



Variable Operations and Maintenance Cost Review

Draft Final Proposal

Stakeholder Web Conference
August 19, 2020

CAISO PUBLIC

CAISO Policy Initiative Stakeholder Process

PROPOSAL DEVELOPMENT

DECISION

IMPLEMENTATION

Issue paper

↳ Straw proposal

Draft proposal

Draft business requirement specification

Draft tariff

Final proposal

ISO Board
EIM Governing Body

Tariff filing

FERC

Business practice manual revisions
Market simulation

Go Live

Stakeholder input

November 2020

We are here

This represents the typical process, and often stages of the process run in parallel.

Agenda

Topic	Speaker
Welcome and stakeholder process	Isabella Nicosia
Introduction/Background	Kevin Head
Stakeholder Comments on Revised Straw Proposal	Kevin Head
Proposal	
Principles	Kevin Head
O&M Cost Framework and Default O&M Adders	Kevin Head
Implementation Considerations	Kevin Head
Next Steps	Isabella Nicosia

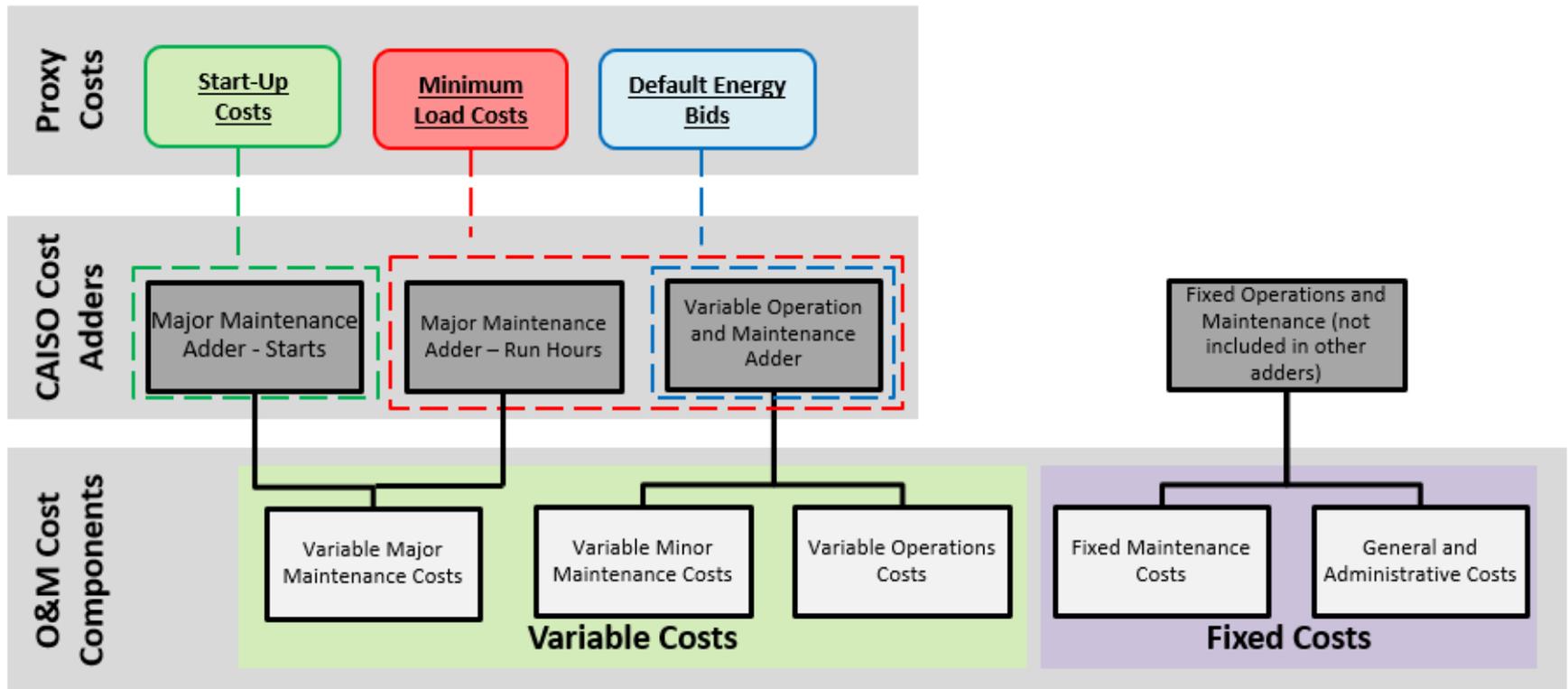
Introduction/Background

- CAISO has committed to revisit default Variable O&M (VOM) adder values once every three years
 - December 2018: CAISO published a report developed by Nexant proposing updates to VOM adder values
 - July 2019: Proposed updated definitions and held 5 technology specific stakeholder workshops to discuss definitions
- Through these two efforts, the CAISO identified the need to formalize the cost review in a stakeholder initiative

Introduction/Background (cont.)

- The new VOM Cost Review stakeholder initiative seeks to address two key issues:
 1. The CAISO did not have an explicit set of principles for the categorization of the O&M cost components to serve as a reference in negotiations
 2. Without these explicit principles, estimating the default O&M adder values is also challenging
- This initiative addresses these issues and creates a more flexible and efficient cost recovery framework

Current Cost Framework



Stakeholder Comments on RSP - Definitions

- Comments were supportive of proposed definitions
- In RSP, the CAISO proposed to rely on the classification of an asset as a “retirement unit” to determine whether the costs of replacing it would be considered Variable Maintenance costs in the context of CAISO’s markets
