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| VCMRR Number | 009 | VCMRR Title | Calculation of the Minimum Requirements Fee |
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| Date | April 26, 2016 |
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| Market Segment | Investor Owned Utility (IOU) |

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| Comments |

On April 6, 2016, the Wholesale Market Subcommittee (WMS) voted to give guidance to the Resource Cost Working Group (RCWG) to draft language for Option 3. Luminant Energy would like to provide the attached clarification on option 3 utilizing the IMM’s June 30, 2015 comments.

The intent of option 3 is to allocate a minimum use fee across all volumes of fuel used by the resource. These volumes could include moving fuel to burn at the resource, moving fuel into storage and providing fuel to a 3rd party. Luminant’s comments focus on ensuring that fuel volumes are not counted twice. The double counting of fuel would result if volumes were included both when they are transported to storage and then again when they are transported to the resource and/or 3rd parties. Under Option 3, all fuel moved out of storage has been included in the fuel adder allocation when it was initially injected into storage. Luminant recommends these comments as only a clarification to the IMM’s comments.

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| Revised Cover Page Language |

None.

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| Revised Proposed Manual Language |

1. **Section 3: Verifiable Startup Costs**

This section of ERCOT’s Verifiable Cost Manual describes policies and procedures that relate to the submission of Verifiable Startup Costs.

1. **Verifiable Startup Costs Policies**
2. The components of startup costs are fuel consumption rates and incremental O&M costs. These are to be derived by applying financial and/or engineering analysis to manufacturer data, operational data, or the results of recent tests on a Resource.
3. Startup fuel consumption rates (MMBtu/start) must be submitted for all startup types (cold, intermediate, and hot) for a Filing Entity to be considered as having submitted Verifiable Startup Costs. However, if a Resource does not have a distinct start type which is analogous to intermediate startup (or if there are no costs specific to an intermediate start), the Filing Entity must assign a value to the intermediate startup costs equal to the hot startup costs.
4. Submitted startup fuel consumption rates and O&M costs will be reviewed by ERCOT and, upon approval, will be used prospectively to calculate Verifiable Startup Costs.
5. The Verifiable Startup Cost ($/start) for a Resource is the verified per-start fuel consumption rate (MMBtu/start)), adjusted by the Proxy Heat Rate (PHR) and value of X (VOX) multiplied by the relevant fuel price ($/MMBtu) plus the verified O&M costs for the Resource. See Appendix 5 for a description of the equation used by ERCOT to calculate Verifiable Startup Cost.
6. Fuel consumed from breaker open to Shutdown may be included as a Verifiable Startup Cost.
7. **Submitting Startup Costs**

Verifiable Startup Costs for a Resource represent a proxy for all of the costs incurred in order to bring a Resource online and make it available to produce power. Only the costs incurred from startup through LSL and from breaker open to Shutdown are permissible startup costs.

The nature of the data that a Filing Entity may submit is set forth below and also partially within Section 5 of the Protocols, which defines Verifiable Startup Costs as:

1. Adjusted fuel consumption rate per start (MMBtu/start) multiplied by a resource category generic fuel price (FIP, FOP, or $1.50 per MMBtu, as applicable); and

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| ***[VCMRR005: Replace paragraph 1 above with the following upon system implementation of NPRR664:]***1. Adjusted fuel consumption rate per start (MMBtu/start) multiplied by a resource category generic fuel price (FIPRr, FOP, or $1.50 per MMBtu, as applicable); and
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1. Unit-specific verifiable operation and maintenance expenses.
2. Startup Fuel Consumption

Fuel consumed during a startup is defined as the fuel consumed from first fire through LSL plus the fuel consumed from breaker open through Shutdown (Including auxiliary boiler fuel and auxiliary-equipment fuel or electrical power requirements), excluding normal plant heating.

