

## SCHEDULE 2 - COMPONENTS OF COST

### 1. GENERAL COST PROVISIONS

#### 1.1 Permissible Components of Cost-based Offers of Energy.

(a) Each Market Participant obligated to sell energy on the PJM Interchange Energy Market at cost-based rates may include the following components or their equivalent in the determination of costs for energy supplied to or from the PJM Region:

For generating units powered by boilers

Firing-up cost

Peak-prepared-for maintenance cost

For generating units powered by machines

Starting cost from cold to synchronized operation

For all generating units

Incremental fuel cost

Incremental maintenance cost

No-load cost during period of operation

Incremental labor cost

Emission allowances/adders

Maintenance Adders

Ten percent adder

Other incremental operating costs

For a generating unit that is subject to operational limitations due to energy or environmental limitations imposed on the generating unit by Applicable Laws and Regulations, the Market Participant may include in the calculation of its “other incremental operating costs” an amount reflecting the unit-specific Energy Market Opportunity Costs expected to be incurred. Such unit-specific Energy Market Opportunity Costs are calculated by forecasting Locational Marginal Prices based on future contract prices for electricity using PJM Western Hub forward prices, taking into account historical variability and basis differentials for the bus at which the generating unit is located for the prior three year period immediately preceding the relevant compliance period, and subtract therefrom the forecasted costs to generate energy at the bus at which the generating unit is located, as specified in more detail in PJM Manual 15. If the difference between the forecasted Locational Marginal Prices and forecasted costs to generate energy is negative, the resulting Energy Market Opportunity Cost shall be zero. Notwithstanding the foregoing, a Market Participant may submit a request to PJM for consideration and approval of an alternative method of calculating its Energy Market Opportunity Cost if the standard methodology described herein does not accurately represent the Market Participant’s Energy Market Opportunity Cost.

For a generating unit that is subject to operational limitations because it only has a limited number of starts or available run hours resulting from (i) the physical equipment limitations of the unit, for up to one year, due to original equipment manufacturer recommendations or insurance carrier restrictions, or (ii) a fuel supply limitation, for up to one year, resulting from an event of Catastrophic Force Majeure, the Market Participant may include in the calculation of its “other incremental operating costs” an amount reflecting the unit-specific Non-Regulatory Opportunity Costs expected to be incurred. Such unit-specific Non-Regulatory Opportunity Costs are calculated by forecasting Locational Marginal Prices based on future contract prices for electricity using PJM Western Hub forward prices, taking into account historical variability and basis differentials for the bus at which the generating unit is located for the prior three year period immediately preceding the period of time in which the unit is bound by the referenced restrictions, and subtract therefrom the forecasted costs to generate energy at the bus at which the generating unit is located, as specified in more detail in PJM Manual 15. If the difference between the forecasted Locational Marginal Prices and forecasted costs to generate energy is negative, the resulting Non-Regulatory Opportunity Cost shall be zero.

(b) All fuel costs shall employ the marginal fuel price experienced by the Member.

## **1.2 Method of Determining Cost Components.**

The PJM Board, upon consideration of the advice and recommendations of the Members Committee, shall from time to time define in detail the method of determining the costs entering into the said components, and the Members shall adhere to such definitions in the preparation of incremental costs used on the Interconnection.

## **2. FUEL COST POLICY**

### **2.1 Approved Fuel Cost Policy Requirement for Non-Zero Cost-based Offer.**

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 consistent with each fuel type for such generation resource.

### **2.2 Fuel Cost Policy Approval Process.**

(a) 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 its 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 expected 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 section 2.6. For each new generation resource for which the Market Seller does not have commercial operating data, the Market Seller shall submit a provisional Fuel Cost Policy, which describes the Market Seller’s methodology to procure and price fuel and includes all available operating data, to PJM and the Market Monitoring Unit for review and approval by no later than forty five (45) calendar days prior to the Market Seller’s

expected initial submittal of a cost-based offer for the resource. Within ninety (90) calendar days of the commercial operation date of the generation resource, the Market Seller shall submit to PJM and the Market Monitoring Unit for review an updated Fuel Cost Policy reflecting actual commercial operating data of the resource. The basis for the Market Monitoring Unit's review is described in the 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 submitted Fuel Cost Policy, 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.

(b) PJM and the Market Monitoring Unit will have an initial thirty (30) Business Days for review of a submitted policy. Market Sellers shall have five (5) Business Days or an alternative deadline agreed to by PJM, to provide additional documentation or information on any request from PJM or the Market Monitoring Unit. If the Market Seller does not believe it can provide the information within five (5) Business Days, it can request an alternative deadline for submission of the data from PJM no later than one (1) Business Day before the due date of the request for additional data, and if PJM consents to extend the deadline, PJM will advise the Market Seller and the Market Monitoring Unit of the new deadline. If the Market Monitoring Unit makes a request directly to the Market Seller, the Market Monitoring Unit shall, within one (1) Business Day, inform PJM of such request at the time it is made. Failure to meet a data request deadline may result in PJM's rejection of the policy. If additional documentation or information has been requested by PJM or the Market Monitoring Unit, PJM has five (5) Business Days after the deadline for the Market Seller's submittal of such additional information or documentation to notify the Market Seller and Market Monitoring Unit of its approval or rejection of the Fuel Cost Policy.

