

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 it is expected that one or more fuel types are going to be 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 cost-schedule 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 (This refers to the physical availability of gas, not the schedule)																									
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 Day Ahead 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	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-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

- a) If the unit elected to use Cost-Based startup and no-load, the cheapest available cost-schedule 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 of both (gas and oil) cost schedules should be set to available via the Schedule Selection screen in Markets Gateway.
- c) The incremental offer curve for the gas cost schedule should be updated to reflect the cost of oil during the hours gas is not 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 oil cost schedule. In the example above, this means reflecting the oil fuel cost in the incremental energy offer on the Cost-Gas schedule during hours ending 01:00 – 07:00 and 23:00, and the “Reference Schedule” should be set to “Cost-Oil” on the Schedule Detail Updates screen for the same hours.
- d) The oil cost schedule should only reflect the cost of oil.

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 18:30 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.
- 3) A schedule should not be made unavailable for a portion of the day unless all fuels are and will be unavailable for the remainder of the day. If a particular fuel is only available for certain hours of the operating day, then the remainder of the schedule should be updated to reflect the price of the available fuel.

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 Day Ahead 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
Real-Time Fuel Availability (This refers to the physical availability of gas, not the schedule)																								
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 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	
Cost - Gas	Gas	Gas	Gas	Gas	Gas	Gas	Gas	Gas	Gas	Gas	Oil	Oil	Oil	Oil	Oil	Oil	Oil	Oil	Oil	Oil	Oil	Oil	Oil	
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	

*Elect Switch to Cost for HE11:00 by 08:55

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: Update Gas Cost Schedule to reflect the price of the Oil Cost Schedule for HE11-23

Step 2: Elect the “Switch to Cost” schedule option for HE 11 by 08:55 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).

Step 3: The incremental offer curve and No Load on the committed schedule should be updated to reflect the cost of the available fuel type 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 oil fuel cost in the incremental energy offer on the Cost-Gas schedule during hours ending 11:00 – 23:00, and the “Reference Schedule” should be set to “Cost-Oil” on the Schedule Detail Updates screen for the same hours.

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 01:00 –13:00 on Gas Cost Schedule. Following the close of the Day-Ahead Market, Gas becomes unavailable for the remainder of the day beginning at HE 11:00.

	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 Day Ahead 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
Real-Time Fuel Availability (This refers to the physical availability of gas, not the schedule)																								
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
Fuel Cost to Reflect in Intraday 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	Oil	Oil	Oil	Oil	Oil	Oil	Oil	Oil	Oil	Oil	Oil
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) The Gas Cost Schedule can be updated to reflect the price of the Oil Cost Schedule, but should not be done so until after the Day-Ahead commitment is met, effective HE 14:00 and beyond (and up to 65 minutes prior to the start of the hour).
- b) The incremental offer curve and No Load on the committed schedule should be updated to reflect the cost of the available fuel type 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 oil fuel cost in the incremental energy offer on the Cost-Gas schedule during hours ending 14:00 – 23:00, and the “Reference Schedule” should be set to “Cost-Oil” on the Schedule Detail Updates screen for the same hours.
- c) The unit will be re-evaluated after the completion of the minimum run time to determine if they should keep running on the updated schedule.
- d) This process should only be used if there is certainty that gas will not be available.

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 04:00, with a Min Run of 4 hours. Gas becomes unavailable at HE 06:00 (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 Day Ahead 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 (This refers to the physical availability of gas, not the schedule)																								
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	Oil
Cost-Gas	Gas	Gas	Gas	Gas	Gas	Gas	Gas	Oil	Oil	Oil	Oil	Oil	Oil	Oil	Oil	Oil	Oil	Oil	Oil	Oil	Oil	Oil	Oil	Oil
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

Gas = RT Dispatch Period

- e) The Gas Cost Schedule can be updated to reflect the price of the Oil Cost Schedule, but should not be done so until after the Min Run time is met, effective HE 08:00 and beyond (and up to 65 minutes prior to the start of the hour).
- f) The incremental offer curve and No Load on the committed schedule should be updated to reflect the cost of the available fuel type 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 oil fuel cost in the incremental energy offer on the Cost-Gas schedule during hours ending 08:00 – 23:00, and the “Reference Schedule” should be set to “Cost-Oil” on the Schedule Detail Updates screen for the same hours.
- g) The unit will be re-evaluated after the completion of the minimum run time to determine if they should keep running on the updated schedule.
- h) This process should only be used if there is certainty that gas will not be available.