It is expected that the amount of fuel consumed will be different for each of the three start types. If available, historical data must be used to determine the typical amount of fuel consumed per start for each start type. This typical per-start fuel consumption is to be determined in accordance with the following rules:

1. When possible, startup fuel consumption rates are to be based on the amount of fuel a Resource has historically consumed per start.
2. For a Filing Entity that does not submit seasonal data, submitted historical usage data should, for each start type, include fuel consumption rates for the lesser of the last 10 starts or every start within the past three (3) years. For a Filing Entity that submits seasonal data, submitted historical usage data should, for each start type, include fuel consumption rates for the lesser of the last three (3) starts or every start within the past three years for each season. For each start type, the Filing Entity shall submit the historical fuel consumption data, an average amount of historical fuel consumption, and the fuel consumption rate that the Resource believes represents the current startup fuel consumption rate.
3. If a Resource does not have the historical fuel consumption rates for each start described above, the Filing Entity must submit the aforementioned data that it does possess and may also include per-start fuel consumption rates based on manufacturer suggested values or tests which are ERCOT approved.
4. If a Filing Entity submits historical startup fuel consumption data on a per hour basis (MMBtu/hour), it must also provide proof of the average number of hours it requires to reach LSL for each startup type.
5. In its sole discretion, however, ERCOT may choose not to accept the Filing Entity’s submitted per-start fuel consumption rates if ERCOT determines that they do not represent a Resource’s “true” startup fuel consumption or that they have not been proven in sufficient detail.
6. Historical fuel consumption rates must be based on documented metered reads when available.

Adjustments to Verified Startup Fuel Consumption

Verified Startup Fuel Consumption is subject to two adjustments. The first adjustment is based on a Proxy Heat Rate that approximates Real Time revenues received by Resources while ramping between breaker close and LSL (see Appendices 5, Specification of Relevant Equations, and 6, Calculation and Application of Proxy Heat Rate and the Value of X). The second adjustment is based on a fuel adder (value of X – VOX or actual fuel cost) to account for the difference between spot fuel prices, transportation costs, and the fuel price utilized by ERCOT for the corresponding Resource, as described in Protocol Section 5.6.1.1, Verifiable Startup Costs, and Section 2, General Rules of Verifiable Costs, and Appendix 6 of this Verifiable Cost Manual. The fuel adder adjustment described in Section 2 and Appendix 6 applies to all Resource fuel types, including natural gas, fuel oil and solid fuel generators.

Additional Rules for Submitting Fuel Costs

1. Filing Entities may elect to submit an actual fuel adder ($/MMBtu) for each Resource for verification by ERCOT. For any Filing Entity that submits actual verifiable costs, the fuel adder will default to $0.50/MMBtu until the Filing Entity establishes an actual fuel adder in those verifiable costs and the Filing Entity must continue to provide actual fuel costs as prescribed in paragraph (2) below. The fuel adder is included in the value of X (VOX) as described in Appendix 6, Calculation and Application of Proxy Heat Rate and the Value of X.
2. Any Filing Entity that submits an actual fuel adder must provide documentation that establishes the historical costs for fuel, including transportation, spot fuel, and any additional verifiable cost associated with fuel contracts that can be easily differentiated from the standard commodity cost of fuel and clearly attributable to the Resource for the period. The fuel adder for a rolling 12-month period is the difference between the Filing Entity’s average fuel price paid (including all fees) during the period and the fuel price utilized by ERCOT for the corresponding Resource. The Filing Entity shall provide rolling 12-month supporting data to verify total fuel price for all purchased volumes to support the actual Resource fuel consumption. Data to support these costs should include, but are not limited to, accounting ledger entries, invoices, and copies of fuel contracts. In addition, the actual costs used to calculate the fuel adder may include, but are not limited to, the following categories: transportation, deliveries, storage, injection, withdrawal, imbalance, and minimum requirements fees. Other costs not described herein may be included and approved by ERCOT.

Note: Review and approval of fuel costs follows the same timeline as verifiable costs; however, ERCOT may require additional time to verify the fuel costs based on the complexity of the submission. In such case, ERCOT will notify the Filing Entity within 15 Business Days of submission if additional time is needed. For clarification on the submission timeline for the fuel adder, please see the table below. The fuel adder will be implemented the first day of the month after fuel costs have been approved.

