Cost Development Subcommittee Information Session: Maintenance Adder & Operating Cost Submission Process

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Performance Compliance
April 14, 2021

Agenda

- History of Maintenance Adder and Operating Cost Adders
- Submitting Maintenance Adder and Operating Cost Templates
- PJM Review Standards

History of Maintenance and Operating Cost Adders

What Are Variable Operations and Maintenance?

Variable Operations and Maintenance (VOM) costs are split into two distinct adders:

- **Maintenance Adder**
  Expenses associated with the repair or replacement of equipment due to wear and tear from electric production.

- **Operating Cost**
  Operating costs are expenses related to consumable materials used during unit operation.

Variable Operations and Maintenance Rules

Maintenance and Operating Cost Adders are recoverable through the energy market.

- Components of the cost-based energy offer

Incremental Energy Offer =	Fuel-Related Costs	+	Emissions Allowance Costs	+	10% Adder	+	**Maintenance Adder**	+	**Operating Cost Adder**

- Market Sellers may elect, but are not required, to include maintenance and operating costs in their cost-based energy offer

VOM Rules: Pre-February 2017

Prior to Feb. 3, 2017:

- Market Sellers expected to follow Manual 15 cost development guidelines, no formal review process
- No requirement in Schedule 2 of the Operating Agreement for PJM to review VOM adders
- Only repercussion for non-compliant adder was FERC referral

Timeline of Rule Changes

Feb. 3, 2017

PJM required to review VOM on annual basis *(Hourly Offers Order)*

April 15, 2019

FERC accepted changes to PJM's VOM rules allowing all units to include major maintenance costs

Feb. 11, 2020

Rule implemented that VOM may only be used in units approved *(e.g., $/hour, $/MWh)*

2021

No new rule changes. VOM process is the same as 2020

Rules resulting from PJM Hourly Offers Order:

- Market Sellers **must** submit Maintenance and Operating Cost Adders to PJM for review in order to include such adders in the unit's cost-based energy offer
- Adders must be submitted for review on an annual basis

- Market seller subject to penalty if:
  - Adders are used in cost-based offer prior to PJM review; or
  - Additional evidence determines that historical costs included in previous year's adder were not directly related to electric production, even if adder was previously reviewed by PJM

VOM Rules: May 2015–April 2019

Prior to April 15, 2019:

Combined cycles (CC) and combustion turbines (CT) could not include major inspections or overhauls in their energy offer.

Rule valid June 1, 2015 to April 15, 2019.

Market Sellers of other resource types, such as nuclear and steam, could include major inspection and overhaul costs in either energy or capacity, but not both.

Market Sellers could either submit operating cost under:

- VOM as one adder; or
- Include as an other fuel-related cost, defined in the Fuel Cost Policy

Effective April 15, 2019, as a result of the FERC Order on VOM:

- All unit types may include any cost directly related to electric production in their cost-based energy offer
  - Market Sellers may include major inspection and overhaul costs from current and previous years' history if they did not include such costs in the applicable delivery year's capacity offer
- Operating cost defined as separate adder with specific rules (addressed later in this presentation)
- Variable costs directly related to electric production cannot be included in a unit's capacity offer

Effective Feb. 11, 2020:

As part of the 2019 VOM compliance filing, PJM added a clarification that Market Sellers may only:

- Change the format of the Maintenance and Operating Cost Adder (e.g., $/MMBtu, $/MWh, $/start) during the annual review period; and

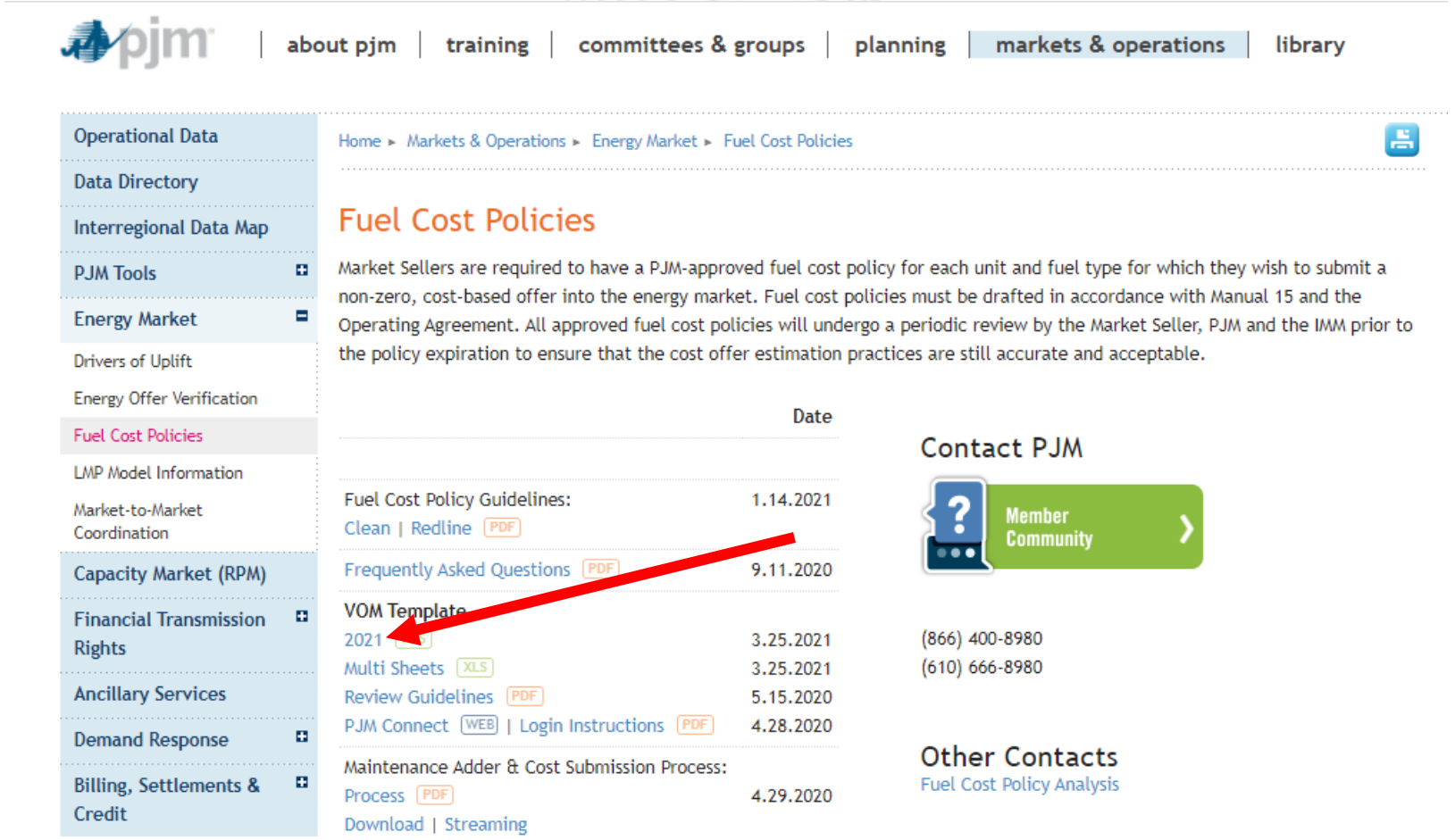
- Use the adder in its approved format (i.e., cannot be converted to a different unit of measure)