 - Stakeholders noted that the use of “retirement units” varies across entities and thus reliance on the term would lead to inconsistent treatment across entities
 - DFP proposes an alternate treatment by using the term “major components”

Stakeholder Comments on RSP – Default costs

- Comments on default Variable Operations costs asked the CAISO to consider proposing default values for two technology types:
 - Zero liquid discharge (ZLD) equipment
 - The CAISO does not believe that ZLD equipment is widely used across the CAISO/EIM footprint and does not propose default values for this technology
 - Wind resources (e.g. royalty payments to landowners)
 - The CAISO believes that there is sufficient data available to propose a default value and we have calculated a default VO cost for wind resources

Stakeholder Comments on RSP – Default costs (cont.)

- Comments on default Variable Maintenance costs discussed methodology and sources:
 - In RSP, CAISO offered two alternatives for calculation of default VM costs
 - No clear consensus among stakeholders on which option was preferred
- CAISO made two main changes in response to comments
 - Using a blend of the two options proposed in the RSP
 - Use the median MMA value, rather than an interpolated value, to cross-validate the external estimates of Variable Maintenance costs

Summary of Draft Final Proposal

- 1) Proposes principles used to categorize O&M costs and provides interpretive guidance to these principles
- 2) Proposes an updated O&M cost framework and updates the default values for the O&M Adders that comprise this cost framework
 - a) Makes the O&M cost framework more flexible
 - b) Updates default Energy O&M Adder values based on Nexant report
 - c) Proposes default values for Min Load and Startup O&M Adder values

Proposed Principles

Variable Operations Costs:

Variable Operations costs are the costs of consumables and other costs that vary directly with the electrical production (i.e., the run-hours, electricity output, or the start-up/shut-down) of a Generating Facility, specifically excluding maintenance costs, greenhouse gas allowance costs, fuel costs, and grid management charges.

Proposed Principles (cont.)

Variable Maintenance Costs:

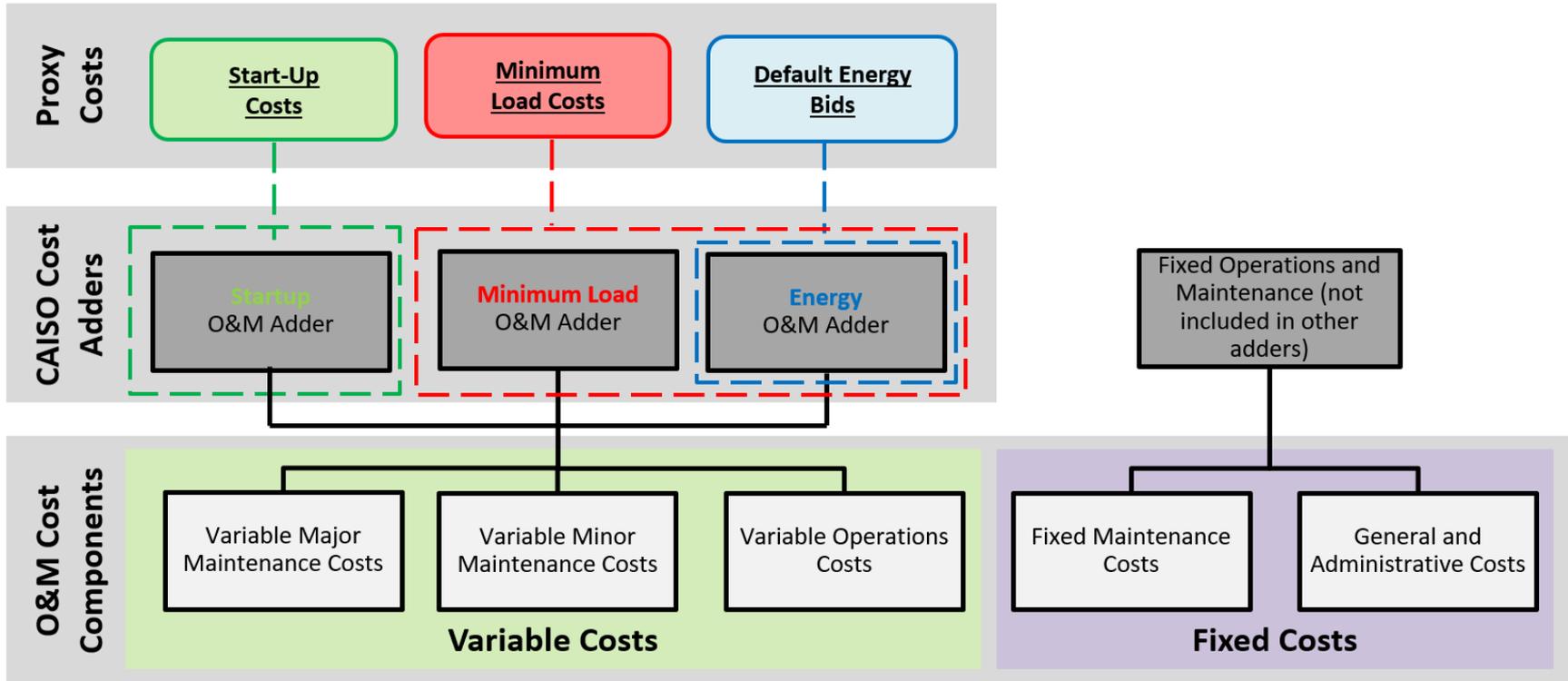
Variable Maintenance costs are the costs associated with the repair, overhaul, replacement, or inspection of a Generating Facility that adhere to the following conditions:

- 1) Such costs must vary with the electrical production (i.e. the run-hours, electricity output, or the start-up/shut-down) of the Generating Facility.*
- 2) Such costs should reflect future maintenance costs that are expected to be incurred within the service life of the major component of plant or equipment.*
- 3) Such costs should be consistent with good utility practice.*
- 4) Such costs should not effect a substantial betterment to the Generating Facility.*
- 5) If the item is a replacement, it cannot be a replacement of an existing major component of plant or equipment.*

Proposed Principles – Interpretive Guidance

- The paper offers interpretive guidance for these principles that is intended to be useful in negotiations
- Highlights in the interpretive guidance include:
 - Clarifications on “future maintenance costs”
 - List of “major components” by technology type
 - Discussion of “service life”
 - Clarifications on “substantial betterment”
- This guidance will be converted into BPM language but stakeholders are encouraged to submit comments to it during this stakeholder initiative