### **2.3 Standard of Review.**

(a) PJM shall review and approve a Fuel Cost Policy if it meets the requirements set forth in subsections 2.3(a)(i) through (v) below. PJM shall reject Fuel Cost Policies that fail to meet such requirements and that do not accurately reflect the applicable costs, such as the fuel source, transportation cost, procurement process used, applicable adders, commodity cost, or provide sufficient information for PJM to verify the Market Seller's fuel cost at the time of the Market Seller's cost-based offer. 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. A Fuel Cost Policy must:

(i) Provide 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) Reflect the Market Seller's applicable commodity and/or transportation contracts (to the extent it holds such contracts) and the Market Seller's method of calculating delivered

fossil fuel cost, limited to inventoried cost, replacement cost or a combination thereof, that reflect the way fuel is purchased or scheduled for purchase, and set 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) Provide 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) Account 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) Adhere to all requirements of PJM Manual 15 applicable to the generation resource.

(b) 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 section 2.3(a) above, accounting for the unique circumstances associated with procurement of fuel to supply the generation resource.

(c) 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 section 2.6 below, PJM approves a new Fuel Cost Policy for the Market Seller.

## **2.4 Revocation of Approved Fuel Cost Policies.**

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 section 5(a) 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.

## **2.5 Information Required To Be Included In Fuel Cost Policies.**

(a) 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) 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.

(iv) 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.

(v) 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.

(vi) 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.

## **2.6 Periodic Update and Review of Fuel Cost Policies.**

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 this Schedule 2 and the PJM Manual 15.

## **2.7 Market Monitoring Unit Review For Market Power Concerns.**

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 Tariff, Attachment M and Tariff, Attachment M-Appendix.

# **3. EMISSION ALLOWANCES/ADDERS**

## **3.1 Review of Emissions Allowances/Adders.**

(a) 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. Such adders must be submitted and reviewed at least annually by PJM and be changed if they are no longer accurate.

(b) Market Sellers may submit emissions cost information to PJM and the Market Monitoring Unit as part of the information it submits during the annual Fuel Cost Policy review process, described in section 2.6 of this Schedule. The basis for the Market Monitoring Unit's review is described in Tariff, Attachment M-Appendix, section II.A.2. 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 emissions costs.

## 4. MAINTENANCE ADDERS

### 4.1 Review of Maintenance Adders.

- (a) Maintenance Adders must be submitted and reviewed at least annually by PJM 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.
- (b) Market Sellers may submit Maintenance Adder information to PJM and the Market Monitoring Unit as part of the information it submits during the annual Fuel Cost Policy review process, described in section 2.6 of this Schedule. The basis for the Market Monitoring Unit's review is described in Tariff, Attachment M-Appendix, section II.A.2. 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 maintenance costs.

## 5. PENALTY PROVISIONS

### 5.1 Penalties.

- (a) 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 or this Schedule 2 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, or PJM determines that any portion of the cost-based offer is not in compliance with this Schedule 2, the Market Seller shall be subject to the following penalty, *which shall be greater than or equal to \$0*, summed for each hour that the offer applied:

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

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. *If PJM notifies the Market Seller of its non-compliant cost-based offer after the Market Seller has ceased submitting non-compliant cost-based offers, d shall be equal to one (1).*

*h* is the applicable hour of the day for which the offer applies, *commencing on the Operating Day that the Market Seller receives notice of its non-compliant cost-based offer. If PJM notifies the Market Seller of its non-compliant cost-based offer after the Market Seller has ceased submitting non-compliant cost-based offers, h is the applicable hours of the last Operating Day for which a non-compliant cost-based offer was submitted.*

$LMP_h$  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 to Market Participants based on each Market Participant's real-time load ratio share for each applicable hour, as determined based on the Market Participant's total hourly load (net of operating Behind The Meter Generation, but not to be less than zero) to the total hourly load of all Market Participants in the PJM Region.

(b) Market Sellers that are assessed a penalty for non-compliance with an approved Fuel Cost Policy or the cost-based offer is not in compliance with the Market Seller's PJM-approved Fuel Cost Policy or this Schedule 2 shall be assessed penalties until the day after PJM determines that the Market Seller's cost-based offers are in compliance with the Market Seller's approved Fuel Cost Policy or in compliance with this Schedule 2. Such penalties will be assessed for no less than one (1) Operating Day.

(c) Market Sellers that are assessed a penalty for not having an approved Fuel Cost Policy shall be assessed penalties until the day after PJM approves the Market Seller's submitted Fuel Cost Policy. Such penalties will be assessed for no less than one (1) Operating Day.

(d) 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.

## **5.2 Rebuttal Period To Challenge Revocation of Fuel Cost Policy.**

Market Sellers who have a Fuel Cost Policy revoked by PJM will be provided a three (3) Business Day rebuttal period, starting from the date of revocation, to submit supporting documentation to PJM demonstrating that the revoked Fuel Cost Policy accurately reflects the fuel source, transportation cost, procurement process used, applicable adders, or commodity cost for such generation resource such that the Fuel Cost Policy accurately reflects the Market Seller's fuel procurement practices and methodology for pricing fuel. During the rebuttal period, if the Market Seller does not have a PJM-approved Fuel Cost Policy, it may not submit a non-zero cost-based offer. The penalty will still apply during the rebuttal period. However, if, upon review of the Market Seller's supporting documentation, PJM determines that the revoked policy accurately reflects the Market Seller's actual methodology used to develop the cost-based offer that was submitted at the time of revocation and that the Market Seller has not violated its Fuel Cost Policy, then PJM will refund to the Market Seller the penalty payments and make whole the Market Seller via uplift payments for the time period for which the applicable Fuel Cost Policy had been revoked and the generation resource was mitigated to its cost-based offer.