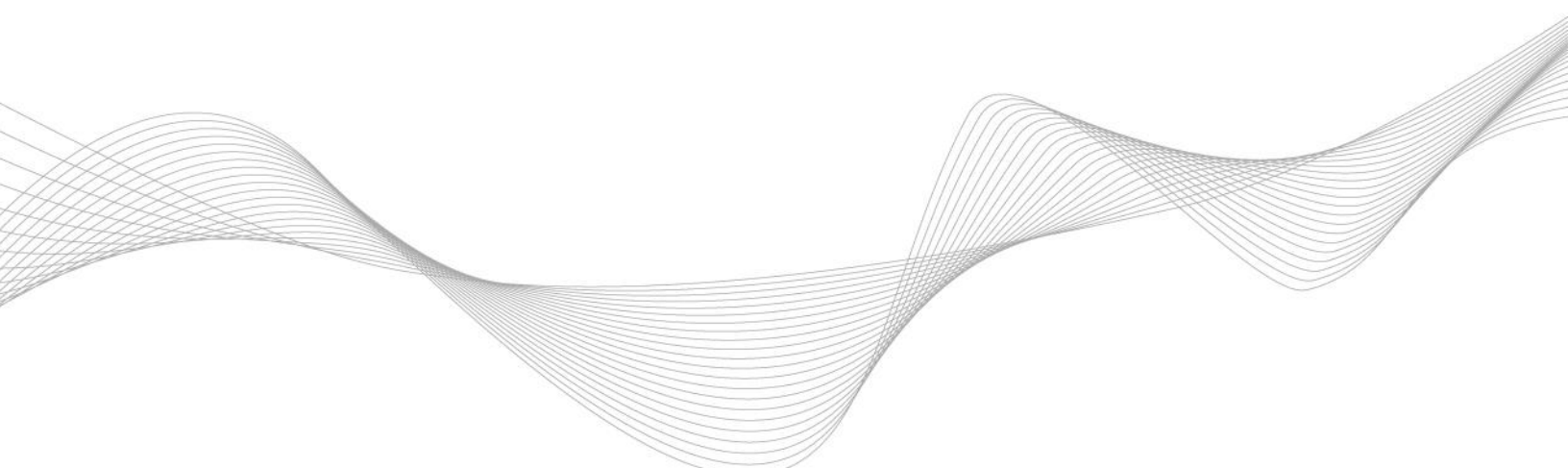# Fuel Cost Policy Guidelines

Annual Review Period PJM Interconnection Version 4: 01/05/2021

Review Date_____ Fuel Cost Policy ID # _____ Replacement FCP ID # _____

☐ OPTIONAL: Contact Information (Name, phone number, email, unit information including ID and name)

Unit Name: _____   Unit ID #: _____

Unit type: _____   Fuel Type:_____

☐ $0 Cost Policy (Section VII) As of September, 2020, true $0 cost offers no longer require a policy. Negative cost offers must still submit a policy outlining the use of RECs and/or PTCs.

☐ Fuel Costs (Section II)
  ☐ Power Purchase Agreement (PPA)
  ☐ Affiliate Supplier(s)_____
  ☐ Inventory   (AND/OR)   ☐ Replacement Cost
  ☐ Spot   (AND/OR)   ☐ Contract
  ☐ Transportation
  ☐ Natural Gas – Define Liquidity, GD1/GD2 regardless of IDO optionality
  ☐ Wind – RECs and PTCs information must be included
  ☐ Hydro – Pumped Storage Cost may be > $0 / Run of River Hydro Cost =$0
  ☐ Solid Waste, Biomass, Landfill Gas – Cost includes negative fuel prices if applicable

☐ Offer update methodology and triggers (Section II)
  ☐ Day-Ahead   ☐ Re-bid
  ☐ Intra-day   ☐ Multi-day

☐ Intraday Optionality (Section III)
  ☐ Opt-out   ☐ Opt-in
                       ☐ Intra-day validation (required)
                       ☐ Secondary trigger (optional)

☐ Start-up, No-load, and Incremental Heat Input Value (Section IV)
  ☐ Source of values
  ☐ Frequency of update
  ☐ Unit-specific Performance Factor (value other than 1)

☐ Emissions Rates and Allowances - for all non-zero polices, state if included (Section V)
  ☐ Not Utilized   ☐ Source and update frequency of rates
                       ☐ Source and update frequency of allowances

☐ Numerical Example – not required for $0 offers (Section VIII)

☐ Documentation Language

The following information was previously required to be included in fuel cost policies. If a policy is being edited for other reasons, please remove all references to the following items. However, if no other edits are being made to the policy, these sections may remain in place.