Proposed Cost Framework



Proposed Default Values

Technology Type	Energy O&M Adder (\$/MWh)	Minimum Load O&M Adder (\$/run-hour/MW)	Startup O&M Adder (\$/start/MW)
<i>Default values represents:</i>	<i>Variable Operations Costs</i>	<i>Variable Maintenance Costs</i>	<i>Variable Maintenance Costs</i>
Coal	2.69	-	-
Steam Turbines	0.33	-	-
CCGTs	0.59	1.74	-
[Frame] CTs	0.97	-	52.13
Aeroderivative CTs	2.15	4.38	-
RICEs	1.10	-	-
Nuclear	1.08	-	-
Biomass Power Plant	1.65	-	-
Geothermal Power Plant	1.16	-	-
Land Fill Gas	1.21	-	-
Hydro	-	0.65	-
Solar	-	-	-
Wind	0.28	-	-
Storage/NGRs/PDRs/RDRRs	-	-	-

Default VM Cost – Final Methodology

- The revised straw proposal offered two options to calculate default Variable Maintenance costs
- This draft final proposal uses a blended approach:
 - Gas resources: an Option 1-type approach involving fewer assumptions and using only one external source of cost estimates (NYISO reports)
 - Hydro resources: an Option 2-type approach, involving an assumption about the operating profile of hydro resources and using two external sources (EIA and EPA reports)

Proposed methodology for calculating default Variable Maintenance cost values

The CAISO proposes to calculate default Variable Maintenance values to be used to complement negotiated values using a 5-step process:

- 1) Estimate variable maintenance costs using external sources
- 2) Determine which adder type (\$/run-hour, \$/start, or \$/MWh adder) is most appropriate for each technology type
- 3) Convert the variable maintenance costs to the appropriate adder type
- 4) Cross-validate the estimate from external sources against median major maintenance adder values to determine a default O&M Adder value
- 5) Using the default O&M Adder value, calculate a resource-specific O&M Adder

Details are spelled out in much greater detail in the paper & supporting calculations

Implementation Considerations

- The CAISO identified two main implementation issues to discuss with stakeholders at this point in the stakeholder process:
 - The treatment of existing negotiated MMAs and VOM adders upon implementation
 - The implementation timeline designed to handle the influx of negotiations before and at the time of implementation of the new default values

Existing negotiated values (MMAs and VOM adders)

- SCs will be allowed to “keep” their currently negotiated values (i.e. the currently negotiated values will be grandfathered in)
 - MMAs will automatically convert to Min Load and/or Startup O&M Adders
 - Custom VOM adders will convert to Energy O&M Adders
- Resources with no negotiated MMAs or VOM adders values will automatically switch over to new default values
- However, when new default values are implemented, the CAISO expects that many SCs will want to negotiate new O&M adder values...

Proposed Implementation Timeline

- ... hence the CAISO proposes to handle this influx of negotiations in two phases
 - **Phase 1**: For applications submitted by 5/31/2021, the CAISO will work to implement these negotiated values on 10/1/2021
 - **Phase 2**: Applications submitted after 5/31/2021 will effective as the negotiations are completed (no guarantee of implementation by 10/1/2021)



Stakeholder Timeline

Date	Milestones
December 19, 2019	Post Straw Proposal
January 6, 2019	Hold stakeholder call on Straw Proposal
January 21, 2019	Stakeholder written comments due on Straw Proposal
May 4, 2020	Post Revised Straw Proposal
May 11, 2020	Hold stakeholder call on Revised Straw Proposal
May 26, 2020	Stakeholder written comments due on Revised Straw Proposal
August 12, 2020	Post Draft Final Proposal
August 19, 2020	Hold stakeholder call on Draft Final Proposal
September 2, 2020	Stakeholder comments due on Draft Final Proposal
Aug. - Sept. 2020	Tariff & BRS Development
November 4, 2020	EIM Governing Body
November 18-19, 2020	Board of Governors

Next steps

- All related information for the Variable Operations and Maintenance Cost Review initiative is available here:
<https://stakeholdercenter.caiso.com/StakeholderInitiatives/Variable-operations-maintenance-cost-review>
- Please submit written comments on today's discussion and the draft final proposal by **September 2, 2020**.

Important – Please review new process for submitting comments

- Provide comments using the new stakeholder commenting tool
- First-time users must register using their email address in order to submit comments on initiatives
- The commenting tool is located on the Stakeholder Initiatives landing page (click on the “commenting tool” icon):
<https://stakeholdercenter.caiso.com/StakeholderInitiatives>