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 01:00, with Min Run time of 4 hours. Gas becomes unavailable at HE 11:00 (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
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 Day Ahead 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 (This refers to the physical availability of gas, not the schedule)																								
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 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	
Cost-Gas	Gas	Gas	Gas	Gas	Gas	Gas	Gas	Gas	Gas	Gas	Oil	Oil	Oil	Oil	Oil	Oil	Oil	Oil	Oil	Oil	Oil	Oil	Oil	
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 Gas Cost Schedule can be updated to reflect the price of the Oil Cost Schedule for hours ending 11:00 through 24:00.
- b) The incremental offer curve and No Load on the committed schedule should be updated to reflect the cost of the available fuel type 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 the basis of the hourly offer. In the example above, this means reflecting the oil fuel cost in the incremental energy offer on the Cost-Gas schedule during hours ending 11:00 – 24:00, and the “Reference Schedule” should be set to “Cost-Oil” on the Schedule Detail Updates screen for the same hours.
- c) 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.
- d) This process should only be used if there is certainty that gas will not be available.

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 11:00. Following the close of the Day-Ahead Market, Gas becomes unavailable prior to HE 11:00. 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 11:00.

	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 Day Ahead 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	Gas
Real-Time Fuel Availability (This refers to the physical availability of gas, not the schedule)																								
Gas	U	U	U	U	U	U	U	U	U	U	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	Oil	Oil	Oil	Oil	Oil	Oil	Oil	Oil	Oil	Oil	Gas	Gas	Gas	Gas	Gas	Gas	Gas	Gas	Gas	Gas	Gas	Gas	Gas	Gas
Cost-Gas	Oil	Oil	Oil	Oil	Oil	Oil	Oil	Oil	Oil	Oil	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 gas was not procured or is unavailable for hours prior to the Day-Ahead Commitment, the Cost Gas schedule can be updated to reflect the price of the Oil Cost Schedule for hours prior to the Day-Ahead commitment, hours ending 01:00 – 10:00. These edits can be made starting 18:30 prior to the Operating day, up to 65 minutes prior to the operating hour.
- b) The incremental offer curve and No Load on the committed schedule should be updated to reflect the cost of the available fuel type 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 oil fuel cost in the incremental energy offer on the Cost-Gas schedule during hours ending 01:00 – 10:00, and the “Reference Schedule” should be set to “Cost-Oil” on the Schedule Detail Updates screen for the same hours.

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 hour ending 11:00 during the Operating Day.

	RT Commitment																							
	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 Day Ahead 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																								
	Oil	Oil	Oil	Oil	Oil	Oil	Oil	Oil	Oil	Oil	Oil	Oil	Oil	Oil	Oil	Oil	Oil	Oil	Oil	Oil	Oil	Oil	Oil	Oil
Real-Time 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	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*	Oil	Oil	Oil	Oil	Oil	Oil	Oil	Oil	Oil	Oil	Gas	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	Gas
Cost-Oil	Oil	Oil	Oil	Oil	Oil	Oil	Oil	Oil	Oil	Oil	Gas	Gas	Gas	Gas	Gas	Gas	Gas	Gas	Gas	Gas	Gas	Gas	Gas	Gas

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 is available (via the Detail Updates screen).
- The Cost Gas schedule should be marked as Available on the Availability Update screen for hours ending 11:00 – 24:00. These edits can be made starting 18:30 prior to the Operating day, up to 65 minutes prior to the operating hour.
- The Cost Oil schedule should be updated to reflect the gas cost for hours ending 11:00 – 24:00.
- The incremental offer curve and No Load on the committed schedule should be updated to reflect the cost of the available fuel type 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 cost in the incremental energy offer on the Cost-Oil schedule for hours ending 11:00 – 24:00, and the “Reference Schedule” should be set to “Cost-Gas” on the Schedule Detail Updates screen for the same hours.

Real-Time Scenario #7: Gas was assumed to be available for the entire day at the time of the Day-Ahead Market. The unit is not committed in Day-Ahead and has not yet been committed in Real-Time. During the Operating Day at 11:00, gas becomes unavailable beginning hour ending 15:00 through the remainder of the Operating Day.

RT, No Commitment																								
	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 Day Ahead 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	A	A	A	A	A	A	A	A	A	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	Gas	Gas	Gas	Gas	Gas	Gas	Gas	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	Oil	Oil	Oil	Oil	Oil	Oil	Oil	Oil	Oil	Oil
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) The Gas Cost Schedule should be updated to reflect the price of the Oil Cost Schedule for hours ending 1500 through 2400.
- b) The incremental offer curve and No Load on the committed schedule should be updated to reflect the cost of the available fuel type 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 the basis of the hourly offer. In the example above, this means reflecting the oil fuel cost in the incremental energy offer on the Cost-Gas schedule during hours ending 1500 – 2400, and the “Reference Schedule” should be set to “Cost-Oil” on the Schedule Detail Updates screen for the same hours.
- c) This process should only be used if there is certainty that gas will not be available.

Revision History:

10.3.2024 Added Real-Time Scenario #7 to provide guidance for when a fuel is unavailable for part of the day.

6.20.2024 Updated 'a' under Day-Ahead Scenarios #1 & #2 from cheapest available fuel to cheapest available cost-based schedule.

5.31.2024 Description of 'Fuel Availability' updated to indicate physical availability, not schedule.

4.19.2024: Updated guidance to appropriately reflect when one of the fuels becomes unavailable.

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