# *[Unit/Company]* Fuel Cost Policy

*General Instructions:*

*This template was developed by Monitoring Analytics to aid Market Sellers in the development of fuel cost policies that meet the IMM’s standards.*

*This template covers a range of fuel cost calculation methods for natural gas fired resources. Modifications to this template can be made in order to meet specific needs. Modifications will be evaluated by the IMM for consistency with the IMM’s standards.*

*The template contains text in italics and/or brackets that should be completed or that provide clarifying instructions. The template contains triggers that have to be defined by the Market Seller and evaluated by the IMM.*

*All costs included in this template shall be short run marginal costs. The short run marginal cost of energy is the incremental cost of producing one more MWh of energy. It includes the cost of fuel, the cost of emissions allowances, volumetric taxes on fuel purchases or subsidies, and consumables for operations that vary in the short run with energy output. Short run marginal costs do not include long term variable, fixed or avoidable costs incurred to maintain the efficiency or availability of the unit, its environmental compliance, or its fuel supply.*

*Before submitting the final version of this document, please remove any of the instructions in brackets and the “draft” watermark.*

# Company and Unit Information

Unit Owner: *[Complete with plant owner unless a different company has ownership of the energy, via a PPA or tolling agreement, in which case, complete with buyer entity]*

Unit Operating Company: *[Complete]*

Energy Manager / Marketer: *[Complete with entity responsible for submitting the energy offer, if applicable]*

Market Seller: *[Complete with the PJM Market Seller entity]*

Contact: *[Indicate person(s) responsible for fuel cost policy submission or cost-based offer development. Include name, business address, phone number and email address]*

Units: *[Complete]*

|  |  |
| --- | --- |
| **Unit ID** | **Unit Name** |
| 12345678 | UNIT 1  |

# Natural Gas Cost Development

## General Overview

The Market Seller shall develop their natural gas costs using the replacement cost method, except when basing fuel cost on same day or next day actual natural gas purchases for the unit as specified in this policy. The replacement cost will be based on relevant market prices as specified in the policy. Under a set of defined market conditions, natural gas costs may be based on independent third party quotes. The defined natural gas cost is the expected or actual cost of natural gas (when natural gas is purchased for the unit) at the time that the day-ahead energy offers or real-time energy offers are submitted to PJM.

Natural gas cost may be developed, as specified in this policy, for the two natural gas days that comprise a PJM power day.

Gas Day 1 (GD1) is defined as the hours covering the PJM power day HE1 through HE10.

Gas Day 2 (GD2) is defined as the hours covering the PJM power day HE11 through HE24.

*[If the natural gas cost used in the cost-based offer is provided by a third party fuel supplier under an executed agreement, include the expiration dates, the counterparty and the pricing methods of the agreement in this document]*

## Applicable Physical Hub

*[Task: Identify one or several physical hubs that represent the relevant natural gas market from which gas can be delivered to the plant.]* The applicable physical hub chosen to develop the cost-based energy offer will be the one reliably available with the lowest delivered gas cost (including marginal transportation charges and pipeline losses).[[1]](#footnote-2) These are the possible physical hubs used *[Task: This can be provided in a spreadsheet for multiple units]*:

Primary: *[Define the applicable ICE hub used. Please also indicate any Platts pricing point used and all the ICE hubs used to estimate the Platts pricing point.]*

Secondary: *[Define applicable ICE hub used.]*

## Day-Ahead

The day-ahead natural gas cost will be based on next day gas or same day gas (transactions or market data at the applicable physical hub(s)) for each applicable hour.

### Gas Day 1

The GD1 natural gas cost will be based on the following method in sequential order if the defined conditions apply:

1. If the Market Seller has executed same day fixed price transactions, the GD1 natural gas cost will be equal to or less than the volume weighted average of all same day fixed price transactions executed by the Market Seller.
2. If same day traded volume on ICE is greater than X MMBtu, the GD1 natural gas cost will be equal to or less than the ICE same day WAP.
3. If same day bid and offered volumes are greater than Y MMBtu, the GD1 natural gas cost will be equal to or less than the ICE same day midpoint of the highest bid and lowest offer.
4. If the Market Seller has executed next day fixed price transactions for GD1, the GD1 natural gas cost will be equal to or less than the volume weighted average of all next day fixed price transactions executed by the Market Seller.
5. If next day gas traded on ICE for GD1, the GD1 natural gas cost will be equal to or less than the ICE next day WAP.
6. If next day gas did not trade on ICE for GD1, the GD1 natural gas cost will be equal to or less than the natural gas cost used in the prior operating day GD2 next day gas estimate.

