



Manual 15 Walkthrough

Fuel Cost Policies and Tariff Language

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Markets Implementation Committee Special Session

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Manual Changes to support the FERC filing

PJM Interconnection, L.L.C., Docket No. ER16-372-002

Compliance Filing Implementing Hourly Offers and Cost-Based Offer Requirements

- Walkthrough of Manual 15 related to Fuel Cost Policy Tariff language filed at the FERC for Hourly Offers
- Updated Manual 15 language as it supports the filing, as well as within the context of Manual 15.
- Ensure the changed sections work with the rest of Manual 15

Administrative Updates

- Capitalization
- Abbreviations
- Dashes
- References
- 7.6 Pumped Hydro
- 8 Demand Side
- 11 Energy Storage

Changes*

- 1.8 Undefined Cost Methodology and Approval Process
- 2.3 Fuel Cost Policy
- 2.3.1 Fuel Cost Policy Submission process

*Dependent on FERC Approval

Tariff Revisions

- *Standards*
- *Requirements*
- *Penalty Structure*
- *Guidelines*
- *Process and Deadlines*
- *Consequences*
- *Roles related to Fuel Cost Policies*

- Filing submitted August 16, 2016, comments due September 16.
- Endorsement of manual language at September MIC, MRC & MC, Goal is to have board approval for Manual 15 language in October.
- Manual 15, Tariff, and Operating Agreement language associated with these changes would not be effective until FERC accepts the proposed changes.
- If the FERC does not accept all changes, PJM will adapt language accordingly.



Manual 15 Supporting Language

- ~116 Pages (Effective Date 4/20/2016 Revision 27)
- Overall Layout of Manual
 - Introduction
 - Applicable to all unit types
 - Unit specific differences (Nuclear, CC, CT, Hydro, DR, Wind...)
 - Opportunity Cost Calculator
 - Attachments
 - Exhibits

- Details on how to create your Cost-Based Offer
- Cost-Based Offers are used when units are committed for transmission constraints or if they fail the TPS test
- Components of Cost (Start-up, No-Load, Incremental)
- What happens if a cost is Undefined (Section 1.8)

- Heat Rate
- Performance Factor
- Fuel Cost Policy Guidelines
- Modification to Fuel Cost Policies
- Total Fuel Related Costs
- Emissions, Start, No-Load
- VOM
- Synchronized Reserve
- Regulation Service

To use this Manual, **read sections one and two**, then refer to the unit type section for additional information.

Section 3: Nuclear Unit Cost Guidelines

Section 4: Fossil Steam Unit Cost Development

Section 5: Combined Cycle (CC) Cost Development

Section 6: Combustion Turbine (CT) and Diesel Engine Costs

Section 7: Hydro

Section 8: Demand Response (DR)

Section 9: Wind Units

Section 10: Solar Units

Section 11: Energy Storage

- 2.1 Heat Rates
- 2.2 Performance Factors
- 2.3 Fuel Cost Guidelines
- 2.4 Start Cost
- 2.5 No Load
- 2.6 Variable Maintenance Cost
- 2.7 Synchronized Reserve
- 2.8 Regulation Service

- X.1 – Heat Rate (unit specific)
- X.2 – Performance Factors (unit specific)
- X.3 – Fuel Cost (unit specific)
- X.4 – Start Cost (unit specific)
- X.5 – No Load (unit specific)
- X.6 – Variable Maintenance Cost (unit specific)
- X.7 – Synchronized Reserve (unit specific)
- X.8 – Regulation Service (unit specific)

- Opportunity Cost Policy
- Basis for Including in Cost Offers
- Calculation Methods
 - Option 1- Long Term
 - Option 2- Short Term
- Details on Options

- FERC Accounts/No-Load Calculation Example
- Handy Whitman Index
- VOM Examples
 - Steam
 - Nuclear
 - Combined Cycle
 - Combustion Turbine
- Immature Units Example
- 700 run hour examples

(1) a requirement for Market Participants to submit Fuel Cost Policies that are approved by PJM prior to submission of Cost-Based Offers, and

(2) a penalty structure that will be applicable in the event that PJM or the IMM determines that a resource has submitted a Cost-Based Offer that does not comply with Schedule 2 of the Operating Agreement or the Cost Development Guidelines in Manual 15.