Submitting Maintenance Adders and Operating Cost Templates

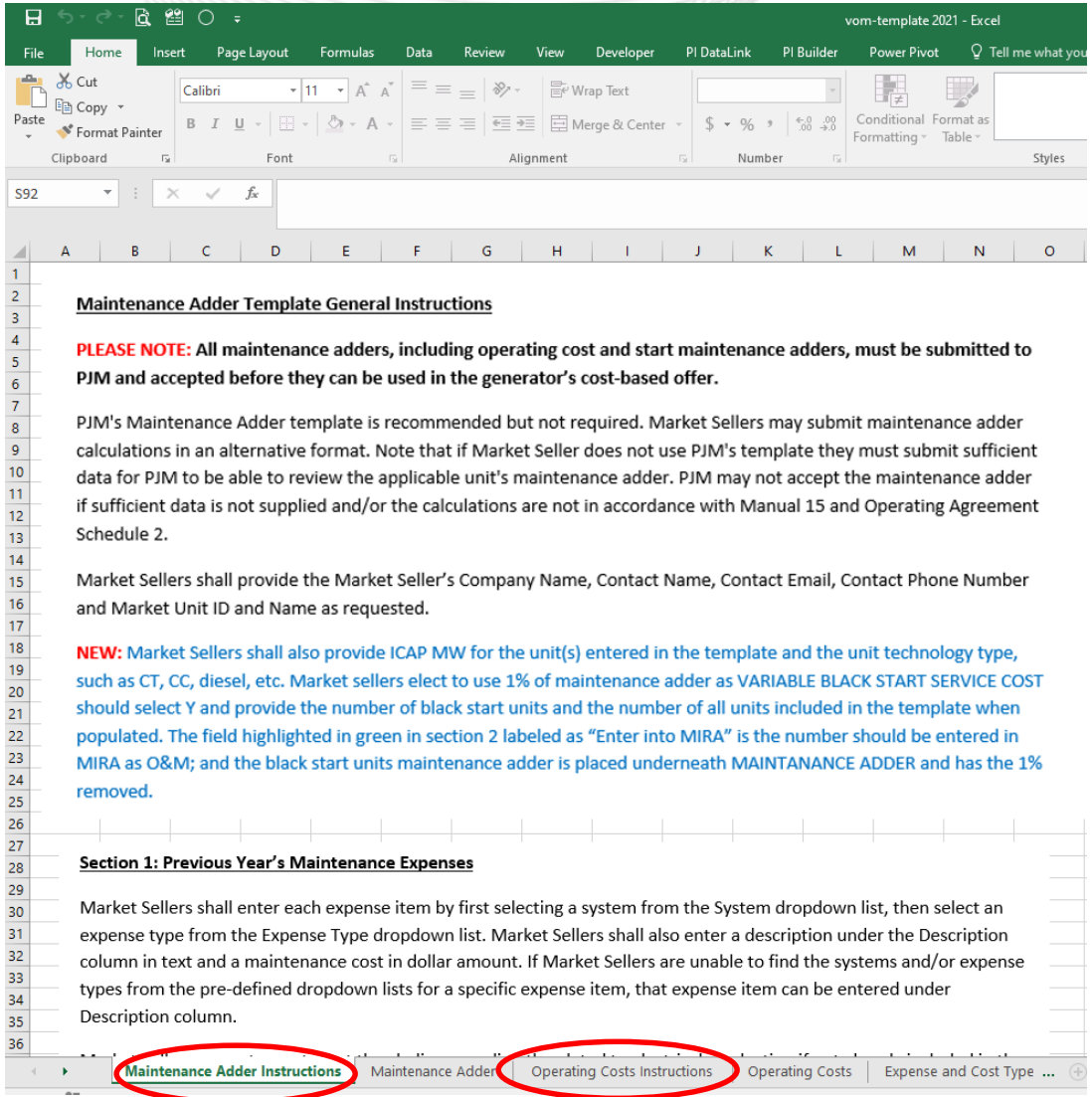
Maintenance Adder Template Overview

Find the 2021 VOM Template

https://pjm.com/markets-and-operations/energy/fuel-cost-policies.aspx



Template Instructions



Maintenance Adder Template Overview

Unit Information

Section 1: Previous Calendar Year (2020)'s Maintenance Expenses

Section 2: Total Historical Maintenance Cost

Maintenance Adder

Section 1:

- Maintenance System
- Maintenance Expense Type
- Description
- Cost

Section 2:

- Maintenance Period
- Historical Maintenance $
- Operating History
- Handy Whitman Index

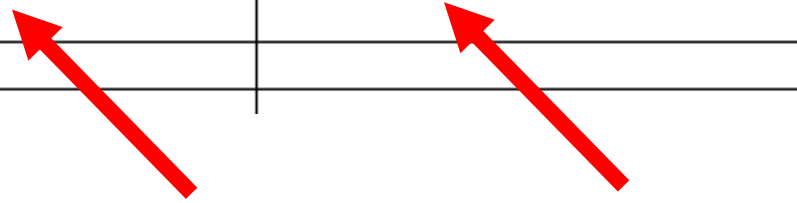
Unit Information – Maintenance Adder

UNIT INFORMATION	
Market Seller Name	
Contact Name	
Contact Email	
Contact Phone	
Market Unit ID and Name	
ICAP MW	
Unit Technology Type (i.e CT, CC, Sub-critical Coal, Landfill Diesel, etc.)	
Use 1% Maintenance Adder as VARIABLE BLACK START SERVICE COST? (Y/N)	

Section 1: Previous Year's Maintenance Expenses

SECTION 1: PREVIOUS YEAR'S MAINTENANCE EXPENSES	
INSTRUCTIONS:	Please add Previous Year's Maintenance Expenses below using the optional dropdowns provided. These must only be variable expenses directly related to electric production. *CANNOT INCLUDE: Any costs included in ACR and/or any other fixed costs. Note: Use of Maintenance Expense Type provided in the dropdown list is optional. If not used, Description must be provided. The full dropdown list can be found on 'Expense and Cost Type List' sheet.

Previous Year: 2020			
Maintenance System	**Maintenance Expense Type**	**Description**	**Cost**



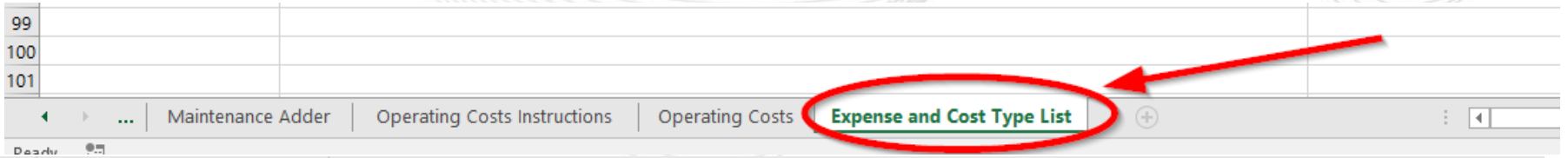
Dropdown List from Expense and Cost Types sheet

Section 1: Previous Year's Maintenance Expenses - Select Maintenance System

Manual 15, section 2.6.1: Maintenance systems directly related to electric production

- ✓ Steam Turbine
- ✓ Combustion Turbine
- ✓ Generator
- ✓ Boiler
- ✓ HRSG
- ✓ Main Steam
- ✓ Feed water
- ✓ Condensate
- ✓ Condenser
- ✓ Cooling Towers
- ✓ Transformers
- ✓ Fuel Systems
- ✓ Diesel

Section 1: Previous Year's Maintenance Expenses - Select Maintenance System and Expense Type



	A	B
1	**Maintenance Systems**	**Maintenance Expense Type**
2	Steam Turbine	Boiler Repairs/Replacement on Tubes, Pendents, Refractory, Fans, Casing, or Supports
3	Combustion Turbine	Heat Recovery Steam Generator Repairs/Overhauls
4	Generator	Repair/Replacements of Motors
5	Boiler	Repair/Replacements of Pumps
6	HRSG	Repair/Replacements of Valves and Pipes
7	Main Steam	Borescope/IGV inspection
8	Feedwater	Combustion/Gas Turbine Repairs/Overhauls/Replacements
9	Condensate	Variable LTSA Fees
10	Condenser	Equipment and Tool Rentals for Combustion Turbine Maintenance Activities
11	Cooling Towers	Repair/replacement/overhaul of generators
12	Transformers	Replacements of Inlet Filters
13	Fuel Systems	Maintenance overtime labor on systems directly related to electric production
14	Diesel	Replacements of Reverse Osmosis Cartridges
15		Starting Engine Repairs/Replacements
16		Repairs on pumps, pipes, valves, fans, motors, cooling tower fill, cooling tower structures, and supports
17		Cooling Towers - fans, structure, fan motor, fill, gear boxes repairs/replacement
18		Cleaning of fill, fans, and sumps
19		CEMS Repairs/Replacements