### Gas Day 2

The GD2 natural gas cost will be based on the following method in sequential order if the defined conditions apply:

1. If the Market Seller has executed next day fixed price transactions, the GD2 natural gas cost will be equal to or less than the volume weighted average of all next day fixed price transactions executed by the Market Seller.
2. If next day traded volume on ICE is greater than X MMBtu, the GD2 natural gas cost will be equal to or less than the ICE next day WAP.
3. If next day bid and offered volume are greater than Y MMBtu, the GD2 natural gas cost will be equal to or less than the ICE next day midpoint of the highest bid / lowest offer.
4. If next day bid or offered volume is equal to or less than Z MMBtu, the Market Seller will request at least three independent third party quotes. The GD2 natural gas cost will be equal to or less than the average of the received quotes.

## Rebid Period

This section applies to updates to the natural gas cost used in the day-ahead offer after the Day-Ahead Energy Market results posting deadline (1330 EPT) and before the Rebid Period deadline (1415 EPT).

### Gas Day 1

The GD1 natural gas cost will be updated during the rebid period if the Market Seller purchases same day gas after the day-ahead offer has been submitted. The updated natural gas cost will be equal to or less than the volume weighted average of all same day fixed price transactions executed by the Market Seller.

If the Market Seller did not purchase same day gas after the day-ahead offer has been submitted and the unit did not clear the Day-Ahead Energy Market for the applicable hour, the GD1 natural gas cost will be updated in the rebid period based on the defined steps: (If condition 1 is met, step 1 defines the cost of gas. If condition 1 is not met, condition 2 is tested. If condition 2 is met, step 2 defines the cost of gas. If condition 2 is not met, step 3 applies.

1. If same day traded volume on ICE is greater than X MMBtu, the GD1 natural gas cost will be equal to or less than the ICE same day WAP.
2. If same day bid and offered volume are greater than Y MMBtu, the GD1 natural gas cost will be equal to or less than the ICE same day midpoint of the highest bid / lowest offer.
3. The GD1 natural gas cost will remain unchanged.

### Gas Day 2

The GD2 natural gas cost will be updated during the rebid period if the Market Seller purchases next day gas after the day-ahead offer has been submitted. The updated natural gas cost will be equal to or less than the volume weighted average of the next day fixed price transactions executed by the Market Seller.

If the Market Seller did not purchase next day gas after the day-ahead offer has been submitted and the unit did not clear the Day-Ahead Energy Market for the applicable hour, the GD2 natural gas cost will be updated in the rebid period based on the defined steps: (If condition 1 is met, step 1 defines the cost of gas. If condition 1 is not met, step 2 applies.

1. If next day gas traded on ICE, the GD2 natural gas cost will be equal to or less than the ICE next day WAP.
2. The GD2 cost will remain unchanged.

## Intraday Updates

This section applies to updates to the natural gas cost after the rebid period based on the Intraday Offers Optionality conditions. This section does not apply if the Market Seller has opted out of intraday offers.

### Gas Day 1

The GD1 natural gas cost will be updated anytime the Market Seller purchases same day gas after the rebid period deadline. The GD1 natural gas cost will be equal to or less than the volume weighted average of same day fixed price transactions.

If the Market Seller did not purchase same day gas after the rebid period, the GD1 natural gas cost will be updated based on the defined steps: (If condition 1 is met, step 1 defines the cost of gas. If condition 1 is not met, condition 2 is tested. If condition 2 is met, step 2 defines the cost of gas. If condition 2 is not met, step 3 applies.

1. If same day traded volume on ICE is greater than X MMBtu by the close of the same day trading period, the GD1 natural gas cost will be equal to or less than the ICE same day WAP at the end of the same day trading period.
2. If same day bid and offered volume are greater than Y MMBtu by close of the same day trading period, the GD1 natural gas cost will be equal to or less than the ICE same day midpoint of the highest bid / lowest offer at the end of the same day trading period.
3. The GD1 cost will remain unchanged.

### Gas Day 2

The GD2 natural gas cost will be updated anytime the Market Seller purchases gas after the rebid period deadline. The GD2 natural gas cost will be equal to or less than the volume weighted average of fixed price transactions executed by the Market Seller.

If the Market Seller purchased indexed price transactions, the GD2 natural gas cost will be equal to or less than the published index value. This update must be made by the offer deadline for the first operating hour of GD2.

If the Market Seller did not purchase gas after the rebid period or purchase indexed price transactions for GD2, the GD2 natural gas cost will be based on the defined steps: (If condition 1 is met, step 1 defines the cost of gas. If condition 1 is not met, condition 2 is tested. If condition 2 is met, step 2 defines the cost of gas. If condition 2 is not met, step 3 defines the cost of gas. If condition 3 is not met, step 4 applies.

