



VOM Minor Maintenance Default Development

CDS

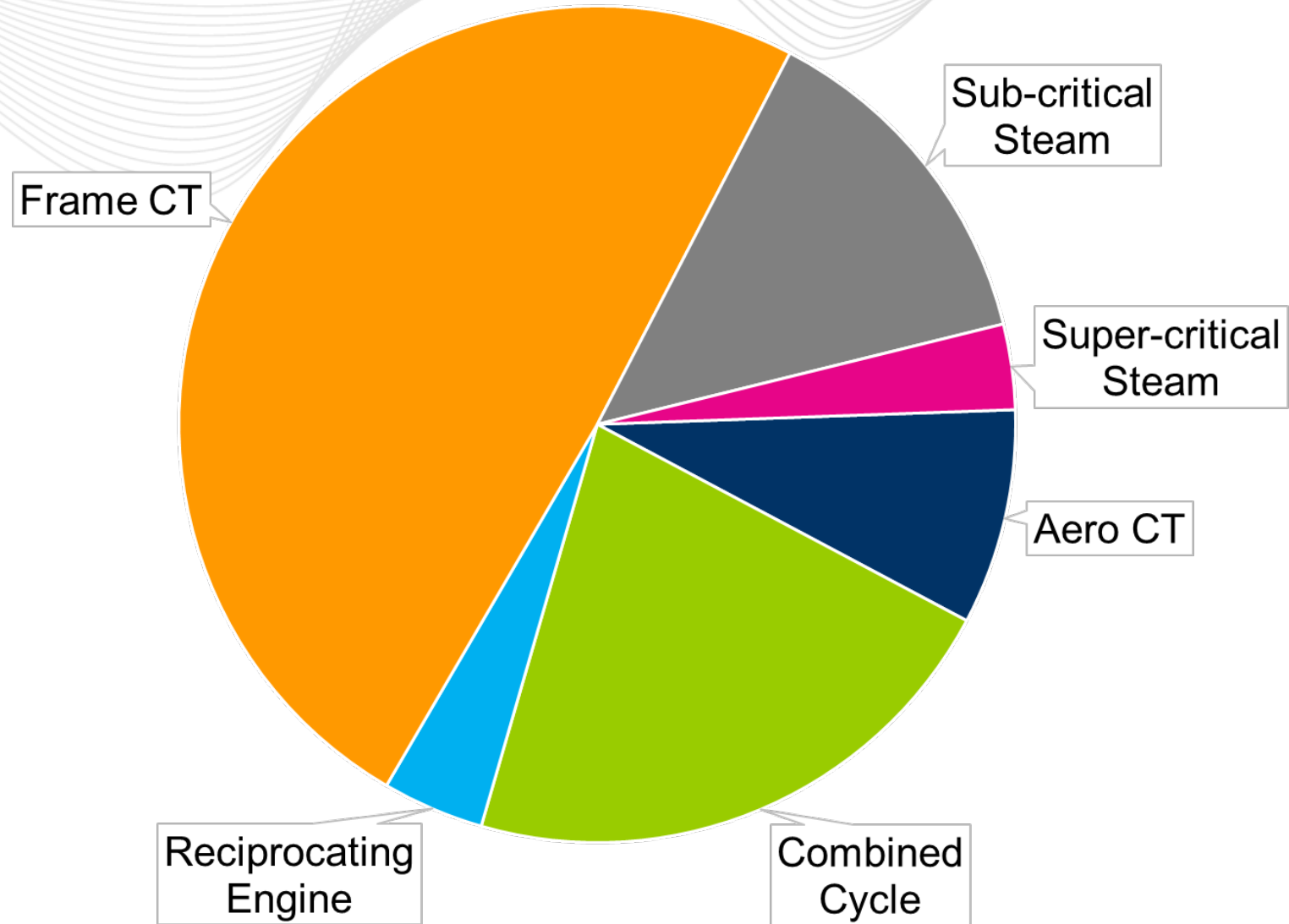
April 4, 2022



All available data from VOM templates submitted in 2021 is being used.

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 c below with actual available maintenance history <i>Note: If selecting Annual MWh, please only include hours with p</i>	
Select Maintenance History:	Actual < 10 ▾	Operating History Units:	Annual MWh ▾
Year	Maintenance History Annual \$	Operating History Annual MWh	
2020	\$ 2,035,000.00	1000	
2019	\$ 87,500.00	2500	
2018	\$ 80,500.00	2300	
2017	\$ 66,500.00	1900	
2016	\$ 84,000.00	2400	
2015	\$ 63,000.00	1800	
2014	\$ 84,000.00	2000	
2013			

Using information submitted on the templates, as well as categories stored in PJM data bases, units were grouped into the following broad categories.



