



MRC Endorsement Variable Operations & Maintenance Costs (VOM) Summary of Proposed Packages

Melissa Piong
Sr Analyst, Operations Analysis & Compliance
Markets & Reliability Committee
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- Three proposed VOM packages were voted on at the April MIC. Two packages received greater than 50% endorsement:
 - Default VOM Package (81% endorsement) – allow resources to utilize either actual maintenance costs attributed to running the unit and directly tied to electric production in a unit’s incremental energy offer (PJM Package) or a default value for Variable O&M, no greater than the new build data published by the U.S. Energy Information Administration (EIA).
 - PJM Package (75% endorsement) – only actual maintenance costs attributed to running the unit and directly tied to electric production can be included in a unit’s incremental energy offer.

NOT RUN

ACR

Avoidable Cost Rates

FIXED

Avoidable costs

- Plant Staff
- Taxes
- Fees
- Insurance
- Carrying Charges
- Fuel Availability

RUN

VOM-M15

Variable Operations and Maintenance – Manual 15

ONE TO TEN YEARS

Major overhauls and inspections

- CT Hot Gas Path Inspections
- Turbine Overhaul
- Boiler Overhaul
- CT and CC Overhaul & Major Inspection Excluded June 15, 2015

ANNUAL

Annual repairs from operating

- Pump/Valve Repair
- Boiler Tube Leak Repair
- CT Air Filter Replacement

OPERATING DAY

Short run marginal cost

- Short Run Marginal Cost
- Water
- Chemicals
- Consumables

NOT RUN

ACR

Avoidable Cost Rates

FIXED

Avoidable costs

- Plant Staff
- Taxes / Fees/ Insurance
- Carrying Charges
- Fuel Availability
- Energy Only Resources and units that did not clear can include ACR fixed cost in VOM

RUN

VOM-M15 or EIA Default

Variable Operations and Maintenance – Manual 15

ONE TO TEN YEARS

Major overhauls and inspections

- CT Hot Gas Path Inspections
- Turbine Overhaul
- Boiler Overhaul
- CT and CC Overhaul & Major Inspection
- FERC accounts cost minus labor

ANNUAL

Annual repairs from operating

- Pump/Valve Repair
- Boiler Tube Leak Repair
- CT Air Filter Replacement
- FERC account cost minus labor

Operating Costs

OPERATING DAY

Short run marginal cost

- Short Run Marginal Cost
- Water
- Chemicals
- Consumables

- Allow resources to utilize either actual maintenance costs attributed to running the unit and directly tied to electric production in a unit's incremental energy offer (PJM Package) or a default value published by the U.S. Energy Information Administration (EIA).
 - Resource class specific default Unit Variable O&M values that cannot be exceeded from EIA build data.
 - If EIA no longer publishes new-build data for a class of resource, the existing unit may utilize annual scalars (e.g. Handy Whitman Index) applied to the last EIA published data to represent an updated default value.

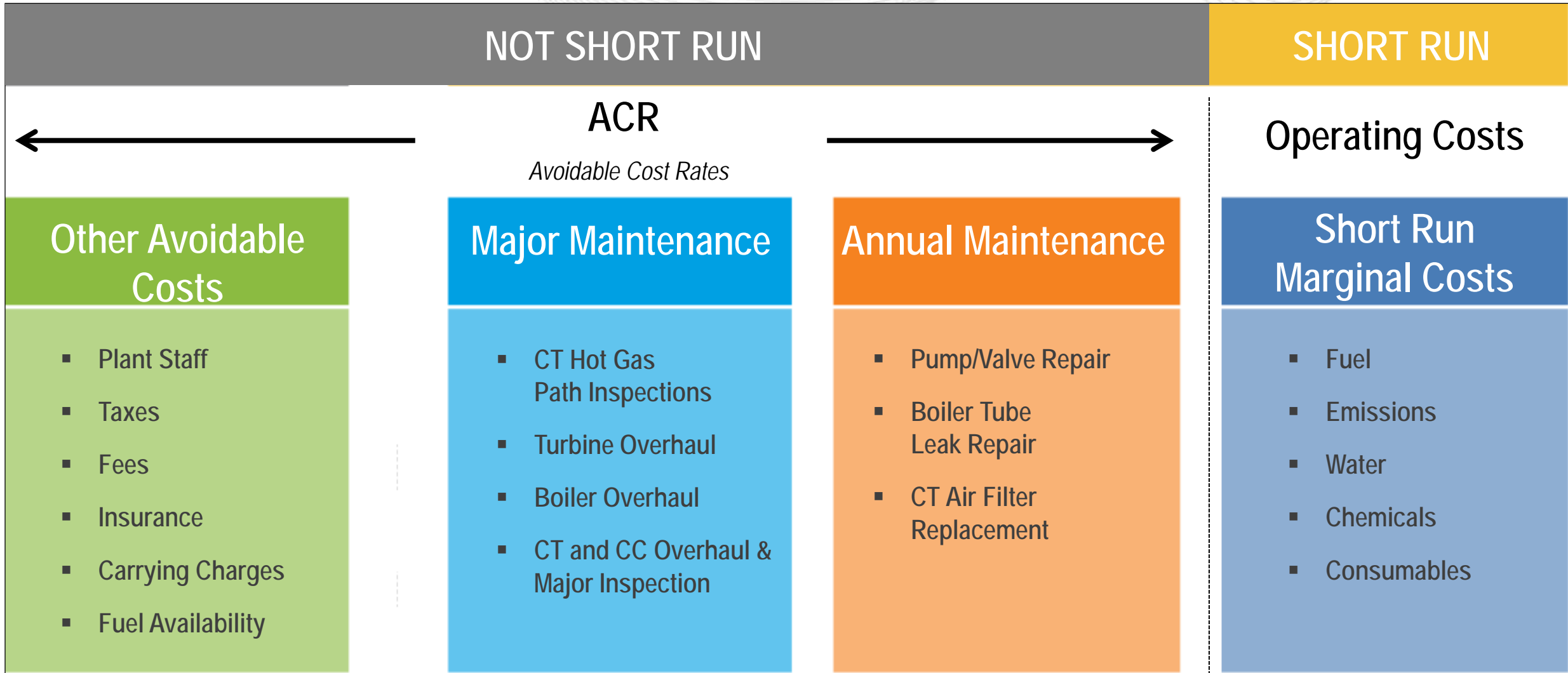
- Only actual maintenance costs attributed to running the unit and directly tied to electric production can be included in a unit's incremental energy offer.
 - CT and CC major inspection, overhaul and LTSA cost can be included
 - Capacity units cannot include ACR fixed cost (i.e. normal labor & maintenance not tied to running)
 - Energy Only Resources and units that did not clear in the Delivery Year auctions can include ACR fixed cost
 - FERC Accounts minus labor cost can be included
 - Remove fixed Title V and emissions fees
- Immature units can use existing history (less than 10 years) or defaults