1. If same day traded volume on ICE is greater than X MMBtu, the GD2 natural gas cost will be equal to or less than the ICE same day WAP.
2. If same day bid and offered volumes are greater than Y MMBtu, the GD2 natural gas cost will be equal to or less than the ICE same day midpoint of the highest bid / lowest offer.
3. If same day bid or offered volume is equal to or less than Z MMBtu, the Market Seller will request at least three independent third party quotes. The GD2 natural gas cost will be equal to or less than the average of the received quotes.
4. The GD2 natural gas cost will remain unchanged.

## Multiday Next Day Product

For days in which next day gas is traded for multiple days (e.g. weekend package), the Market Seller may adjust the natural gas cost for each individual day using actual transactions, market data or independent third party quotes.

The individual day natural gas cost will be based on the following method in sequential order if the defined conditions apply:

1. If the Market Seller has executed next day fixed price transactions for the individual day, the natural gas cost will be equal to or less than the volume weighted average of all next day fixed price transactions executed by the Market Seller.
2. If next day traded volume for the individual day on ICE is greater than X MMBtu, the GD2 natural gas cost will be equal to or less than the ICE next day WAP.
3. If next day bid and offered volumes for the individual day are greater than Y MMBtu, the GD2 natural gas cost will be equal to or less than the ICE next day midpoint of the highest bid / lowest offer.
4. If next day bid or offered volume for the individual day is equal to or less than Z MMBtu, the Market Seller will request at least three independent third party quotes. The GD2 natural gas cost will be equal to or less than the average of the received quotes.

Under the following conditions, the natural gas cost of the individual days of a multiday package will be adjusted:

1. *[Market Seller defined condition.]*

The individual days will be adjusted using the following formula:

For days in which the Market Seller was able to collect market data or independent third party quotes based on the method defined in this section, the applicable next day product in the Day-Ahead, Rebid and Hourly Updates section will be based on the collected data and not the multiday natural gas cost. For example, instead of using a next day WAP, the Market Seller will use a Monday-only WAP for GD2 of the Monday operating day cost-based offer.

For days in which the Market Seller was not able to collect market data or independent third party quotes, the applicable cost will be equal to:

$$Unknown Day NG Cost=\frac{Multiday NG Cost×Days-\sum\_{i=1}^{n}NG Cost\_{i}}{Days}$$

Where:

* Unknown Day NG Cost = Natural gas cost in $ per MMBtu of individual day without market data.
* Multiday NG Cost = Natural gas cost in $ per MMBtu of the next day product for multiple day delivery.
* Days = Number of days of the next day product for multiple day delivery.
* NG Costi = Natural gas cost in $ per MMBtu of individual days with market data.

## Volume Weighted Average Calculation

In cases in which the Market Seller executed transactions that do not meet the unit’s estimated fuel demand, the natural gas cost will be equal to the following formula:

$$NG Cost=\frac{Actual Vol ×Actual NG Cost+\left(Total Vol-Actual Vol\right)×Estimated Cost}{Total Vol}$$

Where:

* NG Cost = Natural gas cost in $ per MMBtu.
* Actual Vol = Volume purchased at fixed prices in MMBtu.
* Actual NG Cost = Volume weighted fixed price transactions average in $ per MMBtu.
* Total Vol = Estimated unit’s fuel usage in a day in MMBtu.
* Estimated Cost = Fuel cost estimated based on market data or quotes.

## Transportation Costs

The natural gas cost will include the following transportation costs: *[If transportation costs are not applicable, please replace language with Not Applicable.]*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Rate / Charge Name** | **Pipeline / LDC** | **Value as of MM/DD/YYYY** | **DA** | **Rebid** | **Hourly Updates** |
| Rate 1 | Pipeline | $X.XX per MMBtu | Yes | Yes | Yes |
| Rate 2 | Pipeline | $X.XX per MMBtu | No | No | Yes |

*[Include natural gas heating value factor for any volumetric charges that are not in an energy unit of measurement (e.g. MCF).]*

## Additional Fuel Costs

*[Task: Include other volumetric short run marginal costs, such as volumetric taxes on fuel purchases or third party supplier fees.]*

*[Include the natural gas heating value factor for any volumetric charges that are not in an energy unit of measurement (e.g. MCF).]*

## Delivered Natural Gas Cost Formula

*[Task: Include the formula with all terms and charges that make up the delivered natural gas cost. The name of the terms should be defined in the transportation and additional fuel cost sections.]* The natural gas cost will be calculated using the following formula *[This is an example, please adjust the formula as necessary. If the natural gas cost is a delivered product. Please delete the formula and state that the natural gas cost is a delivered product with no additional variable charges.]*:

$$Delivered Cost=\frac{NG Cost}{\left(1-Pipeline Fuel Percent\right)}+FT Rate$$

# Heat Input

*[Task: Complete all columns below. If the unit does not use a heat input curve, please replace with the actual method used. If the unit is offered with an average heat rate, state that the unit is offered with an average heat rate instead of using incremental heat rates and a separate no load heat.]*

