

Offering Dual Fuel Generation with Intraday Offers Frequently Asked Questions

PJM Real-Time Market Operations
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Managing Dual Fuel Units in the Energy Market

1. How do I designate a unit as Dual Fuel Capable?
 - a. Participants must designate a unit as Dual Fuel Capable under the Miscellaneous section of the Generator Detail screen in Markets Gateway (Generator > Detail). See section 6.10 of the [Markets Gateway User Guide](#) for instructions to submit this value.
2. When can I designate a unit as Dual Fuel Capable?
 - a. Participants must designate a unit as Dual Fuel Capable by 10:30 the day prior to the date the election is to be effective.

Offering Dual Fuel Units Day-Ahead

In the Day-Ahead Market, schedules must be made available for the entire day. For dual fuel units, this presents a challenge when one or more fuel types become unavailable for a portion of the day. However, with the introduction of Intraday Offers, the ability to specify different startup, no-load and incremental offer prices for each hour provides flexibility to reflect hourly fuel availability. A unit can offer irrespective of the intended fuel on incremental energy offers for price-based and price-based PLS schedules. It is important to accurately reflect the fuel in cost-based offers, and in the startup and no-load costs on price-based offers which use cost-based startup and no-load, in a manner consistent with the Cost Development Guidelines specified in Manual 15 and the unit's individual Fuel Cost Policy. Dual fuel resources also have the ability to change the availability of their cost schedules in the real-time market to reflect updates to fuel availability after the close of the rebid period, starting at 18:30.

The following examples illustrate potential scenarios where knowledge of fuel availability or non-availability can be communicated to the Market.

Day-Ahead Scenario #1: Assume both fuels are available for the next day at the time of Day-Ahead Offer submittal.

| | 01:00 | 02:00 | 03:00 | 04:00 | 05:00 | 06:00 | 07:00 | 08:00 | 09:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 24:00 | |
|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-----------------------------|
| Fuel Availability | | | | | | | | | | | | | | | | | | | | | | | | | |
| Gas | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A = available |
| Oil | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | U = unavailable |
| Fuel Cost to Reflect in Schedules | | | | | | | | | | | | | | | | | | | | | | | | | |
| Price* | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C = Cheapest Fuel Available |
| Cost - Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | |
| Cost - Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | |
| | | | | | | | | | | | | | | | | | | | | | | | | | |

Price* represents Cost based Startup and No Load on Price Schedule

- a) If the unit elected to use Cost-Based Startup and No Load, the cheapest available fuel should be used to derive the daily or hourly values on the Price and Price/PLS schedule.
 - a. Reflect the fuel you expect to run on the majority of the day in your Price/Price PLS Schedule’s reported fuel type on the Schedule Detail screen.
- b) The daily schedule availability for both fuels should be set to “Available”

Day-Ahead Scenario #2: Know in advance Gas is unavailable during off-peak hours, but intend to run on Gas when available because Gas is cheaper than Oil.

| | Off-Peak (OP) Hours | | | | | | | Peak Hours | | | | | | | | | | | | | | | OP | | |
|---|---------------------|-------|-------|-------|-------|-------|-------|------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-----|
| | 01:00 | 02:00 | 03:00 | 04:00 | 05:00 | 06:00 | 07:00 | 08:00 | 09:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 24:00 | |
| Fuel Availability | | | | | | | | | | | | | | | | | | | | | | | | | |
| Gas | U | U | U | U | U | U | U | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | U |
| Oil | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A |
| Fuel Cost to Reflect in DA Schedules | | | | | | | | | | | | | | | | | | | | | | | | | |
| Price* | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Oil |
| Cost - Gas | U | U | U | U | U | U | U | U | U | U | U | U | U | U | U | U | U | U | U | U | U | U | U | U | U |
| Cost - Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Oil |

Price* represents Cost based Startup and No Load on Price Schedule

- a) If the unit elected to use Cost-Based startup and no-load, the cheapest available fuel should be used to derive the daily or hourly startup and no-load values on the Price and Price/PLS schedule.
 - a. Reflect the fuel you expect to run on the majority of the day in your Price/Price PLS Schedule’s reported fuel type.
- b) The daily availability for the least expensive fuel’s cost schedule should be set to unavailable via the Schedule Selection screen in Markets Gateway.
- c) The incremental offer curve for the most expensive fuel available should be updated to reflect the cost of the cheaper fuel during the hours it is available via the Offers Update screen in Markets Gateway. In addition, the “Reference Schedule” field in the Schedule Detail Updates screen should be updated to report the Cost Schedule ID of the fuel that is basis of the hourly offer. In the example above, this means reflecting the gas fuel cost in the incremental energy offer on the Cost-Oil schedule during hours ending 0800 – 2300, and the “Reference Schedule” should be set to “Cost-Gas” on the Schedule Detail Updates screen for the same hours.