2.3 Fuel Cost Policies and Guidelines

~~All Unit Owner Market Sellers who submit a non-zero cost-based offer must have submit an approved fuel cost policy in accordance with section 2.3.1 in this manual. to the PJM MMU pursuant to the Cost Methodology and Approval Process described in this manual.—The fuel cost policy will be submitted in MIRA, or other system(s) made available for submission of such data. Submission to MIRA, or other system(s) made available is considered submission to PJM and the MMU and begins the process. ,from which it will be forwarded to PJM by the MMU.~~

2.3.1 Submission of and/or Modifications to Fuel Cost Policies

On an annual basis, all Market Sellers will be required to either submit an updated Fuel Cost Policy that complies with all applicable provisions of Schedule 2 of the Operating Agreement and this manual, or confirm that their currently effective Fuel Cost Policy still conforms to all applicable provisions thereof, pursuant to the procedures and deadlines specified in this manual. Market Sellers must submit such information to PJM and the MMU by no later than June 15 of each year. PJM shall notify the Market Seller in writing, with a copy to the MMU, whether the updated Fuel Cost Policy is approved or rejected by no later than November 1.

2.3.1 Submission of and/or Modifications to Fuel Cost Policies (Cont'd)

PJM and the MMU will jointly review any policy submitted for an annual review along with the supporting documentation. Market Sellers shall have five (5) business days to provide additional documentation or information on any request from PJM and the MMU. Failure to meet a data request deadline may result in PJM rejection of the policy. If PJM rejects a Market Seller's updated Fuel Cost Policy, PJM must include an explanation for why the Fuel Cost Policy was rejected in its written notification and will establish a deadline for all required updates to the policy.

2.3.1 **Submission of and/or Modifications to Fuel Cost Policies (Cont'd)**

Fuel Cost Policy updates may also be submitted outside of the annual review period.

- If a Market Seller has an approved Fuel Cost Policy currently in place and needs to alter it in order to conform it to the provisions of this Manual or any applicable provisions of PJM's governing documents
- If any action by a government or regulatory agency external to a Market Seller that results in a need for the Market Seller to change its method of fuel cost calculation, the affected Market Seller may immediately submit a an updated Fuel Cost Policy for evaluation,

2.3.1 **Submission of and/or Modifications to Fuel Cost Policies (Cont'd)**

- If PJM requests a Market Seller to submit an updated Fuel Cost Policy the Market Seller shall provide the updated policy to PJM and the MMU within 5 business days,
- Or the Market Seller will be offering a new resource into PJM's Energy Market without an existing Fuel Cost Policy.

For existing resources, the Market Seller's previously approved fuel cost policy will be used for making cost based offers while the new policy is under evaluation.

2.3.1 Submission of and/or Modifications to Fuel Cost Policies (Cont'd)

PJM and the MMU will have an initial 30 business days for review of a policy submitted outside the annual review period. Market Sellers shall have 5 business days to provide additional documentation or information on any request from PJM and the MMU. Failure to meet a data request deadline may result in PJM rejection of the policy. PJM has 5 business days after the last Market Seller submittal to provide approval or rejection of the Fuel Cost Policy. If PJM rejects a Market Seller's updated Fuel Cost Policy, PJM must include an explanation for why the Fuel Cost Policy was rejected in its written notification and will establish a deadline for all required updates to the policy.

2.3.1 Submission of and/or Modifications to Fuel Cost Policies (Cont'd)

If PJM revokes a Market Seller's approved Fuel Cost Policy, the Market Seller must immediately submit an updated Fuel Cost Policy to PJM and the MMU for evaluation. The review process for Fuel Cost Policies submitted outside the annual review period will be followed. Market Sellers without an approved Fuel Cost Policy are not allowed to submit non-zero Cost-Based Offers into the PJM Energy Market and will be assessed a penalty as described in PJM's Operating Agreement Schedule 2.