Section 1: Previous Year's Maintenance Expenses - Enter Description and Cost

- Description must be entered if Maintenance System or Maintenance Expense Type not selected
- Cost must be actual, not estimated

SECTION 1: PREVIOUS YEAR'S MAINTENANCE EXPENSES			
INSTRUCTIONS:	Please add Previous Year's Maintenance Expenses below using the optional dropdowns provided. These must only be variable expenses directly related to electric production. *CANNOT INCLUDE: Any costs included in ACR and/or any other fixed costs. Note: Use of Maintenance Expense Type provided in the dropdown list is optional. If not used, Description must be provided. The full dropdown list can be found on 'Expense and Cost Type List' sheet.		
Previous Year: 2020			
Maintenance System	**Maintenance Expense Type**	**Description**	**Cost**
Steam Turbine	Repair/Replacements of Valves and Pipes	Replacement of steam pipe #1	$ 3,000.00
Feedwater	Feedwater system equipment Repairs on Pumps, Pipes, Valves, and Supports	Replacement of valve #4	$ 4,000.00
		xyz	$ 5,000.00

Section 2: Total Historical Maintenance Cost

SECTION 2: TOTAL HISTORICAL MAINTENANCE COST

INSTRUCTIONS:	Please select from the drop down menu whether you are using a 10 or 20 year maintenance history and fill out the table below. For immature units, please fill out table below with actual available maintenance history. Note: If selecting Annual MWh, please only include hours with positive net MWhs.

Select Maintenance History: Actual < 10 ▼ **Operating History Units:** Annual MWh ▼

Year	Maintenance History Annual $	Operating History Annual MWh
2020	$ -	
2019		
2018		
2017		
2016		
2015		
2014		
2013		
2012		
2011		

2021	799	1.000
Handy Whitman		
YEAR INDEX ESCALATION FACTOR		
2020	779	1.026
2019	760	1.051
2018	745	1.072
2017	711	1.124
2016	714	1.119
2015	700	1.141
2014	672	1.189
2013	653	1.224
2012	645	1.239
2011	631	1.266

Section 2: Total Historical Maintenance Cost – Select Maintenance History

Actual < 10	Provide available maintenance annual $ and operating history less than 10 years
10	Provide 10 years of maintenance annual $ and operating history, cells highlighted in yellow
	Any extra years of data entered will not be included in the adder calculation
20	Provide 20 years of maintenance annual $ and operating history, cells highlighted in yellow

Section 2: Total Historical Maintenance Cost

– Operating History Unit of Measure

- Annual MWh
- Annual MMBtu
- Annual Starts
- Annual Hours
- Annual Equivalent Service Hours (ESH)

Operating History Units: Annual ESH

Operating History
Annual ESH

2021	799	1.000
Handy Whitman		
YEAR INDEX ESCALATION FACTOR		
2020	779	1.026
2019	760	1.051
2018	745	1.072
2017	711	1.124
2016	714	1.119
2015	700	1.141

	Cyclic Starting Factor		Cyclic Peaking Factor
Year	Start Equivalent Hours	Base Hours	Peak Equivalent Hours
2020			
2019			
2018			
2017			
2016			
2015			

- Enter the cyclic starting factor and cyclic peaking factor from the supporting documentation (Conversion factors for extra wear and tear from starts or peak-firing mode)
- Enter converted hours as cyclic equivalent hours

Section 2: Total Historical Maintenance Cost

– Enter Annual $ and Annual Operating History

Enter the same maintenance dollars as submitted last year for corresponding years

Ensure all maintenance dollars can be supported by documentation otherwise exclude

Enter the same operating history for corresponding years if operating history unit of measure unchanged

Enter converted operating history for corresponding years if operating history unit of measure changed

Section 2: Total Historical Maintenance Cost – Escalation Factor

- Handy Whitman Index
- Not editable by user
- Up to 20 years
- PJM updates annually
- Applies to a full calendar year

2021	799	1.000
Handy Whitman		
YEAR INDEX ESCALATION FACTOR		
2020	779	1.026
2019	760	1.051
2018	745	1.072
2017	711	1.124
2016	714	1.119
2015	700	1.141
2014	672	1.189
2013	653	1.224
2012	645	1.239
2011	631	1.266
2010	604	1.323
2009	578	1.382
2008	596	1.341
2007	546	1.463
2006	515	1.551
2005	493	1.621
2004	465	1.718
2003	441	1.812
2002	438	1.824
2001	425	1.880

2021 Maintenance Adder

- Formula used for calculation is based on data entered in sections 1 and 2
- Market seller can add a note if needed

2021 MARKET SELLER REQUESTED MAINTENANCE ADDER		
MAINTENANCE ADDER:	#DIV/0!	/ MWh

2021 Maintenance Adder for Black Start Units

Black Start units that included 1 percent of the total maintenance costs in the Black Start annual revenue requirement must multiply the Maintenance Adder by 99 percent

Use 1% Maintenance Adder as VARIABLE BLACK START SERVICE COST? (Y/N)	Y
Number of black start units	
Number of total units	

	Black Start		
Non Black Start	99%	MIRA	
			/unit/year

Example:

2021 MARKET SELLER REQUESTED MAINTENANCE ADDER			
MAINTENANCE ADDER:	$	10.00	/ MWh
Black Start Units MAINTENANCE ADDER:	$	9.90	/ MWh

Operating Costs Template Overview

Operating Costs Template Overview

Unit Information

Section 1: Previous Calendar Year (2020)'s Operating Costs

Section 2: Total Historical Operating Costs

Operating Cost Adder

Section 1:

- Operating Cost Type
- Description
- Cost

Section 2:

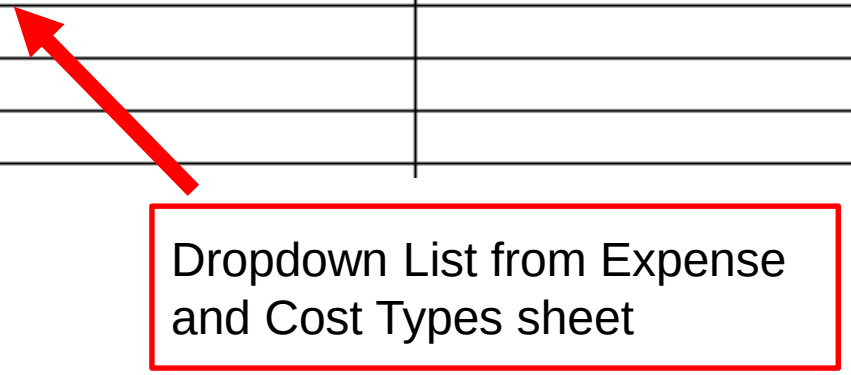
- Historical Operating Cost $
- Operating History
- Handy Whitman Index

Unit Information – Operating Costs

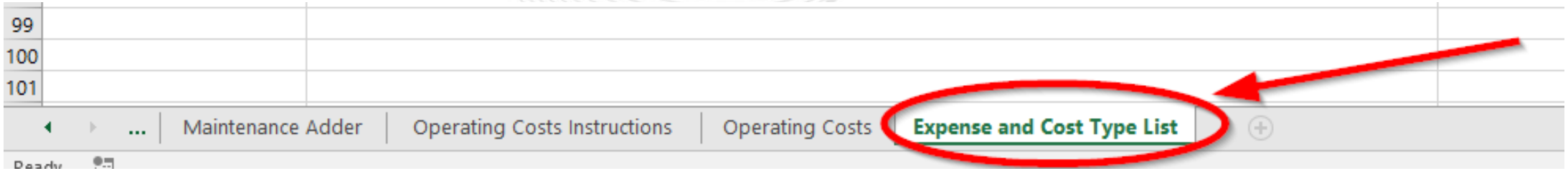
UNIT INFORMATION	
Market Seller Name	
Contact Name	
Contact Email	
Contact Phone	
Market Unit ID and Name	
ICAP MW	
Unit Technology Type (i.e CT, CC, Sub-critical Coal, Landfill Diesel, etc.)	