☐ Maintenance Adders and Operating Costs (VOM)
☐ 10% Adder

I.   INTRODUCTION

This document is intended to provide general guidance for the level of detail requested in submitted Fuel Cost Policies. Detailed guidelines are contained in Manual 15 "Cost Development Guidelines".

Fuel Cost policies are used by PJM and the MMU to review and verify a unit's cost based offer. Fuel Cost Policies define the method used by the Market Seller to determine Total Fuel Related Costs. Fuel Cost policies shall include the method used by the Market Seller to calculate:

- Fuel Cost
- Fuel additives
- Emission allowance cost (if applicable), and;
- Approved Maintenance Adder
- Approved Operating Cost Adder

Fuel Cost policies should also include other items necessary to verify a unit's cost based offers. These can include:

- Performance Factor, Heat Rate, or Heat Input information
- Start Costs
- No Load Costs

Fuel Cost policies shall be submitted to PJM and the MMU through the MIRA application, or other system(s) made available for submission of such data.

NOTE: Policies that include expiration dates for Energy Manager, Fuel Supplier, Transportation Cost, etc. must be set to said expiration date, or November 1 of the periodic review year, whichever comes first.

II.   FUEL COST CALCULATIONS

Market Sellers are responsible for establishing their own method of calculating delivered fuel costs, limited to inventoried cost, replacement cost, or a combination thereof. A Market Seller may elect to calculate fuel cost using actual cost (i.e. contract price), spot price, or a combination of actual cost and spot price. PJM expects the following information to be included in a fuel cost policy (whether the Market Seller is using inventoried cost, replacement cost, or a combination).

- For Market Sellers utilizing contracts, the contract price must include the locational cost of fuel for the generating unit.
  - Fuel supplier contract must be supplied if contract fees are included in addition to the commodity cost
  - Fuel Cost Policy approval expiration date shall be set to either the expiration date of the fuel supplier contract, or November 1 of the periodic review year, whichever comes first.
  - Entering into a new fuel supplier contract requires an update to the Market Sellers Fuel Cost Policy
- For Market Sellers utilizing index pricing, the pricing index used for spot price must be publicly available and reflect the locational cost of fuel for the generating unit.

- Detailed numerical example of the process, methodologies, and calculations used for determining a unit's fuel cost. (separate document)
  - A Market Seller will maintain and supply supporting documentation that would allow PJM or the MMU to confirm a specific day's Total fuel Related Costs, if requested.

Additionally, Market Sellers must provide information on how fuel costs are estimated in the day-ahead market, whether offers are updated in the rebid period and intra-day period, as well as if offers are updated on non-business (weekends and holidays) days, and what the methodology and triggers for each of those offer updates include.

Details pertaining to information needed for the intra-day offer updates are contained in section XIII of this document.

- Day Ahead
  - Describe process for estimating fuel cost in the day-ahead market
  - Natural Gas units must indicate if GD1 and GD2 are used, or if a weighted average gas price is used across the entire electric day
- Rebid
  - Market Sellers must indicate if they are updating offers in the rebid period
  - Triggers for update and process for estimating fuel cost must be defined
- Intra-day
  - Market Sellers must indicate if they are updating offers in the intra-day period
  - Triggers for update and process for estimating fuel cost must be defined
- Non-business (multi-day)
  - Default assumption for weekends and holidays is that the natural gas commodity price will be based on one price for the entire weekend or holiday
  - Market Sellers must indicate if offers are updated on non-business days
  - Triggers for update and process for estimating fuel cost must be defined