- Operating costs can be included in a unit's incremental energy offer but not its VOM.
 - Allowable operating costs include lubricants, chemicals, Limestone, Trona, Ammonia, acids, caustics, water injection, and demineralizers.
 - Market Sellers will be allowed to include additional operating costs via the 1.8 exception process. Acceptable items will be added to M15 during the biennial revision.

- Operating Costs changes
 - Implement operating costs changes upon Manual 15 approval
- Units that did not include VOM costs in their capacity offer for the current Delivery Year.
 - Implement VOM changes upon Manual 15 approval.
- Units that did include VOM costs in their capacity offer and cleared for the current Delivery Year
 - Implement VOM changes June 1 of the first Delivery Year where the VOM costs are not included in the unit's capacity offer.
- Units that did not clear in the current Delivery Year and Energy Resources
 - Include fixed costs in VOM After FERC approval

- MRC endorsement – 6/21/2018
- MC endorsement Tariff & Manual 15– 7/26/2018
- Board approval Manual 15 – August 2018

Appendix



- Only operating costs (short run marginal costs) can be included in a unit's cost-based energy offer.
- Operating costs can be calculated:
 - Actual current costs.
 - Average for a 12 month period (updated annually or monthly).
 - Equal to benchmark by unit type provided by the MMU.
 - Method must be specified in FCP.
- For transparency, M15 will list all allowable operating costs.
 - Market Sellers will be able to include other operating costs if approved. New operating costs will be included in the M15 list during the manual's annual review.

- Replace “incremental” with “short run marginal” in OA Schedule 2 and Manual 15.
- Starting and peaking cyclic factors are not included.
- All maintenance/labor costs are included in the unit’s capacity offer.
 - Remove all costs that are not short run marginal costs from M15 and OA Schedule 2.
 - Revise Net Cone calculation to include labor and maintenance costs.
 - Market Sellers will be allowed to include projected maintenance expenses in their ACR.

Conservative high bound* impact of allowing CCs and CTs to include major overhauls and inspections in their VOM is an increase of \$8.1 M. Please note that this is a \$0.0105/MWh increase.

PJM 2017 GWh	(2017 GWh * Percent of RT local constraint offer capped unit hours)	(Effective GWh * 2016 EIA Cost data) * MWh conversion
	(773,646 * 0.3%)	(2,320.94* \$3.5)*1000
	Effective GWh	VOM Cost Estimate
773,646	2,320.94	= \$ 8,123,283.00

*Based on cost estimate assumptions and the 2017 SOM reports that gas units were marginal 53% of the time.

Cost Estimate Assumptions

- From 2017 State of the Market Report percentage of unit's hours units on cost based offers– 0.3%
- 2017 PJM RTO Total Metered Load = 773,646 GWh
- Marginal Unit for all offer capped hours was a CT
- EIA Default VOM Value for CCs and CTs is \$3.50/MWh and is assumed to be solely related to major inspection and overhaul costs