Section 1: Previous Year's Operating Costs

SECTION 1: PREVIOUS YEAR'S OPERATING COSTS		
INSTRUCTIONS:	Please add Previous Year's operating costs directly related to electric production. Note: Use of Operating Cost Type provided in the dropdown list is optional. If not used, Description must be provided. The full dropdown list can be found on 'Expense and Cost Type List' sheet.	
Previous Year: 2020		
Operating Cost Type	**Description**	**Cost**



Section 1: Previous Year's Operating Costs – Select Operating Cost Type



Maintenance Systems	Maintenance Expense Type
Steam Turbine	Boiler Repairs/Replacement on Tubes, Pendents, Refractory, Fans, Casing, or Supports
Combustion Turbine	Heat Recovery Steam Generator Repairs/Overhauls
Generator	Repair/Replacements of Motors
Boiler	Repair/Replacements of Pumps
HRSG	Repair/Replacements of Valves and Pipes
Main Steam	Borescope/IGV inspection
Feedwater	Combustion/Gas Turbine Repairs/Overhauls/Replacements
Condensate	Variable LTSA Fees
Condenser	Equipment and Tool Rentals for Combustion Turbine Maintenance Activities
Cooling Towers	Repair/replacement/overhaul of generators
Transformers	Replacements of Inlet Filters
Fuel Systems	Maintenance overtime labor on systems directly related to electric production
Diesel	Replacements of Reverse Osmosis Cartridges
	Starting Engine Repairs/Replacements
	Repairs on pumps, pipes, valves, fans, motors, cooling tower fill, cooling tower structures, and supports
	Cooling Towers - fans, structure, fan motor, fill, gear boxes repairs/replacement
	Cleaning of fill, fans, and sumps
	CEMS Repairs/Replacements
	Environmental, Selective Catalytic Reduction (SCR), CO Reduction Catalyst and Scrubber Repairs and Replacements

Operating Cost Type
Calibration Gases
Hydrogen and CO2 for Generator
Lubricants & Greases
Nitrogen
Make-Up Water
Ammonia
Hydrated Lime
Water treatment chemicals
Circ Water Treatment Chemicals
Cooling tower chemicals
Demin Water Treatment Trailers
Reagents
Sulfuric Acid
Engine Oil
Gear Box Oil
Hydrogen
Industrial Gas
Lube Oil
Urea

Section 1: Previous Year's Operating Costs – Enter Description and Cost

- Description must be entered if operating cost type not selected
- Costs must be actual, not estimated
- Example:

SECTION 1: PREVIOUS YEAR'S OPERATING COSTS	
INSTRUCTIONS:	Please add Previous Year's operating costs directly related to electric production. Note: Use of Operating Cost Type provided in the dropdown list is optional. If not used, Description must be provided. The full dropdown list can be found on 'Expense and Cost Type List' sheet.

Previous Year: 2020		
Operating Cost Type	**Description**	**Cost**
Hydrogen		$ 2,600.00
Ammonia		$ 1,200.00
Title V Fees – Variable		$ 15,000.00
	xyz	$ 16,000.00

Section 2: Total Historical Operating Cost

SECTION 2: TOTAL HISTORICAL OPERATING COST

INSTRUCTIONS:	Please fill out the table below using up to 5 years history. If less than 1 year of data entered, then please indicate length in Cell D58 as a note (i.e. 6 month rolling average). Note: If selecting Annual MWh, please only include hours with positive net MWhs.

Operating History Units: Annual MWh

Year	Operating Cost History Annual $	Operating History Annual MWh
2020	$ -	
2019		
2018		
2017		
2016		
Total Historical Operating Cost		$ 0.00
Total Annual MWh		-
Per Unit Operating Cost		#DIV/0! /MWh

2021	799	1.000
Handy Whitman		
YEAR INDEX ESCALATION FACTOR		
2020	779	1.026
2019	760	1.051
2018	745	1.072
2017	711	1.124
2016	714	1.119

Section 2: Total Historical Operating Cost

– Select Operating History Unit of Measure

Annual MWh

Annual MMBtu

– Enter Operating History

Enter same operating history for corresponding years if operating history unit of measure unchanged

Enter converted operating history for corresponding years if operating history unit of measure changed

Section 2: Total Historical Operating Cost

– Enter Annual Operating Cost $

Enter same operating dollars as submitted last year for corresponding years

Ensure operating cost dollars can be supported by documentation otherwise exclude

Total costs with history < 1 year requires a note for actual length (i.e. 6-month rolling average)

Section 2: Total Historical Operating Cost – Escalation Factor

- Handy Whitman Index
- Not editable by user
- PJM updates annually
- Operating costs can only be escalated with more than one year of history
- Up to 5 years

2021	799	1.000
Handy Whitman		
YEAR INDEX ESCALATION FACTOR		
2020	779	1.026
2019	760	1.051
2018	745	1.072
2017	711	1.124
2016	714	1.119

2021 Operating Cost Adder

- Formula for calculation is based on data entered in sections 1 and 2
- Market seller can add a note if needed
- Multi-sheet template available for different fuel types

2021 MARKET SELLER REQUESTED OPERATING COST ADDER		
OPERATING COST ADDER:	#DIV/0!	/MWh

How to Enter a SOM Template

UNIT INFORMATION

Market Seller Name	Company X
Contact Name	John Doe
Contact Email	jd@x.com
Contact Phone	666-444-6666
Market Unit ID and Name	12341234 - Vallery Forge CT 1
ICAP MW	100
Unit Technology Type (i.e CT, CC, Sub-critical Coal, Landfill Diesel, etc.)	CC

SECTION 1: PREVIOUS YEAR'S OPERATING COSTS

INSTRUCTIONS:	Please add Previous Year's operating costs directly related to electric production. Note: Use of Operating Cost Type provided in the dropdown list is optional. If not used, Description must be provided. The full dropdown list can be found on 'Expense and Cost Type List' sheet.

Previous Year: 2020

Operating Cost Type	Description	Cost

SECTION 2: TOTAL HISTORICAL OPERATING COST

INSTRUCTIONS: Please fill out the table below using up to 5 years history. If less than 1 year of data entered, then please indicate length in Cell D58 as a note (i.e. 6 month rolling average).
Note: If selecting Annual MWh, please only include hours with positive net MWhs.

Operating History Units: Annual MWh

Year	Operating Cost History Annual $	Operating History Annual MWh
2020	$ -	
2019		
2018		
2017		
2016		
Total Historical Operating Cost		$ 0.00
Total Annual MWh		-
Per Unit Operating Cost		#DIV/0! /MWh

2021	799	1.000
Handy Whitman		
YEAR INDEX ESCALATION FACTOR		
2020	779	1.026
2019	760	1.051
2018	745	1.072
2017	711	1.124
2016	714	1.119

