California ISO

Stakeholder Comments Template

Variable Operations and Maintenance Cost Review Working Group – Other Resources

This template has been created for submission of stakeholder comments on the VOM Cost Review working group for other resources that was held on July 23, 2019. The workshop, stakeholder meeting presentations, and other information related to this initiative may be found on the initiative webpage at: http://www.caiso.com/informed/Pages/StakeholderProcesses/VariableOperations-MaintenanceCostReview.aspx.

Upon completion of this template, please submit it to initiativecomments@caiso.com. Submissions are requested by close of business on **August 6, 2019.**

Note: Upon submission, please indicate if you would like your comments to be confidential.

Submitted by	Organization	Date Submitted
Joseph Greco	*Middle River Power*	*8/6/2019*

Please provide your organization's comments on the following topics and questions.

1. **Appendix A to this template contains a list of maintenance activities for Other resources. What maintenance activities are missing from this list that should be included for consideration?**

   Middle River Power ("MRP") owns and/or manages approximately 2,000 MW's of renewable and natural gas facilities throughout CA and appreciates the opportunity to provide comments on the Variable Operations and Maintenance Cost Review for Other Resources. Middle River Power is the asset manager for Coso Geothermal Power, LLC which owns and operates a 270 MW nameplate capacity geothermal facility in Inyo County, California. Appendix A does not address geothermal maintenance or capital categories. MRP would like to highlight that the geothermal industry has two specific types of technologies that should be address when considering a proxy VOM price. Varying technologies impact the cost profile for each facility.

Flash units utilize brine and steam from production wells that power traditional steam turbines to generate power. Binary technology utilizes a heat exchange process and a heat transfer medium to power a turbine generator. Steam does not directly power the turbine. Facilities utilize either wet or dry cooling towers to manage condensate temperatures. Common to both technologies is well field management for production and injection wells in addition to royalty payments for geothermal resource that are traditionally owned other entities including the BLM, Navy and private entities.

Each generating facility has varying chemical usage, water requirements, well and plant maintenance costs, capital necessities and overhauls cycles to properly manage the project to maximize output, availability and reliability.

MRP is concerned the single VOM adder may not be appropriate as an industry proxy and negotiated VOM adders should be considered. MRP request additional analysis be performed prior to implementing a uniform VOM adder. Further, since geothermal brine and steam production has a much different cost profile than traditional fossil fuel to power the facility, the calculation for a default energy bid should be reevaluated for geothermal. There are significant upfront and ongoing costs to develop and maintain the wellfield to assure steady production from the wellfield.

2. **Appendix A also allocates the maintenance activities to three cost components (Major Maintenance [green], Other Maintenance – Variable [yellow], Other Maintenance – Fixed [red]). Please review and note whether you disagree with our proposed allocation and why.**

   Since Appendix A does not apply to geothermal, MRP has no comments at this time.

3. **Please provide any comments or updates you may have to the definitions of Major Maintenance Costs, Variable Operations Costs, and General and Administrative Costs, if any, listed in the July 2, 2019 report found on the stakeholder initiative website.**

   Since Appendix A does not apply to geothermal, MRP has no comments at this time.

4. **Please provide any comments or updates to the categories/sub-categories of generation technologies for VOM adders. Should the categories currently found in the CAISO BPM for Market Instruments be further disaggregated into sub-categories (e.g. Coal – Subcritical vs. Coal – Supercritical, Advanced Nuclear* vs. Conventional Nuclear Plant Size 1100 MWs)?**

   MRP offers no comment at this time.

5. **Please offer your feedback on structure of this stakeholder initiative and working groups.**

   No additional comments at this time.

Additional comments

Please offer any other feedback your organization would like to provide on the topics discussed during the working group.

Please see comments in item 1 above.

* - As defined in US EIA report – Capital Cost Estimate for Utility Scale Electricity Generating Plants, November 2016.

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