Undefined Cost Methodology and Approval Process – Section 1.8

1.8 **Undefined** Cost Methodology and Approval Process

A ~~PJM Member~~ Market Seller which seeks ~~to obtain and exemption, exception or change to any time frame, process, methodology, calculation or policy set forth in this Manual or the~~ approval of any cost that is not specifically permitted by the ~~PJM Tariff, PJM Operating Agreement or~~ this Manual shall submit a request to ~~PJM and the PJM Market Monitoring Unit (MMU)~~ for consideration and determination along with documentation supporting its request, ~~except as otherwise specified herein.~~

After receipt of such a request, the ~~PJM~~ MMU shall notify the ~~PJM Member~~ Market Seller and PJM of its determination as to whether the request raises market power concerns no later than fifteen (15) calendar days after the submission of the request. ~~If the PJM Member and the PJM MMU agree on determination of the request, the request shall be deemed to be approved.~~ PJM will review the request and notify the Market Seller and MMU whether the request is approved no later than thirty (30) calendar days after submission of the request.

~~If the PJM member and the PJM MMU cannot agree on the determination of the request, the PJM member may submit its request to PJM in writing for consideration and approval. In its written request to PJM, the PJM member must notify PJM of all prior determinations of the PJM MMU with respect to any such request and must provide a copy of such request to the PJM MMU within one (1) calendar day of submitting the request to PJM.~~

~~This process shall be referred to in this Manual as the “Cost and Methodology and Approval Process.”~~

Appendix

- Capacity Deficiency **penalty** is no longer part of the Hourly Offers filing
- Penalty **calculation** did not change however it applies whenever you submit an offer not in accordance with an approved Fuel Cost Policy or you don't have an approved Fuel Cost Policy
- Removed Administrative Penalties
- Fuel Cost Policy Annual vs. Interim, and which policy applies **during the process**
- Reject vs. Revoke Language

(d) A Market Seller may only submit a non-zero Cost-Based Offer into the PJM Interchange Energy Market for a generation resource if it has a PJM-approved Fuel Cost Policy for such generation resource.

(e) A Market Seller shall provide a Fuel Cost Policy to PJM and the Market Monitoring Unit for each generation resource that it intends to offer into the PJM Interchange Energy Market, for each fuel type utilized by the resource. The Market Seller shall submit the initial Fuel Cost Policy for a generation resource to PJM and the Market Monitoring Unit for review by no later than 45 days prior to the Market Seller's initial submittal of a cost-based offer for the resource and shall update existing Fuel Cost Policies consistent with the annual update requirements set forth below in subsection (k). The basis for the Market Monitoring Unit's review is described in PJM Tariff, Attachment M-Appendix. PJM shall consult with the Market Monitoring Unit, and consider any input and advice timely received from the Market Monitoring Unit, in its determination of whether to approve a Market Seller's Fuel Cost Policy. After it has completed its evaluation of the request, PJM shall notify the Market Seller in writing, with a copy to the Market Monitoring Unit, whether the Fuel Cost Policy is approved or rejected. If PJM rejects a Market Seller's Fuel Cost Policy, PJM shall include an explanation for why the Fuel Cost Policy was rejected in its written notification.

- (f) PJM shall review and approve a Fuel Cost Policy if it:
 - (i) Provides information sufficient for the verification of the Market Seller's fuel procurement practices, as further described below and in PJM Manual 15, and how those practices are utilized to determine cost-based offers the Market Seller submits into the PJM Interchange Energy Market;
 - (ii) Reflects the Market Seller's applicable commodity and/or transportation contracts (to the extent it holds such contracts), and sets forth all applicable indices as a measure that PJM can use to verify how anticipated spot market purchases are utilized in determining fuel costs;
 - (iii) Provides a detailed explanation of the basis for and reasonableness of any applicable adders included in determining fuel costs in accordance with PJM Manual 15;
 - (iv) Accounts for situations where applicable indices or other objective market measures are not sufficiently liquid by documenting the alternative means actually utilized by the Market Seller to price the applicable fuel used in the determination of its cost-based offers, such as documented quotes for the procurement of natural gas; and
 - (v) Adheres to all requirements of PJM Manual 15 applicable to the generation resource.

(g) To the extent a Market Seller proposes alternative measures to document its fuel costs in its Fuel Cost Policy for a generation resource, the Market Seller shall explain how such alternative measures are consistent with or superior to the standard specified in subsection (f) above, accounting for the unique circumstances associated with procurement of fuel to supply the generation resource.