2021 MARKET SELLER REQUESTED OPERATING COST ADDER

OPERATING COST ADDER:	#DIV/0!	/MWh	Using 2020 SOM value for CC: $1.41/MWh

Section 7 of the 2020 State of Market Report

Table 7-4 Average short run marginal costs: 2020

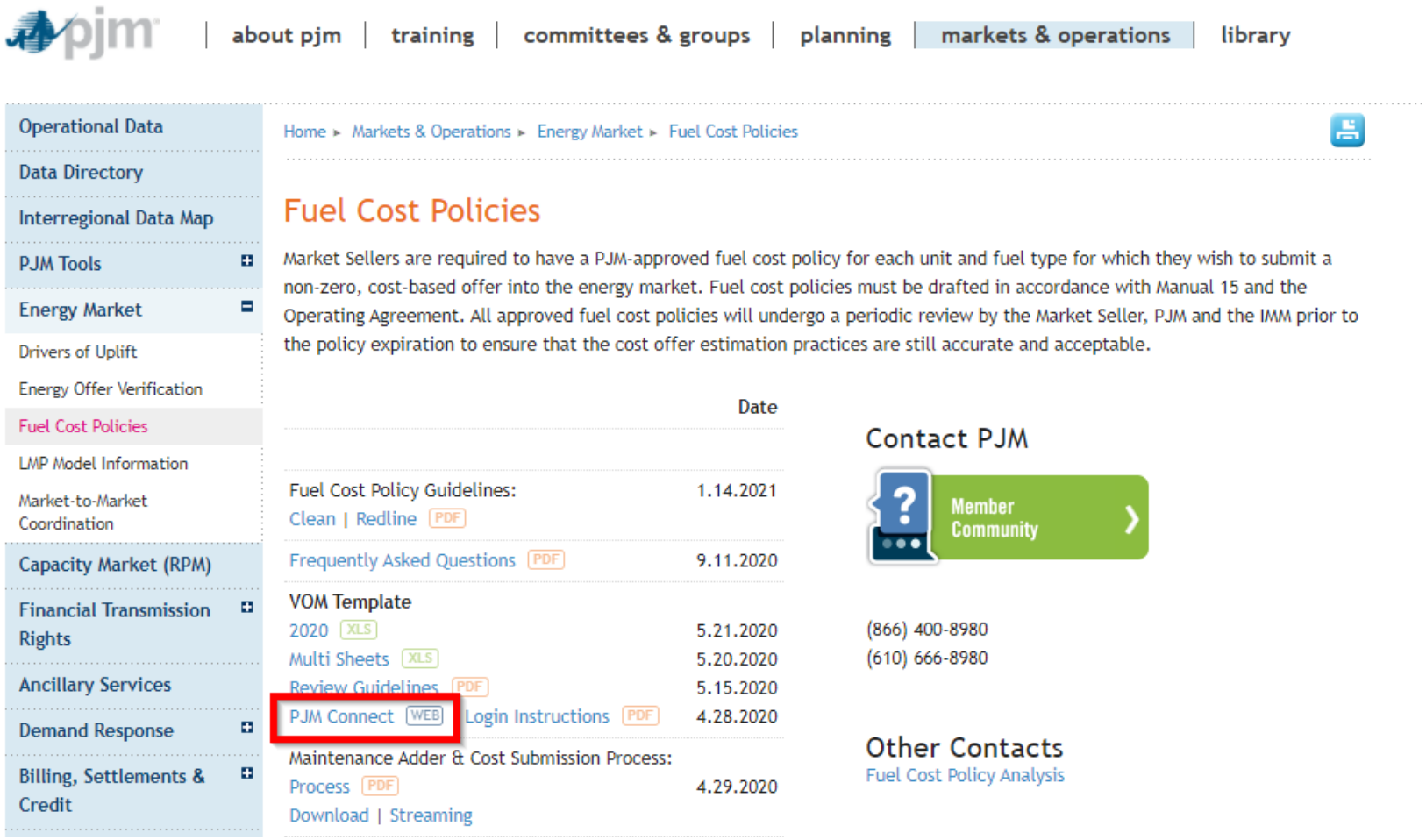
Unit Type	Short Run Marginal Costs ($/MWh)	Heat Rate (Btu/kWh)	VOM ($/MWh)
CT	$19.38	9,241	$0.36
CC	$13.41	6,296	$1.41
CP	$27.63	9,250	$4.21
DS	$96.01	9,660	$0.25
Nuclear	$0.00	NA	$0.00
Wind	$0.00	NA	$0.00
Wind (off shore)	$0.00	NA	$0.00
Solar	$0.00	NA	$0.00

https://www.monitoringanalytics.com/reports/PJM_State_of_the_Market/2020.shtml

Submit Templates in PJM Connect/SharePoint

Find the Submission Site

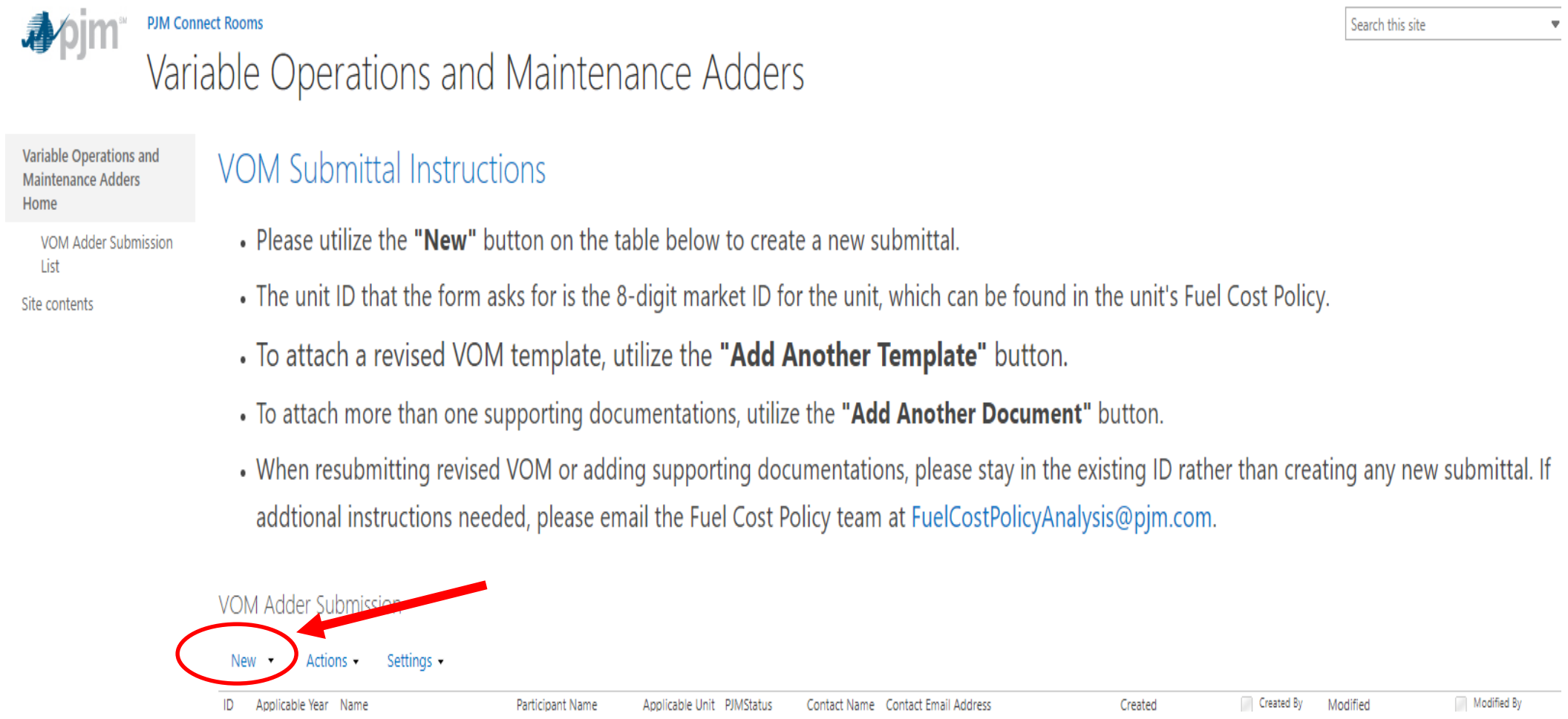
https://connect.pjm.com/vomadders/SitePages/Home.aspx