Adjusting Dual Fuel Availability in Real-Time

Under certain conditions, explained in detail in the following scenarios, hourly updates to schedule availability and offer data can be submitted starting at 1830 prior to the operating day and up to 65 minutes before the operating hour.

Notes:

- 1) The following scenarios assume Gas is the least expensive fuel available. In the event Gas is more expensive than Oil, the scenarios would need to be reversed.
- 2) For simplicity, a single Price schedule row is listed. Cost-based Startup and No Load values for Price and Price PLS schedules follow the same logic.

Real-Time Scenario #1: Gas was assumed to be available for the entire day at the time of the Day-Ahead Market. The unit is committed in Day-Ahead for entire Operating day on its Price Schedule. Following the close of the Day-Ahead Market, Gas becomes unavailable for a portion of the day in Real Time.

| | 01:00 | 02:00 | 03:00 | 04:00 | 05:00 | 06:00 | 07:00 | 08:00 | 09:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 24:00 |
|---|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| DA Fuel Availability | | | | | | | | | | | | | | | | | | | | | | | | |
| Gas | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A |
| Oil | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A |
| Fuel Cost to Reflect in DA Schedules | | | | | | | | | | | | | | | | | | | | | | | | |
| Price* | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas |
| Cost - Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas |
| Cost - Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil |
| Day-Ahead Commitment | | | | | | | | | | | | | | | | | | | | | | | | |
| | Price | Price | Price | Price | Price | Price | Price | Price | Price | Price | Price | Price | Price | Price | Price | Price | Price | Price | Price | Price | Price | Price | Price | Price |
| Fuel Availability | | | | | | | | | | | | | | | | | | | | | | | | |
| Gas | A | A | A | A | A | A | A | A | A | A | U | U | U | U | U | U | U | U | U | U | U | U | U | |
| Oil | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | |
| RT Schedule Availability | | | | | | | | | | | | | | | | | | | | | | | | |
| Price | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas* | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas |
| Cost - Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | U | U | U | U | U | U | U | U | U | U | U | U | U | |
| Cost - Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil |

*Elect Switch to Cost for HE 1100 by 0855

Price* represents Cost based Startup and No Load on Price Schedule

- a) The Price schedule assumed the unit would run on Gas at the time of Day-Ahead Offer submittal and commitment. If the Market Seller becomes aware that gas is unavailable beginning at HE 11, there is no way to increase the price schedule offer curves for the duration of the day because the unit is committed. Instead, the unit can use the “Switch to Cost” option using the following steps:
 - Step 1: Set the Gas Cost schedule to unavailable for HE 11 – HE 24 by 0855. This ensures when the unit elects “Switch to Cost” it does not get placed on the cheaper Gas Cost schedule.
 - Step 2: Elect the “Switch to Cost” schedule option for HE 11 by 0855 via the Detail Updates screen.
 - a. PJM would then dispatch the unit on the cheapest of the available Cost Schedules (Oil).
 - b. PJM would make the unit whole up to the cheapest of the committed offer (DA) and updated offer (RT).

Real-Time Scenario #2: Gas was assumed to be available for the entire day at the time of the Day-Ahead Market. The unit is committed in Day-Ahead from 0100 –1300 on Gas Cost Schedule. Following the close of the Day-Ahead Market, Gas becomes unavailable for the remainder of the day beginning at HE 1100.

| | 0100 | 0200 | 0300 | 0400 | 0500 | 0600 | 0700 | 0800 | 0900 | 1000 | 1100 | 1200 | 1300 | 1400 | 1500 | 1600 | 1700 | 1800 | 1900 | 2000 | 2100 | 2200 | 2300 | 2400 |
|---|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| DA Fuel Availability | | | | | | | | | | | | | | | | | | | | | | | | |
| Gas | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A |
| Oil | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A |
| Fuel Cost to Reflect in DA Schedules | | | | | | | | | | | | | | | | | | | | | | | | |
| Price* | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas |
| Cost - Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas |
| Cost - Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil |
| Day-Ahead Commitment | | | | | | | | | | | | | | | | | | | | | | | | |
| | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| Fuel Availability | | | | | | | | | | | | | | | | | | | | | | | | |
| Gas | A | A | A | A | A | A | A | A | A | A | U | U | U | U | U | U | U | U | U | U | U | U | U | |
| Oil | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | |
| Fuel Cost to Reflect in Schedules | | | | | | | | | | | | | | | | | | | | | | | | |
| Price | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil |
| Cost - Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas* | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas |
| Cost - Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil |

Gas*- Update Gas Schedule Availability after DA commitment
 Price* represents Cost based Startup and No Load on Price Schedule

- a) The Gas Cost schedule can be set to unavailable via the Schedule Availability Update screen for hours after the Day-Ahead commitment period (1400 – 2400).
- b) Call PJM Dispatch to inform them of the loss of fuel. PJM Dispatch will not switch schedules until completion of Day-Ahead commitment period or Min Run time.
- c) The price schedule offer curves can be updated for hours 1400 – 2400 (after the completion of the Day-Ahead commitment period).

Real-Time Scenario #3: The unit is not committed in the Day-Ahead Market. The unit is dispatched in Real-Time on Gas Cost Schedule at HE 0400, with a Min Run of 4 hours. Gas becomes unavailable at HE 0600 (2 hours prior to Min Run time completion).

| | 01:00 | 02:00 | 03:00 | 04:00 | 05:00 | 06:00 | 07:00 | 08:00 | 09:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 24:00 |
|---|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| DA Fuel Availability | | | | | | | | | | | | | | | | | | | | | | | | |
| Gas | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A |
| Oil | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A |
| Fuel Cost to Reflect in DA Schedules | | | | | | | | | | | | | | | | | | | | | | | | |
| Price* | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas |
| Cost - Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas |
| Cost - Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil |
| Day-Ahead Commitment | | | | | | | | | | | | | | | | | | | | | | | | |
| | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| Real-Time Fuel Availability | | | | | | | | | | | | | | | | | | | | | | | | |
| Gas | A | A | A | A | A | U | U | U | U | U | U | U | U | U | U | U | U | U | U | U | U | U | U | |
| Oil | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A |
| Fuel Cost to Reflect in Intraday Schedules | | | | | | | | | | | | | | | | | | | | | | | | |
| Price | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | |
| Cost - Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | U | U | U | U | U | U | U | U | U | U | U | U | U | U | U | U | |
| Cost - Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | |

Price* represents Cost based Startup and No Load on Price Schedule

Gas = RT Dispatch Period

- a) The Cost Schedule availability cannot be changed on the Availability Update screen until HE 0700, when the unit reaches its' Min Run duration. The Gas Cost Schedule availability can be updated after the Min Run time is met, effective HE 0800 and beyond (and up to 65 minutes prior to the start of the hour)
- b) The unit will be re-evaluated after the completion of the minimum run time to determine if they should keep running on the new schedule.

Real-Time Scenario #4: The unit is not committed in the Day-Ahead Market. The unit is dispatched in Real-time on its' Gas Cost Schedule at HE 0100, with Min Run time of 4 hours. Gas becomes unavailable at HE 1000 (after Min Run would be met).

| | 01:00 | 02:00 | 03:00 | 04:00 | 05:00 | 06:00 | 07:00 | 08:00 | 09:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 24:00 | |
|---|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-----|
| DA Fuel Availability | | | | | | | | | | | | | | | | | | | | | | | | | |
| Gas | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A |
| Oil | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A |
| Fuel Cost to Reflect in DA Schedules | | | | | | | | | | | | | | | | | | | | | | | | | |
| Price* | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas |
| Cost - Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas |
| Cost - Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil |
| Day-Ahead Commitment | | | | | | | | | | | | | | | | | | | | | | | | | |
| | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| Real-Time Fuel Availability | | | | | | | | | | | | | | | | | | | | | | | | | |
| Gas | A | A | A | A | A | A | A | A | A | A | U | U | U | U | U | U | U | U | U | U | U | U | U | U | |
| Oil | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A |
| Fuel Cost to Reflect in Intraday Schedules | | | | | | | | | | | | | | | | | | | | | | | | | |
| Price | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil |
| Cost - Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | U | U | U | U | U | U | U | U | U | U | U | U | U | U | U |
| Cost - Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil |

Price* represents Cost based Startup and No Load on Price Schedule

Gas = RT Dispatch Period

- The Gas Cost Schedule availability can be changed on the Availability Update screen after the Min Run is met, effective HE 0400 and beyond. In this example, the Gas Cost Schedule availability can be updated without restriction to reflect the loss of Gas at HE 1100.
- The unit will be re-evaluated after the completion of the each subsequent hour to determine if they should keep running on the available schedules.

