



Utilization of Default Energy Information Administration Values for Variable Operations & Maintenance

Uniformity of accounting principles of line item plant charges for inclusion into the supplier's cost-based energy offer present significant challenges. The purpose of this proposal is allow for great simplification on how much VOM is eligible to be recovered via the energy market.

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Disclaimer:

The views and proposal presented herein are not representative of the AEP regulated operating companies of Appalachian Power Company, Indiana Michigan Power Company, Kentucky Power Company, or Wheeling Power Company.

Summary

Resource owners may utilize published U.S. Energy Information Administration (EIA) data as an up-to default value representing VOM in their cost-based energy offers. To the extent the VOM data changes, as it should, and the newer new-build VOM data still largely represents the design of the existing asset, the owner should utilize the most recent EIA VOM data.

If EIA stops publishing values associated with a certain type of resource, appropriate default scalars will be utilized, allowing for the continued usage of a historic, default EIA VOM value. If the default EIA VOM value (including appropriate scalars) is not high enough to support the operation of the resource, the owner may elect to utilize their own method of computation. The utilization of a higher-than default value must be approved by PJM, with IMM review.

Details

Proof of Concept –Further development if this package is selected.

Variable O&M:

The U.S. Energy Information Administration (EIA) publishes data representing costs associated with the building of new power plants. The EIA reports are generally referred to as Capital Cost Estimates for Utility Scale Electric Generating Plants. This proposal allows the utilization of published EIA VOM data to represent a default, up-to value that may be included within a resource's cost based offer, with no additional supporting cost information necessary.

To the extent EIA stops publishing new build information for an existing resource type, or if the new-build design no longer represents costs of historic classes; the most recent, historical information, for that existing resource type, may be utilized with an annual time scalar (e.g. 1.5%), to best represent the VOM costs associated with that asset class.

A new PJM resource may utilize the most recent EIA VOM information as the up-to default VOM value.

To the extent a resource believes the computed default values are insufficient to cover VOM cost, it may submit their actual/projected cost-related data for potential approval by PJM, with review from the market monitoring unit.

If this proposal is chosen, the working group will need to decide reasonable values for time and equipment scalars to be utilized in the up-to default VOM value.

EIA data included the following within their published Variable Operations & Maintenance value:

- Raw water
- Waste and wastewater disposal expenses
- Purchase power (which is incurred inversely to operating hours), demand charges and related utilities
- Chemicals, catalysts, and gases
- Consumable materials and supplies
- Major maintenance but not fuel-related expenses.

Appendix Info

Some Examples of Default New Build VOM by Resource Type and the Date Reported¹:

2016 data from

https://www.eia.gov/analysis/studies/powerplants/capitalcost/pdf/capcost_assumption.pdf

2013 data from https://www.eia.gov/outlooks/capitalcost/pdf/updated_capcost.pdf

Resource Type	Date Published by EIA	Up-to Default VOM Allowed (\$/MWh)
Single Unit Advanced Pulverized Coal – 650 MW	2013	4.47
Dual Unit Advanced Pulverized Coal – 1300MW	2013	4.47
Natural Gas Combined Cycle	2016	3.48
Conventional CT	2016	3.50 ²
Nuclear	2016	2.29
Battery Storage	2016	8.00
Photovoltaic	2016	0

¹ There may be updated EIA data available; this data is provided for proof-of-concept purposes. Time and equipment scalars may be applicable.

² New Build VOM value has been greatly reduced in recent years, and may not be appropriate for older assets. The asset owner should reference the year associated with VOM to be utilized.

Another Example of VOM and Fixed O&M Data from U.S. Energy Information Administration (EIA)

[“Updated Capital Cost Estimates for Utility Scale Electricity for Utility Scale Electricity Generating Plants – April 2013”](#)

(2013 data utilized in these examples because the newer data no longer shows the cost of Advanced Pulverized Coal. More recent data is available for other resource types.)