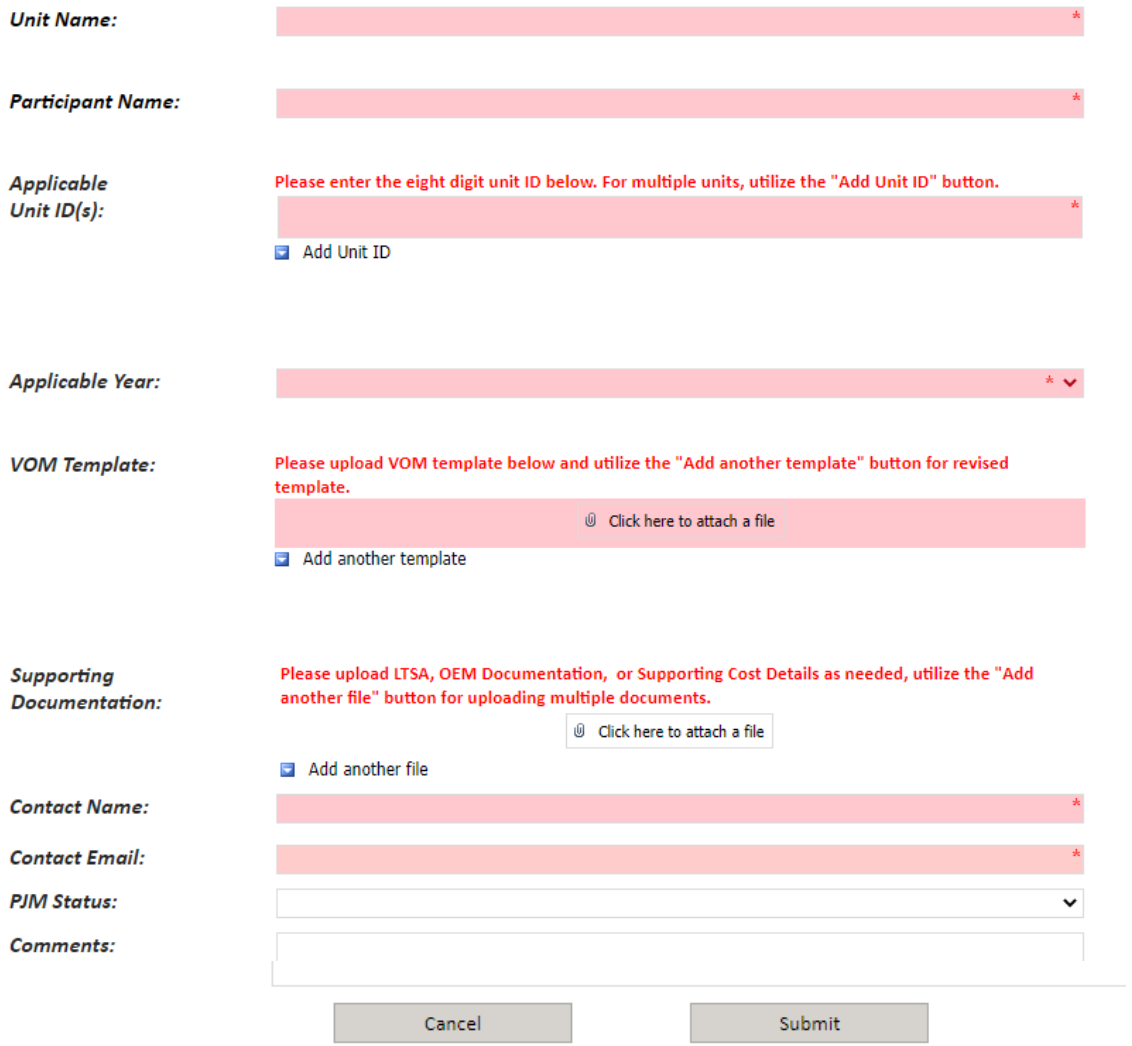
Sign In Page

User signs in with the account credentials for Single Sign-On; if login issues occur, please contact Sharepoint_support@pjm.com or fuelcostpolicyanalysis@pjm.com

Home Page

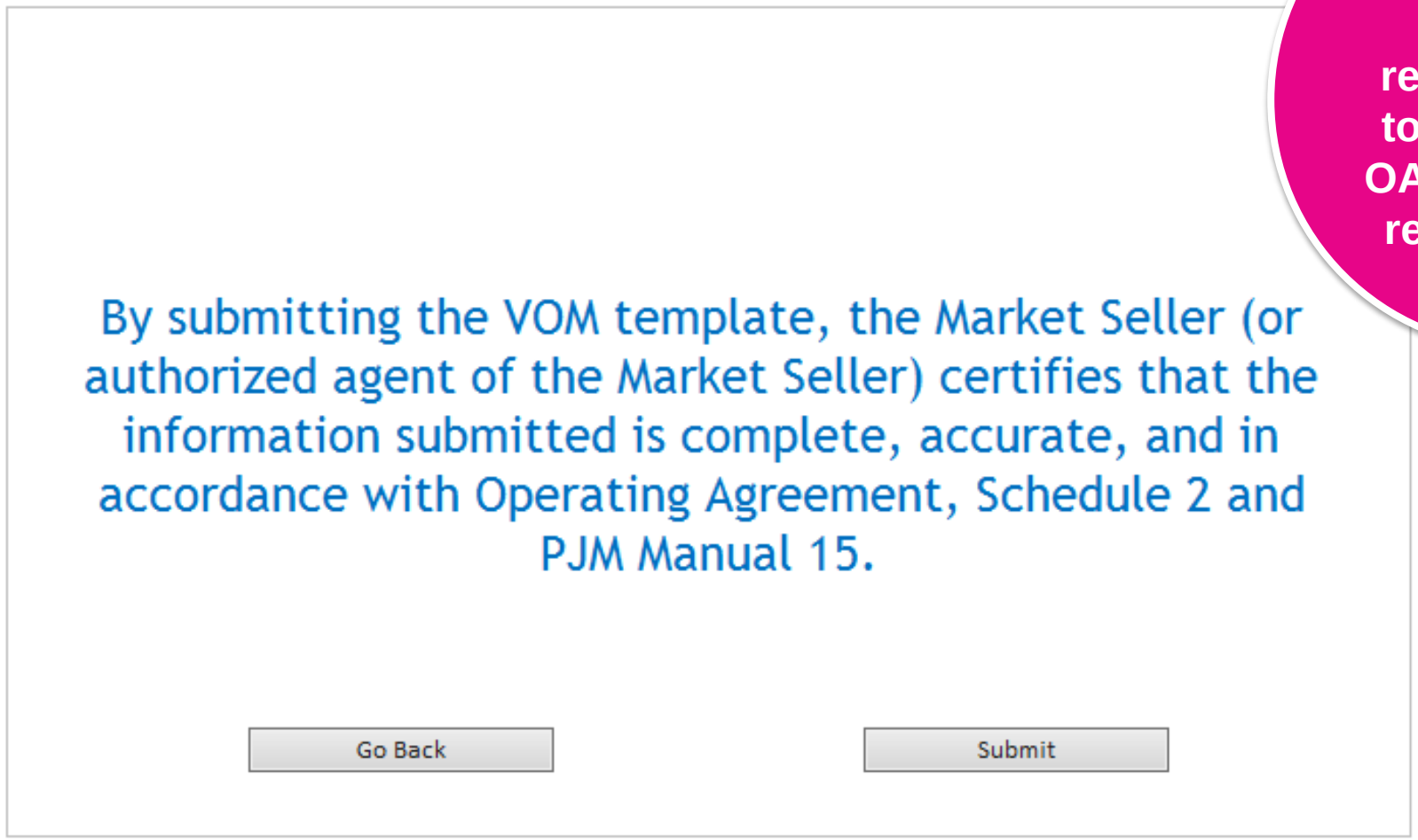


Enter Submission Details



Complete Submission

It is the Market Seller's responsibility to conform to OA and Manual requirements



Track Submission Status

PJM Review Standards

What Do We Look For?

- Unit Information – Any key info missing?
- Section 1 – Previous Year's Itemized breakdown of maintenance and operating cost
  - Any unallowable expenses included?
  - Any expenses that are not clear and require further clarification?
  - Any expenses with extreme dollar amount?
  - Any expenses not supported by documentation?
- Section 2 – Historical Data
  - Any historical year has maintenance/operating costs dollars significantly different from other years?
  - Any historical year has operating data significantly different from other years?
  - Any historical year has little operating data but significant maintenance/operating costs dollars?
- Requested Adder – Any notes?

Allowable Maintenance and Operating Costs

OA Schedule 2 and M15

- Maintenance Adders - expenses directly related to electric production and must be a function of starts and/or run hours
  - repair, replacement, and major inspection, and overhaul expenses including variable long term service agreement expenses
- Operating Costs – expenses related to consumable materials used during unit operation
  - lubricants, chemicals, limestone, trona, ammonia, acids, caustics, water injection, activated carbon for mercury control, demineralizers usage, etc.