Additional guidelines are also provided below for specific fuel types.
  A) *Natural Gas*

   Market Sellers shall provide the following additional information for natural gas fired units:
   - Contract terms, if applicable, for gas procurement including any variations for timing and procurement.
   - Spot price details, if applicable, such as index or broker quotes that would be used for cost determination.
     - Identify if using timely or intraday pricing (GD1/GD2) for Day-Ahead, Rebid, and Intraday (if applicable)
     - If using ICE, identify timeline of the observation on ICE
     - For brokers quotes, at least one required
   - Transportation and supply details such as relevant pipeline(s) or LDC(s), transportation charges or basis, types of transportation service used (firm/interruptible), and source points and intermediary points.
   - Document any process changes used to address varying conditions such as weekends/holidays, change in season, extreme temperatures, and pipeline restrictions.
   - Define liquidity standards for using pricing indices.
   - Define the process or methodology for pricing natural gas during times of illiquidity.

[Return to Checklist](#)

B) *Dual-Fuel*

- A policy for each fuel type is required
- Units that co-fire more than one fuel shall weight average the cost of the fuel on a per MMBtu basis.

C) *Nuclear*

Nuclear fuel costs shall be based on the dollars in FERC Account 518, less in-service interest charges (whether related to fuel that is leased or capitalized). This quantity shall be calculated in units of dollar per MMBtu, as forecasted for the applicable cycle.

D) *Hydro and Pumped Storage*

- Fuel costs for a Run-of-River hydro unit are typically zero.
- Pumped Storage fuel cost shall be calculated on a seven (7) day rolling basis by multiplying the real time LMP at the plant node by the actual power consumed when pumping divided by the pumping efficiency. The pumping efficiency is determined annually based on actual pumping operations or by Original Equipment Manufacturer (OEM) curves if annual data is not available.

E) *Wind*

Market Seller shall identify how they account for Renewable Energy Credits (RECs) and Production Tax Credits (PTCs).

- Market Sellers for renewable resources may include cost associated with land rent/leases and the impact of tax credits in the calculation of the impact of PTC credits. An example of the calculated PTC value = PTC $ value / (1 – tax rate).

F) *Solar*

The fuel costs for solar units are zero.

G) *Energy Storage*

The fuel costs for energy storage units are zero.

H) *Solid waste, Bio-mass or Landfill gas*

Market Seller shall include the costs of such fuels when calculating a fuel cost even when the cost of such fuel is negative. However, cost offers for such units are not required to be less than zero.

Return to Checklist

III. INTRADAY OPTIONALITY

Market Sellers must specify in their Fuel Cost Policy if they elect to opt-in to Intraday Offers. If a Market Seller plans to opt-in and opt-out periodically throughout the year, then the Fuel Cost Policy must describe how the fuel is priced when opting-in.

Opt-In Language

(Market Seller) will opt-in to Intraday Offers for the unit(s) referenced in this Fuel Cost Policy. (Market Seller) will validate cost-based offers during the operating day, and update their cost-based offer intraday if costs change from original cost input used to create the day-ahead cost offer. The Intraday validation will be completed within the time period beginning (HH:MM time-zone) and ending (HH:MM time-zone). Cost-based offers may be increased but must be decreased based on the updated commodity cost at the time of validation.

(Market Seller) will validate and update the cost-based offer based on the following process: *(Describe Intraday validation and update process or refer to Monitoring Analytics template for guidance on update process).*

- *Intraday Validation – REQUIRED*
- *Secondary trigger, for a [% or $] change in commodity cost for a specified time period, if applicable – NOT REQUIRED*
  - o *Hot or Cold weather alerts*
  - o *RTO load forecast greater than 125,000 MW in the winter months;*

Dual-fuel units that opt-in with oil or coal as a secondary fuel, are not required to update the secondary fuel cost schedule intra-day.
- *(Market Seller) will opt-in to Intraday Offers but not update cost-based offers intraday for the oil and coal based fuels.*

IV. HEAT RATE AND PERFORMANCE FACTOR

The Marker Seller shall indicate the source and frequency of update for start-up, no-load, and incremental Heat Rates. Performance factors shall be provided to PJM. The Market Seller shall also indicate the method used in determining the performance factor and the frequency with which performance factors are updated. Performance factors can be modified by a seasonal performance factor to reflect ambient conditions.

