



Variable Operations and Maintenance Cost Review

Working Group 2 – Storage Resources

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Purpose of Working Groups

- Goal 1: Offer definitions for comment for:
 - Major Maintenance Costs
 - Variable Operations Costs
 - General and Administrative Costs
- Goal 2: Refer stakeholders to the ongoing ESDER stakeholder process

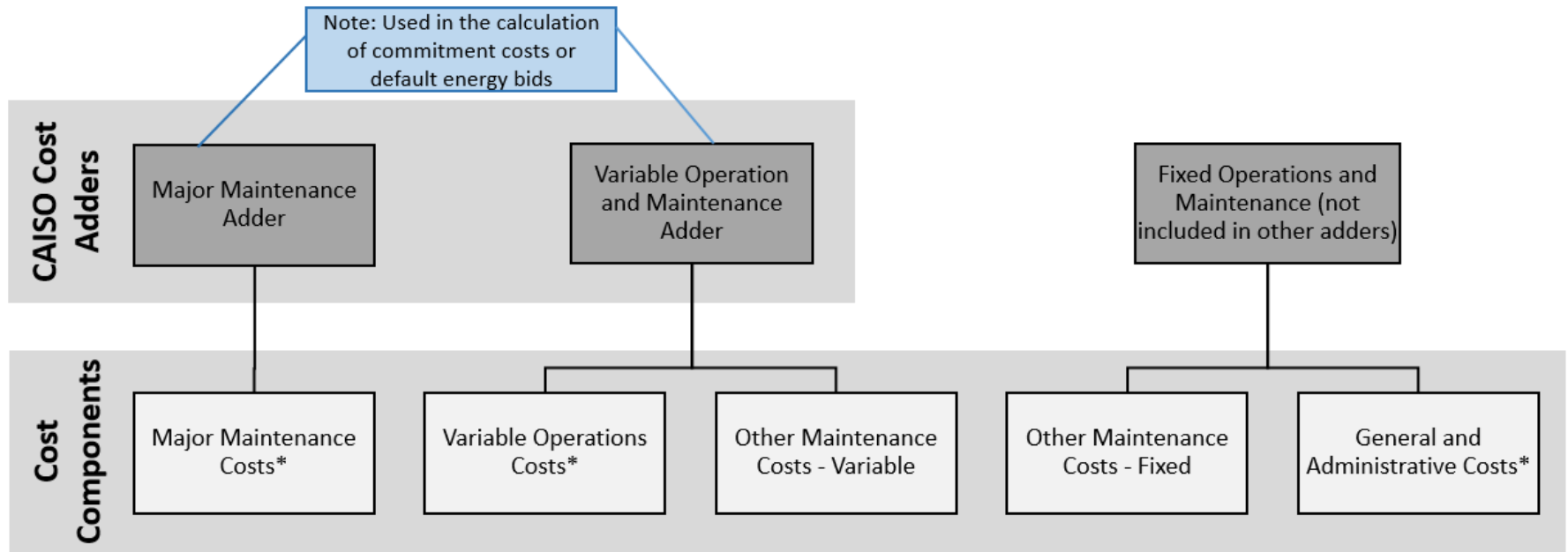
Background

- The CAISO has committed to revisit Variable O&M (VOM) adder values once every three years
- In December 2018, the CAISO and Nexant published a report proposing updates to VOM adder values that had been in place since 2012
- Stakeholders noted a lack of definitions for major maintenance and variable operations and maintenance in the CAISO Tariff and other issues with the values
 - Concerns were also raised about non-generating resources (NGRs), particularly batteries, being listed as “Plants without Variable Operations and Maintenance Costs”

Cost Components

- To aid in the discussion of the gray areas in the process of differentiating costs, CAISO is introducing some new cost component terms:
 - General and Administrative (G&A)
 - Variable Operations (VO)
 - Major Maintenance (MM)
 - Other Maintenance (OM)
 - Other Maintenance - Variable
 - Other Maintenance - Fixed

Cost Components and Cost Adders



* - **Goal 1:** ISO is offering definitions for stakeholder comment to these terms herein

The Low-Hanging Fruit

General & Administrative Costs

- General and Administrative costs are those costs incurred at a power plant that *do not vary with and/or relate to production.*
- These costs include:
 - Leasing or rental costs
 - Property taxes
 - Insurance
 - Industry-related fees and costs

The Low-Hanging Fruit

Variable Operations Costs

- Costs of consumables *associated directly with the electrical production* of a generating unit and *specifically exclude both maintenance and fuel costs.*
- These costs include:
 - Consumable materials and supplies

Major Maintenance Costs

- Costs associated with *extensive maintenance of the generating unit* that cannot be done as part of routine maintenance. Major maintenance costs must be *associated with electrical production* of the generating unit such that the costs can be *related to run-hour production or the startup* of the generating unit.
- Major maintenance is an existing concept in our Tariff

The Tricky Part

Other Maintenance Costs

- Other Maintenance costs are maintenance costs which *do not require the generator to undergo an extensive outage* and may be characterized as *fixed or variable*.

VOM adders and MMAs for NGRs

- CAISO/Nexant report (issued December 2018) estimated VOM costs for Fuel Cells at \$37.70/MWh and Batteries at \$0/MWh
- Currently, NGRs resources do not have VOM adders or MMAs as they do not have DEBs or Commitment Costs in the CAISO markets
- DEBs for NGRs are being considered in the Energy Storage and Distributed Energy Resources (ESDER) Phase 4 stakeholder process

Proposed Next Steps

- Please review materials found on the ESDER stakeholder process [website](#) and participate in the ESDER initiative
- If you'd like to comment on variable operations and maintenance activities related to storage resources, please send emails to initiativecomments@caiso.com by 7/30

Please note if you'd like your comments to be confidential