Unallowable Maintenance Expenses

- ❑ HVAC
- ❑ Buildings/Grounds/Yards
- ❑ Control Room Equipment and Software
- ❑ Compressed air
- ❑ Closed cooling water
- ❑ Heat tracing/freeze protection
- ❑ Water treatment
- ❑ Upgrades not as a result of replacing obsolete parts
- ❑ Preventive maintenance/periodic testing/inspections
- ❑ Straight time labor
- ❑ Anything already included in ACR template
- ❑ any incurred costs due to weather related events or operator errors

Unallowable Operating Costs

Examples of Unallowable Operating Costs:

- Potable water
- Stack testing
- Materials used not as a result of electric production
- Routine maintenance (e.g. annual oil filter replacement)

Historical Maintenance and Operating Costs

Must be consistent with historical data submitted from previous years

Must have supporting documentation available to justify the historical maintenance dollars or operating costs dollars for each year

Confirmation on Historical Years

- If there are costs identified by PJM in the itemized breakdown for 2020 (section 1) as not allowable, we will ask Market Sellers to confirm if those costs are included in any of the historical years.

- If they are included in any of the historical years, we will ask Market Sellers to exclude them from those historical years, submit a revised template and confirm with us those costs have been removed.

Cyclic Starting Factor and Cyclic Peaking Factor

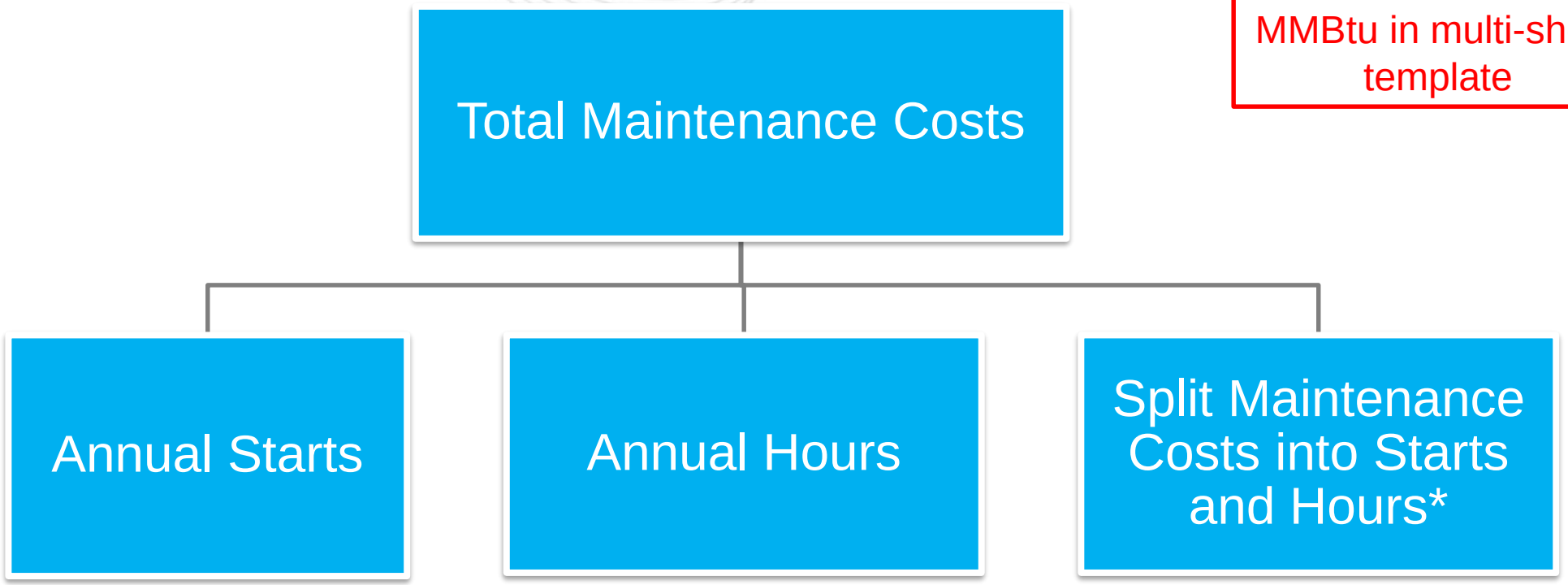
Cyclic starting and peaking factors convert starts and peak hours into equivalent service hours

Only OEM or LTSA specified cyclic starting and peaking factors can be used in Maintenance Adder, no default values allowed.

These are typically found in OEM or LTSA documentation under “equivalent hours”, “equivalent starts”, “factored hours”, or “factored starts”.

Multi-Sheet Template

Note: Cannot select MMBtu in multi-sheet template



* Multi-sheet template available at:
https://www.pjm.com/markets-and-operations/energy/fuel-cost-policies.aspx

FERC Accounts

Market Sellers can use FERC account expenses if they are directly related to electrical production.

Manual 15 Attachment A lists applicable FERC accounts that can be referenced for maintenance expenses – 512, 513 and 553

Must subtract straight time labor and anything that's not directly related to electric production; Requires a statement in the template

LTSA Payments

Only variable fees are allowable, based on:

- Number of starts
- Number of run hours
- Number of factored starts
- Number of factored hours
- Number of equivalent service hours

Must be actual payments, future estimated payments are not allowed

Must upload the section of the LTSA that specifies:

- The formula for calculating variable fees
- The formula for calculating equivalent service hours (if applicable)

Equipment Upgrades

- Capital upgrades/enhancements typically not allowed in maintenance adder; they are typically included in capacity offer.
- Examples of upgrades cannot be included:
  - The addition of an SCR;
  - Replacement of steam turbine blades with the latest tilted twisted design;
  - Addition of emission control equipment;
  - Addition of water sprays on a CT for power augmentation.
- Exception: the original equipment is obsolete and can no longer be procured (e.g. replacement of a flow control actuator with a new design when the old design is no longer available.)

State of Market (SOM) Value

Immature unit < one calendar year of operating history

Latest annual SOM report published by Monitoring Analytics

Can use actual history (<1 year) as alternative

Can only be used as operating cost adder in $/MWh; Maintenance adder must be 0

Supporting Documentation Requirements

- Market Sellers shall provide supporting documentation for the maintenance expenses and operating costs entered in section 1
- Market Sellers must have supporting documentation available to justify the maintenance and operating costs dollars for historical years entered in section 2
- Market Sellers may provide summaries of maintenance activities, accounting records or invoices as supporting documentation
- Summaries, at minimum, shall include a description of the work performed or materials purchased in order to confirm that the activities are directly related to electric production

Acceptable Level of Supporting Documentation

- Accounting Records
- Maintenance Management System Records
- Invoices
- Procurement Cards or Records

Required details may include:

- Work Order
- Project Number
- Work/Material Description
- Cost associated with project/work order
- Cost per unit (e.g. $0.05/gallon of water)

Additional Documentation Requirements

- Documentation provided to PJM shall clearly show all of the individual expenses that go into the more general expense or cost categories entered on the VOM template
- Please do not provide a bulk export of all accounting line items without filtering for and categorizing the relevant expenses.
- Unclear documentation could result in PJM requesting reorganization of the documentation, thus delaying the review process.