(h) If PJM determines that a Fuel Cost Policy submitted for review does not contain adequate support for PJM to make a determination as to the acceptability of any portion of the proposed policy consistent with the standards set forth above, PJM shall reject the Fuel Cost Policy. If PJM rejects the Fuel Cost Policy, the Market Seller's previously PJM-approved Fuel Cost Policy shall apply to all of the Market Seller's cost-based offers until such time as, subject to the review process set forth below in subsection (k), PJM approves a new Fuel Cost Policy for the Market Seller.

(i) If, after having approved a Fuel Cost Policy, PJM determines, with input and advice timely received from the Market Monitoring Unit, that the Market Seller's procurement practices or the method for determining other components of cost-based offers is no longer consistent with the approved Fuel Cost Policy, this Schedule or PJM Manual 15, PJM may revoke its approval of the Fuel Cost Policy, and Market Seller shall be required to submit a new Fuel Cost Policy for approval pursuant to the process and deadlines set forth in PJM Manual 15. If PJM revokes a Market Seller's previously approved Fuel Cost Policy, PJM shall notify the Market Seller in writing, with a copy to the Market Monitoring Unit, and include an explanation for the revocation. Upon revocation of a Fuel Cost Policy, the penalty referenced in subsection (l) below shall apply beginning on the day after PJM issues the written notification of revocation to the Market Seller, with no additional requirement for PJM to provide any further notice to the Market Seller.

(j) Each Market Seller shall include in its Fuel Cost Policy the following information, as further described in the applicable provisions of PJM Manual 15:

(i) For all Fuel Cost Policies, regardless of fuel type, the Market Seller shall provide a detailed explanation of the Market Seller's established method of calculating fuel costs, indicating whether fuel purchases are subject to a contract price and/or spot pricing, and specifying how it is determined which of the contract prices and/or spot market prices to use. The Market Seller shall include its method for determining commodity, handling and transportation costs.

(ii) For Fuel Cost Policies applicable to generation resources using a fuel source other than natural gas, the Market Seller shall adhere to the following guidelines:

1. Fuel costs for solar, Energy Storage Resources and run-of-river hydro resources shall be zero.
2. Fuel costs for nuclear resources shall not include in-service interest charges whether related to fuel that is leased or capitalized.
3. For Pumped Storage Hydro resources, fuel cost shall be determined based on the amount of energy necessary to pump from the lower reservoir to the upper reservoir.
4. For wind resources, the Market Seller shall identify how it accounts for renewable energy credits and production tax credits.
5. For solid waste, bio-mass and landfill gas resources, the Market Seller shall include the costs of such fuels even when the cost is negative.

(iii) For emissions costs, Market Sellers shall report the emissions rate of each generation resource, the method for determining the emissions allowance cost, and the frequency of updating emission rates.

(iv) A Fuel Cost Policy may include any applicable Maintenance Adders. Such adders must be reviewed at least annually by the Market Seller and be changed if they are no longer accurate. Maintenance Adders cannot include any costs that are included in the generation resource's Avoidable Cost Rate.

(v) Market Sellers shall report, for all of the generation resource's operating modes, fuels, and at various operating temperatures, the incremental, no load and start heat requirements, the method of developing heat inputs, and the frequency of updating heat inputs.

(vi) A Fuel Cost Policy shall include any applicable unit specific performance factors, and the method used to determine them, which may be modified seasonally to reflect ambient conditions.

(vii) A Fuel Cost Policy shall include the cost-based Start Cost calculation for the generation resource, and identify for each temperature state the starting fuel (MMBtu), station service (MWh), start Maintenance Adder, and any Start Additional Labor Cost.

(viii) A Fuel Cost Policy shall also include any other incremental operating costs included in a Market Seller's cost-based offer for a resource, including but not limited to the consumables used for operation and the marginal value of costs in terms of dollars per MWh or dollars per unit of fuel, along with all applicable descriptions, calculation methodologies associated with such costs, and frequency of updating such costs.