*[Indicate if the unit is offered with a slope or step function.]*

|  |  |  |
| --- | --- | --- |
| **Component** | **Source** | **Update Frequency** |
| Heat Input Curve | Performance test | Annually |
| Startup Heat | Performance test | Annually |

## Performance Factor

*[Task: If a performance factor is not used delete bullets below and state that the performance factor is always equal to one (1)].*

* Performance Factor Update Frequency: *[Monthly].*
* Performance Factor Source: *[Describe how the performance factor is calculated].*
* Performance Factor Method: *[Total Fuel, Separate, Fixed Start Approach. See PJM Manual 15 section 2.2.3 for details].*

# Emissions

*[Select one of the following methods. If neither of these methods apply, please specify and describe method used*

*Method 1: Emission costs are based on replacement cost method. The applicable emission allowance cost will be equal to or less than the most recent midpoint for the current year at the time the cost-based offer was made.*

*Method 2: Emission costs are based on actual transactions. The applicable emission allowance cost will be equal to or less than the volume weighted average of all transactions for the current year.]*

*[Task: Complete all columns below. If emission cost is not used in offer then type NA and delete table. The content of the table below are examples.]*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Pollutant** | **Emission Rate Source** | **Emission Rate Update Frequency** | **Emission Allowance Source** | **Emission Cost Update Frequency** |
| CO2 | CEMS | Annually | Platts | Daily |
| NOX | CEMS | Annually | Platts | Daily |
| SO2 | CEMS | Annually | Platts | Daily |

# Other Operating Costs

*[Task: List the other components of costs that are consumables such as other fuel related costs not covered in the fuel cost, transportation or emission sections. Include how these costs are calculated and updated, for example, updated annually using last calendar year total costs divided by total MWh. Include the units of measure, for example, $ per MWh or $ per MMBtu.]*

# Intraday Offers Optionality

*[Instruction: All Market Sellers must decide whether to opt to use intraday offers.]*

*[Opt in: If the Market Seller opts to update offers in real time, the Market Seller will have to define the conditions and time(s) of day under which they have the option in this section and the fuel cost policy must contain a section for intraday updates. All offer updates must follow the Market Seller defined conditions. Cost-based offers must be verified using the same conditions. The following is language for opting in.]*

The Market Seller opts to update offers intraday under the following conditions:

1. When Market Seller purchases natural gas for the applicable gas day.
2. *[Market Seller defined condition and time(s) of day]*

The method used to update cost-based offers intraday is defined in the Intraday Updates section and must be applied under the same conditions and at the same times as the option to update offers intraday.

*[Opt out: If the Market Seller opts not to update offers in real time, the fuel cost policy must not contain a section for intraday updates. The following is the language for opting out.]*

The Market Seller opts to not update offers intraday.

# Documentation

The Market Seller will maintain all documentation needed to verify cost-based energy offers. The documentation may include invoices, contracts, screenshots, instant messages, text messages, emails or recorded phone calls. This information may be requested by PJM or the IMM to verify the development of cost-based energy offers.

If the unit’s cost-based incremental offer is greater than $1,000 per MWh due to the use of a value greater than the ICE WAP or greater than the highest bid/lowest offer midpoint, the Market Sellerwill provide to the PJM and the IMM the value and all supporting documentation (e.g. ICE screen shots, instant messages, screenshots, recorded phone calls, text messages, emails) for ex ante review. The Market Seller will provide this value and documentation at least 30 minutes prior to the PJM Day-Ahead Energy Market deadline.

# Cost-Based Offer Numerical Example

*[Please provide spreadsheet with numerical example for a recently submitted cost-based offer. Specify date for current units. The example should include the following items when applicable:*

* *Separate calculations for the start costs, no load cost, and the entire incremental cost curve.*
* *Start heat input, no load heat input, segment incremental heat rates and heat input curve.*
* *All components of the Total Fuel Related Cost (TFRC) must be defined separately: commodity fuel price, transportation, other delivery charges, and other fuel related costs such as fuel handling or third party supplier fees.*
* *VOM costs in $ per start, $ per MMBtu, $ per MWh or $ per hour, if used in the calculation of the cost-based offer.*
* *Ten percent adder, FMU adder (if eligible) or opportunity cost adder (if eligible) if any of these adders are used in the calculation of the cost-based offer.*
* *Pollutant emission rates and assumed Emission Credit Allowance prices.]*
1. Physical hubs are also referred to as price points or trading locations by Platts Gas Daily. [↑](#footnote-ref-2)