Documentation Example

Example:

VOM Template Category:

Boiler Overhaul $1,000,000

Documentation line items:

Boiler Overhaul	Activity 1	$150,000
Boiler Overhaul	Activity 2	$250,000
Boiler Overhaul	Activity 3	$100,000
Boiler Overhaul	Activity 4	$300,000
Boiler Overhaul	Activity 5	$200,000

Highlights of 2021 Review Standards

2021 Annual Review

- Control system removed from allowable system list
- Control Room Equipment and software added to the unallowable expense list
- Default values for cyclic starting and peaking factor removed
- Additional Documentation Requirement Added
- New requirement on confirmation on historical years

Changes to VOM Template

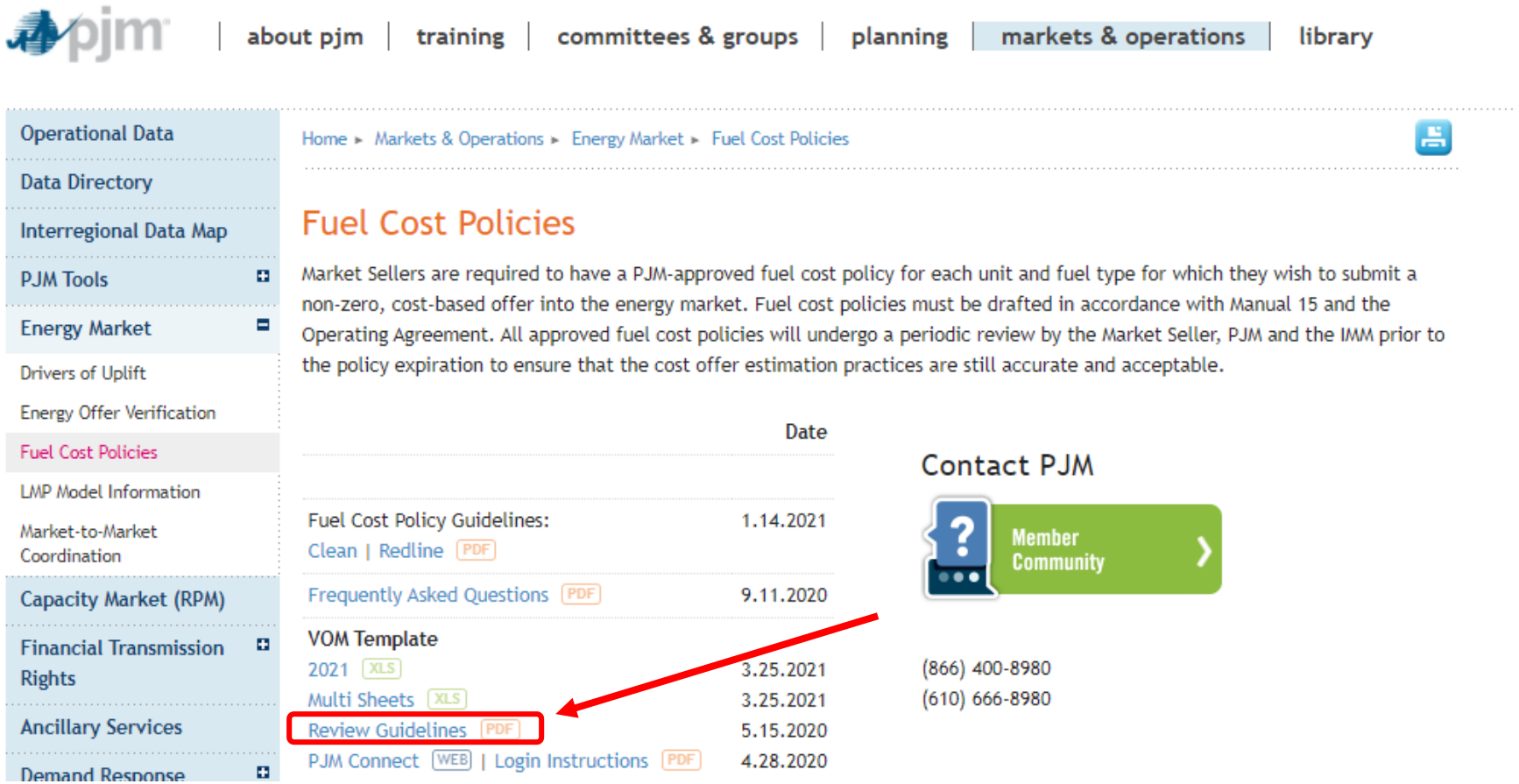
UNIT INFORMATION	
Market Seller Name	
Contact Name	
Contact Email	
Contact Phone	
Market Unit ID and Name	

UNIT INFORMATION	
Market Seller Name	
Contact Name	
Contact Email	
Contact Phone	
Market Unit ID and Name	
ICAP MW	
Unit Technology Type (i.e CT, CC, Sub-critical Coal, Landfill Diesel, etc.)	
Use 1% Maintenance Adder as VARIABLE BLACK START SERVICE COST? (Y/N)	Y
Number of black start units	
Number of total units	

Only change in 2021

VOM Guidelines

https://pjm.com/markets-and-operations/energy/fuel-cost-policies.aspx



PJM Notification Email

Send

From ▾ FuelCostPolicyAnalysis@pjm.com

To... Market Seller Point of Contact

Cc... ⊞ **Fuel Cost Policy Analysis**; ☐ MMU_Energy_Offers_Review@monitoringanalytics.com;

Subject Maintenance Adder and Operating Cost - PJM Review Completed

Hello,

PJM has completed its review of the Maintenance Adder and Operating Cost for the unit(s) listed below based on the information provided. As a result, the unit(s) listed below may include such Maintenance Adder and Operating Cost in the associated cost-based offers until the Date of Expiration provided below. Notwithstanding, the completion of this review does not preclude any potential penalty that may be assessed in the event PJM later determines, with input from the Market Monitor, that the Maintenance Adder and Operating Cost includes charges that are not in compliance with Operating Agreement, Schedule 2.

Maintenance Adder and Operating Cost Information			
Unit Name	Date of Template Submittal to PJM	Completion of Review	Date of Expiration
Valley Forge CT 1	6/15/2021	9/15/2021	12/31/2022
Valley Forge CT 2	6/15/2021	9/15/2021	12/31/2022

Note: *The existing Maintenance Adder and Operating Cost will expire on 9/22/2021. If additional days are needed to implement the new Maintenance Adder and Operating Cost referenced herein, a Market Seller may request, subject to PJM approval, a later Date of Expiration to the existing Maintenance Adder and Operating Cost.*

Please send questions to fuelcostpolicyanalysis@pjm.com
Thank you-

FAQs Regarding Applying Adders

When can the adders be used?

- Adders can be used as soon as the review is completed and notification email received.

When will the adders expire?

- New adders expire at the end of next year or when replaced.
- Existing adders will expire seven calendar days from the date of the completed review, unless requesting an extension.

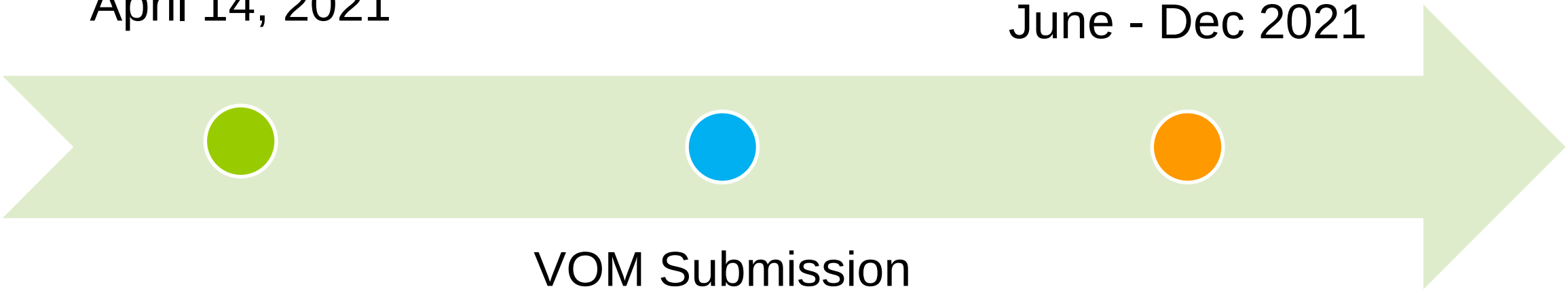
Can the units of adder be modified?

- The units of adder cannot be modified until the subsequent annual review.

Annual Review Timeline

CDS

April 14, 2021



VOM Submission Deadline

June 15, 2021

PJM Review

June - Dec 2021

Contact

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FuelCostPolicyAnalysis@pjm.com

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VOM Information Session 2021