TABLE 2-5 – TECHNOLOGY PERFORMANCE SPECIFICATIONS

Technology	Fuel	Nominal Capacity (kW) ⁽¹⁾	Nominal Heat Rate (Btu/kWh) ⁽²⁾	Capital Cost (\$/kW) ⁽³⁾	Fixed O&M (\$/kW-yr) ⁽⁴⁾	Variable O&M (\$/MWh) ⁽⁵⁾	SO ₂ (lb/MMBtu) ⁽⁶⁾	NO _x (lb/MMBtu)	CO ₂ (lb/MMBtu)
Advanced Pulverized Coal	Coal	650,000	8,800	3,246	37.80	4.47	0.1 ⁽⁷⁾	0.06	206 ⁽⁷⁾
Advanced Pulverized Coal	Coal	1,300,000	8,800	2,934	31.18	4.47	0.1 ⁽⁷⁾	0.06	206 ⁽⁷⁾
Advanced Pulverized Coal with CCS	Coal	650,000	12,000	5,227	80.53	9.51	0.02 ⁽¹⁰⁾	0.06	20.6 ⁽⁹⁾
Advanced Pulverized Coal with CCS	Coal	1,300,000	12,000	4,724	66.43	9.51	0.02 ⁽¹⁰⁾	0.06	20.6 ⁽⁹⁾
NGCC	Gas	620,000	7,050	917	13.17	3.60	0.001	0.0075 ⁽¹²⁾	117
AG-NGCC	Gas	400,000	6,430	1,023	15.37	3.27	0.001	0.0075 ⁽¹²⁾	117
Advanced NGCC with CCS	Gas	340,000	7,525	2,095	31.79	6.78	0.001	0.0075 ⁽¹²⁾	12 ⁽⁹⁾
Conventional CT	Gas	85,000	10,850	973	7.34	15.45	0.001	0.03 ⁽¹¹⁾	117
Advanced CT	Gas	210,000	9,750	676	7.04	10.37	0.001	0.03 ⁽¹¹⁾	117
IGCC	Coal	600,000	8,700	4,400	62.25	7.22	0.025 ⁽¹⁰⁾	0.0075 ⁽¹²⁾	206 ⁽⁷⁾
IGCC	Coal	1,200,000	8,700	3,784	51.39	7.22	0.025 ⁽¹⁰⁾	0.0075 ⁽¹²⁾	206 ⁽⁷⁾
IGCC with CCS	Coal	520,000	10,700	6,599	72.83	8.45	0.015 ⁽¹⁰⁾⁽⁹⁾	0.0075 ⁽¹²⁾	20.6 ⁽⁹⁾
Advanced Nuclear	Uranium	2,234,000	N/A	5,530	93.28	2.14	0	0	0
Biomass Combined Cycle	Biomass	20,000	12,350	8,180	356.07	17.49	0	0.0075 ⁽¹²⁾	195
Biomass BFB	Biomass	50,000	13,500	4,114	105.63	5.26	0	0.08	195
Fuel Cells	Gas	10,000	9,500	7,108	0	43.00	0.00013	0.013	130
Geothermal – Dual Flash	Geothermal	50,000	N/A	6,243	132.00	0	0.2 ⁽¹³⁾	0	120 ⁽¹³⁾
Geothermal – Binary	Geothermal	50,000	N/A	4,362	100.00	0	0.2 ⁽¹³⁾	0	120 ⁽¹³⁾
MSW	MSW	50,000	18,000	8,312	392.82	8.75	0.07 ⁽¹⁴⁾	0.27 ⁽¹⁵⁾	200
Hydroelectric	Hydro	500,000	N/A	2,936	14.13	0	0	0	0
Pumped Storage	Hydro	250,000	N/A	5,288	18.00	0	0	0	0
Onshore Wind	Wind	100,000	N/A	2,213	39.55	0	0	0	0
Offshore Wind	Wind	400,000	N/A	6,230	74.00	0	0	0	0
Solar Thermal	Solar	100,000	N/A	5,067	67.26	0	0	0	0
Photovoltaic	Solar	20,000	N/A	4,183	27.75	0	0	0	0
Photovoltaic – Tracking	Solar	150,000	N/A	3,873	24.69	0	0	0	0
Photovoltaic – Tracking with 10% storage	Solar	150,000	N/A	4,054					
Photovoltaic – Tracking with 20% storage	Solar	150,000	N/A	4,236					

Footnotes are listed on the next page.