Return to Checklist

V. EMISSION ALLOWANCE COSTS

Market Seller must state its method for determining the cost of CO_2/ SO_2/NO_x emissions adders. This shall include:

- The type of emissions adders that are included in the cost-based offer.
- The source and frequency of updates for emissions rates.
- The source and frequency of updates for emissions allowances.
- Units with dual-fuel firing capability should use different emission allowance factors based on the CO_2/ SO_2/NO_x emitted for each particular fuel or fuel mix.
- Emission allowance calculation must be provided to PJM each year during the Annual Review period using by updating COA.

VI. INCREMENTAL ADJUSTMENT PARAMETER COST

The Market Seller shall identify any other incremental costs associated with operating the unit that are included in the development of a unit's cost offer, and developed in accordance with Manual 15 and Schedule 2 of the Operating Agreement.

VII. ZERO COST OFFERS

The submitted cost-based offers for starts, no-load, and incremental energy will always be equal to zero ($0/MWh). As of September 1, 2020, Units with $0 cost offers are no longer required to submit a fuel cost policy. However, units with negative cost offers are still required to submit policies outlining their use of RECs and/or PTCs.

VIII.NUMERICAL EXAMPLE

All fuel cost policies for non-$0 cost-based offers are required to provide a numerical example. Numerical examples shall include the following elements such that PJM or the IMM can accurately reconstruct the Market Seller's cost-based offer:

- **START COST**
  - The Market Seller shall provide an example of the Start Cost calculation in the numerical example. This example shall identify:
    - Start fuel (MMBtu)
      - Combined Cycle units shall demonstrate that they are subtracting the net energy output of the CTs prior to ST synchronization.
    - Station Service (MWh)
    - Start Maintenance Adder ($)
    - Start Additional labor Cost ($)

- **NO-LOAD COST**
  - Each unit's No-Load fuel cost shall be developed using a regression analysis from the unit's heat input curve. The Market Seller shall provide PJM and the MMU the No-Load Fuel (MMBtu) calculated. The Market Seller shall also provide an example of the No-Load Cost calculation. Any No-Load cost adjustments necessary to create a monotonically increasing incremental offer curve shall also be identified.

Return to Checklist

Revision History

Revision 1 (08/07/2019)
Author: Melissa Pilong
Reviewer: Glen Boyle
- To comply with FERC Order on VOM
  - VOM adder updated to Maintenance Adder and Operating Cost Adder
  - Other Fuel Related Cost Section removed from policies and replaced with submission of Operating Costs to PJM and the IMM via the VOM template
- Requirement added for fuel contract to be supplied when contract-related fees are added to the cost-based offer estimate (this is for validation of allowable costs)
- Requirement for a new Fuel Cost Policy to be submitted when entering into a new fuel supplier contract (this is so that PJM can verify that the fuel supplier is independent)

Revision 2 (08/16/2019)
Author: Jennifer Warner-Freeman
Reviewer: Melissa Pilong
- Rearrangement and additional clarity on each section
- Requirement for Combined Cycles to demonstrate that they are subtracting the net energy output of the CTs prior to ST synchronization when calculating start-up cost

Revision 3 (04/15/2020)
Author: Jennifer Warner-Freeman
Reviewer: Melissa Pilong
- Clarification of checklist about sections that are no longer required
- Removal of detailed explanations for sections no longer required

Revision 4 (11/23/2020)
Author: Jennifer Warner-Freeman
Reviewer: Melissa Pilong
- Clarification on $0 policies no longer needing a fuel cost policy as of September, 2020.
- Typos, pagination fixes

Revision 5 (09/23/2021)
Author: Melissa Pilong
Reviewer:
- Clarification on natural gas weekend and holiday commodity cost estimation assumptions