Real-Time Scenario #5: Both fuels are assumed to be available at the time of the Day-Ahead Market. The unit is committed in Day-Ahead on its' Gas Cost schedule starting at HE 1100. Following the close of the Day-Ahead Market, Gas becomes unavailable prior to HE 1100. The unit needs to reflect the loss of gas to ensure potential Real-Time commitment prior to the Day-Ahead commitment does not consider the Gas schedule prior to HE 1100.

| | 01:00 | 02:00 | 03:00 | 04:00 | 05:00 | 06:00 | 07:00 | 08:00 | 09:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 24:00 |
|---|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| DA Fuel Availability | | | | | | | | | | | | | | | | | | | | | | | | |
| Gas | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A |
| Oil | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A |
| Fuel Cost to Reflect in DA Schedules | | | | | | | | | | | | | | | | | | | | | | | | |
| Price* | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas |
| Cost - Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas |
| Cost - Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil |
| Day-Ahead Commitment | | | | | | | | | | | | | | | | | | | | | | | | |
| | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | |
| RT Fuel Availability | | | | | | | | | | | | | | | | | | | | | | | | |
| Gas | U | U | U | U | U | U | U | U | U | U | A | A | A | A | A | A | A | A | A | A | A | A | A | |
| Oil | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | |
| Fuel Cost to Reflect in Intraday Schedules | | | | | | | | | | | | | | | | | | | | | | | | |
| Price | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | |
| Cost - Gas | U | U | U | U | U | U | U | U | U | U | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | |
| Cost - Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | |

Price* represents Cost based Startup and No Load on Price Schedule

- a) If gas was not procured or is unavailable for hours prior to the Day-Ahead Commitment, the Cost Gas schedule should be marked Unavailable on the Availability Update screen for hours prior to the Day-Ahead commitment, HE 0100 – HE 1000. These edits can be made starting 18:30 prior to the Operating day, up to 65 minutes prior to the operating hour.
 - a. If the hours are not marked unavailable, the unit can be dispatched on the Gas schedule.
- b) The hourly cost-based Startup and No Load values should be updated to reflect the Oil schedule.

Real-Time Scenario #6: Gas was assumed to be unavailable for the entire day at the time of the Day-Ahead Market. The unit is committed in Day-Ahead for the entire day on its' Oil Cost schedule. Following the close of the Day-Ahead Market, gas becomes available during the Operating Day.

| | 01:00 | 02:00 | 03:00 | 04:00 | 05:00 | 06:00 | 07:00 | 08:00 | 09:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 | 24:00 |
|---|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| DA Fuel Availability | | | | | | | | | | | | | | | | | | | | | | | | |
| Gas | U | U | U | U | U | U | U | U | U | U | U | U | U | U | U | U | U | U | U | U | U | U | U | U |
| Oil | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A |
| Fuel Cost to Reflect in DA Schedules | | | | | | | | | | | | | | | | | | | | | | | | |
| Price* | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil |
| Cost - Gas | U | U | U | U | U | U | U | U | U | U | U | U | U | U | U | U | U | U | U | U | U | U | U | U |
| Cost - Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil |
| Day-Ahead Commitment | | | | | | | | | | | | | | | | | | | | | | | | |
| | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil |
| RT Fuel Availability | | | | | | | | | | | | | | | | | | | | | | | | |
| Gas | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A |
| Oil | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A |
| Fuel Cost to Reflect in Intraday Schedules | | | | | | | | | | | | | | | | | | | | | | | | |
| Price* | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas | Gas |
| Cost - Gas | Gas | U | U | U | U | U | U | U | U | U | U | U | U | U | U | U | U | U | U | U | U | U | U | U |
| Cost - Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil | Oil |

Price* represents Cost based Startup and No Load on Price Schedule

- To reflect the availability of Gas, starting at 18:30 prior to the operating day and up to 65 minutes prior to the operating hour, the cost based startup and no-load values should be updated to reflect the cheapest fuel that will can be used (via the Detail Updates screen).
- The Cost Gas schedule should be marked as Available on the Availability Update screen for the appropriate hours. These edits can be made starting 18:30 prior to the Operating day, up to 65 minutes prior to the operating hour.

Revision History:

12.18.2018: Included description of “Reference Schedule” field introduced to designate hours that dual fuel units are not expected to run on the schedule’s designated fuel type.

1.21.2018: Original Version