(k) On an annual basis, all Market Sellers will be required to either submit to PJM and the Market Monitoring Unit an updated Fuel Cost Policy that complies with this Schedule 2 and PJM Manual 15, or confirm that their currently effective and approved Fuel Cost Policy remains compliant, pursuant to the procedures and deadlines specified in PJM Manual 15. Market Sellers must submit such information by no later than June 15 of each year. PJM shall consult with the Market Monitoring Unit, and consider any input timely received from the Market Monitoring Unit, in its determination of whether to approve a Market Seller's updated Fuel Cost Policy. After it has completed its evaluation of the request, PJM shall notify the Market Seller in writing, with a copy to the Market Monitoring Unit, of its determination whether the updated Fuel Cost Policy is approved or rejected by no later than November 1. If PJM rejects a Market Seller's updated Fuel Cost Policy, in its written notification, PJM shall provide an explanation for why the Fuel Cost Policy was rejected. If a Market Seller desires to update its Fuel Cost Policy, or PJM determines either on its own or based on input received from the Market Monitoring Unit, that the Market Seller must update its Fuel Cost Policy outside of the annual review process, the Market Seller shall follow the applicable processes and deadlines specified in PJM Manual 15.

(I) If upon review of a Market Seller's cost-based offer, PJM determines that the offer is not in compliance with the Market Seller's PJM-approved Fuel Cost Policy and the Market Monitoring Unit agrees with that determination, or the Market Monitoring Unit determines that the offer is not in compliance with the Market Seller's PJM-approved Fuel Cost Policy and PJM agrees with the Market Monitoring Unit's determination, or the Market Seller does not have a PJM-approved Fuel Cost Policy, the Market Seller shall be subject to the following penalty summed for each hour that the offer applied:

$$\Sigma \text{ Penalty}_{dh} = \frac{\min(d, 15)}{20} \times \text{LMP}_h \times \text{MW}_h$$

where:

d is the greater of one and the number of days since PJM first notified the Market Seller of PJM's and the Market Monitoring Unit's agreement regarding applicability of the penalty

h is the applicable hour of the day for which the offer applies

LMP_h is the real-time LMP at the applicable pricing location for the resource for the hour

MW_h is the available capacity of the resource for the hour

All charges collected pursuant to this provision shall be allocated by Load Ratio Share to all Load Serving Entities in the PJM Region.

If upon review of a Market Seller's cost-based offer PJM and the Market Monitoring Unit disagree about whether the offer is in compliance with the Market Seller's PJM-approved Fuel Cost Policy, PJM and/or the Market Monitoring Unit may confidentially refer the matter to FERC Office of Enforcement for resolution and determination whether the applicable penalties should be assessed.

(m) Nothing in this Schedule 2 is intended to abrogate or in any way alter the responsibility of the Market Monitoring Unit to make determinations about market power pursuant to the PJM Tariff, Attachment M and Attachment M-Appendix.

- Market Seller submits proposed Fuel Cost Policy to PJM & MMU
- PJM & MMU has 30 business days for initial review & response
 - Upon request for additional information from PJM and/or the MMU, Market Sellers have 5 business days to submit requested information
 - Negotiation will continue in a cycle as long as progress is made
- PJM and/or the MMU have 5 business days from receipt of additional information to provide a response which could include approval, rejection, or request for additional information

If PJM and the MMU agree that an offer is not compliant with a Market Seller's Fuel Cost Policy the Penalty will be calculated using the Section (I) formula.

If PJM and the MMU do not agree the Market Seller may be confidentially referred to FERC Office of Enforcement by PJM and/or the Market Monitoring Unit.

Maintenance Adder:

“Maintenance Adder” shall mean an adder that may be included to account for variable operation and maintenance expenses in a Market Seller’s Fuel Cost Policy. The Maintenance Adder is calculated in accordance with the applicable provisions of PJM Manual 15, and may only include expenses incurred as a result of electric production.

Start Additional Labor Costs:

“Start Additional Labor Costs” shall mean additional labor costs for startup required above normal station manning levels.

Fuel Cost Policy:

“Fuel Cost Policy” shall mean the document provided by a Market Seller to PJM and the Market Monitoring Unit in accordance with PJM Manual 15 which reflects the Market Seller’s methodologies used to price fuel and compute the Market Seller’s total fuel-related costs applicable to cost-based offers for a generation resource.