usually results in commitment during one part of the day on one fuel type
- Hourly gas/oil schedules are an option but are not required under the status quo or under any proposal.
- The energy market does not including modelling of transition times between fuel types.

Market Seller Designated Offers

- **Under the GT Power Group / IMM proposal, the market sellers designate which cost schedule is most economic for commitment.**
- **The IMM will monitor designated cost offers.**
- **If the reason for the designated cost offer is not clear, the IMM may contact the market seller to ask for the reason.**

Appendix

- **Example of PJM formula applied to choose between gas and oil schedules**
- **From IMM presentation MIC August 9, 2023**

Dual Fuel Unit Commitment

- **The flaws with PJM's proposal can be illustrated with an example of a dual fuel unit on a day with a large change in gas prices.**
- **The IMM constructed an example based on representative costs for actual units and actual fuel prices from February 3, 2023.**
- **The example offer schedules were input in the calculation spreadsheet provided by PJM to demonstrate its proposal.**

Example Daily Parameters for Dual Fuel Unit

Table 1 - Daily Resource Parameters and Cost

Resource offers or Schedules	Maximum Run Time (hrs)	Minimum Run Time (hrs)	Daily Cold Start Up cost ($)	Daily No Load Cost ($/hr)
Price Schedule	24	12	$ 10,000.00	$ 8,000.00
Price PLS Schedule	24	6	$ 10,000.00	$ 8,000.00
Cost Schedule 1 (Gas)	24	6	$ 10,000.00	$ 9,000.00
Cost Schedule 2 (Oil)	24	6	$ 50,000.00	$ 45,000.00

Example Hourly Price Offer Based on Gas

Table 2 - Incremental Energy Offers

	HE1-HE10,HE23-HE24		HE11-HE22	
Price Schedule (gas)	MW	Price ($/MWh)	MW	Price ($/MWh)
	200	15	200	120
	300	20	300	160
	500	25	500	200
	501	500	501	500

Example Hourly Cost Offers

	HE1-HE10,HE23-HE24		HE11-HE22	
Cost Schedule 1 (gas)	MW	Price ($/MWh)	MW	Price ($/MWh)
	200	20	200	160
	300	25	300	200
	500	30	500	240
	501	35	501	280

	HE1-HE10,HE23-HE24		HE11-HE22	
Cost Schedule 2 (oil)	MW	Price ($/MWh)	MW	Price ($/MWh)
	200	100	200	100
	300	125	300	125
	500	150	500	150
	501	175	501	175

Gas is the economic fuel for commitment for gas day 1, but oil for gas day 2.

Application of PJM Dispatch Cost Formula

Table 4 - Total Dispatch Cost

	Solution Option 4(A):Total Dispatch Cost over Min Run (largest values for equivalent hours of min run time) using EcoMin
Price Schedule	$ 1,136,000.00
Price PLS Schedule	$ 608,000.00
Cost Schedule 1 (gas)	$ 704,000.00
Cost Schedule 2 (oil)	$ 440,000.00

The oil cost schedule is selected regardless of the time of day.

Unacceptable Outcome

- **The PJM proposed dispatch cost formula simplifies too much. It ignores hourly offers for many hours of the day, which is a particular issue for gas and dual fuel resources.**
- **It is unacceptable for the market to commit a resource on its oil cost offer when its gas cost offer is available and more economic.**
- **If the example unit failed the TPS test and was needed during gas day 1, when gas is lower cost, PJM's proposal would commit it on the oil offer anyway.**

Monitoring Analytics, LLC
2621 Van Buren Avenue
Suite 160
Eagleville, PA
19403
(610) 271-8050

MA@monitoringanalytics.com
www.MonitoringAnalytics.com