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| **Submission Months** | **Submission Period** | **Approval Period** |
| September- February | April | May-June |
| March – August |  October | November-December |

Minimum Requirements Fee

1. A cost incurred by a Resource or Qualified Scheduling Entity (QSE) for transporting less fuel than the minimum required volume for the given time period, based on the QSE’s contract terms.
2. Represents a portion of the total costs of the fuel adder.
3. Allocated to the total volume of fuel transported per the terms of the QSE’s contract.. The fee will be calculated as shown below:

MRF ($/MMBtu) = TMRFD ($) / TF (MMBtu)

Where:

MRF = Minimum Requirements Fee

TMRFD = Total Minimum Requirements Fee Dollars

TF = Total Fuel Transported to storage, to a Resource net of supply from storage, and for third-party sales net of supply from storage.

Fuel Type Percentages

For each start type, the Filing Entity must provide documentation establishing the respective ratios of gas, oil, and solid fuel consumed during the startup through LSL sequence. Historical and/or manufacturer suggested ratios are to be submitted as percentages and in accordance with the manner of submitting startup fuel consumption data, detailed above. For each start type, the Filing Entity must calculate and submit:

* total fuel consumption per-start (MMBtu/start); and
* the ratio of each type of fuel consumed to the total amount of fuel consumed per startup.

Filing Entities with approved fuel consumption ratios for the associated Resource are to submit updated data to ERCOT if they subsequently use a different fuel type during startup and if they also anticipate doing so for any substantial period of time, whether due to fuel market conditions or otherwise.

Non-Fuel Startup Costs

Verifiable Non-Fuel Startup Costs represent a proxy for all non-fuel costs that a Resource incurs during the startup through LSL and from breaker open to shutdown sequence. The costs that ERCOT considers in calculating this proxy include incremental operation and maintenance costs (Verifiable O&M) that can reasonably be said to result from the Resource starting up. Verifiable O&M Costs include and incremental emission costs applicable to net generation between BC and LSL. For more information see *Section* 2: *General Rules of Verifiable Costs*.

To be included as a Verifiable O&M Cost of Startup, O&M costs must be submitted in accordance with *Section 9: Operating and Maintenance Cost Guidelines.* ERCOT will not approve submitted O&M startup costs if the amounts or the methods used to calculate them do not coincide with other O&M costs a Filing Entity has submitted, unless there is a reasonable, documented reason for doing so. For example, startup operating costs might be different because there are greater chemical, water or emissions costs during the startup sequence. Also, it might be reasonable to multiply an hours-based maintenance cost by the amount of time it takes to complete a startup to LSL sequence. Additionally, if maintenance costs are allocated on a per-start basis, it might be reasonable for the maintenance component of verifiable startup costs to differ per start type.

Start Type Descriptions

The following is a general description of startup costs per start type:

*Hot Startup Cost*

Hot startup cost is the expected cost to start a Resource, which is in the "hot" condition. Hot conditions vary unit by unit, but in general, a steam unit is hot through an overnight shutdown.

*Intermediate Startup Cost*

Intermediate startup cost is the expected cost to start a Resource that has recently been online and for which neither hot nor cold conditions are applicable.

*Cold Startup Cost*

Cold startup cost is the expected cost to start a Resource which is in the "cold" condition. Cold conditions vary unit by unit, but in general, a steam unit is cold after a two or three-day shutdown.

Table 1: Startup Verifiable Cost Data Requirements per Resource per start type

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| --- | --- |
| **Input Data**  | **Description** |
| **AFCRS (MMBtu/Start)** | **Fuel consumption rate per start** |
| **GASPERSU (%)** | **Gas fuel consumed per start as a percentage of total per start fuel consumption** |
| **OILPERSU (%)** | **Oil fuel consumed per start as a percentage of total per start fuel consumption** |
| **SFPERSU (%)** | **Solid fuel consumed per start as a percentage of total per start fuel consumption** |
| **O&M ($/start)** | **Verifiable O&M expenses per start** |