Not all units report operating history in MWh. Market Sellers were able to choose:

- Equivalent Service Hours
- Hours
- mmBTU
- MWh
- Starts

In order to standardize calculations in MWh, for all units Net Actual Generation from GADS was used in place of template-reported operating history.



Identify/Exclude Major Maintenance Years

Estimate years including major maintenance based on a number of factors:

- Preliminary thresholds - Major maintenance dollars per technology type and unit size. The thresholds are based on historical observations.

Major Maintenance Thresholds						
Unit Technology	< 20 MW	20-50 MW	50-120 MW	120-250 MW	250-750 MW	> 750 MW
Aero CT	\$100,000	\$200,000	\$500,000	\$1,000,000		
Combined Cycle		\$750,000	\$2,000,000	\$3,000,000	\$5,000,000	\$6,000,000
Frame CT	\$200,000	\$500,000	\$1,000,000	\$2,000,000	\$4,000,000	
Nuclear						\$8,000,000
Reciprocating Engine	\$50,000	\$50,000	\$50,000			
Sub Critical Steam	\$500,000	\$750,000	\$2,000,000	\$3,000,000	\$5,000,000	\$7,000,000
Super Critical Steam					\$5,000,000	\$7,000,000

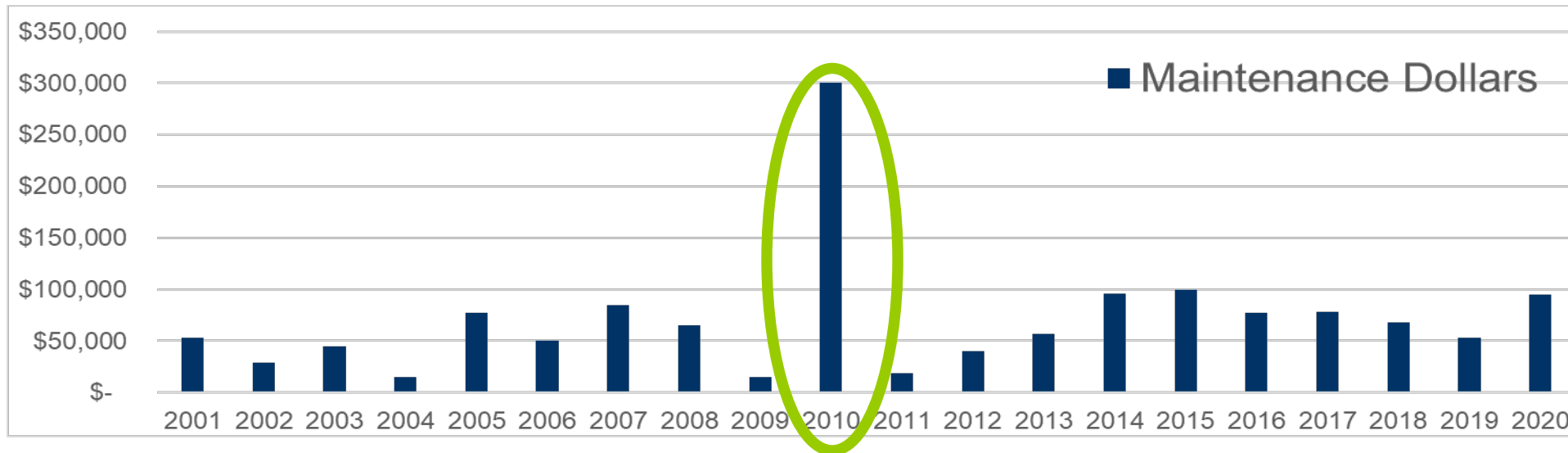


Identify/Exclude Major Maintenance Years cont.

- Itemized expenses from 2020 - Major maintenance dollars identified in items such as 'major overhaul', 'unit outage', or any description that shows the major maintenance activities (HGP inspection, SCR replacement ...)

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
Combustion Turbine	Combustion/Gas Turbine Repairs/Overhauls/Replacements		\$ 2,000,000.00
Combustion Turbine	Maintenance overtime labor on systems directly related to electric production		\$ 35,000.00

- Maintenance dollar spikes in historical years. For non CTs units, if the operating history dips for that year, it could indicate major maintenance occurred.



- GADS outage data to verify if major maintenance was performed.

Once years including major maintenance are removed from the data, the remaining data can be used to calculate the adder.

$$\text{Adder} = \text{Maintenance Dollars} / \text{Operating History}$$

Other considerations:

- Apply escalation factor
- Should the adder be the average or some other value?

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